

Integrated Resource Management Plan



Red Lake Band of Chippewa Indians
Red Lake Reservation, Minnesota

2011 INTERIM DRAFT

RED LAKE BAND
of CHIPPEWA INDIANS
RED LAKE NATION HEADQUARTERS



OFFICERS:
FLOYD JOURDAIN, JR., Chairman
DON R. COOK, SR., Secretary
DARRELL G. SEKI, SR., Treasurer

DISTRICT REPRESENTATIVES:
GARY NELSON
GLENDA J. MARTIN
JULIUS "TOADY" THUNDER
ALLEN PEMBERTON
ROMAN "DUCKER" STATELY
DONALD J. "DUDIE" MAY
WILLIAM "BILLY" GREENE
RICHARD BARRETT, SR.

ADVISORY COUNCIL:
7 HEREDITARY CHIEFS

PO Box 550, Red Lake, MN 56671

Phone 218-679-3341 • Fax 218-679-3378

RESOLUTION NO. 181-11

Upon a motion by Secretary Cook and second by Representative Barrett, the following was enacted:

WHEREAS, in June, 2000 the Red Lake Tribe adopted an Integrated Resource Management Plan (IRMP) to guide the management and use of the Tribal resources for ten years, and

WHEREAS, this IRMP has been reviewed and updated by the Red Lake Department of Natural Resources (DNR), as a living document, to guide to the wise management of the Tribe's natural resources into the future; and be updated and revised, as needed, with the Red Lake Tribal Council's approval; now

THEREFORE BE IT RESOLVED, that the Red Lake Tribal Council hereby adopts this 2011 IRMP, as presented by the Red Lake Department of Natural Resources; and

BE IT FURTHER RESOLVED, that the DNR should publish the 2011 IRMP and present it to the Bureau of Indian Affairs Midwest Regional Office Director for concurrence and signature.

FOR : 10
AGAINST : 0

We do hereby certify that the foregoing resolution was duly presented and enacted upon at the Regular Meeting of the Tribal Council, held on Tuesday, November 8, 2011, with a quorum present, at the Red Lake Nation Headquarters, Red Lake.


FLOYD JOURDAIN, JR., CHAIRMAN


DON R. COOK, SR., SECRETARY

TABLE OF CONTENTS

Section.....	Page Number
DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACT	
1.0 INTRODUCTION.....	1-1
1.1 Executive Summary.....	1-1
1.2 Purpose and Need	1-2
1.3 Methodology and Organization Plan.....	1-5
1.4 Acknowledgements.....	1-5
2.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT	2-1
2.1 Location	2-1
2.2 Landforms & Geography	2-5
2.3 Climate.....	2-6
2.4 Vegetation	2-6
2.5 Towns and Transportation	2-11
2.6 Human Resources.....	2-11
2.7 Economics	2-12
2.7.1 References.....	2-16
3.0 ISSUES AND CONCERNS.....	3-1
3.1 Cultural and Traditional Resources.....	3-1
3.1.1 The Fishery Resource	3-2
3.1.2 The Wildlife Resource	3-2
3.1.3 The Forest Resource.....	3-2
3.1.4 The Water Resource.....	3-3
3.1.5 The Wetland Resource	3-3

3.2	Environmental Protection	3-3
4.0	GOALS AND OBJECTIVES	4-1
4.1	Cultural and Traditional Values	4-1
4.2	The Fishery Resource.....	4-3
4.3	The Wildlife Resource	4-3
4.4	The Forest Resource	4-4
4.5	The Water Resource	4-5
4.5.1	Surfacewater: Lakes and Streams	4-5
4.5.2	Groundwater.....	4-5
4.6	The Wetland Resource.....	4-6
4.7	Environmental Protection.....	4-7
4.7.1	Municipal Solid Waste.....	4-7
4.7.2	Storage Tanks	4-7
4.7.3	Accidental Chemical Releases.....	4-8
4.7.4	Pesticides/Herbicides	4-8
4.7.5	Air Pollution	4-8
5.0	ALTERNATIVES SELECTED BY IRMP PLANNING TEAM.....	5-1
6.0	RED LAKE RESOURCES.....	6-1
6.1	The Cultural and Traditional Resource	6-1
6.1.1	Description of the Affected Environment.....	6-1
6.1.2	Issues and Concerns	6-7
6.1.3	Goals and Objectives	6-8
6.1.4	Alternatives and Impacts.....	6-10
6.1.5	Decision Matrix	6-13
6.1.6	Integrating Resource Management	6-14
6.1.7	References.....	6-16
6.2	The Fishery Resource.....	6-21
6.2.1	Description of the Affected Environment.....	6-21
6.2.2	Issues and Concerns	6-25
6.2.3	Goals and Objectives	6-25
6.2.4	Alternatives	6-26
6.2.5	Decision Matrix	6-28

6.2.6	Integrating Resource Management	6-29
6.2.7	References.....	6-30
6.2.8	Acronyms and Terms	6-33
6.3	The Wildlife Resource	6-35
6.3.1	Description of the Affected Environment.....	6-35
6.3.2	Issues and Concerns	6-44
6.3.3	Goals and Objectives	6-45
6.3.4	Alternatives	6-45
6.3.5	Decision Matrix	6-48
6.3.6	Integrating Resource Management	6-49
6.3.7	References.....	6-51
6.4	The Forest Resource	6-53
6.4.1	Description of the Forest Resource.....	6-53
6.4.2	Forestry Program.....	6-58
6.4.3	Issues and Concerns	6-64
6.4.4	Goals and Objectives	6-64
6.4.5	Alternatives	6-65
6.4.6	Decision Matrix.....	6-66
6.4.7	Integrating Resource Management	6-66
6.4.8	References.....	6-68
6.4.9	Acronyms and Terms	6-73
6.5	The Water Resource	6-77
6.5.1	Description of the Affected Environment.....	6-77
6.5.2	Issues and Concerns	6-89
6.5.3	Goals and Objectives	6-90
6.5.4	Alternatives	6-91
6.5.5	Decision Matrix.....	6-93
6.5.6	Integrating Resource Management	6-94
6.5.7	References.....	6-96
6.5.8	Acronyms and Terms	6-98
6.6	The Wetland Resource.....	6-99
6.6.1	Description of the Affected Environment.....	6-99
6.6.2	Issues and Concerns	6-105
6.6.3	Goals and Objectives	6-105
6.6.4	Alternatives	6-106
6.6.5	Decision Matrix.....	6-113
6.6.6	Integrating Resource Management	6-113
6.6.7	References.....	6-116
6.7	Environmental Protection.....	6-119

6.7.1	Description of the Affected Environment.....	6-119
6.7.2	Issue Areas.....	6-119
6.7.2.1	Municipal Solid Waste	6-119
6.7.2.2	Storage Tanks.....	6-121
6.7.2.3	Accidental Chemical Releases to the Environment ..	6-123
6.7.2.4	Pesticides/Herbicides.....	6-124
6.7.2.5	Air Pollution.....	6-125
6.7.3	Decision Matrix	6-127
6.7.4	Integrating Resource Management	6-129

APPENDICES

APPENDIX A: Results - Red Lake Natural Resources Questionnaire

APPENDIX B:

APPENDIX C:

APPENDIX D:

APPENDIX E: Planning Team 2000 IRMP

LIST OF FIGURES

2-1	Location of Red Lake Band Land.....	2-3
2-2	Red Lake Reservation Acreage.....	2-1
2-3	Confluence of Three Major Biotic Zones.....	2-9
6-1	Designated Wildlife Areas on the Reservation	6-37
6-2	Major Cover Types of the Diminished Reservation.....	6-53
6-3	Forest Cover Types of the Entire Red Lake Reservation	6-54
6-4	Organizational Structure of Forestry Program.....	6-59
6-5	Red Lake Watershed Ownership.....	6-77
6-6	Ownership of the Red Lakes	6-79
6-7	Bathymetric Map of Upper Red Lake.....	6-83
6-8	Bathymetric Map of Lower Red Lake	6-85
6-9	Habitat Types by Percentage of Total Diminished Reservation Base	6-100
6-10	Wetland Habitat Types by Percentage of Diminished Wetland Base.....	6-101
6-11	Open Water Habitat Types by Percentage of Diminished Reservation Water Base	6-101
6-12	Terrestrial Habitat Types by Percentage of Diminished Reservation Land Base.....	6-102

LIST OF TABLES

5-1 Resources and Alternatives5-1
6-1 Surveyed Lakes Baseline Data6-24
**6-2 Seasons and Limits for the Taking of Wildlife on the Red Lake
Reservation.....6-40**
6-3 Furbearer Data Collection.....6-44
6-4 Acreage by Surface Cover Type Groups6-54
6-5 Select Water Quality Parameters, RLDNR, 1990-92.....6-87

1.0 INTRODUCTION

1.1 Executive Summary

As reservation populations and associated development pressures increase, more demands will be placed on all Tribal resources. The goal of this interim Integrated Resource Management Plan (IRMP) is to assure that socially and environmentally acceptable levels of natural resources are preserved for future generations of Red Lake Band members. Because there are direct relationships between the various natural resources disciplines, this objective can only be accomplished through coordinated efforts of resource managers, guided by sound management principles that address public concerns and input.

Increasing pressures on natural resources require effective management strategies that acknowledge current conditions and respond to changing pressures. This plan describes a general management scheme for natural resources occurring on lands of the Red Lake Band of Chippewa Indians. It is designed to be used as a tool to help guide and direct the current and future management of the Band's natural resources and was written in a form that makes it a valuable resource to Band members and members of Tribal government interested in general resource management goals, objectives, and alternatives. The document is divided into 7 resource management sections: Cultural and Traditional Resource; Fishery Resource; Wildlife Resource; Forest Resource; Water & Wetland Resource; and Environmental Protection, with each section detailing current conditions, describing future concerns, and identifying preferred management alternatives. It describes the basic components of the Red Lake Department of Natural Resources and emphasizes the interrelatedness of its 6 primary programs. The plan is designed to be flexible, allowing for changing conditions and promoting responsiveness to unforeseen developments.

A more comprehensive IRMP will be developed over the next three years, with additional input from Tribal departments that manage resources outside of the responsibility of the Red Lake Department of Natural Resources; for example Economic Development and Planning, Education, Health & Public Safety.

The benefactors of this plan, and the future, more broadened IRMP will be Red Lake Band members. The Interim document relies on the Tribal member inputs acquired for the original 2000 IRMP. An important component of the more comprehensive IRMP will be new Band member input from public meetings and questionnaires distributed early in the planning process, starting in early 2011. The future effectiveness of both plans is dependant on continued dialogue between Band members and resource managers. The commitment by the Red Lake Department of Natural Resources to encourage interdepartmental dialogue and promote public involvement in resource issues is the backbone of this document and critical for effective management of Tribal natural resources.

1.2 Purpose and Need

Philosophical

The beneficiaries of natural resources are people. The Creator provided an environment for all living things to flourish, including human beings. The Red Lake Reservation has an abundance of natural gifts. Natural resources can be managed to increase benefits to people and to recover from previous misuse. Creative resource management and protection is needed to balance the increasingly consumptive habits of people with nature's ability to retain its fundamental integrity. It is also needed to mitigate the effects of past practices that are now often recognized as mistakes. Methods must be implemented that allow for the use of natural resources without further deterioration of the fabric of life. The path to this balance is fraught with conflicts, both real and perceived. It is our collective responsibility to look, listen, and learn so we can overcome obstacles to a harmonious balance between ourselves and the natural world. This plan should help us accomplish this goal.

People depend upon natural resources. Resource management presumes that planned and informed human intervention in natural processes will produce increased benefits for human beings. Without this premise, the need for a management plan becomes unnecessary. Intervention may include a wide range of activities, from exclusion of human impact to extensive manipulation of vegetation. Benefits may include the protection of fragile biological components to economic opportunity. Management may be restorative or consumptive in nature, but the intent is always to provide a healthy and productive resource base to sustain the people of Red Lake far into the future.

The fishery and forests directly support more than 400 Band members, affecting nearly every family on the Reservation. The economic vitality of natural resources is critical to the welfare of the Red Lake Band and should not be underestimated. Ecological and biological limitations must be respected to provide sustainable levels of harvest. Of equal concern are the cultural, traditional, and spiritual aspects which tie all Band members to the land. A critical part of natural resource management is to perpetuate and enhance all these values.

The Red Lake Reservation exists within larger geographical systems. The air, water, wildlife, and forests are ecologically intertwined with the biological systems throughout northern Minnesota and beyond. However, the resources at Red Lake have some special qualities which enhance and strengthen the larger systems. It is important to maintain the special qualities of the Red Lake resource and contribute to the overall health of the ecosystems on which Red Lake depends. Descriptions of each resource can be found at the beginning of each resource section in this document.

Red Lake Band members belong to socio-economic systems that also extend beyond Reservation boundaries. It is important to recognize that the Red Lake people are dependent upon and contribute to these larger socio-economic systems. Similarly, the people of Red Lake have traditional and cultural perspectives which enhance and strengthen the larger systems. These qualities are discussed in Section E under "Cultural & Traditional Resources." It is important to contribute to the overall health of the socio-economic systems on which Red Lake depends, as well as maintain the special and unique qualities of the Red Lake people.

The intensity of resource management is a function of resource consumption, the capacity of the resource to produce on a sustainable basis, the establishment of priorities, and the amount of funding available. The role of reducing consumption is a global imperative and involves consumer systems far beyond Red Lake boundaries. The Red Lake resource base could certainly be managed more intensively to produce more raw materials as well as provide a higher quality environment, but the available funds and priorities can conflict. The alternatives in this plan are influenced by this dynamic.

Red Lake lies within a lightly populated region where the flows between raw materials and societal benefits may not be very obvious. Red Lake provides certain quantities of raw materials far beyond what the Band membership could consume. However, the Red Lake people consume many products and materials not produced on the Reservation. While the balance of production and consumption is a study beyond the scope of this management plan, we must acknowledge that the world is "smaller" than what it was even ten years ago.

This document is the second effort of its kind for the Red Lake Band. It is not intended to be a manual of regulations for daily operations. It is a collection of information to serve as a *guide* for decision-making by providing a focus for resource management direction. This focus will certainly evolve over time, especially as more and better information becomes available. The recommendations herein are *not intended* as final solutions but rather as a move toward a more coordinated, informed, and thoughtful use of Red Lake natural resources.

This IRMP was developed through an inter-disciplinary team comprised primarily of resource managers from the Red Lake Department of Natural Resources (RLDNR). Completion of the original June 2000 document and this 2011 revision are both by the RLDNR. Guidance and initiative were provided from the Red Lake Tribal Council and federal regulations. Issues and concerns, which drove the developments of management alternatives, were derived from Red Lake Band member input, directives from Tribal governmental authorities, technical recommendations by various resource management professionals, and requirements of federal and Tribal law.

Considerable effort was expended to ascertain the wishes and desires of the Red Lake Band members and are reflected in the 2000 IRMP. The same inputs were utilized for this interim 2010 IRMP. It is important to understand that these wishes and desires are diverse and sometimes oppose each other. They consist of viewpoints that may be considered "traditional" as well as those thought of as more "non-traditional." There is no single set of opinions that all Band members would agree upon, as is true of any large group of individuals. Where conflicts become apparent, either perceived or real, Tribal officials and resource managers are, and will be, presented with their greatest challenges.

Most Reservation natural resources were considered. The resources identified as of primary importance to Band members are the Red Lake commercial fishery, forests, wildlife, water, and cultural. These resources have been given most of the attention in the 2000 plan and this document. The preservation of the opportunity for traditional use of natural resources is an absolutely critical objective that must be infused into all resource use policies (even though member desires will conflict in some cases). Several areas of resource inventory were and are deficient and will remain so without additional funding and staffing. Of particular importance, is a lack of information about cultural/traditional resources.

Federal Regulations

There are many federal regulations relating to the development of a Tribal IRMP. The primary document driving the original development of the Red Lake IRMP was Supplement 10 of the Bureau of Indian Affairs Manual No. 30. Additionally, the 2010 version and anticipated expanded IRMP were guided by the "Guidelines for Integrated Resource Management Planning" (2001 by Don Hall). Several basic themes are presented. Self-determination is one key element. The Indian owners of the land must have the opportunity to participate in the planning process and their opinions must be solicited. The role of the Indian owner is of primary importance in IRMP development.

Another key element involves the process of plan development. The methodology used should be consistent with the National Environmental Protection Act of 1969 (NEPA). This document should serve as an Environmental Assessment under NEPA, as well as satisfy other legislation, federal regulations, and BIA policies addressing planning and natural resources.

Federal laws regarding environmental and cultural protection must be adhered to. As part of the NEPA process and because the Red Lake Band receives federal funding, resource management policy cannot violate federal environmental protection and related laws.

The "Appendix" Section contains a list of federal laws and regulations that pertain to resource management in Indian country.

Tribal Resolutions and Ordinances

The Red Lake Tribal Council was formulated in 1918. Since that time, numerous resolutions and ordinances have been passed that relate to natural resources. Many of these resolutions have been cataloged, but the job is not yet complete. A list of the currently known documents can be found in the "Appendix" Section. There are, without doubt, other important Tribal resolutions and ordinances in the Tribal records. Additionally, Tribal Codes have been developed, many of which impact natural resources. Of special interest are the Housing Codes, as housing development has grown tremendously in the last 15 years. In 1993, the Tribal Council passed the original resolutions forming the IRMP Planning Team and Memorandum of Understanding between the Red Lake Band and the BIA to develop the IRMP. These resolutions and the Memorandum of Understanding were renewed in 2008.

1.3 Methodology and Organization of Plan

This IRMP consists of several sections. After the Introduction is the Description of Affected Environment, which includes some history, facts, and figures about the Red Lake Reservation. This is followed by a section identifying Issues and Concerns regarding Red Lake's natural resources, as expressed by Band members, resource managers, and Tribal authorities. Based upon these issues and concerns, Goals and Objectives for resources management are identified. Following the goals and objectives is a description of the management options (Alternatives) recommended by the IRMP Planning Team. This is followed by a Resources section with a detailed examination of each resource that was considered. At the end of the individual resource subsections there is a discussion of how the management of each resource will be integrated with the other resources to provide a balanced (or integrated) approach to management of the Reservation's resources. Upon reading the individual resource subsections, it will become apparent that each was written by a separate author representing his or her particular area of expertise. The IRMP concludes with an Appendix of information and sources used in preparation of the IRMP, as well as other useful information.

1.4 Acknowledgments

The Red Lake Department of Natural Resources and the BIA Red Lake Agency were the principal organizations responsible for initiating the 2000 IRMP, this Interim document, and the more comprehensive document currently being developed. However, there were other entities which made contributions, gave advice, and provided critical review. The original planning team & contributors is listed in Appendix B.

Red Lake IRMP Review (Interim), Core Subcommittee

IRMP 2000 Core Programs (Current Participants) Chapter Updates

Thomas Castonguay – Chairman	1.0. Introduction, Appendix
Pam May- Public Information	2.0. Description of the Affected Environment
Les Peterson – Archeologist (Roads)	6.1. The Cultural and Traditional Resource
Pat Brown – Fisheries	6.2. The Fishery Resource
Jay Huseby - Wildlife Director	6.3. The Wildlife Resource
Jeff Fossen – Forestry	6.4. The Forest Resource
Joel Rohde – Water	6.5. The Water Resource; 6.6. The Wetland Resource
Cody Charwood – Environmental Programs	6.7. Environmental Protection

Planning Team of the future Comprehensive IRMP

Harlan Beaulieu Agriculture, Housing	Red Lake Tribal Government Realty Officer
Allen Pemberton Director	Red Lake Tribal Government Department of Natural Resources Redby Representative Tribal Council
Dave Conner Administrative Officer	Red Lake Tribal Government Department of Natural Resource
Thomas Castonguay Trust Forester	Bureau of Indian Affairs Red Lake Agency
Cody Charwood Environmental Coordinator	Red Lake Tribal Government Environmental Program
Pam May Public Information Officer	Red Lake Tribal Government Department of Natural Resources

Shane Bowe Wetlands Specialist	Red Lake Tribal Government Department of Natural Resources
Joel Rohde Waters Program Director	Red Lake Tribal Government Department of Natural Resources
Jay Huseby Wildlife Biologist	Red Lake Tribal Government Department of Natural Resources
Jeff Fossen Forestry Program Director	Red Lake Tribal Government Department of Natural Resources
Mitch Wilson Inventory Forester	Red Lake Tribal Government Department of Natural Resources
Pat Brown Fisheries Biologist	Red Lake Tribal Government Department of Natural Resources
Les Peterson Archaeologist	Red Lake Tribal Government Roads Department
Jane Barrett	Director - Tribal Housing Authority
Scott Able Geographic Information System	Red Lake Tribal Government Red Lake DNR
Christine Ostrom Registered Nurse	Public Health, Sanitarian Indian Health Service
Jordan Exantus	Tribal Planning Department
Brent Gish	Schools - Superintendent
Bill Brunnel	Public Safety -- Director

Assistance Providers

Gary Fuller	Red Lake Archivist
Robert Bizal	Bureau of Indian Affairs Branch of Forest Resource Planning

2.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

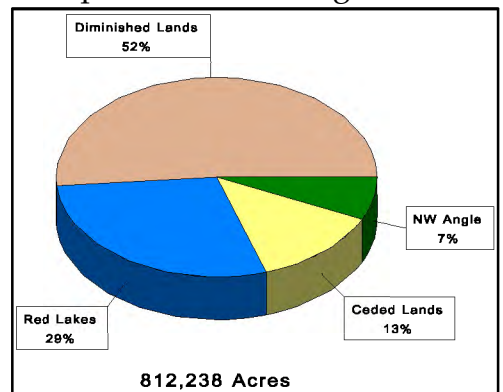
This section describes the Red Lake Reservation in general terms. More detailed descriptions of individual resources are found in the beginning of each individual resources section.

2.1 Location

The Red Lake Indian Reservation consists of 812,238 acres (the number of acres vary, this number was derived from Tribal realty records and the 1992 CFI database, plus Red Lake DNR acreage [GIS] for the Band-controlled portion of the Red Lake). It is the largest Reservation in the BIA Midwest Region, containing 55 percent of all Indian land. Holdings are distributed across more than 10,000 square miles in eight northern Minnesota counties between townships north 150 and 168, and ranges west 26 and 40. Those counties are Beltrami, Clearwater, Koochiching, Lake of the Woods, Marshall, Pennington, Red Lake, and Roseau. This map can be referenced in Figure 2-1.

This IRMP covers all lands of the Red Lake Reservation, one of a few "closed" reservations in the United States. "Closed" refers to large contiguous blocks of Tribally owned land where public access is restricted. Although conventional and legal jurisdictions define the geographical scope of this plan, it is recognized that territory controlled by the Red Lake Band of Chippewa Indians is but one piece in the matrix that defines the regional ecosystem.

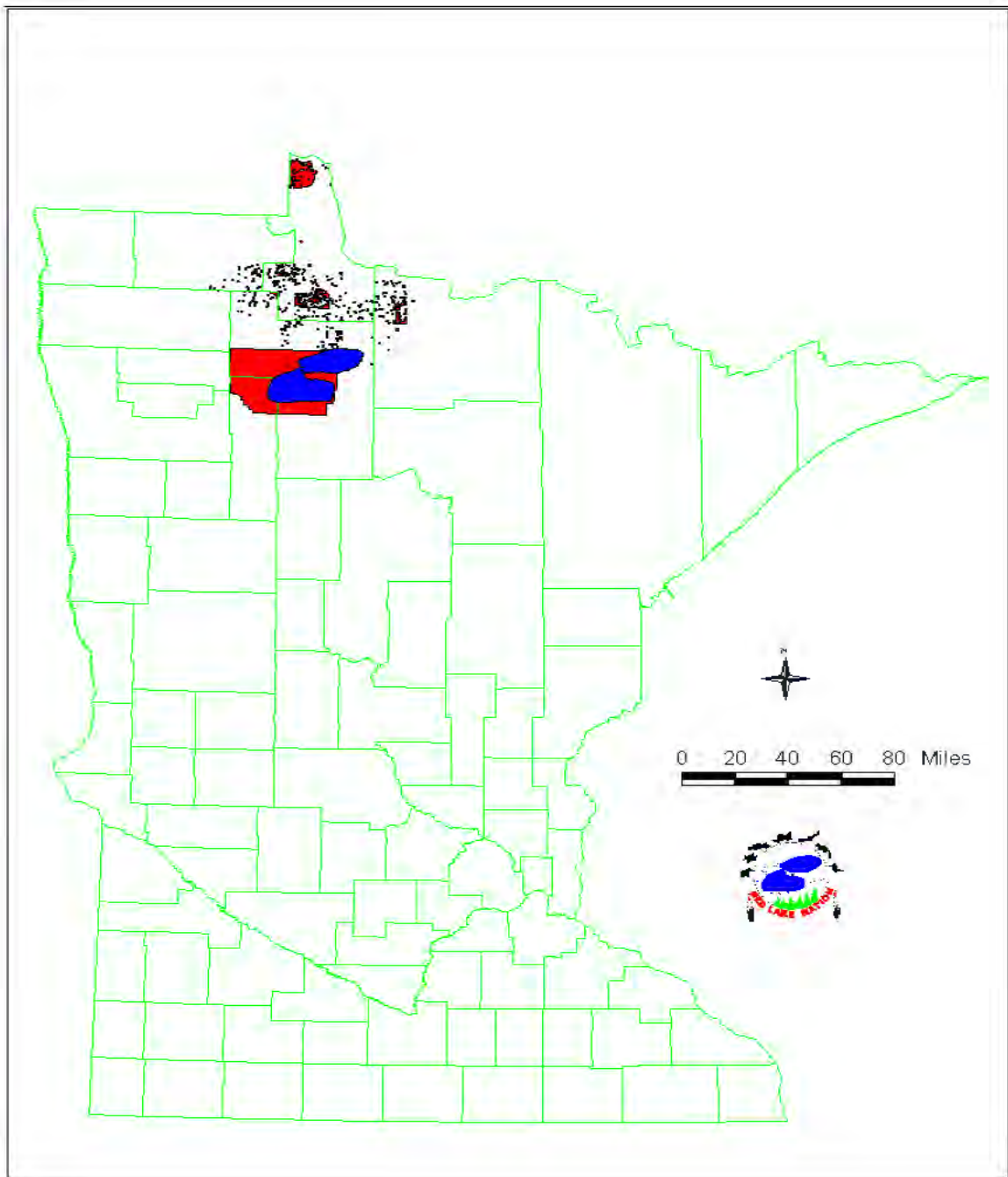
The Reservation has three principle management areas, based primarily on geographical characteristics. As seen in Figure 2-2, the main portion is a contiguous block called the Diminished Reservation. The term "diminished reservation" is based on treaty history, and means that it has never been ceded to the U.S. government. The other two regions are lands which were ceded to the U.S. government by treaty, but subsequently restored to the Band. The largest contiguous block of these territories is located on the Northwest Angle. The "Angle" has historically been treated as a separate management area. The remainders of the restored ceded lands are commonly termed the "Ceded Lands." These lands are scattered acreages mostly located in Lake of the Woods, Beltrami, Koochiching and Roseau Counties. The largest contiguous blocks amount to several thousand acres.



Source:

Figure 2-2
Red Lake Reservation Acreage

This page left intentionally blank.



Source:

Figure 2-1
Location of Red Lake Band Land

This page left intentionally blank.

2.2 Landforms and Geography

Retreating continental glaciers created the land forms present today. Former shorelines and beds from glacial Lake Agassiz, outwash plains, and various moraine deposits formed the topography. The Reservation is part of the Hudson Bay watershed. About 78 percent of the landscape is at or near water table levels, leaving 22 percent as upland acreage (Source was the 1992 CFI database using landscape position. Acreages for various surface cover types will vary among the different databases used by Red Lake resource managers.). The elevation varies from about 1060 feet at Lake of the Woods to 1420 feet on the Ponemah peninsula.

The Diminished Reservation

The major features are Upper and Lower Red Lake, the latter being wholly contained within Reservation boundaries. They are shallow remnants of glacial Lake Agassiz separated by the Ponemah peninsula and joined by a narrow passage. The Red Lakes drain to the west, by way of the Red Lake River, into the Red River of the North, and eventually to Hudson Bay. Water levels are controlled by a dam at the outlet of Lower Red Lake. There are numerous small "inland" lakes, mostly in the moraine country south of Lower Red Lake.

Most of the people reside on the lands south of Lower Red Lake and on the Ponemah peninsula. Rolling morainal topography and old beach ridges are typical. Steep slopes can occur. This area is the northwest edge of a system of glacial moraine deposits common to north-central Minnesota. Very flat open wetland with scattered low rises or islands comprise the western third of the Diminished Reservation. The Red Lake River bisects this area. The Clearwater River runs along the southwest boundary.

The region termed the "Narrows Country", or the "Narrows", lies north of Lower Red Lake between Upper Red Lake and Highway 89. This section of Highway 89 runs atop a low moraine called the "Ridge." Characterized by forested peatlands, the Narrows is the least accessible and least developed area of the Diminished Reservation. The region is named for the passage connecting Upper and Lower Red Lakes.

The Ceded Lands

These land holdings lie largely on the old beds of glacial Lake Agassiz. The landscape is very flat. Organic soils and patterned peatlands typify most of the area. Uplands may rise to 30 feet above the surrounding topography and are referred to as "Islands." They are largely sandy deposits left by glacial outwash, reworked by the erosive forces of wind and water to achieve the current landform. There are two large upland areas. Beltrami Island is about 57,000 acres located due north of the Red Lakes in Lake of the Woods County. Little Pine Island is about 3,000 acres located in Koochiching County.

This region of Minnesota is drained by several tributaries to the Rainy River, Thief River, and Lake of the Woods. Most larger streams have been "straightened." The Volstead Act of 1908 resulted in ditching of large areas in an ill-fated attempt at agricultural development. There are few lakes or ponds.

The Northwest Angle

The Angle is a peculiar piece of U.S. territory located on the northwest side of Lake of the Woods. The only land access from the United States is through southeastern Manitoba. The Red Lake Band owns nearly 80% of the Angle, which consists mostly of forested peatlands with ridges and islands of upland sands left by the retreating glacier. There are several creeks but no lakes.

2.3 Climate

Continental climates predominate in northern Minnesota. Winters are long and cold, and summers are hot and semi-humid. Maximum and minimum recorded temperatures are 109° and -50° Fahrenheit, respectively. The average January temperature is 4 degrees. The average July temperature is 68. Average annual rainfall is about 22 inches, most falling in the spring. Between 40 and 60 inches of snow may fall annually. The growing season is about 114 days. The average dates of last spring frost and first fall frost are 25 May and 23 September.

Weather from year to year is highly variable, ranging from extended droughts, such as the one in the late 1980's, to cool, wet summers. Winter snow depths might be as little as six inches or more than three feet. Wind storms are regular phenomena that can blow down large acreages of forest. In 1995, a major storm blew down thousands of acres across northwestern and north-central Minnesota. Wind has done considerable damage at Red Lake in the Camp Four area and scattered spots on the "Ridge."

Weather patterns in any particular year have important implications in ecological processes. Storms can reduce or destroy an annual seed crop or the young of a particular species of an animal. Severe winters result in higher mortality of deer, grouse, and other highly valued species on the Reservation. Deep snow from early in the season will cause a thin freeze in swamps and marshes, making access difficult for loggers. Extremely wet years can drown out large portions of vegetation in marginal areas in and around wetlands. Management activities often need to be modified or postponed due to weather.

2.4 Vegetation

Three major vegetation zones intermingle on the Red Lake Reservation. Second growth deciduous and pine forests characterize the Ponemah peninsula and the areas to the

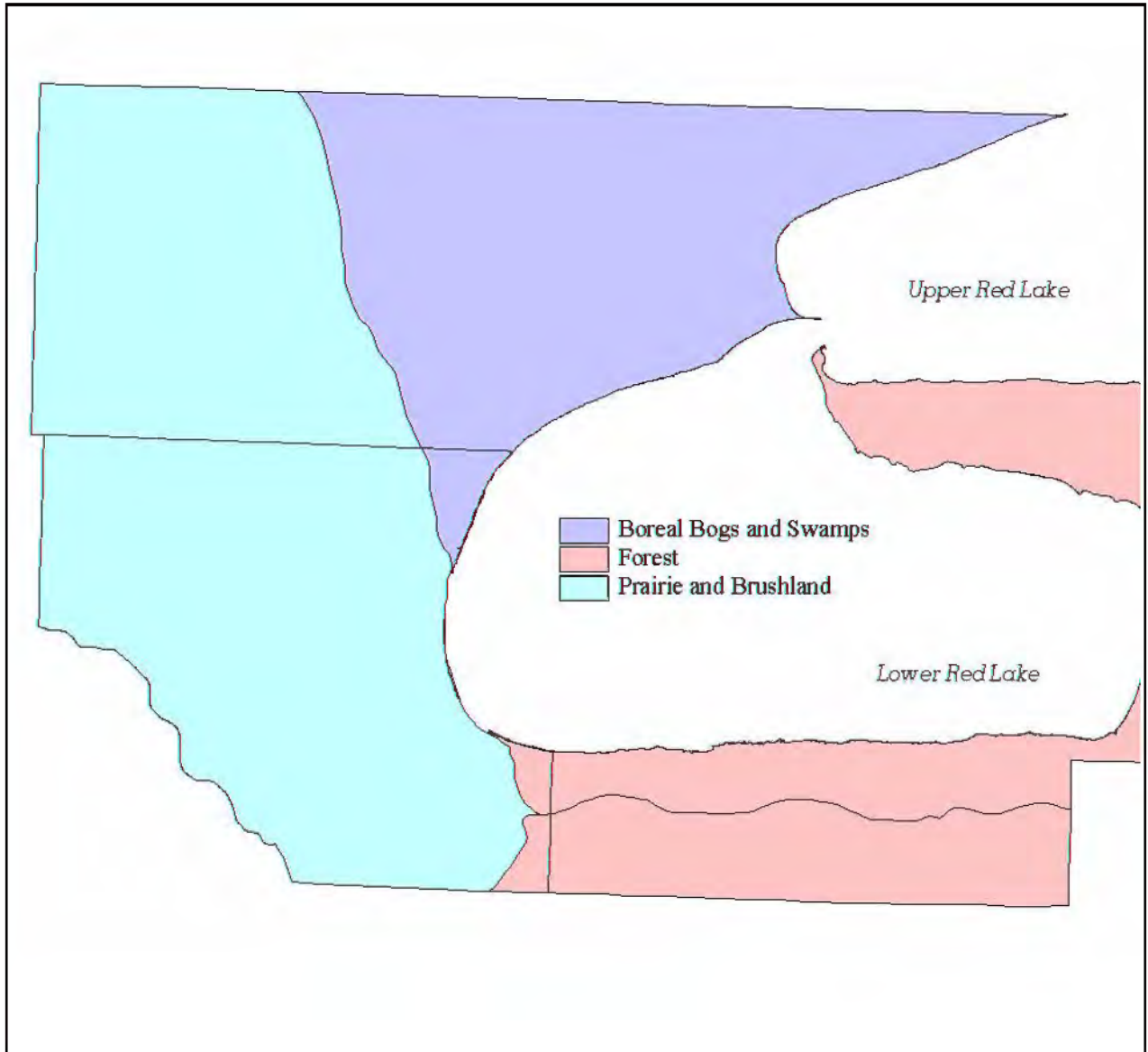
south of Lower Red Lake. This zone tends to be more biologically diverse, both in the number of vegetation types and the species diversity within vegetation types. These areas have sustained the greatest human impact.

To the west, lies the marsh/wet prairie/oak savannah type. Sedges and wet grass species typify the zone, with some areas of lowland brush. Upland islands commonly support aspen associations. Fires frequently occur in this region, especially in drier years.

From the north, boreal swamp conifer and bog associations predominate much of the Ceded Lands, the NW Angle and large portions of the Diminished Reservation in the Narrows area. Upland islands are often purer stands of aspen or jack pine. Red Lake lands are scattered throughout the patterned peatland country, an ecosystem of increasing scientific interest.

In 2004 an ecological classification system was published: *A Guide to Forest Habitat Types of the Red Lake Indian Reservation* by John Kotar & Timothy L. Burger. This guide is designed to assist natural resource managers develop site level management plans.

This page left intentionally blank.



Source:

Figure 2-3
Confluence of Three Major Biotic Zones

This page left intentionally blank.

2.5 Towns and Transportation

There are four communities on the Red Lake Reservation, all located near Lower Red Lake. Red Lake, Redby and Little Rock are on the south shore. Ponemah is located on the south side of the peninsula between Upper and Lower Red Lake. Red Lake is the largest village and the location of most services. The nearest larger population centers are Bemidji and Thief River Falls. Smaller nearby towns include Warroad, Roseau, Baudette, Blackduck, Kelliher, Bagley and Angle Inlet.

The Diminished Reservation is served by U.S. Highways 1 and 89, which are maintained by the State of Minnesota. The Band maintains about 132 miles of paved roads. Additionally, there are hundreds of miles of unimproved or woods roads. Most of the road networks are located south of Lower Red Lake and on the Ponemah Peninsula.

Access to the Ceded Lands is from Highway 72 in the east, County Road 9/54 in the west, and Highway 11 across the north. County highway departments maintain several graded roads throughout the area. There are many unimproved, mostly winter-only, roads accessing some portions of Red Lake land, but many areas remain inaccessible by vehicle.

The Northwest Angle contains one gravel all-weather road that extends in from Manitoba and services a small year-round community along Angle Inlet and by Young's Bay. There is also a network of un-maintained winter-only roads throughout much of the Angle, some of which are becoming brushy. Most of the area remains inaccessible by vehicle.

2.6 Human Resources

Originally, the Anishinaabe, the Ojibwe, lived along the eastern ocean, the Atlantic. Oral history relates their number was so large that at night, the lights of settlement watch fires stretched for many hundreds of miles along the coast. Their history also relates that centuries ago they received a prophecy that compelled them to migrate westward until they came to a place where food grew on the water. Thus, the Anishinaabe journeyed from the eastern ocean across half a continent to settle here, bringing intact their language, lineage and law. Today the Anishinaabe live in Michigan, Wisconsin, Minnesota, Canada, North Dakota and Montana. The Anishinaabe who make up the Red Lake Nation are part of this large tribe.

Historically and traditionally, the Anishinaabe lived around the seasons, following and gathering the gifts of each: maple sugar in the spring, berries, fish and game in the summer, wild rice in the fall, trapping and hunting in the winter, stories in the deep winter when snow blanketed the earth. They did cultivate gardens but did not practice large scale farming.

The Midewiwin, or Grand Medicine Society, set the parameters of conduct and lifestyle for the Anishinaabe. As well, the Anishinaabe had a system of clans, each with a different responsibility. For instance, the Crane and Loon Clans were chief clans, the Bear Clan provided policing and guarding of villages, the Martin Clan were warriors.

There are 10,326 enrolled members of the Red Lake Nation. About half of these enrolled members live on the reservation, while the other half live in various places across America. Most off-reservation members live in urban areas with a concentration in Minneapolis/St. Paul and Duluth, Minnesota (King 2010).

The resident population of the Red Lake Reservation is 11,785 (BIA 2009). The difference between 5000 tribal members living on the reservation and the total reservation population of 11,785 is made up of the children, spouses, relatives, and partners of tribal members. Most of these people trace a lineage to Red Lake but do not have the required $\frac{1}{4}$ Red Lake blood quantum to be enrolled (King 2010).

There are three elementary schools (including St. Mary's Mission), a middle school, a high school, a tribal college and several vocational education opportunities. The majority of the schools are located in Red Lake, except for Ponemah Elementary and the vocational school which is located in Redby. The Red Lake Public School District reported that 1368 students were enrolled for the 2009-2010 academic year. Minnesota open enrollment policy allows Red Lake children to attend schools in adjacent districts. In the 2009-2010 academic year 204 students were enrolled in other school districts such as Bemidji, Blackduck, Gonvick-Clearbrook, and Kelliher. The Four-Year Graduation Rate is 16 students or 12.2%. This rate includes 131 ninth-grade students in 2005-2006 plus students who moved in minus students who moved out. (Academic Excellence: School Report Card, by the Minnesota Dept. of Education, 2009/10 School Year). According to the 2000 Census 55% of the population 18 to 24 years old did not have a High School Diploma.

2.7 Economics

At Red Lake, unemployment and underemployment exist in percentages that would be considered catastrophic anywhere else, with seasonal shifts from 50-75% unemployment. According to the 2009 BIA Labor Report, Red Lake's unemployment rate was 71%, and that 50% of those people employed were still below the poverty level.

The Whitefeather-Moe Training Center houses various programs that assist their consumers to prepare for employment and become self-sufficient. Some of the programs include Northwest Technical Satellite College, Youthbuild, Daycare, New Beginnings, State/Tribal employment, and Beltrami County Human Services. In 2009 New Beginnings assisted 1075 consumers: for example, 325 students received scholarship money for college and technical training; 53 students received a GED; 121

clients entered into work experience contracts; 130 clients received unsubsidized employment; 70 families received child care subsidies; 180 children received child; 60 youth received summer employment. Beltrami County Human resources reported that 826 band members received MFIP assistance. Minnesota Family Investment Program (MFIP) is a state run welfare program. The County also provided other services such as food support, medical programs and emergency assistance.

Federal and state grants and contracts provide for the majority of jobs through Tribal programs. Jobs are also generated by a state funded independent school system which employs 352 people during the school year, of which 167 are reservation residents. Red Lake has developed three small casinos on tribal land which employ close to 1,000 people, 57% of whom are tribal members (King 2010). 7 Clans Casino-Thief River Falls is located eight miles (13 km) south of Thief River Falls just off Highway 59 and is currently the largest of all three gaming facilities with a hotel, two restaurants, and a water park. 7 Clans-Warroad is the second largest. Although not attached to the Warroad facility, Red Lake also owns a restaurant situated a block away, as well as the Super 8 Motel. Red Lake 7 Clans Casino has a hotel and event center.

A new convenience stores/ fresh fish markets is under construction adjacent to the Red Lake 7 Clans Casino. Gas and convenience store goods will be available, but what is unique about this property is that they will also sell fresh Red Lake Walleye and Red Lake Nation foods products such as jellies, jams, and wild rice.

Red Lake Nation Propane was established in 2009, and began full operations in 2010. The company offers competitive prices on fuel, and flexible payment policies that band members can afford. Band members can switch over soon to Red Lake's own company if they choose to do so. The company has its own delivery trucks, tanks, and the capability to service all areas of the reservation, and surrounding communities.

Seasonally, Red Lake Fisheries buys hook and line-caught fish from individuals and employs a seasonal, part-time staff of 54. (Red Lake fishermen no longer use gill nets, so the enterprise of commercial fishing which used to employ hundreds is diminished by about 90%.) Today, private business at Red Lake is made up of four small grocery/convenience stores which together employ about 30 to 40 people. About 40 individuals are self employed in logging, towing, and pawn which afford them an independent income. About 20 artisans and craft workers market their work door to door which does not generate a livable income, but supplements their resources (King 2010).

There are four districts within the reservation which include Red Lake, Redby, Ponemah and Little Rock.

Red Lake is the location of the tribal headquarters, archives-library and several tribal programs and businesses. Red Lake Schools, (K-12) and community center are located in Red Lake. St. Mary's Mission also operates a 1-6th grade school. Other facilities located in Red Lake are a modern IHS/CHS hospital, IHS staff housing, Jourdain/Perpich Extended Care Facility, Senior Apartments, Fitness Center, a convenience store and laundry facility. The Old BIA Agency houses several tribal programs. The Humanities building contains a gym, AmeriCorps, Red Lake Nation College, and the Elderly Nutrition Program. The Boys and Girls club and powwow grounds are north of the Humanities. Adjacent to the elementary school, the Forest Development Center contains 3 state of the art computer controlled greenhouses, a technologically advanced nursery and seed bank, along with a laboratory and testing facilities. The Tribal Justice Center houses the court and law enforcement Departments. A Juvenile Justice Center located directly behind the existing adult detention center is the subject of ongoing litigation between the BIA (which refused to fund the operating costs for the facility) and the Red Lake Band. The building has lain dormant since 2005 when it was completed.

Redby is five miles east of Red Lake. Redby has a community center, which also houses the Food Distribution Program, Red Lake Fisheries, the Whitefeather-Moe Technical Training Center, an adolescent group home and a chemical dependency treatment facility, two stores, a café and garage, and Red Lake Nation Foods.

Ponemah is near the end of the peninsula separating Upper and Lower Red Lakes. It has a community center, a K-8th grade school, Head Start, a health clinic, ambulance station, law enforcement substation, elderly nutrition center, Fitness Center, a convenience store and laundry, and powwow grounds.

The Little Rock area is to the west of Red Lake. It has a community center, a health station, a cattle and buffalo farm, cultural Round House, two Indian-owned stores, numerous pine plantations managed by Red Lake's Department of Natural Resources, and is also the physical location of Red Lake Net News.

Red Lake has its own planning department and grant writers that work with the various programs and agencies to improve the reservation's infrastructure. Upgrades have been completed in water and sewer systems, wastewater treatment, solid waste, road improvements and maintenance.

The Red Lake Housing Authority plans, coordinates and oversees reservation housing. Recent examples include: The construction of 8 new HIP homes. A 15 homeownership development project in the highlands Walking Shield village was also completed. This project cost \$1.3 million dollars. Fifteen houses cost \$ 89,250 apiece, but were sold to band members at a reduced cost of \$52,000. The Red Lake Housing Authority, Housing Finance, and the Minnesota Housing Finance agency financed this project. State Representative Brita Sailor was instrumental in securing state funding for the project.

A 30 unit tax credit home project became a reality in Littlerock. These homes utilize geo thermal ground source heat pumps. This was a \$4.9 million dollar project. Each home cost \$164,530; these are rentals with option to buy after 15 years. Financing was made available from the Housing Authority, Federal Home Loan Bank of Des Moines, the Greater Minnesota Housing Fund, and Raymond James Tax Credit Investment Funds. This project was connected to city water, and sewer at a cost of \$1.4 million. This portion was funded by loans, and grants from the United States Department of Agriculture.

The United States Navy Sea Bees, in coordination with Red Lake Housing constructed 3 houses that were placed in the south McBride's housing area. The units were sold at cost of materials only for \$50,000 dollars apiece. The labor was provided free by the military.

Three houses were constructed by Northwest Technical College and the Leech Lake Tribal College. Two were placed in the South McBride's housing area, and 1 replaced a Housing Authority home that was destroyed by fire.

Red Lake Housing Finance Corporation entered into 12 new loans for homebuyers, and 8 additional loans for home improvement. The total loan amounts for 2009 was \$960,000.

In 2009, over \$9 million dollars was spent on housing construction on the reservation alone. An additional \$112,458 went to rental assistance, and security deposits to help 76 Indian families off the reservation in Beltrami County.

Although housing development has increased, 450 families or 19.5% are on the housing waiting list (Red Lake Housing Authority Housing Waiting List as of October, 2010). This number does not reflect those families and single people who have not applied for housing or who have given up the wait and not reapplied. The Incidence of Homelessness rate is 4.2% (2009 Minnesota Statewide Survey of Persons without Permanent Shelter - Companion Survey on Reservations).The stretch of Highway 1 from east of Redby to Big Stone Creek has largely been lined with housing.

Most of the area between Highway 1 and the south shore of Lower Red Lake has been removed from the resource development base. A corridor along Highway 89 from Red Lake to the Reservation boundary has also been removed from the resource base due to housing expansion. A pine area on the north end of Barton's Camp Road has recently been developed for housing. Conflicts have arisen with housing locations in pine stands, plantations, and other forest stands of high commercial value.

2.7.1 References

Academic Excellence: School Report Card, by the Minnesota Dept of Education, 2009/10 School Year.

King, Sandy. 2010. Personal Communication. Tribal Grant Writer, Red Lake Tribal Government.

Minnesota Statewide Survey of Persons without Permanent Shelter - Companion Survey on Reservations. 2009.

Red Lake Housing Authority Housing Waiting List as of October, 2010.

Red Lake Labor Force Report. 2009. Prepared by the U.S. Department of the Interior, Bureau of Indian Affairs.

3.0 ISSUES AND CONCERNS

Issues and concerns were identified by soliciting responses from resource managers, the public and Tribal authorities. Twelve community meetings and a public open house were held in 1994. A detailed survey was mailed to each resident on the Reservation. Non-resident Band members received a card stating the availability of the survey and how to receive one. Details of this scoping process can be reviewed in the "Appendix" Section. The results of the scoping process are listed in this section, by resource category. The issues and concerns developed for the original IRMP were also used for the review of Goals and Objectives, management alternatives, and evaluating the resource management sections of this interim IRMP. New public input will be gathered prior to the development and adoption of the completely revised IRMP.

3.1 Cultural and Traditional Resources

(This section remains intentionally unchanged from the original 2000 IRMP)

The Red Lake Nation has a rich cultural heritage that spans at least 10,000 years of human occupation of what is now northwestern Minnesota. That heritage remains poorly understood and is threatened by ongoing development and resource extraction activities. At the present time, there is not a comprehensive program to identify and protect the historic sites, archaeological sites, traditional use areas and cemeteries that are the lasting manifestations of that long heritage. A Tribal historic preservation ordinance and centralized historic preservation program are needed to ensure that the manifestations of that cultural heritage are identified and protected for the future. The primary cultural resource issues include:

- Without a central historic preservation authority, programs and departments apply varying levels of effort to identify cultural resources in project and management areas. Varying levels of knowledge, expertise, and commitment result in inconsistent efforts to identify, understand, and protect cultural resource properties. This results in destruction of the cultural resource properties, including cemeteries, as a result of Tribal undertakings. This situation also results in uncertain compliance with federal Historic Preservation laws and may limit the availability of federal project funds.
- Without a designated historic preservation office, there is no means of assembling a comprehensive inventory of cultural resource knowledge and properties or applying it to the review of proposed undertakings of Tribal programs or others. This creates inefficiency, inconsistency, and waste in the project review process.
- The lack of a designated Tribal Historic Preservation Officer and a Tribal Preservation Ordinance makes it impossible for the Red Lake Nation to qualify for federal historic preservation funding.

- The lack of a Tribal Historic Preservation Ordinance precludes enforcement by law enforcement officials.
- And lastly, without timely support of the data gathering and education efforts of the library and archives in conjunction with the Historic Preservation Office, the knowledge of Tribal history will be lost with the passing on of the elders. Not only would the locations of the physical manifestations of the past be lost, but so too would the history of the people. The loss of that history would undermine the long-term effort to instill a sense of identity and promote self esteem in young people through education.

3.1.1 The Fishery Resource

- Maintain walleye population in Red Lakes
- Improve markets for rough fish for financial and biological purposes
- Eliminate illegal sales of fish to improve fishery profits
- Eliminate illegal fishing gear to protect fish stocks
- Adequate enforcement of fish and game codes
- Water quality and fish contamination (see Water Resource section)
- Strive for natural balance of fish populations
- Maintain genetic integrity
- Protect reservation from exotic aquatic species
- Spawning habitat (see Water Resource section)
- Protect riparian areas (see Forest Resource section)
- Improve the use of fish by-products for environmental reasons

3.1.2 The Wildlife Resource

- Providing adequate numbers of big and small game species for sustained harvest by Band members
- Lack of wildlife management personnel and funding
- Providing adequate enforcement of all fish and game codes
- Maintain or increase diversity of natural habitats
- Protect wildlife populations from damage caused by feral animals (i.e., dogs)
- Establishment of additional wildlife refuges
- Nuisance animal control (e.g., beaver and bears)

3.1.3 The Forest Resource

- Impacts of logging
- Forest health
- Jobs in the forest
- Impacts of wildfires

- Conflicts of forest management activities with other uses
- Public education on forestry issues
- Tribal Council support of forestry
- Restoration of pine acreage

3.1.4 The Water Resource

Surfacewater: Lakes and Streams

- Maintain, improve and protect the biological and chemical integrity of Tribal waters
- Monitor for contaminants in fish, wildlife and waters

Groundwater

- Prevent the contamination of drinking water supplies
- Maintain groundwater and drinking water quality
- Continue testing landfill monitoring wells per the *Red Lake Landfill Closure Plan*

3.1.5 The Wetland Resource

- Lack of adequate biological inventory of Red Lake Nation lands
- Potential loss or alteration of wetlands acreages due to:
 - filling for development, e.g. road-building
 - alterations to groundwater hydrology as a result of the utilization of logging roads and winter-roads, and the use of clearcutting
 - Lack of wetland and wildlife preservation areas
 - Loss of species diversity due to clearcutting techniques, drainage, and water quality issues
 - Degradation of wetlands and waters due to point and non-point discharges
 - Control of nuisance & exotic plant species (cattail & purple loosestrife)
 - Red Lake should be the sole permitting agency (□404) over its own lands

3.2 Environmental Protection

Municipal Solid Waste

- Comply with federal regulations regarding landfill closure
- Reduce the possibility of leachate from refuse piles contaminating groundwater
- Eliminate litter and illegally dumped household wastes on Tribal lands
- Maintain capped landfills while monitoring explosive gases and nearby groundwater
- Proper disposal of fish wastes

Storage Tanks

- Leaking tanks could contaminate groundwater and, potentially, surface water
- Uncertain as to whether or not all USTs have been identified
- Ensure that all tanks are registered as required
- Ensure that tanks meet federal requirements

Accidental Chemical Releases

- Accidental chemical release could result in health problems to emergency responders and/or citizens
- The Tribe is developing an emergency response plan
- The Tribe needs additional training and equipment in to effectively respond to chemical emergencies

Pesticides/Herbicides

- Pesticides are used by farmers and forestry personnel to control pests
- Pesticides can contaminate our air, soil and water
- Humans can be harmed by pesticides through digestion, inhalation, or dermal contact
- Improper application of pesticides can increase the risk of contamination

Air Pollution

- Air monitoring is being implemented on the Reservation
- Acid deposition may be occurring on Tribal lands and waters
- Deposition of heavy metals most likely occurs resulting in the contamination of fish and animals and, perhaps, making them unsuitable for consumption
- Indoor air pollution is an unmonitored concern

4.0 GOALS AND OBJECTIVES

Similar to "*Issues and Concerns*," this section has been organized by resource category. Goals and objectives were developed by resource managers with significant input from the public and Tribal authorities. These goals and objectives provide the principal basis upon which management alternatives and practices should be evaluated. Each resource management section has been evaluated with these goals and objectives in mind.

4.1 Cultural and Traditional Values

(remains the same as in 2000)

Goals

The long-term goal of the Red Lake Nation is to establish a comprehensive Cultural Heritage Preservation Program that will:

- Determine the social and cultural context and perceived significance of cultural heritage within the Red Lake Nation
- Define the range of the cultural resource base within the Red Lake Nation
- Inventory all cultural resource properties within the Red Lake Nation
- Develop avenues of communication to educate Tribal members about the richness of the cultural heritage, to develop a sense of the significance of the past in today's world
- Preserve sites, objects and ideas relative to Red Lake cultural heritage for the welfare and enlightenment of future generations
- Protect significant aspects of the cultural resource base from dilution or destruction during the course of Tribal undertakings, such as construction, maintenance and resource extraction
- Develop a Tribal Historic Preservation Ordinance to guide compliance and direct enforcement by law enforcement officials

Objectives

The primary objective of a Historic Preservation Program for the Red Lake Nation Historic Preservation Office should be to coordinate preservation activities, review agency undertakings and assist the Tribal Library and Archives in conservation and education activities. Preservation objectives include:

- Development of a comprehensive Tribal Historic Preservation Program
- Appointment of a Cultural Advisory Committee to advise the Preservation staff in cooperation with the Tribal Library and Archives
- Establishment of a clearinghouse function for coordination of all aspects of historic preservation within the Red Lake Nation
- Assumption of some of the functions of the State Historic Preservation Office under the terms of Section 106 of the National Historic Preservation Act
- Coordination with internal departments and external agencies and review of proposed undertakings to ensure compliance with preservation laws and Tribal

ordinances and policies

- Maintenance of inventories and databases of cultural resource properties, including historic sites, historic standing structures, archaeological properties, traditional cultural properties and cemeteries
- Development of a paraprofessional training and certification program to assist in the identification and management of cultural resource properties
- Assistance to the Tribal council in the development of policies and ordinances necessary to preserve and protect significant cultural resource properties, including law enforcement
- Assistance to the Tribal Library and Archives in their curation, conservation, education and outreach operations related to heritage preservation
- Assistance to the Tribal Library and Archives in the inventory of Traditional Cultural Properties through oral interviews, interdisciplinary research and field investigations

The primary role of the Tribal Library and Archives is to maintain reference services, curate and conserve collections of cultural and archaeological materials and disseminate information regarding the cultural heritage of the Red Lake Nation to patrons, schools and the public at large. The primary objectives of the Library and Archives Department are:

- Maintenance and enhancement of the Tribal library collections
- Maintenance, organization and enhancement of the Tribal collection of archival records
- Establishment and maintenance of an archival facility for archaeological and ethnographic materials
- Establishment and maintenance of a conservation facility for stabilization and long term care of archaeological objects and ethnographic materials
- Gathering and transcription of oral histories from elders
- Research, writing and dissemination of a Red Lake Tribal History to facilitate public outreach and education efforts
- Cooperation with Historic Preservation staff in the inventory of Traditional Cultural Properties through oral interviews with members of the Red Lake Nation
- Research and development of fixed and traveling interpretive displays regarding the history of the Red Lake Nation for enlightenment of visitors, school children and the general public
- Cooperation with the historic preservation staff and the Tribal Council in the drafting and implementation of Tribal ordinances to preserve and protect sites and objects significant to the cultural heritage of the Red Lake Nation
- Service as Tribal coordinator under the federal Native American Graves Protection and Repatriation Act
- Completion of field surveys to identify cultural resource properties

4.2 The Fishery Resource

Goals

- Reduce fishing mortality
- Increase production
- Increase revenue from harvest of rough fish
- Adequate enforcement
- Increased capability
- See also Water Resource section
- Restore predator-prey dynamics
- Limit outbreeding
- Limit/prevent introduction of exotic aquatic species
- Maintain optimum water levels
- See also Forest Resource section
- Find market for fish waste

Objectives

- Restrict harvest
- Stock fish
- Investigate alternative markets
- Increased enforcement
- More staff
- Better equipment
- Better training
- See also Water Resource section
- Research what caused the imbalance
- Research for better understanding
- Prevention/control of fish transfer/movement
- Public education
- Improved laws
- Improved enforcement of laws
- Work with Corps of Engineers to better manage lake level
- See also Forest Resource section
- Research improved market capability

4.3 The Wildlife Resource

Goals

- Establish/expand big and small game population monitoring programs
- Develop methods that provide data on annual big game harvest
- Increase habitat quality and availability
- Hire additional wildlife management personnel and seek out additional sources

of funding

- Increase capability of enforcement division
- Evaluate current land use and practices
- Identify and quantify natural habitat types
- Reduce numbers of feral & nuisance animals

Objectives

- Establish seasons and bag limits based on biological information
- Establish mandatory or voluntary registration and/or conduct hunter surveys
- Implement proven habitat management techniques
- Seek out additional sources of funding to support wildlife staff
- Hire additional enforcement personnel, provide advanced training, and supply necessary equipment
- Produce habitat and land-use maps using air photo interpretation and digitization
- Use a geographic information system (GIS) to assist with land use planning
- Public education and active removal of unsupervised animals
- Keep records of rare habitats / sites & critical habitats
- Provide public education to gain support for restricted use of identified sites

4.4 The Forest Resource

Goals

- Enforce timber sale contract specifications and requirements
- Maintain a healthy, vigorous forest
- Manage forest at sustainable levels
- Improve cooperation with law enforcement to control arson and theft
- Protect sensitive cultural sites
- Educate the public on forest practices
- Increase cooperative efforts with other Tribal departments
- Increase pine component of forest ecosystem

Objectives

- Prepare presale plan and improve logging specifications to best regenerate sale areas
- Continue to Implement Minnesota's Best Management Practices (BMP) guidelines and protect the forest from wildfire, insects, and diseases
- Recalculate Annual Allowable Cut
- Work with law enforcement on arson and theft; increase Smokey Bear education
- Identify cultural sites and uses, and protect them from timber sale activity
- Identify forestry demonstration areas, set aside school forests, provide logger education training, establish regular logger-forestry meetings, involve public

affairs officer with regular forestry newsletter articles, participate in yearly economic summit, and establish a positive public image

- Communicate on a regular basis with other DNR staff (staff meetings). Seek input from other disciplines on special problems
- Promote natural regeneration when possible, increase use of managed fire, encourage use of herbicides, match species to best site, and improve survival

4.5 The Water Resource

4.5.1 Surfacewater: Lakes and Streams

Goals:

- Conserve, protect and enhance surface water quality on Tribal lands
- Maintain water quality to support all uses
- Protect riparian areas and lake and stream water quality by maintaining contiguous streambank vegetative cover and watershed wetlands
- Prevent exotic species introduction
- Develop and adopt water quality standards (WQS) for Tribal lakes and streams

Objectives:

- Continue annual baseline water quality data collection on priority Tribal lakes and streams. Computerize data annually so it is readily accessible
- Implement watershed BMP and work towards joint watershed management to preserve water quality (e.g. septic and land use codes, development set-back zones, etc.)
- Install detention/treatment ponds to treat major stormwater discharge points
- Health concerns: continue to monitor contaminants in fish and wildlife and update health advisories as needed. Disseminate new information as it becomes available and publish current advisories on a regular basis
- Work with other basin agencies to prevent exotic species introductions to the basin. Monitor for exotics as part of our on-going biological assessment program
- Upon "treatment-as-a-state" approval from EPA our goal would be to complete the development of and adopt Tribal water quality standards within one year

4.5.2 Groundwater

Goals:

- Conserve, protect and enhance Tribal groundwater resources
- Locate and seal abandoned wells. Inventory and track status of all wells on the Reservation (e.g. active, abandoned, sealed, future use, etc.)
- Continue to test landfill monitoring wells per *Red Lake Closure Plan*

Objectives:

- Expand the groundwater database on Tribal lands
- Continue to test landfill monitoring wells per the Red Lake Landfill Closure Plan and recommendations put forth in the annual landfill monitoring well reports
- Establish wellhead protection zones (WHPA's) or "high value areas" to protect sensitive groundwater and groundwater recharge areas. These areas would be off-limits to industry, etc
- Implement development planning (zoning). Coordinate with other agencies to plan housing, industrial, and other forms of development so they have the least long-term impact on groundwater resources Identify contaminated groundwater areas

4.6 The Wetland Resource

Goals

- Maintain and refine the Red Lake Nation's Wetlands Inventory
- Implement Tribal Wetlands Protection Codes
- Develop a Red Lake Scientific and Natural Area program/designation
- Create Red Lake Wetland and Wildlife Preservation Areas
- Maintain/enhance biodiversity of Red Lake Nation lands
- Create/enhance more wetland areas: along streams (including oxbow restorations), at stormwater discharge points, and at treatment pond outlets
- Minimize future alterations to Hydrology of Red Lake Nation ecosystems
- Prevent/control infestation of wetland areas by nuisance & exotic species
- Effect Assumption of Section 404 Regulatory Authority (over Wetlands Permitting) by Red Lake Nation on all Tribal lands

Objectives

- Work through grants to expand and update the existing inventory
- Have Tribal Council approve and implement a wetland code on the Reservation
- Develop an inventory of suitable areas for Tribal Council consideration
- Develop an inventory of suitable sites and draft management plans for Tribal Council consideration
- Develop special projects (e.g., NAWCA) to enhance biodiversity
- Work with Forestry to improve harvest plans to incorporate more biodiversity
- Work cooperatively with Roads, Builders, and other departments towards creative planning and development of mitigation sites
- Encourage use (and preservation) of buffer strips along stream corridors and lakeshore areas. (Implement through Wetlands Code and the Forestry Silvicultural Policy)
- Institute monitoring and enforcement of BMPs in Forestry's harvest plans
- Institute, monitor, and enforce wetlands code on Reservation lands

- Develop plan and funding source to perform periodic search (and eradication) of exotics, include an educational component

4.7 Environmental Protection

4.7.1 Municipal Solid Waste

Goals

- Continue to cap, inspect, and monitor landfill sites to minimize leachate production and groundwater contamination
- Determine current and potential risk to the quality of surface and ground waters near landfill sites
- Eliminate illegal dumping
- Develop and promote waste reduction, recycling, and household hazardous waste collection
- Complete, implement, and update as needed the Tribal Solid Waste Management Plan

Objectives

- Secure resources to implement the Landfill Closure and Post Closure Management Plan
- Maintain transfer stations at Red Lake and Ponemah
- Provide community education materials on proper solid waste management
- Maintain groundwater monitoring activity near landfills
- Develop a plan for the proper disposal of fish wastes

4.7.2 Storage Tanks

Goals

- Protect water, soil and air quality by minimizing the chance of leakage
- Identify, assess, and register all underground storage tanks (USTs) of 500 gallons or more capacity
- Comply with federal regulations for the installation, maintenance and closure of all regulated USTs

Objectives

- Develop and implement a Tribal program for the management of underground storage tanks (USTs)
- Develop and adopt a Tribal ordinance and standards for installation, inspections, and remediation of spills
- Train Tribal staff on performing inspections
- Periodically monitor groundwater quality near USTs

- Develop and adopt a Tribal ordinance and standards for the removal, collection and disposal of petroleum contaminated soils

4.7.3 Accidental Chemical Releases

Goals

- Protect the health and safety of individuals from accidental chemical releases
- Protect the water, air and land resources from chemical contamination
- Reduce the probability of an accidental chemical release occurring on or near Tribal lands
- Provide professional training and community education in responding to hazardous materials emergencies

Objectives

- Help develop an all hazard Tribal Emergency Response Plan that meets SARA III requirements
- Identify and secure Memorandum of Understandings between the Tribe and local emergency responders, where required, in the implement Response/HazMat Program

4.7.4 Pesticides/Herbicides

Goals

- Protect Tribal and residential public health and environmental quality by controlling the use of pesticides
- Provide training to the Tribal policy makers, pesticide users, interested Tribal staff, and community members on the proper use of pesticides

Objectives

- Develop and adopt for implementation a Tribal Pesticide Ordinance and Management Plan
- Develop a training program for all Tribal and federal personnel taking part in the pesticide application program

4.7.5 Air Pollution

Goals

- Protect the air quality of the reservation lands and buildings
- Provide trained resource persons and staff in the area of air quality protection

Objectives

- Develop an inventory of sources on or near Tribal lands and determine emissions from these sources

- Establish ambient air monitoring station(s) within the reservation boundaries
- Conduct studies to determine if there are pollution problems from indoor sources
- Develop a community education and outreach program
- Based on data collected, evaluate and develop an Air Quality Management Plan

The following are the "preferred" or recommended alternatives selected by the 2000 planning team as presented to the Red Lake Tribal Council. In 2011 these alternatives still represent the best management options available to benefit the Red Lake Tribe and the natural resources of the Reservation.

The preferred alternatives are listed in the same order as they appear in the resource section of this document.

5.0 ALTERNATIVES SELECTED BY IRMP PLANNING TEAM

(Mod.1; 2/26/09)

**Table 5-1
Resources and Alternatives**

Resource	Preferred Alternative
Cultural & Traditional	<i>Alternative 4:</i> Establish a Tribal Historic Preservation Office and comprehensive Preservation Program, including a Cultural Heritage Advisory Committee. No progress (or change) since 2000
Fishery	<i>Alternative 2:</i> Continue the fishery assessment program currently in place, and expand management activities: population modeling, estimate total allowable catch for walleye annually. Goals accomplished: Continue Progress no change
Wildlife	<i>Alternative 2:</i> Expand wildlife research and habitat enhancement activities on Tribal lands, focusing on species most important to Band members (i.e., whitetail deer, moose, waterfowl and ruffed grouse). No change from 2000
Forest	<i>Alternative 2:</i> Add more staff to the Forestry Program with minor increases in funding. Increase pine restoration and planting efforts, maintain updated stand exam and timber sale records, and expand greenhouse capacity. No Change from 2000
Water	<i>Alternative 2:</i> Base funding increase. The Red Lake DNR would expand the existing Water Quality Monitoring Program to include the Restored Ceded Lands and the Northwest Angle. See Wetland
Wetland	<i>Alternative 3:</i> No Net Loss Wetland Protection (<i>medium measure of protection</i>) Merge with Water; No Change to stated Alternatives
Environmental Protection	Municipal Solid Waste: <i>Alternative 2:</i> Update, implement, and enforce Tribal solid waste ordinances; implement recycling of some household waste materials; and provide annual pick up of household hazardous wastes.
	Storage Tanks: <i>Alternative 2:</i> Develop and implement a Tribal management of underground storage tanks (USTs), and develop Tribal ordinances and standards on installation, construction, inspections and clean-up of USTs.
	Accidental Chemical Releases: <i>Alternative 2:</i> Develop and implement all pertinent Tribal ordinances and assist in developing a Tribal Emergency Response Plan (TERP).
	Pesticides/Herbicides: <i>Alternative 2:</i> This alternative would involve the development of a comprehensive management plan for pesticide usage, including a Tribal policy on pesticide management.

Resource	Preferred Alternative
	Air Pollution: <i>Alternative 2:</i> Develop a Tribal Air Source Emissions Inventory Program. Staff an Air Quality Program Office. Educate Tribal members about the effects of environmental tobacco smoke. Develop and implement a Tribal Air Code. Provide monitoring to determine indoor air pollution risks. Ambient air monitoring for major air pollutants.

The continued implementation of each alternative through this integrated resource plan will allow for benefits to be derived by the Red Lake Reservation in the areas of environmental, biological, economic, and social gain while still allowing for the sustained perpetuation of the natural resources.

6.0 RED LAKE RESOURCES

6.1 The Cultural and Traditional Resource

(remains the same as in 2000)

6.1.1 Description of the Affected Environment

Cultural resources are defined as prehistoric and historic archaeological sites, historic standing structures, traditional cultural properties, and sacred and burial sites. These resources are no less than the perpetuation of living cultural traditions, beliefs, life ways, language, oral tradition, arts, crafts, ceremonies, traditional use of plants and animals, traditional religion and culture, as well as the places and properties associated with them. All of these resources are important to the members of the Red Lake Band of Chippewa Indians.

The value of the Red Lake Band's cultural resources is in the stories people tell of former ways of life, human adaptation to the environment, and the history of the Red Lake Band of Chippewa. The value may be aesthetic, historical, scientific, traditional, interpretive, utilitarian, or any combination of the above. Value often depends on the integrity (i.e., availability and lack of disturbance or modification) of the cultural resources or their surroundings.

The identification and protection of cultural resources on federal or Indian lands is governed primarily by the National Historic Preservation Act of 1966, as amended, and the Archaeological Resources Protection Act of 1979, and their implementing regulations. These laws apply to any activity or undertaking that involves federal funding, a federal license or permit, or involves federal or Indian lands. Responsibility for ensuring compliance with the appropriate laws and regulations currently lies with the Bureau of Indian Affairs.

Compliance with the legal requirements of federal and Tribal legislation would need to be completed prior to the implementation of ground disturbing activities that involve federal funding, a federal license or permit. This often involves an archaeological survey of the project area to locate any subsurface indications of past human activity. In addition, the review process would require coordination with Tribal elders to determine if any known sacred or burial sites exist in the area or if the area contains traditional plants or use areas. If any of these resources are present in a project area, decisions to proceed with the activity would depend upon the results of consultation with the Tribal Council, the Bureau of Indian Affairs, the Minnesota Indian Affairs Council and State Historic Preservation Office, and the Advisory Council on Historic Preservation, as appropriate.

The Recorded Cultural Resources

It is likely that numerous important cultural resources exist on the Red Lake Reservation. Due to its strategic geographic location, the area has been an important focal point for human activity for at least 10,000 years. Unfortunately, comprehensive surveys to identify all significant cultural resources on the reservation have not been completed. Without good comprehensive site data, it is difficult to make general assessments about the distribution of cultural resources and the probability of locating them.

Very few cultural resource properties have been recorded on the Red Lake Reservation because few cultural resource inventory surveys have been undertaken. No cultural resource properties have been listed on the National Register of Historic Places. No historic sites or standing structures have been inventoried and no traditional cultural properties have been formally recorded. These data gaps are the direct result of the lack of cultural resource inventory efforts, until this time.

Preconstruction surveys by federal and state agencies and informant reports have resulted in the recording of a small sample of archaeological resources, however. The Tribal Cultural Resource Inventory currently includes 24 cultural resource properties. These sites range from a large habitation site and burial mound complex, which was occupied for the last 2,000 years at the outlet of Lower Red Lake, to house ruins dating to the early part of the twentieth century. Informant reports indicate that substantial deposits of archaeological habitation material are present at each of the modern village sites and at the mouth of each stream which enters Lower Red Lake. It is certain that numerous significant archaeological properties will be recorded as inventory surveys are undertaken.

Prehistoric Occupation

The archaeological record indicates that American Indians have occupied the Red Lake area for nearly 10,000 years, following the final recession of the continental ice sheets and drainage of the vast Glacial Lake Agassiz that followed. Sparse evidence, in the form of isolated stone spear heads, documents the earliest occupation during what is termed the Paleoindian Period. Prior to about 8,000 years ago, it appears that the occupation of the Red Lake area was limited to small hunting bands that relied on the caribou, elk and bison that had spread into the Agassiz Basin. These hunters appear to have been highly nomadic with an economy which was highly dependent on the gregarious herd animals.

Between about 8,000 and 3,000 years ago, people began to adapt, in varying ways, to the series of micro environments that formed as the climate reached essentially modern conditions. During this period known as the Archaic, people appear to have developed

a somewhat less nomadic lifestyle based on a more intense extraction of the broader variety of plant and animal resources available by that time. One unique adaptation during this period was the Old Copper Culture that is easily identified through the presence of its spear points, cutting tools and ornaments made out of naturally occurring copper nodules. Again, relatively few occupation sites dating to this period have been identified. Most known sites comprise disturbed burials in pits in glacial beach ridges.

A vast majority of the archaeological properties identified in the Red Lake area date to what is known as the Woodland Period. The Woodland Period, which began about 3,000 years ago, has the defining characteristics of the manufacture of pottery, settled village lifestyle, and use of domesticated plants and animals. Woodland people are further distinguished by the large earthen burial mounds they constructed.

Some initial conclusions about prehistoric occupation can be reached by examining the distribution of archaeological sites (i.e., settlement patterns) in each county. In settlement-pattern analysis, archaeologists assume that prehistoric people chose to occupy specific locations in order to exploit the resources nearby (*Roper, 1979; Vita-Finzi & Higgs, 1970*). Presumably, living sites were intended to be conveniently located near important natural resources.

The seasonal round of activities of the historic Dakota may be expected to hold in general terms for the prehistoric Woodland people as well, in which case periodic forays outside the village would have been common in the fall and spring. The location of prehistoric villages and burial mound sites implies that prehistoric Woodland people were intentionally living near resources they wished to exploit. The following section focuses on two of the prehistoric groups that are thought to be ancestral to the historic Dakota (Blackduck culture and Laurel culture) and describes the archaeological evidence of their ways of life and use of resources.

Woodland-Period Occupation

There exists little archaeological evidence for occupation of northern Minnesota during the early Woodland period (1,000 B.C.-500 B.C.). Evidence from the middle and late Woodland sites (500 B.C. to contact with Europeans) is more common. The most commonly identified middle Woodland expression in northern Minnesota is the Laurel culture (100 B.C.-800 A.D.). According to Ossenberg (*1974*), the Laurel people were ancestral (along with the Blackduck culture) to the historically known Dakota Sioux. Mason (*1981*) argues that the Laurel culture arose directly from Archaic antecedents. The most significant changes included the introduction of Laurel pottery styles and the use of burial mounds for mortuary interment. Stoltman (*1973*) describes this middle Woodland culture:

"What generally characterizes the Laurel culture, besides its Middle Woodland age...and northerly geographic position, is a hunting and gathering way of life focusing, no doubt in a seasonal rhythm, mainly upon fish, moose, and beaver. In addition, most Laurel sites are characterized by a distinctive assemblage of artifacts that includes the earliest ceramics in the area."

Cooking with pottery has many technological advantages over cooking with non-ceramic materials (Arnold, 1985) and Laurel people presumably could have eaten a much broader range of plant and animal foods than their Archaic forefathers. This may have included more green leafy vegetables available in Minnesota. Ceramic cooking technology also renders seeds more digestible, for they frequently require longer cooking times. Further, cooking vessels allow for the destruction of bacteria and parasites in meat and the breakdown of some plant toxins. Since Laurel culture sites are more numerous and larger than Archaic sites, evidence of a more successful adaptation to northern Minnesota, ceramic technology may have played an important part in adaptation to this region.

Unfortunately, there is little direct evidence of the prehistoric use of plants from the Laurel period in Minnesota. Floral remains are rarely preserved and require exacting field-recovery techniques that were not developed just until 1968. As a result, we can only hypothesize that Laurel groups used many of the same plant taxa as the historic Dakota and Anishinaabeg cultures. Since skeletal evidence suggests that Laurel populations in northern Minnesota are related to later Dakota people, it is reasonable to project historically known uses back in time.

Faunal evidence from this period is more widespread (Lukens, 1973). As Stoltman describes the Laurel economy, moose, beaver, and fish were the faunal mainstays of the diet. All of these resources were abundant in northern Minnesota. Lukens reported on the faunal assemblages from three Laurel sites in Minnesota, analyzing a total of 8,094 bones and fragments. Fish were the most numerous vertebrate, nearly 57 percent of the total. Mammal remains were next in frequency. Of 27 mammalian species, beaver, moose, and woodchuck made up 75% of the mammal bones recovered. Birds (mostly aquatic) and turtles accounted for the remainder of the assemblage. Tools and other articles were also made from animal parts. Stoltman found evidence of worked moose and caribou phalanges, harpoon heads made of moose antlers, and engraving tools made of beaver incisors. Clearly, the animal component of the Laurel economy emphasized species common to aquatic habitats.

Blackduck culture (800-1400 A.D.) was widespread across northern Minnesota, Manitoba, and southern Ontario during late Woodland times. Also ancestral to historic Dakota people, Blackduck populations replaced Laurel people in Minnesota. Again there is a decided lack of evidence for the use of plants by Blackduck groups in Minnesota. While it is reasonable to suggest that information on plant usage known

from the historic Dakota and Anishinaabeg cultures can be projected back, confirmed archaeological evidence is needed.

Faunal analysis undertaken on animal bones from the Hill Point site reveals a pattern of animal usage similar to that described by Lukens for Laurel sites (Whelan 1990). The Hill Point site is located in Clearwater County, Minnesota along the north arm of Lake Itasca and is not in the northern region. The Itasca moraine on which the site rests is dotted with wetlands, however. In keeping with the more ecologically moderate terrain, the mammalian fauna from the site are dominated by deer (roughly 60%). Beaver, muskrat, and moose are next in abundance, each with roughly 10 percent of the mammalian fauna. Turtle species (including snapping turtle and painted turtle) and various species of fish are also present in the assemblage. Thus, aquatic resources were still valuable and exploited by these later Blackduck peoples, as they were during Laurel times.

Although archaeological evidence of the presence of humans in northwestern Minnesota dates back at least 10,000 years, the Red Lake Anishinaabeg are relative newcomers. Their predecessors had used available resources in a seasonal round of provisioning activities to supply their subsistence needs. Before the establishment of reservations, the Red Lake Band pursued a similar subsistence strategy. In fact, the Red Lake economy today continues to be based largely on the same resources that native inhabitants of the region have exploited for generations. In this sense, the Red Lake Anishinaabeg maintains a great deal of continuity with the past.

Historic-Period Occupation

Historic description and Indian oral traditions report that the earliest inhabitants of northern Minnesota were the Dakota people. Siouan tribes were hunter-gatherer-horticulturalists (Warren 1885; Hickerson 1962; Walker 1983). This is consistent with the 17th and 18th century cartographic representations of the region (*Wedel 1974; Karpinski 1977*).

In the historic period, other cultural groups, including the Anishinaabeg, Cheyenne, Iowa, Oto, and Omaha, are thought to have occupied different parts of Minnesota (*Johnson, 1985*). There were other tribes present like the Arikara, Cree, Crow, and Assiniboine. Indian myth and oral tradition state that at some point in the 18th century the Dakota and the recently arrived Anishinaabeg engaged in a fierce war over the right to live in and use northern Minnesota lands. The Anishinaabeg were expanding westward from their previous homelands in Wisconsin and Michigan as the frontier of Euro-American occupation pushed to the west. Outfitted with firearms and weapons obtained from Euro-American traders, the Anishinaabeg began a period of hostile attacks on other Native American societies in Wisconsin and neighboring northern Minnesota. By virtue of their superior weaponry, the Anishinaabeg were able to push

the Dakota out of northern Minnesota. According to Anishinaabeg and Dakota legends, the territorial war culminated in the Battle of Kathio, in which the Anishinaabeg succeeded in vanquishing their Dakota enemies. The Dakota were forced to escape southward into the lands around the Minnesota River (*Warren, 1885; Folwell, 1921; Hickerson, 1962*). Suggested dates for the Battle of Kathio are from 1720 to 1800 (*Anderson, 1980; Hickerson, 1962, 1974; Warren, 1885; Winchell, 1911*). Although there is some discussion of the veracity of the details of this scenario (*Johnson, 1985; Anderson, 1980*), it is generally accepted that the Anishinaabeg did replace the Dakota in northern Minnesota during the 18th century.

Migrations that spanned many generations brought the Anishinaabeg people from the region of Sault Ste. Marie through the Great Lakes watershed into northern Minnesota. Hunting, trapping, and trading forays to the north and south of Lake Superior evolved into migrations and the eventual dispersion of the Anishinaabeg throughout the Hudson Bay drainage area, northern Wisconsin and Minnesota, and Michigan's Upper Peninsula. Separated geographically by Lake Superior, the northern and southern Ojibwe evolved culturally in different directions as a result of differences in both environment and trade relations. Ancestors of most of the Red Lake Band followed the northern route. They were one of the few groups in northern Minnesota to do so (*Dunning, 1958, 1969; Bishop, 1974, 1976, 1978; Bishop and Smith, 1970; Hickerson, 1962, 1970*).

In 1679 the Frenchman Daniel Grayson Duluth persuaded the Dakota to trade peacefully with the Anishinaabeg, who had migrated southwestward, by assuring both tribes of a reliable source of European trade goods. This alliance allowed the Anishinaabeg to establish their position as fur trade intermediaries and gave them access to game further west. Western game became necessary because intensified hunting for the trade quickly depleted the limited game in boreal forest zones (*Hickerson, 1962, 1965, 1970*).

This alliance between the Dakota and Anishinaabeg shattered when the French journeyed farther west in the 1720's and 1730's to establish direct trade relations with the Dakota, bypassing Anishinaabeg intermediaries. Faced with a reduction in game areas open to them, the southern Anishinaabeg moved into northern Minnesota as invaders to exploit the resources previously accessible to them only as allies of the Dakota. Their migrations displaced remnant Dakota communities that remained after the Dakota acquisition of the horse. The horse enhanced bison hunting and trade opportunities providing incentive for most of the Minnesota Siouan population to emigrate to the prairies of the Minnesota and Missouri rivers. Competition between the Dakota and Anishinaabeg settled into a stable pattern once the Anishinaabeg had successfully occupied the Minnesota coniferous woodland. The Red Lake Band entered the scene from the north at a later time, thereby avoiding the most intense period of competition and profiting from the Dakota exodus (*Hickerson, 1962, 1965, 1970, 1974; Anderson, 1980; Holzkamm, 1983; Watrall, 1968; White, 1978*).

The northern Anishinaabeg migration route had entailed less cultural reordering than that followed by the southern Anishinaabeg (*Dunning, 1958, 1969; Bishop, 1974, 1976, 1978; Bishop and Smith, 1970; Landes, 1939, Densmore, 1919, 1929*). In addition, the isolation of the Red Lake area contributed to the reputation of Red Lake Band as being among the most conservative Anishinaabeg bands in the state. The fact that the Red River flows north to Hudson Bay deterred settlement of the area by Euro-Americans eager to develop market agriculture. Peatlands constituted a large portion of the habitat in which the Red Lake Indians practiced a subsistence strategy uniquely suited to the North Country environment.

In the mid-19th century, the Red Lake Anishinaabeg followed an annual subsistence cycle of seasonal harvesting activities that closely resembled that of the early historic Dakota. Situated as they were on the shores of a bountiful fishery, the people relied on fish from Red Lake. Wild rice, the cereal grain staple of indigenous people of the western Great Lakes, also was an important part of their diet. Although seasonal migrations were part of the subsistence pattern, the stability of the timing and locations gave continuity to the annual subsistence cycle that amply sustained the Anishinaabeg in the north country of Minnesota. This reliable seasonal circuit still serves as the cornerstone of autonomy for the Red Lake Band (*Densmore, 1910, 1919, 1928, 1929; Mittelholtz, 1957; Rogers, 1974; James, 1956; Cleland, 1966; Yarnell, 1964; Nelson and Dahl, 1986; Rogosin, 1958*).

Archaeological and historical research dovetails to establish that the components of an ancient way of life evolved by indigenous people in Minnesota's North Country have persisted to leave a distinctive mark on contemporary Indian cultures. The resources of the Red Lake Reservation ecosystems remain as central to the livelihood and well-being of the Anishinaabeg who live there today as they were to their ancestors. Prehistoric and early historic native peoples have seldom left the sort of records that reveal their attitudes toward the land and the resources that sustained their cultures and ways of life. Red Lake Band leaders have actively sought to safeguard their resources against outside exploitation, consistently demonstrating an understanding of their role within the ecosystem as a whole. For the Red Lake Band, the importance of the ecosystem to their way of life has remained unchanged.

6.1.2 Issues and Concerns

Issues

The Red Lake Nation has a rich cultural heritage that spans at least 10,000 years of human occupation of what is now northwestern Minnesota. That heritage remains poorly understood and is threatened by ongoing development and resource extraction activities. At the present time, there is not a comprehensive program to identify and protect the historic sites, archaeological sites, traditional use areas and cemeteries that are the lasting manifestations of that long heritage. A Tribal Historic Preservation

Ordinance and centralized Historic Preservation Program are needed to ensure that the manifestations of that cultural heritage are identified and protected for the future. The primary cultural resource issues include:

Without a central historic preservation authority, programs and departments apply varying levels of effort to identify cultural resources in project and management areas. Varying levels of knowledge, expertise, and commitment result in inconsistent efforts to identify, understand, and protect cultural resource properties. This results in destruction of the cultural resource properties, including cemeteries, as a result of Tribal undertakings. This situation also results in uncertain compliance with federal Historic Preservation laws and may limit the availability of federal project funds.

- Without a designated Historic Preservation Office, there is no means of assembling a comprehensive inventory of cultural resource knowledge and properties or applying it to the review of proposed undertakings of Tribal programs or others. This creates inefficiency, inconsistency, and waste in the project review process.
- The lack of a designated Tribal Historic Preservation Officer and a Tribal Preservation Ordinance makes it impossible for the Red Lake Nation to qualify for federal historic preservation funding.
- The lack of a Tribal Historic Preservation ordinance precludes enforcement by law enforcement officials.
- Without timely support of the data gathering and education efforts of the Tribal Library and Archives in conjunction with the Historic Preservation Office, the knowledge of Tribal history will be lost with the passing on of the elders. Not only would the locations of the physical manifestations of the past be lost, but so too would the history of the people. The loss of that history would undermine the long-term effort to instill a sense of identity and promote self esteem in young people through education.

6.1.3 Goals and Objectives

Goals

The long-term goal of the Red Lake Nation is to establish a comprehensive Cultural Heritage Preservation Program that will:

- Determine the social and cultural context and perceived significance of cultural heritage within the Red Lake Nation
- Define the range of the cultural resource base within the Red Lake Nation
- Inventory all cultural resource properties within the Red Lake Nation
- Develop avenues of communication to educate Tribal members about the richness of the cultural heritage and to develop a sense of the significance of the past in today's world
- Preserve sites, objects and ideas relative to Red Lake cultural heritage for the

welfare and enlightenment of future generations

- Protect significant aspects of the cultural resource base from dilution or destruction during the course of Tribal undertakings, such as construction, maintenance, and resource extraction
- Develop a Tribal Historic Preservation Ordinance to guide compliance and direct enforcement by law enforcement officials

Objectives

The primary objective of a Historic Preservation Program for the Red Lake Nation Historic Preservation Office should be to coordinate preservation activities, review agency undertakings and assist the Tribal Library and Archives in its conservation and education activities. Preservation objectives include:

- Development of a comprehensive Tribal Historic Preservation Program
- Appointment of a Cultural Advisory Committee to advise the Preservation staff in cooperation with the Tribal Library and Archives
- Establishment of a clearinghouse functions for coordination of all aspects of historic preservation within the Red Lake Nation
- Assumption of some of the functions of the State Historic Preservation Office under the terms of Section 106 of the National Historic Preservation Act
- Coordination with internal departments and external agencies and review of proposed undertakings to ensure compliance with preservation laws and Tribal ordinances and policies
- Maintenance of inventories and databases of cultural resource properties, including historic sites, historic standing structures, archaeological properties, traditional cultural properties and cemeteries
- Completion of field surveys to identify cultural resource properties
- Development of a paraprofessional training and certification program to assist in the identification and management of cultural resource properties
- Assistance to the Tribal council in the development of policies and ordinances necessary to preserve and protect significant cultural resource properties, including law enforcement
- Assistance to the Tribal Library and Archives in its curation, conservation, education and outreach operations related to heritage preservation
- Assistance to the Tribal Library and Archives in the inventory of Traditional Cultural Properties through oral interviews, interdisciplinary research and field investigations

The primary role of the Tribal Library and Archives is to maintain reference services, curate and conserve collections of cultural and archaeological materials and disseminate information regarding the cultural heritage of the Red Lake Nation to patrons, schools and the public at large. The primary objectives of the Library and Archives Department are:

- Maintenance and enhancement of the Tribal Library collections
- Maintenance, organization and enhancement of the Tribal collection of archival records
- Establishment and maintenance of an archival facility for archaeological and ethnographic materials
- Establishment and maintenance of a conservation facility for stabilization and long term care of archaeological objects and ethnographic materials
- Gathering and transcription of oral histories from elders
- Research, writing and dissemination of a Red Lake Tribal History to facilitate public outreach and education efforts
- Cooperation with Historic Preservation staff in the inventory of traditional cultural properties through oral interviews with members of the Red Lake Nation
- Research and development of fixed and traveling interpretive displays regarding the history of the Red Lake Nation for enlightenment of visitors, school children and the general public
- Cooperation with the Historic Preservation staff and the Tribal Council in the drafting and implementation of Tribal ordinances to preserve and protect sites and objects significant to the cultural heritage of the Red Lake Nation
- Service as Tribal coordinator under the federal Native American Graves Protection and Repatriation Act

Only through cooperative and concerted effort toward the fulfillment of these objectives can the Tribal Historic Preservation Office and the Tribal Library and Archives attain the mutual goal of identification, preservation and interpretation of the cultural heritage of the Red Lake Nation.

6.1.4 Alternatives and Impacts

Alternative 1 - No Change

- No comprehensive Cultural Heritage Preservation Program would be established
- The Tribal Council and departmental programs would continue to plan and implement projects and programs without the aid of comprehensive review or guidance by a Cultural Heritage Advisory Committee
- Cultural resource documentation and decision making would continue to take place to varying degrees under Tribal programs, generally in response to the mandates of federal funding and review agencies
- No comprehensive Tribal cultural resource inventory and database would be established

Impacts of Alternative 1:

- Decisions regarding the identification, evaluation and preservation of cultural resource properties would continue to be made in an ad hoc manner within the limits of the various Tribal programs and functions
- Significant historic sites, archaeological properties, traditional cultural properties and cemeteries would remain un-inventoried and destruction by development projects would continue
- Project delays and disruption resulting from unanticipated discoveries would continue
- The continued lack of a central Historic Preservation Authority to work in concert with the Library and Archives Department and other Tribal programs would result in the continued loss of cultural resource properties and Tribal history. These resources are critical to the maintenance of the culture of the Red Lake Nation

Staff/Budget Needs: No new staff or funding would be necessary.

Alternative 2 - Coordinate Existing Programs and Staff

Existing staff in the Tribal Council Office, DNR, Housing Authority, Sanitation Department, Tribal Roads Department and other Tribal programs would consciously coordinate planning and review activities to allow internal review of planning and operations to assist in the identification and avoidance of potential adverse effects to cultural resources. This coordination would be undertaken within the limits of current funding and staffing. A commitment of staff time and energy would be required, however, to initiate interdepartmental coordination and communication.

Impacts of Alternative 2:

- Interdepartmental coordination and communication would aid in the application of uniform historic preservation effort coordination across program and department boundaries
- Comprehensive resource identification and preservation would not be feasible due to already busy workloads and priorities
- Comprehensive resource inventory, interpretation and education efforts could not be undertaken without the guidance of a Cultural Heritage Advisory Committee
- This alternative could result in greater consistency of resource management in the short term, but could do little to avoid the ultimate destruction of the cultural resource base

Staff/Budget Needs: There would be no direct funding expenditures under this alternative, but consultation and coordination would require commitment and a small amount of existing staff time.

Alternative 3 - Coordinate Existing Programs with Guidance of a Cultural Heritage Advisory Committee

The historic preservation effort possible in Alternate 2, above, would be enhanced by appointment and long term operation of a Cultural Heritage Advisory Committee.

Impacts of Alternative 3:

- The breadth of the range of cultural resources present within the Red Lake Nation would be better understood through consultation with a Cultural Heritage Advisory Committee
- The comprehensive inventory of cultural resources would be enhanced through the input of the Cultural Resource Advisory Committee
- The Cultural Resource Advisory Committee would assist in making thoughtful and consistent decisions regarding property evaluations and management decisions throughout the Red Lake Nation
- Cultural resource inventory efforts and the education program of the Library and Archives staff would be greatly enhanced through the insights of the Advisory Committee
- The involvement of elders and others on a Cultural Resource Advisory Committee could assist staff in the identification and evaluation of cultural resource properties. This could be a first step toward a better inventory of significant properties that warrant preservation. Their input into education programs of the Library and Archives could also improve the awareness and understanding of cultural resource preservation in future generations.

The benefits noted above would be limited in nature, however, due to the lack of a central preservation authority to provide coordination and a clearing-house function.

Staff/Budget Needs: \$10,000 per annum. This alternative would require no new staff positions, but would require assignment of 0.25 FTE of an existing position for coordination of committee operation, stipends and expenses of committee members would also result. If a Tribal Historic Preservation Officer was also appointed, the required funds might be available in federal preservation grant programs.

Alternate 4 - Establish a Tribal Historic Preservation Office and Comprehensive Preservation Program, Including a Cultural Heritage Advisory Committee

The cultural heritage preservation goals of the Red Lake Nation would best be achieved through the establishment of a Tribal Historic Preservation Office and the enhancement of the existing Tribal Library and Archives. This alternative would include the appointment of a Tribal Historic Preservation Officer and designation as a Tribal Historic Preservation Office under Section 106 of the National Historic Preservation Act. The efforts of the office would be coordinated closely with those of the Library and Archives and would be guided by a Cultural Heritage Advisory Committee.

Impacts of Alternate 4:

- Cultural Heritage Preservation could be administered by a single entity, a Tribal Historic Preservation Office
- All Historic Preservation activities would be coordinated by a single appointed Tribal Historic Preservation Officer
- Comprehensive Tribal preservation procedures could be established in consultation with the Cultural Heritage Advisory Committee
- Law enforcement officials could apply preservation procedures under a Tribal Historic Preservation Ordinance
- Consultation with the Cultural Heritage Advisory Committee would help define the range and relative importance of cultural resource properties within the Red Lake Nation
- The Tribal Preservation Office could coordinate all research, archival and education issues closely with the Tribal Library and Archives staff
- Oral and written histories could be gathered, assembled and distributed to better understand the history of the Red Lake Nation and its people. This history could then be used to enhance educational programs
- Comprehensive cultural resource inventory surveys could be undertaken and property databases could be integrated into the Tribal Geographic Information System
- All Tribal undertakings could be reviewed and management decisions consulted in by the Preservation Office to allow enhanced preservation of the fragile cultural resource base with improved administrative efficiency and cost effectiveness
- Federal Preservation Grant funds could be sought that could potentially offset a majority of the costs of the Historic Preservation Program

Staff/Budget Needs: \$75,000 per annum (up to \$50,000 of this funding may be available in dedicated federal American Indian Historic Preservation programs). The budget would include:

Tribal Historic Preservation Officer	\$35,000
Preservation Technician	\$20,000
Support	\$20,000

6.1.5 Decision Matrix

Description of Goal/Objective:	Meets goal/objective?			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Determine social and cultural context and perceived significance of cultural heritage within the Red Lake Nation.	No	No	Partly	Yes
Define the range of cultural resource properties within the Red Lake Nation.	No	No	Partly	Yes

Description of Goal/Objective:	Meets goal/objective?			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Inventory all cultural resource properties within the Red Lake Nation.	No	No	Partly	Yes
Develop avenues of communication to educate Tribal members about the richness of the cultural heritage.	No	No	Partly	Yes
Preserve sites, objects and ideas relative to Red Lake cultural heritage for the enlightenment of future generations.	Partly	Partly	Partly	Yes
Protect significant cultural resources by law enforcement during Tribal construction, maintenance, and resource extraction.	Partly	Partly	Partly	Yes

6.1.6 Integrating Resource Management

To provide increased integration of the overall management of Red Lake's natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Cultural and Traditional Resource**.

Fishery Resource

1. Cooperate to insure fish population management and regulation are within the cultural traditions of the Band

Wildlife Resource

2. Cooperate to ensure that wildlife population management and regulation are within the cultural traditions of the Band
3. Cooperate to ensure the focus of management efforts are on wildlife species most important to Band members

Forest Resource

1. Need to cooperate on grave site information
2. Provide input on future projects such as increased pine planting and prescribed burning for blueberry production
3. Develop specific regulations for timber sales regarding cultural resource protection

Water Resource

1. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource
2. Cooperate on development of site identification and documentation

Wetland Resource

1. Cooperate on cultural resource site identification, documentation, and protection
2. Cooperate in the development of a cultural sites map data base on GIS system, and protocols to protect the confidentiality of the data
3. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource

Environmental Protection

1. Coordinate to ensure compliance with preservation laws, ordinances and policies

Conservation Enforcement

1. Cooperate to develop and enforce a cultural resource ordinance

6.1.7 References

- Anderson, G.C. 1980. *Early Dakota migration and interTribal war: A revision*. Western Historical Quarterly 11:17-36.
- Arnold, D. 1985. Ceramic theory and cultural process. Cambridge University Press, New York, New York, USA.
- Bishop, C. A. 1974. The northern Ojibwa and the fur trade: An historical and ecological study. Holt, Rinehart, and Winston of Canada, Toronto, Ontario, Canada.
- 1976. The emergence of the northern Ojibwa: Social and economic consequences. American Ethnologist 3:39-54.
- 1978. Cultural and biological adaptations to deprivation: The northern Ojibwa case. In C.C. Laughlin, Jr., and I. A. Brady, editors. Extinction and survival in human populations. Columbia University Press, New York, New York, USA.
- and M. E. Smith. 1970. The emergence of hunting territories among the northern Ojibwa. Ethnology 9:1-15.
- Cleland, C. E. 1966. The prehistoric animal ecology and ethnozoology of the upper Great Lakes region. Museum of Anthropology, Anthropological Papers no. 29. University of Michigan Press, Ann Arbor, Michigan, USA.
- Cluth, Rose. 1995. Personal Communication. Leech Lake Cultural Resources Ordinances on Tribal Lands. Leech Lake Heritage Sites Program. Cass Lake, Minnesota.
- Densmore, F. 1910-1913. Chippewa music. Bureau of American Ethnology, Smithsonian Institution 45, 53. U.S. Government Printing Office, Washington D. C., USA.
- 1919. Material culture among the Chippewa. Smithsonian Miscellaneous Collections 70:114-118.
- 1928. Uses of plants by the Chippewa Indians. Bureau of American Ethnology, Annual Report 44:275-397.
- 1929. Chippewa customs. Bureau of American Ethnology. Smithsonian Institution 86. U.S. Government Printing Office, Washington D. C., USA.
- Downer, Alan. 1995. Personal Communication. A Guide to Cultural Resources

- Compliance on the Lands of the Navajo Nation. Navajo Nation Historic Preservation Department. Window Rock, Arizona.
- Dunning, R. W. 1958. Some implications of economic change in northern Ojibway social structure. *Canadian Journal of Economics and Political Science* 24.
- 1969. Social and economic change among the northern Ojibwa. University of Toronto Press, Toronto, Ontario, Canada.
- Folwell, W. 1921. A history of Minnesota. Vols. 1 & 4. Minnesota Historical Society Press, St. Paul, Minnesota, USA.
- Hickerson, H. 1962. The southwest Chippewa: An ethnohistorical study. *American Anthropological Society Memoir* no. 92.
- 1965. The Virginia deer and interTribal buffer zones in the upper Mississippi valley. In A. Leeds and A. Vayda, editors. *Man, culture, and animals: The role of animals human ecological adjustments*. American Association for the Advancement of Science, Publication no. 78. Washington, D. C., USA.
- 1970. The Chippewa and their neighbors: A study in ethnohistory. Holt, Rinehart and Winston. New York, New York, USA.
- 1974. Chippewa Indians IV: Ethnohistory of the Chippewa in central Minnesota. Garland, New York, New York, USA.
- Holzmann, T. E. 1983. Eastern Dakota population movements and the European fur trade: One more time. *Plains Anthropologist* 28:225 -233.
- James, E., editor. 1956. A narrative of the captivity and adventures of John Tanner during thirty years residence among the Indians in the interior of North America. Ross and Haines, Minneapolis, Minnesota, USA.
- Johnson, E. 1985. The 17th century Mdewakanton Dakota subsistence mode. Pages 154-166 in J. Spector and E. Johnson, editors. *Archaeology, ecology and ethnohistory of the prairie-forest border zone of Minnesota and Manitoba*. J & L Reprints in Anthropology vol. 31. J & L Reprints, Lincoln, Nebraska, USA.
- Jones, Jim. 1995. Personal Communication. Cultural Resource Management In Minnesota. Minnesota Indian Affairs Council. Bemidji, Minnesota.
- Karpinski, L. C. 1977. Maps of famous cartographers depicting North America. An historical atlas of the Great Lakes and Michigan, with bibliography of the printed

- maps of Michigan to 1880. 2nd edition. Meridian, Amsterdam, Netherlands.
- Landes, R. 1939. The Ojibwa woman. Columbia University Contributions to Anthropology no 31. New York, New York, USA.
- Lavasseur, Andrea. 1995. Personal Communication. Paraprofessional Archaeological Awareness Training. Chippewa National Forest. Cass Lake, Minnesota.
- Lukens P. W., Jr. 1973. The vertebrate fauna from Pike Bay Mound, Smith Mound 4, and McKinstry Mound. Pages 37-45 in J. B. Stoltman, editor. The Laurel culture in Minnesota. Minnesota Prehistoric Archaeology Series no. 8. Minnesota Historical Society, St. Paul, Minnesota, USA.
- Mason, R. 1981. Great Lakes archaeology. Academic Press, New York, New York, USA.
- Mittleholtz, E. F. 1957. Historical review of the Red Lake Indian Reservation, Red Lake, Minnesota: A history of its people and progress. Beltrami County Historical Society Collections no. 2.
- Nelson, R. N., and R. P. Dahl. 1986. The wild rice industry: Economic analysis of rapid growth and implications for Minnesota. Institute of Agriculture, Forestry, and Home Economics, Department of Agricultural and Applied Economics Staff Paper P86-25. University of Minnesota, Minneapolis, Minnesota, USA.
- Ossenberg, N. S. 1974. Origins and relationships of woodland peoples: The evidence of cranial morphology. Pages 15-39 in E. Johnson, editor. Aspects of upper Great Lakes anthropology. Minnesota Historical Press, St. Paul, Minnesota, USA.
- Parker, Patricia L. 1990. Keepers of the Treasures; Protecting Historic Properties and Cultural Traditions on Indian Lands. A report on Tribal Preservation Funding needs submitted to Congress. NPS, Interagency Resource, Branch of Preservation Planning, Washington, D.C.
- Rogers, J. 1974. Red world and white: Memories of a Chippewa boyhood. University of Oklahoma Press, Norman, Oklahoma, USA. (First published in 1967 as A Chippewa Speaks by John Rogers.)
- Rogosin, A. 1958. Wild rice (*Zizania aquatica*) in northern Minnesota, with special reference to the effects of various water levels and water level changes, seeding densities, and fertilizer. M.S. thesis. University of Minnesota, St. Paul, Minnesota, USA.

- Roper, D. 1979. The method and theory of site catchment analysis: A review. *Advances in archaeological method and theory* 2:119-140.
- Stoltman, J. B. 1973. The Laurel culture in Minnesota. Minnesota prehistoric archaeology series no. 8. Minnesota Historical Society, St. Paul, Minnesota, USA.
- Vita-Finzi, C., and E. S. Higgs. 1970. Prehistoric economy in the Mount Carmel area of Palestine: Site catchment analysis. *Proceedings of the Prehistoric Society* 36:1-37.
- Walker, J.R. 1983. Lakota myth. E. Jahner, editor. University of Nebraska Press, Lincoln, Nebraska, USA.
- Warren, W. 1885. History of the Ojibway Nation, based upon traditions and oral statements. *Collections, Minnesota Historical Society* 5:21-394.
- Watrall, C. 1968. Virginia deer and the buffer zone in the late Prehistoric-early Protohistoric periods in Minnesota. *Plains Anthropologist* 13:81-86.
- Wedel, M. M. 1974. LeSueur and the Dakota Sioux. Pages 157-171 in E. Johnson, editor. *Aspects of upper Great Lakes anthropology*. Minnesota Historical Press, St. Paul, Minnesota, USA.
- White, R. 1978. The winning of the West: The expansion of the western Sioux in the 18th and 19th centuries. *Journal of American History* 65:319-343.
- Winchell N. H. 1911. The Aborigines of Minnesota. The Minnesota Historical Society. Pioneer Press Co., St. Paul, Minnesota, USA.
- Wright, H. E., Jr., B. A. Coffin, and N. E. Aaseng. The Patterned Peatlands of Minnesota. Ch. 15 by Mary K. Whelan. Ch. 16 by Melissa L. Meyer. Used by permission. University of Minnesota Press, Minneapolis, Minnesota, USA.
- Yarnell, R. A. 1964. Aboriginal relationships between culture and plant life in the upper Great Lakes region. *Anthropological Paper no. 23*, Museum of Anthropology, University of Michigan Press, Ann Arbor, Michigan, USA.

This page left intentionally blank.

6.2 The Fishery Resource

6.2.1 Description of the Affected Environment

The Red Lake Reservation contains approximately 135 lakes and 55 miles of rivers and streams. The dominant geographic feature of the Reservation is Upper and Lower Red Lake, which at 284,264 surface acres (at 1,174 feet above mean sea level), constitutes the largest body of water within Minnesota. All of Lower Red Lake and two thirds of Upper Red Lake lie within the boundaries of the Reservation. The lakes consist of two large oval shaped basins connected by a navigable channel approximately three-quarters mile wide. Maximum depth of Upper Red Lake is 16 feet, with a mean depth of 8 feet. Maximum depth of Lower Red Lake is 35 feet, with a mean depth of 18 feet. The shoreline and a large portion of the lake bottom consist of sand. The lakes are moderately fertile, wind swept, and do not stratify. Water temperature closely approximates air temperature during the summer months. The lakes are typical of several large “walleye factory” lakes situated in north-central Minnesota. Major tributaries include the Tamarack River on the east end of Upper Red Lake, and the Blackduck River on the east end of Lower Red Lake. Lake level is maintained by annual precipitation, evaporation, and a dam at the only outlet on the west end of Lower Red Lake. From here water enters the Red Lake River, which flows into the Red River of the North, a part of the Hudson Bay Drainage.

The Red Lakes have been used for subsistence purposes by Band members for as long as they have resided here. Fish have been an important component of the diet during the open-water season, and fish were dried and smoked for winter use. Many Band members maintain a close tie with the lake, and participate in a seasonal cycle of fish harvest.

A commercial fishery has operated on the reservation since 1917. The principal species harvested include walleye, yellow perch, Lake Whitefish, northern pike, goldeye, black crappie, and freshwater drum. Other commercial species present include white sucker, black bullhead, rock bass, largemouth bass, pumpkinseed, bluegill, northern redhorse, quillback, and burbot. Forage species present in the Red Lakes include golden shiner, trout-perch, spottail shiner, emerald shiner, common shiner, blacknose shiner, mimic shiner, finescale dace, brook stickleback, ohnny darter, Iowa darter, and fathead minnow. Lake sturgeon were formerly present, but had effectively been extirpated by the 1950. Recently the Band has reintroduced this species and is currently working on restoring this population to sustainable levels.

The majority of the other Reservation lakes are located south of Lower Red Lake and range in size from 5 to 300 acres. These lakes are used and managed principally for sport-fishing. Most of the species observed in these lakes include those mentioned above for the Red Lakes. Principal gamefish species sought by anglers include

largemouth bass, northern pike, walleye, black crappie, and sunfish. In addition, Green Lake (Redby) is managed for lake trout, and Kinney, Island, Squaw-Smith, and Heart Lakes are managed for rainbow trout and brook trout. Trout species are maintained by stocking, as suitable trout spawning habitat does not exist in these lakes. Historically, trout were stocked in several of the streams entering the Red Lakes, but these populations have not been maintained and these populations have dropped below detection levels.

Commercial Fishery

The principal use of the Red Lakes has been for commercial fishing, which was historically conducted by a cooperative, the Red Lake Fisheries Association (the Association). In the early 1990's, annual sales of fish was as high as \$4.5 million, with as many as 600 Band members registered as Association members. In terms of the numbers of people affected and revenue generated, commercial fishing was the most important industry on the Reservation. The Association was governed by a 5 person board of directors, which was elected each year at an annual meeting of the Association. The board of directors retained a general manager to oversee the day to day operations of the commercial fishery and the fish processing facility at Redby, Minnesota. In 1997, the walleye population had collapsed and the commercial fishermen voted to suspend commercial fishing until the walleye population recovered. This moratorium on the harvest lasted until the spring of 2006. In 2006, the Red Lake Tribal Council gained regulator control of the commercial fishery which is currently run as a Tribal Enterprise. This changed the current regulatory structure and way that fish are being harvested.

Commercial fishing is regulated in three ways. Federal guidelines governing the fishery, which are detailed in Title 25 of the US Code of Federal Regulations (25 CFR) which the Red Lake Tribal Council opposes by Tribal Resolution 48-06; a set of regulations developed and passed by the Red Tribal Council; and harvest recommendations outlined in the Red Lake Fisheries Technical Committees Harvest Plan for the Red Lakes. Broadly speaking, these regulating mechanisms allow commercial fishing only on the Red Lakes by Red Lake Band Members who are registered with the fish plant. Each member is limited to the use of hook and line and a daily bag limit which must be turned into the processing plant. The harvest season is year round except for a short period in the fall when the ice forms on the lake and in the spring when the ice goes off the lake until the spawning season is completed in early May. Gill netting crews, hired and outfitted by the processing plant, are utilized to supplement the hook and line catches when sufficient numbers of walleye are not captured by hook and line. Walleye and other species turned into the fisheries are processed at the plant to fillets and then marketed through the Red Lake Fisheries.

The principal economic important species to the Red Lakes commercial fishery is walleye, followed by yellow perch. Historically the walleye were managed using an

annual static quota of 650,000 lbs. instead of using a biologically based quota. This management system contributed to the collapse of the walleye population by the mid 1990's. In 1999, the Red Lake Band, State of Minnesota, and Bureau of Indian Affairs signed a Memorandum of Understanding to cooperatively work together to recovery the walleye stock of Red lake. This effort was extremely successful and the walleye population is now being managed cooperatively based on annual population surveys conducted by the Red Lake Band and State of Minnesota. Using this system of management will allow for increasing and decreasing the annual quota based on the condition of the walleye population protecting against over fishing the stocks. In 2009, the MOU was renewed for five more years to reaffirming the continued cooperation between these agencies.

The goal of commercial fishery management for the Red Lakes has been, and continues to be, sustain and optimize the walleye harvest. In 1987 the Red Lake Tribal Council established a fisheries assessment program to collect baseline data on the fish stocks of the Red Lakes, so informed decisions could be made on management. The assessment unit established a sampling program that includes collecting length, weight, age, and sex data on commercial species harvested at the plant during the fishing season. A seasonal lake assessment program was developed at the same time. Annual sampling includes: roving creel surveys, shoreline seining for young of the year, forage fish trawling survey, and fall experimental gillnet surveys. The State of Minnesota follows similar sampling protocol, which allows for the combining the data to get a comprehensive look at the fish stocks of the Red Lakes. This information is then used in several harvest models that have been developed for the Red Lake Walleye fishery and assist in making annual harvest decisions.

Sports Fishery

A number of Band members utilize smaller Reservation lakes for sports fishing. There are no restrictions on Band members for angling, except that no fishing is allowed on the Reservation between the second Saturday in March and the second Saturday in May each year, as many species spawn during this period. The Tribal Council sells a limited number fishing permits to non-members. There are currently 24 lakes open to non-member angling, as well as the Red Lake River below the dam. The angling season for non-members runs from about mid-May through October each year. At this time non-members may fish for all species except walleye.

The Red Lake Department of Natural Resources began a sport fishery assessment program in 1989 to provide baseline data on fish populations of some of the small lakes on the Reservation. These are conducted on a 4 year rotating cycle and information is used to make management recommendations. Lakes surveyed include:

**Table 6-1
Surveyed Lakes Baseline Data**

Lake Name	Acreage	Lake Name	Acreage	Lake Name	Acreage
Bass	195	Mccall	32	Shell	47
Big	393	Heart	14	Shemahgun	53
Chain of Lakes	20	Mollison	51	Squaw-Smith	14
Bigstone	10	Green (Redby)	87	Emerald	58
Round	85	Heart	16	Dickens	26
Thunders	84	Island	34	Green (Red Lake)	87
Fuller's	80	Kinney	35	Morrison	22
Birch	11	Sandy	86	Johnson	40

Source:

As mentioned above, Kinney, Island, Squaw-Smith, Heart and Green (Redby) Lakes are managed for trout species. The other lakes are managed mainly for largemouth bass, northern pike, black crappie, sunfish, and walleye. Most of the lakes receive relatively minor angling pressure, and do not require management activities such as fish stocking. A few lakes, such as Fuller's and Shemahgun, do have relatively easy access, and thus receive more angling pressure. On lakes such as these, there is the potential for management needs such as fish stocking and restricted harvest, and these have been implemented, and will continue to be so, on an as needed basis. Small lake fishery assessment reports are available at the Red Lake DNR office.

In the future, additional sampling and population estimates should be conducted on the more popular lakes to determine the contributions of the current stocking program.

Fish Hatchery Operations

The Band has operated a fish hatchery at Redby, Minnesota since it was constructed in 1924. Operation of the hatchery since that time has basically consisted of taking spawn from walleye and northern pike from the Blackduck River each spring, and incubating the eggs until hatch at the fish hatchery. Sac fry were then placed into the Red Lakes to augment natural reproduction. Some northern pike eggs and fry have been stocked at the Kiwosay reservoir each spring, to rear to fingerling size for off-Reservation sales. In the last few years, steps have been taken to increase the utility of the hatchery and increase survival of fry. These have included building a new facility, installing new hatching batteries, and monitoring and treating eggs to increase survival.

There is an ongoing debate among fisheries professionals and the public regarding the cost versus benefits of hatchery production of species like walleye, intended for lakes like the Red Lakes, which have suitable spawning habitat and naturally reproducing populations of fish. Stocking was used as a tool to recover the Red Lake walleye fishery

and was very successful management tool. Since 2005, walleye have not been stocked and good numbers of young walleye are being produced naturally. The current management plan does not prescribe the use of stocking and is based on keeping adequate numbers of mature females in the lake.

The Red Lake hatchery worked with the University of Wisconsin to explore aquaculture opportunities with yellow perch. It was found that yellow perch could not be raised feasible at this time. If yellow perch (or walleye) could be domesticated to the point where they could be raised to market size in tanks on pellet feed, they may be marketed profitably due to their high value. Little work has been done to date on valuable species such as yellow perch and walleye, but other species have been successfully domesticated and profitably reared, including catfish, and species of trout and salmon. We plan on exploring aquaculture opportunities as funds are made available, while at the same time, increasing our fish husbandry capabilities, which will have applicability to other areas of fish hatchery operations.

6.2.2 Issues and Concerns

- Sustainable utilization of the walleye population in the Red Lakes
- Improve markets for rough fish for financial and biological purposes
- Eliminate illegal sales of fish to improve fishery profits
- Eliminate illegal fishing gear to protect fish stocks
- Adequate enforcement of fish and game codes
- Strive for natural balance of fish populations
- Maintain genetic integrity
- Protect reservation from exotic aquatic species
- Water quality and fish contamination
- Spawning habitat
- Protect riparian areas
- Improve use of fish by-products for environmental reasons

6.2.3 Goals And Objectives

Goals

- Determine annual sustainable harvest levels based on population status
- Maximize production
- Minimize by catch and maximize revenues from incidental harvest of rough fish
- Adequate enforcement
- Increased capability
- Monitor predator-prey dynamics
- Limit outbreeding
- Limit/prevent introduction of exotic aquatic species

Objectives

- Outline sustainable harvest strategies
- Sustainable management
- Investigate alternative markets
- Increased enforcement
- More staff
- Better equipment
- Better training
- Additional research on forage stocks
- Research for better understanding
- Prevention/control of fish transfer/movement
- Public education
- Improved laws
- Improved enforcement of laws

6.2.4 Alternatives

Alternative 1 - No change

Continue the commercial fishery assessment program currently in place at present budget levels, including direct sampling of the commercial catch, shoreline seining for young of the year assessment, summer forage trawling survey, and experimental gill netting for catch per unit effort statistics. Continue to work, to the extent feasible, with the Red Lakes Fisheries Technical Committee to sustainably utilize the Red Lakes walleye stocks. Continue to provide reports and management recommendations to the Tribal Council and the commercial fishery. Continue to assist tribal game enforcement staff to enforce Tribal fishing regulations. Continue monitoring sport-fishing lakes on a four year cycle, or as recommended by the Department, and provide management recommendations and carry out management activities as required. Continue to operate the fish hatchery as before, spawning and incubating walleye and northern pike, as warranted to stock in reservation waters. Continue to explore aquaculture potential of yellow perch and other species through experimentation and demonstration projects with the University of Wisconsin as funds are made available.

Alternative 2

Continue the commercial fishery assessment program currently in place, and expand management activities to include additional research projects identified by the Red Lake Fisheries Technical Committee and Red Lake Department of Natural Resources. Continue to work with the Red Lakes Fisheries Technical Committee to sustainably utilize and protect the Red Lakes walleye stocks. Increase enforcement of the Tribal commercial fishing regulations currently in place, as well as new regulations as they are implemented.

Increase sport fishery management activities to include surveys and management of additional lakes. Consider promotion of Reservation fishing by non-members as a viable alternative to fishing State waters through the Casinos. Perform boat landing and habitat improvement projects in these smaller lakes when funds become available. Consider special regulations for members and non-members on a per lake basis to protect certain stocks of fish, and develop trophy fishing opportunities.

Continue to operate the fish hatchery as before, spawning and incubating walleye and northern pike, and then stocking into the small lakes as warranted. Continue to explore aquaculture potential of yellow perch through experimentation and demonstration projects with the University of Wisconsin as funds are made available, and possible increase aquaculture rearing space.

This alternative would necessitate an additional biologist and technician, as well as increased enforcement staff for the Law Enforcement Division.

Additional Staffing Needs (does not include increased law enforcement needs):

Biologist & Technician:	\$82,000
Support:	\$30,000

Alternative 3

Continue the commercial fishery assessment program currently in place, and in addition, employ an additional fishery research biologist and support staff to conduct additional research activities to protect the commercial fish stocks. This would involve population modeling, special research projects, and a determination of the best harvest methods for individual species. Increase Law Enforcement staff by at least two conservation officers, with the responsibility of enforcing all regulations pertaining to commercial fishing.

Increase sport fishery management activities to include surveys and management of additional lakes. Consider promotion of Reservation fishing by non-members as a viable alternative to fishing State waters through the Casinos. Perform boat landing and habitat improvement projects in these smaller lakes when funds become available. Expand surveys to include rivers and streams on the reservation. Consider special regulations for members and non-members on a per lake basis to protect certain stocks of fish, and develop trophy fishing opportunities.

Expand fish production capabilities in areas other than walleye and northern pike. This may include production of species such as trout for stocking small lakes, and further development of aquaculture operations. Possibly develop a sturgeon rearing program to assist in the recovery of this species on the reservation. This alternative would require a fish production specialist, and additional equipment and modifications to the fish hatchery.

This alternative would necessitate an additional biologist, fish production specialist, and technician. Procurement of walleye eggs would require extra cost.

Additional Staffing Needs (does not include increased law enforcement needs):

Biologist & Technician: \$125,250

Support: \$45,000

6.2.5 Decision Matrix

Description of Issues/Concerns	Addresses issue/concern?		
	Alternative 1	Alternative 2	Alternative 3
1. Sustainable utilization of the walleye population	Yes	Yes	Yes
2. Improve markets for rough fish	No	No	No
3. Eliminate illegal sales of fish to improve fishery profits	No	Likely	Likely
4. Eliminate illegal fishing gear to protect fish stocks	No	Likely	Likely
5. Adequate enforcement of fish and game codes	No	Likely	Likely
6. Strive for natural balance of fish populations	No	Likely	Likely
7. Protect reservation from exotic aquatic species	No	No	No
Description of Goal	Meets goal?		
	Alternative 1	Alternative 2	Alternative 3
1. Sustainable Harvest	Yes	Yes	Yes
2. Maximize production	Likely	Likely	Likely
3. Minimize by catch and maximize revenue from rough fish	No	No	No
4. Adequate enforcement	No	Likely	Likely
5. Increased capability	No	Likely	Likely
6. Restore predator-prey dynamics	Likely	Likely	Likely
7. Limit/prevent introduction of exotic aquatic species	No	Likely	Likely
Description of Objective	Meets goal?		
	Alternative 1	Alternative 2	Alternative 3
1. Restrict harvest	Yes	Yes	Yes
2. Adaptive management strategies	Unknown	Unknown	Unknown
3. Investigate alternative markets	No	No	No
4. Increased enforcement	No	Yes	Yes
5. More staff	No	Yes	Yes
Better equipment	No	Yes	Yes
Better training	No	Yes	Yes
6. Research what caused the imbalance	No	Yes	Yes
7. Public education	Yes	Yes	Yes
Improved laws	Yes	Yes	Yes
Improved enforcement of laws	No	No	No

6.2.6 Integrating Resource Management

To provide increased integration of the overall management of Red Lakes natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Fisheries Resource**.

Cultural and Traditional Resource

1. Cooperate to ensure fish population management and regulation are within the cultural traditions of the Band

Wildlife Resource

1. Coordinate when practices have the potential to effect fisheries or wildlife populations
2. Cooperate on regulation of development of wetlands and wetland structures – monitor effects on fish and wildlife populations

Forest Resource

1. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat
2. Work together to implement best management practices (BMPs) to prevent erosion and maintain water quality and fish habitat

Water Resource

1. Coordinate to sample lakes and formulate updated fish consumption advisories. Share data collected with the Tribal Conservation Department so they can relay the information to the public
2. Cooperate on the collection of data on the overall productivity of Tribal lakes and streams
3. Cooperate on monitoring and managing lake levels to promote water quality and fish habitat
4. Cooperate on studying lake level fluctuations effect on spawning habitat
5. Lake levels should be managed to promote water quality and fish spawning and nursery habitat.

Wetland Resource

1. Cooperate on detection and control of nuisance aquatic species, such as purple loosestrife
2. Cooperate and coordinate on the use of impoundments for fish rearing

Environmental Protection

1. Cooperate on methods to reduce fisheries byproducts (fish waste)
2. Coordinate to ensure protection of fish habitat

Conservation Enforcement

1. Cooperate and coordinate to ensure fishery regulations are enforced

6.2.7 References

- Avery, Carlos. 1918. *Minnesota's Experiment in State Fishing*. Trans. Am. Fish. Soc., 48: No. 1, pp. 57-64.
- Boussu, Marvin F. 1966. A Review of the Indian Commercial Fishery at Red Lakes, Minnesota, Including Recommendations Regarding the Fishery and Applications to the Establishment of Other Indian Commercial Fisheries. U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries. 19 pp.
- Bushong, D. L. 1990. Fecundity and Egg Quality in Exploited Walleye *Stizostedion vitreum vitreum* Populations. M.S. thesis. University of Minnesota, Saint Paul, MN. 70 pp.
- Close, T. L. 1978. A Quantitative Creel Census of Upper Red Lake, Minnesota, 1976-77. MN DNR, Div. Of Fish and Wildl., Sect. Fisheries, Fish Mgmt. Report 9, St. Paul, Minnesota, USA.
- Cyterski, M. J. 1995. A Growth History of Red Lake Walleye *Stizostedion vitreum* Developed Through Scale Analysis. M.S. thesis. University of Minnesota, Saint Paul, MN. 140 pp.
- Cyterski, M. J., and G. R. Spangler. 1996. A Tool for Age Determination. North American Journal of Fisheries management 16: 403-412.
- Elwell, A. S., B. J. R. Gudmundson, C. S. Holt, K. Lundberg, J. A. Oliphant, and D. L. Thompson. 1973. Environmental Assessment of the Red Lake Project, Minnesota, for the St. Paul District, Corps of Engineers. 114 pp. (With appendices).
- Heyerdahl, E. G. 1971. Annual Catch of Yellow Perch from the Red Lakes, Minnesota, in Relation to Growth Rate and Fishing Effort. Agric. Exp. Stn., Univ. Of Minn. Tech. Bull. 285.
- McClure, A. 1992. The Impact of Young-of-the-Year Yellow Perch on Zooplankton in the Red Lakes, Minnesota. M.S. thesis. University of Minnesota, Saint Paul, MN. 104 pp.
- Miller, L. M. 1992. Genetic Alteration of Fish Size by a Size-Selective Fishery. M.S. thesis. University of Minnesota, Saint Paul, MN. 54 pp.
- Ney, J. J., and L. L. Smith. 1975. First-Year Growth of the Yellow Perch *Perca flavescens* in the Red Lakes, Minnesota. Trans. Am. Fish. Soc. 104: 718-725.

- Palmer, E. E. 1993. Seasonal Ovarian Development of Freshwater Drum *Aplodinotus grunniens* in the Red Lakes, Minnesota. M.S. thesis. University of Minnesota, Saint Paul, MN. 53 pp.
- Pereira, D. L. 1992. Dynamics and Biochronology of Freshwater Drum *Aplodinotus grunniens* in the Red Lakes, Minnesota. Ph.D. thesis, University of Minnesota, Saint Paul, MN. 115 pp.
- Pereira, D.L., C. Bingham, G.R. Spangler, D.J. Conner, and P.K. Cunningham. 1994. Construction of a 110-year Biochronology from Sagittae of Freshwater Drum (*Aplodinotus grunniens*), In D.H. Secor, J.M. Dean, and S.E. Campana [ed.] New developments in fish otolith research. University of South Carolina Press, Columbia, SC.
- Pereira, D.L., C. Bingham, G.R. Spangler, Y. Cohen, D.J. Conner, and P.K. Cunningham. 1995. Growth and Recruitment of Freshwater Drum (*Aplodinotus grunniens*) as Related to Long-Term Temperature Patterns, In R.J. Beamish [ed.] Climate change and northern fish populations. Canadian Special Publication of Fisheries and Aquatic Sciences 121.
- RLDNR, 1987-94. Quarterly and annual reports of the Red Lake Department of Natural Resources.
- Shroyer, S. M. 1991. Growth of Red Lakes Walleye from the 1940s to the 1980s. M.S. thesis. University of Minnesota, Saint Paul, MN. 104 pp.
- Smith, L. L. Jr., L. W. Krefting, and R. L. Butler. 1951. Movements of Marked Walleyes *Stizostedion vitreum vitreum* (Mitchill), in the Fishery of the Red lakes, Minnesota. *Trans. Am. Fish. Soc.* 81: 179-196.
- Smith, L. L. Jr., and L. W. Krefting. 1953. Fluctuations in Production and Abundance of Commercial Species in the Red Lakes, Minnesota, with Special Reference to Changes in the Walleye Population. *Trans. Am. Fish. Soc.* 83: 131-160.
- Smith, L. L. Jr. 1958. Indian Fishery on the Red Lakes. *Minnesota Conservation Volunteer*. Vol. 21, No. 122: 43-47.
- Smith, L. L. Jr., and R. L. Pycha. 1960. First Year Growth of Walleye *Stizostedion vitreum vitreum* (Mitchill), and Associated Factors in the Red Lakes, Minnesota. *Limnol. Oceanogr.* 5: 281-290.
- Smith, L. L. Jr., and R. L. Pycha. 1961. Factors Related to Commercial Production of the Walleye in Red Lakes, Minnesota. *Trans. Am. Fish. Soc.* 90: 190-217.

- Smith, L. L. Jr. 1977. Walleye *Stizostedion vitreum vitreum* and Yellow Perch *Perca flavescens* of the Red Lakes, Minnesota, 1930-75. *J. Fish. Res. Board Can.* Vol. 34: 1774-1783.
- Stone, Frank. 1992. Fishery Assessment of Seven Lakes on the Red Lake Indian Reservation, 1991. Project completion report, U. S. Fish and Wildlife Service. 27 pp.
- United States Government. 1992. Commercial Fishing on Red Lake Indian Reservation. Pp. 594-595. In *United States Code of Federal Regulations*, Title 25, Part 242.
- USFWS, 1991. Results from the 1990 Fisheries Assessment Survey Conducted on the Red Lake Indian Reservation. Project completion report, U. S. Fish and Wildlife Service. 67 pp.
- Van Oosten, J., and H. J. Deason. 1957. History of the Red Lakes fishery, 1917-38, with Observations on Population Status. U.S. Dept. Of Interior, Fish and Wildlife Service. Special Scientific Report - Fisheries No. 229. 63 pp.

6.2.8 Acronyms and Terms

Catch per unit of effort: A method of reporting the catch of a given species of fish from a fishing event. It is usually reported as the number or pounds of fish caught per net.

Young of the year: Refers to fish that were hatched in the year in question, and that have been alive less than one year.

Experimental gill net: A gill net used by assessment agencies to assess catch per unit of effort of fish of various sizes. The Red Lake DNR uses a 6' x 250' net with five, 50' panels of mesh sizes, varying from 1" to 4" stretch measure.

Shoreline seine: A small mesh net used near shore in the summer months, to assess production of young of the year game fish, as well as forage fish diversity. The Red Lake DNR uses a seine that is 4' x 100', with a mesh size of 3/8".

RLDNR: Red Lake Department of Natural Resources

Sac fry: Newly hatched fish that are generally less than one week old, and still possess a yolk sac to provide food during their first few days of life.

Units of Measure

ft. = feet

lbs. = pounds

in. = inches

This page left intentionally blank.

6.3 The Wildlife Resource

6.3.1 Description of the Affected Environment

The Red Lake Reservation may have the most diverse wildlife species assemblage of any reservation in the Great Lakes Region, and possibly in the United States. It is positioned between three major biomes: the northern boreal forest to the north, the eastern edge of the prairie to the west, and hardwoods to the southeast. Habitats on the Reservation consist of a diverse mix of upland forest, wetlands, lakes, streams, and prairie remnants in which wildlife thrive.

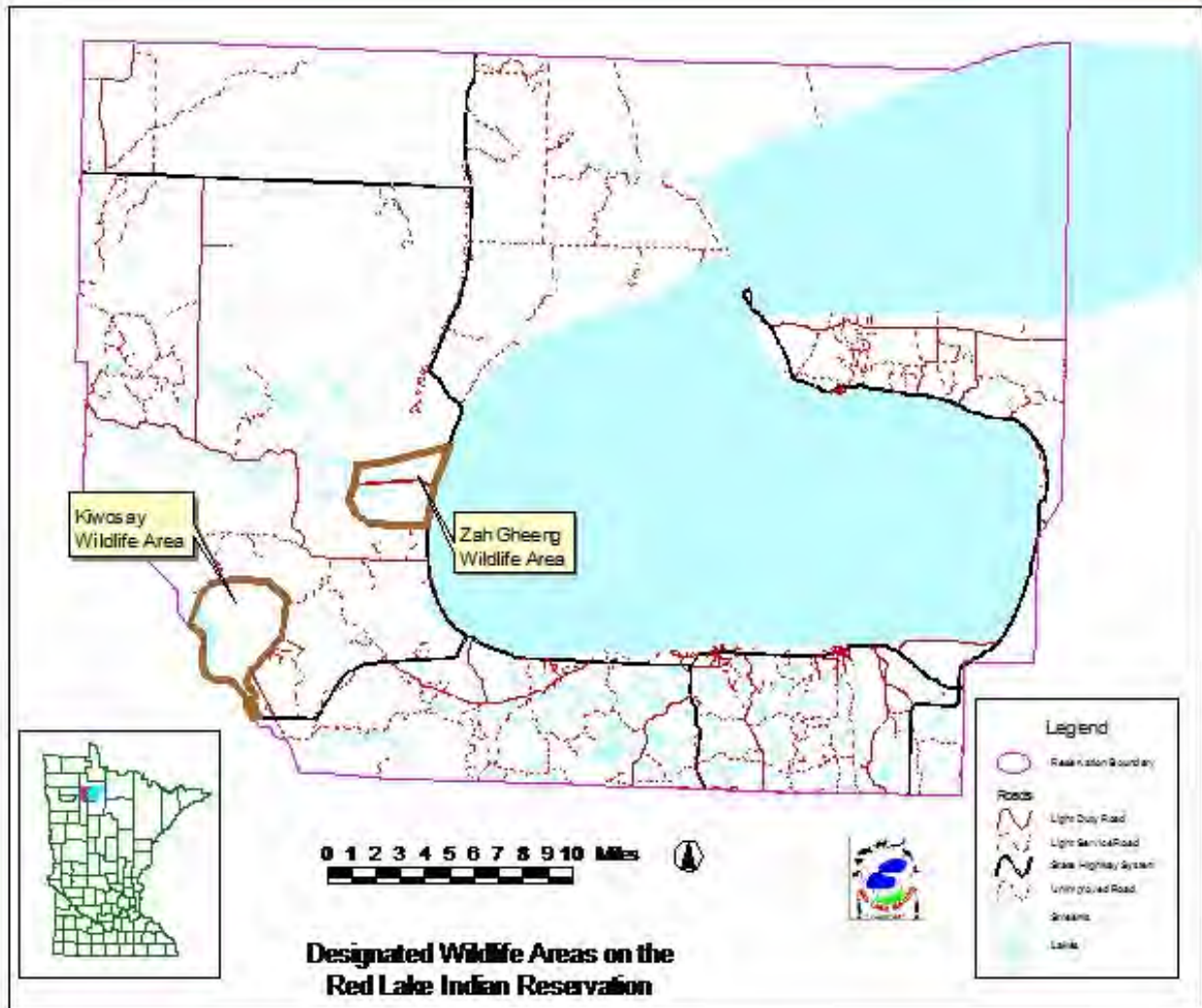
There is great mammalian diversity here. Common species include; Moose, whitetail deer, American elk, gray wolf, coyote, red and gray fox, black bear, bobcats, Canadian lynx, beaver, muskrat, river otter, striped skunk, badger, weasels, mink, fisher, marten, raccoon, porcupine, squirrels, chipmunks, woodchuck, rabbits and hares, shrews, pocket gophers, voles, and bats. Woodland caribou were common until about the turn of the century, but declined with increasing white-tailed deer numbers. Sightings of mountain lions have been recorded.

Bird species (residents and migrants) are also well represented, and include the following forms: many species of waterfowl and water birds (ducks, geese, swans, loons, grebes, cormorants, gulls, pelicans, terns), many species of shorebirds and wading birds (cranes, herons, rails, avocets, plovers, sandpipers, snipe, godwits, and phalaropes), a number of upland game species (ruffed, spruce, and sharp-tailed grouse, greater prairie chickens, gray partridge and American woodcock), many birds of prey (bald and golden eagles, a number of hawks, falcons, and owls, ospreys, vultures) Pigeons, doves, nighthawks, whip-poor-will, hummingbirds, kingfishers, a number of woodpeckers, many species of resident and migrant perching birds and songbirds (flycatchers, larks, swallows and swifts, crows and ravens, jays, titmice, chickadees, nuthatches, creepers, wrens, kinglets, gnatcatchers, thrushes, shrikes, waxwings, vireos, warblers, blackbirds, starlings, tanagers, finches, sparrows, and buntings).

Many species are important to Tribal members for food, as well as for cultural, medicinal, and subsistence activities. The use of specific wildlife species for cultural purposes is discussed in the Cultural Resources section.

Little is known about many wildlife populations inhabiting the Reservation, as lack of financial and human resources have historically limited the Band's ability to conduct wildlife surveys and management activities. During the past 13 years, the Band has expanded its wildlife monitoring capability. Currently, 3 full-time Biologists, 2 full-time Technicians and one seasonal trapper are on staff, and temporary positions (University Interns and Graduate Students) are often hired to support research and special projects. Most positions are largely dependant on external funding sources (grants and awards).

This page left intentionally blank.



Source:

Figure 6-1
Designated Wildlife Areas on the Reservation

This page left intentionally blank.

Species that have received some attention, in terms of population monitoring and management activities, include: moose, whitetail deer, gray wolf, black bear, bald eagle, American woodcock, ruffed grouse, small mammals, furbearers, American bitterns and waterfowl.

There are two designated wildlife areas on the Reservation: the Kiwosay and Zah-Gheeng Wildlife Areas (**Figure 6-1**). The Kiwosay is located in the south-west corner of the reservation, and borders the Clearwater River while the Zah-Gheeng Wildlife Area is located just to the west of the Red Lake dam, and surrounds the eastern-most portion of the Red Lake River. Both areas were conceived, designed, and built in the 1960s with assistance from the U.S. Bureau of Sport Fisheries and Wildlife (now known as the U.S. Fish and Wildlife Service), as a means to offset some of the detrimental impacts to wildlife caused by the U.S. Army Corps of Engineers' channelization of the Red Lake and Clearwater Rivers for downstream flood control. Management activities on these areas have primarily been for waterfowl and furbearers. Unfortunately, neither of these areas functions as originally intended. The principal problem at the Kiwosay has been floating peat mats, which have occurred as a result of cattail infestation. The floating peat mats have reduced the open-water area of the reservoir, and reduced utility of waterfowl nesting islands that were constructed in the reservoir. At the Zah-Gheeng, inlet channels constructed to flood the marsh with water from Lower Red Lake have not operated as intended. Water does get into the marsh, but remains at relatively low levels, with little flow-through.

The Good Lake area is a more recent flood control project that created a 1,600 acre shallow water impoundment. Although the primary purpose of this impoundment is for flood control, actions have been undertaken to increase the areas' utility for wildlife. These include construction of waterfowl nesting islands in the impoundment and construction of a fish trap, should the Band decide to rear fish in the reservoir. The Band has control of the water level in the reservoir, and may operate the control structures to achieve minimal pool bounce during the waterfowl nesting season. Although this may conflict with flood control purposes, the Band has the final say on how the reservoir is managed. More recently, a large waterfowl habitat enhancement project, promoting use by migrating and breeding waterfowl and shorebirds was completed at this site. This area may become a designated wildlife management area in the future, to be managed primarily for waterfowl and furbearers.

The Band purchased a 2,500-acre cultivated wild rice farm ("Red Lake Farm") in 1996, and has since invested considerable resources to improve local wildlife habitats. Most efforts were designed to increase use by migrating and breeding waterfowl. Since 1997, three North American Wetlands Conservation Act (NAWCA) projects, 2 Tribal Wildlife Grants-sponsored projects, and a number of Bureau of Indian Affairs' Circle of Flight-sponsored projects have been conducted at this project site, which includes the ARed Lake Farm@ and adjacent Kiwosay Wildlife Area. These projects were supported by a

variety of partners, including federal, state, county, and private natural resources organizations. The area has since become a showcase example of the successful coexistence between agriculture and effective wildlife management in northwest Minnesota. Wildlife populations using the site provide rich educational, research, and viewing opportunities for tribal youth, students from local universities, and wildlife enthusiasts. Project activities have been highlighted in a number of publications (Minnesota Waterfowler and the National Wetlands Newsletter) and during presentations at a number of professional meetings.

Generally, harvest of wildlife species from Red Lake lands is regulated in two ways: the Red Lake Code of Indian Offences, Title X Game and Fish, Chapter 1000, Game and Fish Code; and through specific resolutions of the Tribal Council. The Game and Fish Code lays out the framework for what constitutes an illegal activity, legal jurisdiction, and penalties. Seasons and limits for Band members and non-Band members (**Table 6-2**) have typically been set via Tribal Council resolutions. A provision of the Game and Fish Code allows for the taking of certain federally protected species for ceremonial purposes by special Tribal Council permit.

Table 6-2
Seasons and Limits for the Taking of Wildlife on the Red Lake Reservation

Red Lake Band Members			
Species	Season	Limits (Daily/ Combined)	Special Conditions
Whitetail deer	Sept. 15 - December 31	None	
Moose	CLOSED	NA	Harvest prohibited in 2000
Elk	Sept. 15 - December 31	None	
Bear	Sept. 15 - December 31	None	
Ruffed/Spruce grouse	Year-round	None	
Sharp-tailed grouse	Year-round	None	
Waterfowl	Year-round	None	2 closed refuges
Cottontail rabbit	Year-round	None	
Snowshoe hare	Year-round	None	
Furbearers	Mid-October-May 2	None	CITES tags requires for some
Non-Band Members			
Species	Season	Limits (Daily/ Combined)	Special Conditions
Whitetail deer	Coincides with State Zone 1 Season	1	NW Angle only

Non-Band Members			
Species	Season	Limits (Daily/ Combined)	Special Conditions
Moose	No Season	NA	
Bear	No Season	NA	
Ruffed/Spruce grouse	Seasons and Limits same as state		Ceded lands only
Sharp-tailed grouse	Seasons and Limits same as state		Ceded lands only
Waterfowl	Set by Federal guideline		Western Portion of Diminished only
Cottontail rabbit	Seasons and Limits same as state		Ceded lands only
Snowshoe hare	Seasons and Limits same as state		Ceded lands only
Furbearers	No Season		

Source:

Historically, the Red Lake Band of Chippewa Indians has avoided implementing restrictions on its members for the taking of fish, game, and fur. This has been done to help retain the traditional ways of the Band, making wildlife resources available to members for subsistence harvest. With increases in the Reservation population leading to increased stress on wildlife populations, there is a need to consider additional regulations on the taking of fish, game, and fur to preserve wildlife for future generations.

Historically, the two most important big game species were white-tailed deer and moose. Hunting for deer and moose has important social and cultural implications and has been an annual fall ritual for many Band members to stock up on food for the coming winter. During the past 15 years, moose numbers in northwest Minnesota have declined dramatically and Red Lake closed its moose season in 2000. There is currently a 4-month big game hunting season, with no limit on the number of animals a Band member may take. The potential for over harvest is increasing and has been a controversial issue. Some have expressed concerns about the rights of Band members to hunt, fish, and gather resources without interference from authorities. From a resource management standpoint, it would be extremely desirable to know how many big game animals are taken each year. This would allow the overall condition of the herds to be evaluated, and allow managers to determine if harvest occurs at sustainable levels. This would necessitate mandatory big game registration, something that the Tribal Council has not allowed in the past.

Whitetail deer are difficult to census from the air, due to their small size and use of dense cover during winter. An annual aerial census for whitetail deer would also be very expensive. Pellet counts have been used in the past but are considered somewhat unreliable. Voluntary registration of whitetail deer has been tried on other Reservations, with mixed results. This method could be tried at Red Lake, if mandatory registration remains a concern. Mandatory registration of non-member harvested deer at the Northwest Angle is conducted annually to determine the number, sex, and age of whitetail deer harvested, and to screen for potential disease. Voluntary registration of deer (for disease detection) has been conducted on the Diminished reservation since 2005. This type of data should be collected annually for the data to be most useful for deer population management. It would be very beneficial to have similar harvest data from all Tribal lands.

Although some Band members hunt black bear, the numbers taken are assumed to be small, largely because the black bear represents one of the clans of the Red Lake Band of Chippewa Indians. Bears can become a nuisance at certain times. Bears are abundant at Red Lake, and often use food sources associated with people and homes, when natural foods aren't available. Red Lake wardens spend substantial amounts of time during the summer months trapping and relocating nuisance bears. In 1995, 38 adult bears were live-trapped and relocated to remote areas, six adult bears were destroyed, and six were killed in automobile accidents.

During recent years, attempts have been made to remove the gray wolf from the federal endangered species list. Red Lake had a Delegate sitting on the Minnesota Wolf Management Roundtable in the late 1990's, assisting the state in developing a wolf management plan. The Band is currently conducting a project that will inventory wolf numbers and distribution on all Red Lake lands and culminate in the development of its own tribal wolf management plan, promoting wolf protection through effective management. This plan could be in place as early as fall, 2010.

Feral animals can have considerable impact on wildlife populations. Wild dogs are known to kill deer and can severely limit local populations, when allowed to become established, and several dog attacks of people have occurred during recent years. Deer are particularly vulnerable to unsupervised dogs during winter (in deep snow) and during the fawning season. Some of these pets are abandoned by their owners and others are simply left unsupervised for extended periods. Care should be taken by owners to ensure their pets are not a threat to people and local wildlife populations.

Waterfowl hunting is enjoyed by a number of Band members, and the Tribal Council sells a number of waterfowl permits to non-Band members each year. Overall, hunting pressure on waterfowl on the Reservation may be considered low. A number of management activities to increase waterfowl populations have been undertaken, including installation and maintenance of wood duck houses, construction of nesting

islands in shallow-water impoundments, and renovation of water control structures in impoundments on the main block of the Reservation and in the Ceded Lands. Some of the areas where active management has taken place include the Red Lake Farms, Kiwosay Wildlife Area, the Good Lake Impoundment, the Manweiler Impoundment, and the Schilling Impoundment. Many of these activities have been possible due to funding from the BIA's Circle of Flight Program.

The Band recently conducting a Circle of Flight-sponsored waterfowl nest success study at Red Lake, designed to evaluate factors that affect production from available habitats. During the past 10 years, over a million dollars have been invested in projects that promote use of Red Lake lands by migrating and breeding waterfowl, as well as a wide variety of other wetland and grassland-dependant wildlife populations.

Hunting of ruffed, sharp-tailed, and spruce grouse is a popular pastime of Band members, but it is not known how many are taken each year. The Tribal Council sells a limited number of small game permits to non-members to hunt grouse and snowshoe hares in the Ceded Lands. Surveys are used to track spring populations of grouse. The Band participates in the Minnesota DNR's annual interagency ruffed grouse drumming counts, which allow managers to track population trends throughout the state. These counts will continue and likely be expanded on reservation lands, allowing for identification and more effective management of ruffed grouse habitats. Increased coordination with Forestry personnel may lead to timber harvesting techniques that provide varying ages of aspen stands known to promote grouse populations. An unknown number of cottontail rabbit and snowshoe hares are taken each year by Band members by hunting and with the use of snares.

An annual American woodcock singing ground survey is performed each spring, in cooperation with the United States Fish and Wildlife Services' North American Woodcock Singing Ground Survey Program. Four routes are run each spring. Data from the surveys are incorporated into the national database to forecast trends in woodcock populations in North America.

Trapping of furbearers is an important pastime and income source for some Band members. There is only limited information available on the numbers and kinds of furbearers taken each year. The Band has an agreement with the State to tag certain species (fisher, marten, otter, and bobcat) for transport off of the Reservation. An example of data collected during two seasons is presented in Table 6-3 on the following page:

**Table 6-3
Furbearer Data Collection**

Species	1993-94		1994-95	
	Male	Female	Male	Female
Fisher	23	8	74	27
Bobcat	2	3	6	6
Otter	12	2	54	10
Marten	1	0	0	0
Lynx	0	0	0	0

Source:

The Band participates in the Minnesota DNR's Interagency scent post survey, designed to track furbearer populations across the state, and has modified and expanded surveys on Tribal lands to provide another source of valuable data to assist in effectively managing predator populations. Additionally, waterfowl and wetland enhancement activities have likely increased muskrat and beaver populations on the Reservation.

Several threatened and endangered species, as well as Minnesota species of special concern, are found on Red Lake lands, including gray wolves, Canada lynx, Wilson's phalaropes, common terns, and snapping turtles. Due to a lack of financial resources, a complete inventory of rare mammals, birds, amphibians, reptiles, fish, mollusks, insects, and plants has not been conducted. State and Federal lists identifying these species are available through the Minnesota DNR's Natural Heritage and Nongame Research Program and the U. S. Fish and Wildlife Service. Regional inventories have probably been conducted and could be used to develop a list of rare species likely found on Red Lake lands. When funding allows, rare species should be given special attention with regard to management activities. The Band participates in the National Eagle Repository Program, records incidental observations of bald eagle nests, and keeps informed on the changing status of other rare birds and mammals. The Band participated in the Minnesota Wolf Management Roundtable and will continue to be involved in the future management of wolves in the state.

6.3.2 Issues and Concerns

- Provide adequate numbers of big and small game species for sustained harvest by Band members
- Lack of wildlife management personnel and funding
- Providing adequate enforcement of all fish and game codes
- Maintain or increase diversity of natural habitats
- Protect wildlife populations from damage caused by feral animals (i.e., dogs)
- Establishment of additional wildlife refuges
- Nuisance animal control (i.e., beaver and bears)

6.3.3 Goals and Objectives

Goals

- Establish/expand big and small game population monitoring programs
- Develop methods that provide data on annual big game harvest
- Increase habitat quality and availability
- Hire additional wildlife management personnel and seek out additional sources of funding
- Increase capability of enforcement division
- Evaluate current land use and practices
- Identify and quantify natural habitat types
- Reduce numbers of feral animals
- Identify and protect critical habitats when warranted
- Reduce numbers of nuisance animals

Objectives

- Establish seasons and bag limits based on biological information
- Establish mandatory or voluntary registration and/or conduct hunter surveys
- Implement proven habitat management techniques
- Seek out additional sources of funding to support wildlife staff
- Hire additional enforcement personnel, provide advanced training, and supply necessary equipment
- Produce habitat and land-use maps using air photo interpretation and digitization
- Use a geographic information system (GIS) to assist with land use planning
- Provide public education and active removal of feral animals
- Keep records of rare habitats or sites and provide public education to gain support for restricted use of identified sites
- Public education and active removal of problem animals

6.3.4 Alternatives

Alternative 1 - No change

Continue the wildlife program as it currently exists utilizing existing staffing levels (three full-time Biologists and 2 Technicians, and additional seasonal personnel when needed and funding levels allow). Because current funding for the Wildlife Program is largely dependant on grant dollars, a commitment should be made to fund the Biologist and Technician positions with Self Governance Program dollars.

Continue to conduct waterfowl enhancement activities and research at the Red Lake Farm and Kiwosay Wildlife Area, the Zah-Gheeng Wildlife Area, the Good Lake area, and the Ceded Lands, to the extent that financial and human resources are available. We could also continue to participate in the United States Fish and Wildlife Services' North American Woodcock Singing Ground Survey Program, and collect information on spring ruffed grouse populations to monitor population levels and trends. Furbearer populations would continue to be monitored as part of the annual fall scent post survey, coordinated by the Minnesota DNR. However, limited information would be available for aquatic and semi aquatic species (i.e., beaver, muskrat, and river otter).

Limited research on big game species inhabiting Red Lake lands will occur. There would be limited disease monitoring of the whitetail deer populations and no attempt to determine numbers taken by Tribal members. We would continue to monitor numbers of whitetail deer taken by non-Band members in the Northwest Angle deer hunt, to the extent that financial and human resources are available.

Alternative 2

Expand wildlife research and habitat enhancement activities on Tribal lands, focusing on species most important to Band members (i.e., whitetail deer, moose, waterfowl and ruffed grouse). This would likely require additional wildlife staff and funding. (a minimum of 3 full-time field Biologists and 3 Technicians, as well as seasonal personnel when needed and funding levels allow). When funding allows, the wildlife program would strive to gain recognition and potential funding by conducting research and publishing in peer reviewed journals, contributing to the scientific literature, Red Lake's wildlife database, and the preservation of Red Lake's wildlife resources.

Continue to conduct waterfowl enhancement activities and research at the Red Lake Farm and Kiwosay Wildlife Area, the Zah-Gheeng Wildlife Area, the Good Lake area, and the Ceded Lands, to the extent that financial and human resources are available. Populations and trends for woodcock and furbearers would continue to be assessed through annual surveys. Spring breeding populations of ruffed grouse would continue to be monitored, but research would be expanded to identify critical habitats and factors limiting populations. Long-term ruffed grouse monitoring and habitat management would be initiated to increase grouse populations on Tribal lands. Continue existing monitoring and develop a limited furbearer management program, which would include a review of all available data on trapping, including analysis of tagging and stamping data. Recommend any necessary changes to current practices to improve the type of information being collected.

Develop a small-scale whitetail deer management program for the Reservation. This would include collecting biological information (age, sex, and weight) on deer harvested by Band members, and attempting to determine annual harvest by Band

members, possibly through the use of a voluntary registration program or survey of hunters. Additionally, deer and moose population monitoring techniques would be developed and habitat use evaluated. These techniques would have to be ongoing to accumulate meaningful data. We would continue to monitor numbers of whitetail deer taken by non-Band members in the Northwest Angle deer hunt, to the extent that financial and human resources are available.

Work with Forestry to modify timber harvest plans and sales to be more beneficial to wildlife. This would include wildlife program review of all proposed timber sales.

Promote increased enforcement of game codes throughout the Reservation by adding one additional game warden to law enforcement staff. This option would also require an increase in the law enforcement budget to accommodate an additional warden.

Additional Staffing Needs (does not include increased law enforcement needs):

Biologist & Technicians:	\$90,000
Support:	\$45,000

Alternative 3

Expand wildlife research, habitat enhancement and management on Tribal lands, including development of a big game management program designed to increase populations of deer and moose on Tribal lands. This would require a considerable increase in funding and personnel (a minimum of 3 or 4 full-time Biologists, 3 Technicians, and seasonal personnel). The wildlife program would regularly design and conduct research with intent of publishing results in peer reviewed journals. By contributing to the scientific literature, the program would gain recognition and likely attract additional funding, promoting the preservation of Red Lake's wildlife resources.

Continue to conduct waterfowl enhancement activities at the Red Lake Farm and Kiwosay Wildlife Area, the Zah-Gheeng Wildlife Area, the Good Lake area, and the Ceded Lands, to the extent that financial and human resources are available. Populations and trends for woodcock would continue to be monitored and research on furbearer populations would be expanded. The furbearer management program would include a review of all available data on trapping, including analysis of tagging and stamping data, and surveys and analysis of population trends. Spring breeding populations of ruffed grouse would continue to be monitored, but research would be expanded to identify critical habitats and factors limiting populations. Long-term ruffed grouse monitoring and habitat management would be initiated to increase grouse populations on Tribal lands.

Develop a big game management program for the Reservation, focusing on whitetail deer, moose, and black bear. Develop and improve censusing techniques for these big

game species. Design a big game registration program (voluntary or mandatory) to obtain estimates of annual big game harvest. Perform research necessary to evaluate available habitats and determine factors limiting populations of deer and moose on Tribal lands, and conduct habitat enhancement projects designed to increase populations. We would continue to monitor numbers of whitetail deer taken by non-Band members in the Northwest Angle deer hunt, to the extent that financial and human resources are available.

Work with Forestry to modify timber harvest plans and sales to minimize negative impacts to wildlife populations. This would include modification of the Band’s timber use policy statement to require an integrated review and approval of all timber harvest plans.

Develop a non-game wildlife program for the Reservation. Expand wildlife censusing and management techniques to include non-game species such as bald eagle, sandhill cranes, white pelicans, common terns, and gray wolf. Inform the public about the importance of non-game species to the natural environment and recommend ways to enhance non-game wildlife habitat and populations. Provide assistance with control of nuisance animals, such as domestic dogs, beaver, black bear and other wildlife species.

Promote increased enforcement of game codes throughout the Reservation by adding two additional game wardens to the law enforcement staff. This alternative would require an increase in the law enforcement budget to accommodate the two additional wardens.

Additional Staffing Needs (does not include increased law enforcement needs):

Biologists and Technicians:	\$120,000
Support:	\$ 60,000

6.3.5 Decision Matrix

Description of goal	Meets goal?		
	Alt. 1	Alt. 2	Alt. 3
Establish/expand big and small game population monitoring program	No	Yes	Yes
Develop methods that provide data on annual big game harvest	Unlikely	Likely	Yes
Increase habitat quality and availability	No	Likely	Yes
Hire additional personnel and seek additional funding sources	Unlikely	Likely	Yes
Increase capability of enforcement division	No	Likely	Yes
Evaluate current land use and practices	No	Likely	Yes
Identify and quantify natural habitat types	No	Yes	Yes
Reduce number of feral animals	No	Likely	Yes

Description of goal	Meets goal?		
	Alt. 1	Alt. 2	Alt. 3
Identify and protect critical habitats when warranted	Unlikely	Yes	Yes
Reduce numbers of nuisance animals	No	Likely	Yes
Establish seasons and bag limits based on biological information	No	Unlikely	Likely
Establish mandatory or voluntary registration and/or conduct hunter surveys	Unlikely	Likely	Yes
Implement proven habitat management techniques	No	Unlikely	Yes
Seek out additional sources of funding to support wildlife staff	Unlikely	Likely	Yes
Hire additional enforcement personnel, provide advanced training, and supply necessary equipment	No	Likely	Yes
Produce habitat and land-use maps using air photo interpretation and digitization	No	Unlikely	Yes
Use a geographic information system (GIS) to assist with land use planning	No	Unlikely	Yes
Public education and active removal of feral animals	No	Unlikely	Yes
Keep records of rare habitats or sites and provide public education to gain support for restricted use of identified sites	No	Unlikely	Yes
Public education and active removal of problem animals	No	Unlikely	Likely

6.3.6 Integrating Resource Management

To provide increased integration of the overall management of Red Lake's natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Wildlife Resource**.

Cultural and Traditional Resource

1. Cooperate to ensure that wildlife population management and regulation are in line with the cultural traditions of the Band
2. Cooperate to ensure the focus of management efforts are on wildlife species most important to Band members

Fishery Resource

1. Coordinate when practices have the potential to effect fisheries or wildlife populations
2. Cooperate on regulation of development of wetlands and wetland structures - monitor effects on fish and wildlife populations

Forest Resource

1. Cooperate on wildlife population and habitat management
2. Coordinate to maintain diversity of forest cover types and ages to benefit wildlife
3. Evaluate specific practices, such as prescribed burns, on specific wildlife habitats

Water Resource

1. Work together monitoring water quality and water levels and the effect they have on area lakes, streams, wetlands, and wildlife management areas
2. Share information regarding wildlife species effecting and effected by water level manipulation caused by natural factors, wildlife or humans
3. Share rapid bioassessment data related to lake and stream surveys
4. Share noxious weed data and surveys
5. Share contaminant data

Wetland Resource

1. Cooperate on monitoring the effects of wetland alterations (including the development of mitigation sites) on resident wildlife populations
2. Cooperate on development of monitoring efforts for threatened aquatic populations such as frogs and dragonflies
3. Cooperate on water level management on impoundments for optimal wildlife habitat benefits
4. Coordinate on the identification and development of Tribal Scenic and Natural Preservation Areas
5. Cooperate on the development of wetland restoration and creation, and monitor the effects on wildlife populations

Environmental Protection

1. Coordinate on the identification of species that might be utilized as biological indicators and identify potential projects that evaluate local environmental quality
2. Coordinate on the development of codes regulating nuisance animals

Conservation Enforcement

1. Involve wildlife personnel in nuisance bear trapping and relocation. Biological data could be collected from captured bears to monitor the health of the population.
2. Develop a nuisance animal tagging program to determine effectiveness of relocation program
3. To ensure sustainable harvest, seasons and limits should be set and enforced based on population levels and established wildlife management practices. For example, moose season is closed due to extremely low and declining populations in northwestern Minnesota.

6.3.7 References

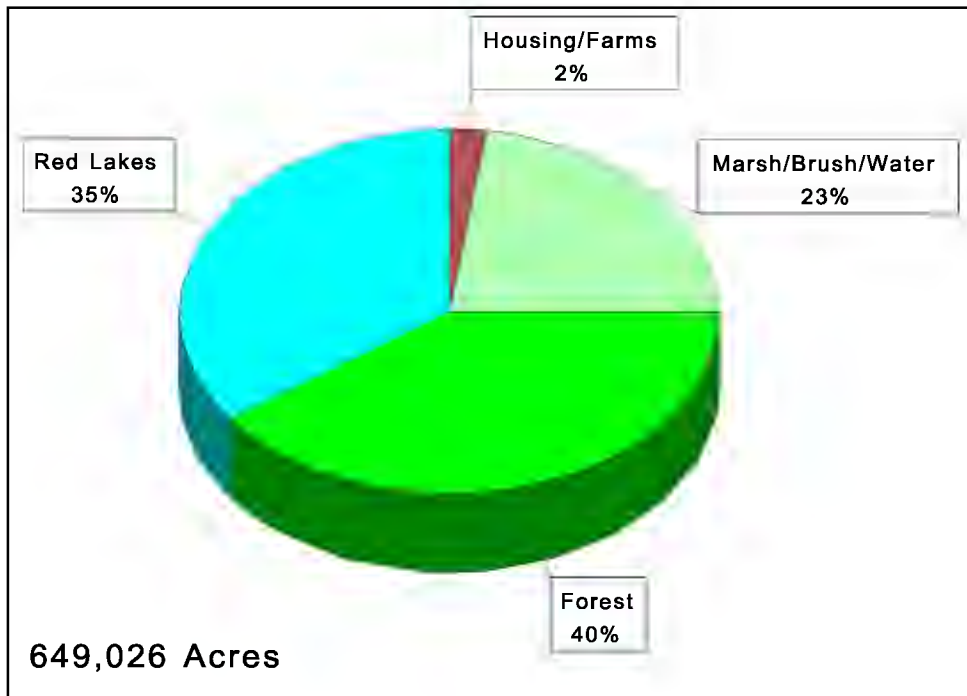
- BIA. 1979. *The Red Lake Indian Reservation: Its Resources and Development Potential*. USDI Bureau of Indian Affairs Planning and Support Group, Billings, Montana. Report No. 253. 321 pp.
- Bookhout, Theodore A. (Ed.). 1994. *Research and Management Techniques for Wildlife and Habitats*. The Wildlife Society. Bethesda, Maryland. 740 pp.
- Hammer, Donald A. 1992. *Creating Freshwater Wetlands*. Lewis Publishers, Inc. Chelsea, MI. 298 pp.
- Hazard, Evan B. 1982. *The Mammals of Minnesota*. University of Minnesota Press. Minneapolis, MN. 280 pp.
- Henderson, Carol L. 1987. *Landscaping for Wildlife*. Minnesota Department of Natural Resources. 149 pp.
- Janssen, Robert B. 1992. *Birds in Minnesota*. University of Minnesota Press. Minneapolis, MN. 352 pp.
- Kortright, F. H. 1943. *The Ducks, Geese, and Swans of North America*. The American Wildlife Institute. Washington, D. C. 476 pp.

This page left intentionally blank.

6.4 The Forest Resource

6.4.1 Description of the Forest Resource

The Red Lake Reservation forest resource consists of 348,502 acres, giving Red Lake the largest Tribal forest in the Midwest. Nationally, Red Lake Reservation forests rank sixth in area behind the Navajo, Fort Apache, Colville, Jicarilla, and Yakima reservations.



Source:

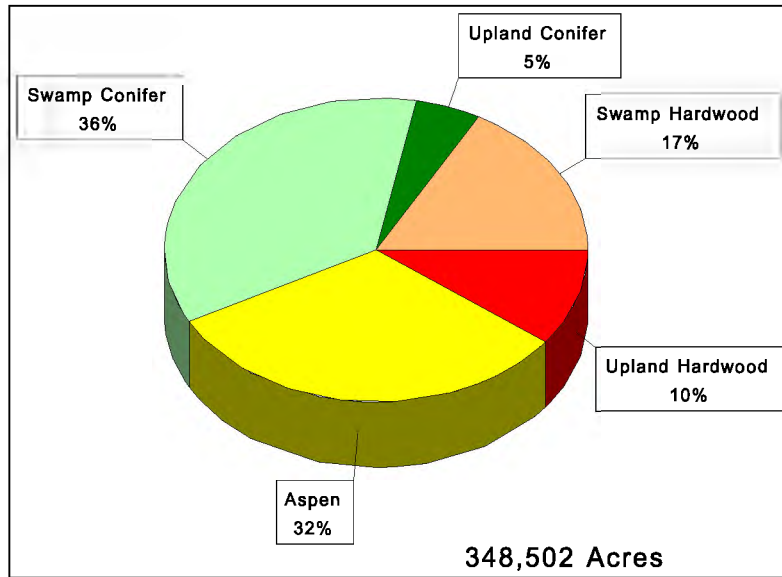
**Figure 6-2
Major Cover Types of the Diminished Reservation**

On the Diminished portion of the reservation, the forest covers about 260,101 acres, or roughly 40 percent of the landscape. Three major ecosystems are present at Red Lake, wet prairie to the west, boreal swamp to the north, and mixed conifer-hardwood upland forest to the south and east. The forest types on the Diminished Reservation are typical of forests found across northern Minnesota.

Of the 156,700 acres of Ceded Lands belonging to the Red Lake Band of Chippewa, 88,402 acres, or 56 percent are forested. Human population densities are very low with few improved roads. Most of the area is accessible only during the winter. The Northwest Angle is geographically isolated by water and international boundary from

the rest of the Reservation and from Minnesota. Most of the “Angle” belongs to the Red Lake Band, an area of about 52,841 acres.

The forest types on the Red Lake Reservation can be categorized by five major forest cover type groups: 1) aspen; 2) upland hardwoods; 3) swamp hardwoods; 4) upland conifers; and 5) swamp conifers. These cover type groups are made up of ecologically similar forest types or associations. For example, the aspen cover type group includes aspen, aspen/balm, aspen/northern hardwood, and aspen/bur oak forest types.



Source:

**Figure 6-3
Forest Cover Types of the Entire Red Lake Reservation**

**Table 6-4
Acreage by Surface Cover Type Groups**

Surface Cover-Type Group	Northwest Angle	Ceded Lands	Diminished	All Lands
Aspen	4,903	7,847	98,710	111,460
Upland Hardwood	0	0	33,561	33,561
Swamp Hardwood	5,448	4,616	50,836	60,899
Upland Conifer	0	7,386	10,364	17,750
Swamp Conifer	30,506	27,696	66,630	124,832
Total Forest	40,857	47,545	260,101	348,502

Source:

Aspen Cover Type Group

The aspen group, the second largest cover type group, covers 111,460 acres, or about 32 percent of the entire forest. Aspen is currently the major commercial species in northern Minnesota, and certainly at Red Lake. Aspen species make up two-thirds of the harvest volume since 1980 when aspen markets went from poor to excellent. The economic impact in terms of employment, personal income, and Tribal income is a key part of the Red Lake economy.

There are large stocks of mature and over-mature aspen at Red Lake. The western portion of the Diminished Reservation is dominated by aspen parklands where there is approximately 30,000 acres the aspen cover type group. Most of the current stocks are winter access only, limiting the length of the logging season.

The only silviculturally sound technique to regenerate aspen, especially in over-aged stands, is clearcutting. The principal concern has been the visual impact of clearcutting, which is understandable, but is not an ecological issue. Complete, or nearly complete, harvest of mature aspen insures that the aspen cover-type will be sustained and in degraded stands, the quality and stocking will be improved. Also, a regulated harvest utilizing techniques such as clearcutting provides significant benefits to many different species of wildlife by providing multiple age classes throughout the landscape. Visual impacts, however important, must be weighed with biological and economic factors. Both long-term and short-term perspectives should be used.

Left to exclusively natural means, much of the aspen cover type group will fail to remain in an adequately stocked forested condition. Undisturbed, aspen types will not reproduce themselves well and much of the area is too far from alternate seed sources to depend on natural succession to other forest types.

Excellent marketability, financial gain to the Band, large stocks of mature timber and almost guaranteed regeneration suggest the harvest should be maximized. At the same time, consideration should be given to regulating the aspen resource to provide an even flow, sustainable harvest, rather than perpetuating a boom and bust cycle.

Upland Hardwood Cover Type Group

The upland hardwood group covers 33,561 acres, or 10 percent of the entire forest, with none in the Ceded Lands. It is the fourth largest cover type group. Upland hardwood species made up only 10 percent of the harvest volume since 1980. Uses include firewood, a limited amount of log production, sugar bushes, birch crafts, and other cultural uses. Additionally, hardwoods are particularly important for wildlife. What might be termed undesirable or non-merchantable hardwoods are sources of food and

shelter for many species of wildlife. Even low grade oaks produce acorns for deer, bear, and jays.

Growing the diversity and quality of hardwoods that are possible to the eastern and southern U.S. may not be a silvicultural reality at Red Lake. The Red Lake Reservation lies on the fringe between prairie and forest, and many tree species within this cover-type are at the limits of their ecological range.

This is a biologically stressful condition, particularly for sugar maple. Though it can be very prolific in the understory on better soils, its potential for anything other than a sugar bush is usually quite limited. In contrast, basswood has significant potential and will easily reach saw-timber size and attain very high quality with proper management. Both uneven-aged management and doing nothing will allow a large portion of the resource to succeed to sugar maple-dominated stands. Encouragement of basswood, oak, and most other hardwoods can be best accomplished by even-aged techniques such as clearcutting, seed tree, shelterwood, and group selection. Even-aged hardwood management, in this part of Minnesota, probably fits larger natural ecosystem dynamics more closely and has far greater benefits to wildlife habitat.

Swamp Hardwood Cover Type Group

The swamp hardwood group covers 60,899 acres, or 17 percent of the entire forest. It is the third largest cover type group. The swamp hardwood resource consists of two major forest types which are ecologically quite different; 1) black ash, and 2) balm-of-Gilead. Harvest pressure on swamp hardwoods is currently low, after a small peak in 1989 and 1990. Swamp hardwood species made up only 4 percent of the harvest volume since 1980. Markets were good only for quality saw-timber.

Balm-of-Gilead might be characterized as a “swamp variety of aspen.” Stands tend to run rather pure, and regeneration requires full sunlight, suggesting even-aged management. The balm types are fairly easy to regenerate, but balm markets have historically been poor until recently, preventing most commercial operations. Stands are aging similarly to aspen. Much of the balm resource has advanced regeneration of ash or swamp conifer species.

A fair amount of quality black ash exists today, and the potential for improvement on productive sites may be realized by implementing timber stand improvement practices (similar to those needed by upland hardwoods). Black ash is successfully managed on either an uneven-aged or even-aged basis, depending on site conditions.

With the impending threat of invasive species, such as emerald ash borer in ash species, or changes in climate trends that may introduce stress, caution must be exercised when management techniques produce stands that are dominated by a single species. It may

be desirable for both economic and ecological reasons to allow the resource to succeed into other forest types. Maintaining species diversity becomes important to help buffer losses in revenue to the tribe but, perhaps more importantly, maintain hydrologic stability for this cover type.

Upland Conifer/Pine Cover Type Group

The upland conifer group covers 17,750 acres, or 5 percent of the entire forest. It is the smallest cover type group. Pine species made up 18 percent of the harvest volume since 1980. Most natural pine stands are roughly the same age originating from fires in the 1910's and 1920's. In addition, many pine plantations were established in the 1960's and 1970's. Generally, quality is good, and growth is reasonable.

Thinning will maximize growth on quality trees, and prevent growth stagnation and stress that comes with overcrowding. Thinning can usually be done on a commercial basis. It is important that a silviculturally sound, site specific thinning prescription be written and followed for marking and cutting to help eliminate the potential for high-grading pine stands. Good timber sale administration is necessary for control of logging to prevent damage to the remaining standing trees. Given several decades to work, even small wounds can easily develop into pockets of rot which degrade the most valuable portion of the tree.

Survival rates in plantations are low. Pine plantation success averages about 50 percent. The main reasons for mortality are brush competition, fire and with higher incidence more recently, development for roads and housing. Soils appropriate for establishing pine are also desirable for home sites. Competition will only increase between the demand for housing and the objective to "plant more pine." Changes in land use are slow and subtle, but are nonetheless real. The zoning issue will need to be addressed and decisions will need to be made if Red Lake forests are to be preserved for future generations

In terms of maintenance, brush competition is the biggest challenge. Seedling release from competition (access to sunlight, water, and soil nutrients) is critical to survival. Mechanical release (brush saw) alone, or in combination with chemical herbicide application are used to maintain plantations. Herbicides were used to help establish pine plantations in the Ceded Lands in the 1970's, and survival rates on these plantations are much better than on plantations without herbicide applications.

Wildfires must be controlled. The vast majority of fires are of human origin. With the high cost of establishing plantations, it is imperative that these investments are protected if future generations of Red Lake people are to have a pine resource.

Another consideration in pine management is natural regeneration of existing pine stands. Red pine is a difficult species to regenerate naturally. Providing the proper timing and environmental situation will be a challenge. White pine regeneration is fairly straightforward, although it can require considerable investment to overcome deer browsing, brush competition, insect problems, and blister rust. “Carpets” of white pine regeneration can be found under some stands. However, white pine is susceptible to disease and insect problems.

Swamp Conifer Cover Type Group

The swamp conifer group covers 124,832 acres, or 36 percent of the entire forest. It is the largest cover type group. The most common species are balsam fir, tamarack, black ash, cedar, and black spruce. Swamp conifers cover large areas of Red Lake forest where growth is slow and stocking levels are naturally low. Most stocks lie north of Lower Red Lake between the Ridge and Upper Red Lake. Markets are poor, and swamp conifer species made up only 2 percent of the harvest volume since 1980. Markets may change in the next ten years, however. Large tamarack stocks have the greatest potential.

Regeneration in mature/over-mature stands is an important consideration. Advanced regeneration is lowest in tamarack and mixed conifer stands. Forest succession is questionable in stands where regeneration is low and brush conversion will likely become a problem. Some areas may have rare plant associations that should be safeguarded. Minimizing site disturbance and avoiding long term hydrological alteration are critical considerations in any management activity.

6.4.2 Forestry Program

The structure of the Red Lake DNR Forestry program consists of four units, or departments, each with a unique responsibility. These areas are: 1) **Inventory and Planning** which evaluates the forest in many different ways and provides valuable planning information; 2) **Timber Sales** which works to regenerate the forest through harvesting techniques for the benefit of the tribe; 3) **Forest Development** which grows and plants young trees, establishes plantations, and improves timber quality; and 4) **Fire Management** which protects the resource from destructive wild fires, prevents wild fires through education, and assists with reforestation efforts through the use of prescribed burning. Although the emphasis of each unit varies, the four units work together to accomplish the goals and objectives of the program. This section serves to explain each unit in greater detail. The organizational chart that follows illustrates the current program structure.

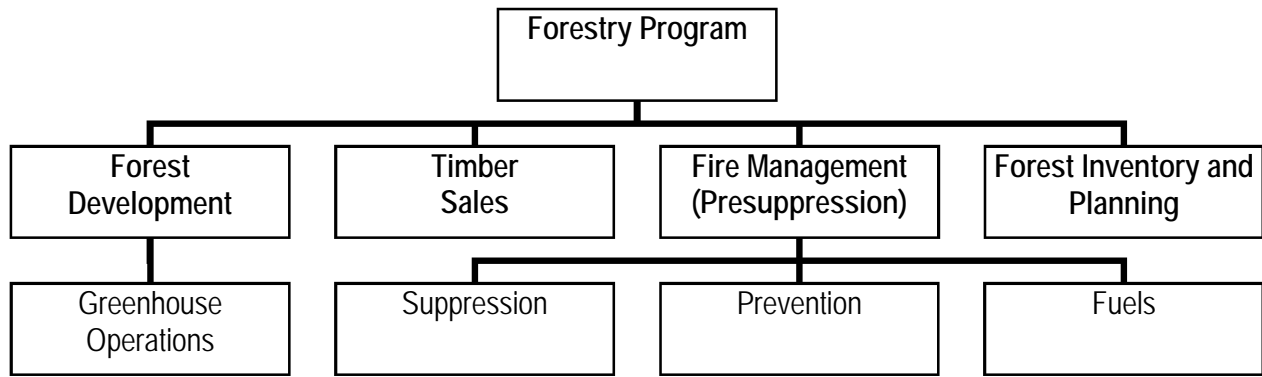


Figure 6-4
Organizational Structure of Forestry Program

Forest Inventory and Planning (FI&P)

The Red Lake forest is evaluated in terms of area, soils, species composition, timber volumes, size and density, stocking, age class, growth, mortality, and damaging agents. FI&P is responsible for collecting, analyzing and managing this data in an accurate, updated and well organized database. This information then enables the forest resource manager to make sound silvicultural decisions. It is especially important in planning timber harvests and forest development activities such as tree planting.

FI&P's tools are the Geographic Information Systems (GIS), Continuous Forest Inventory (CFI), and stand exam or Operations Inventory (OpInv). Fire management, timber harvest, wildlife habitat, watershed management, and forest development projects are some of the many applications of this data.

a. Geographic Information System (GIS). Geographic Information Systems (GIS) combine spatial and tabular databases into one location. They allow the instantaneous correlation of location and attribute data, along with advanced query and analysis tools. Different years of digital aerial photography and department-specific datasets allow for precise planning and record-keeping.

Whereas in the not-too-distant past paper maps needed to be cross-referenced with tabular data and then cross-referenced with paper photography, GIS allows for simultaneous viewing of all elements. Some examples of the many applications of the GIS include: harvest planning, timber sale maps, plantation site maps, mapping fire occurrences, planning prescribed burns, and identification and tracking of mortality trends. Department-specific datasets are maintained.

b. Operations Inventory (OpInv), or Stand Examination. Red Lake employs a

stand examination inventory referred to as Operations Inventory, which was developed by the BIA to obtain information for landscape and individual stand management. This inventory system delineates the Reservation into cover type units, or stands, which are grouped into forest compartments. Each stand has cover type information and age data. There are about 13,600 cover type units on the Diminished Reservation. OpInv is designed to yield the location and a brief description of each forest stand. It is not as precise as the CFI data, but it is better designed for daily operations, and provides good information about locations of each forest stand.

c. Continuous Forest Inventory (CFI). The Red Lake CFI system employs 778 permanent, 1/5 acre plots, which consist of measuring every merchantable tree every 10-15 years for diameter, height and relative health. Trees that become merchantable in size between measurements are added to the plot data. The CFI data is highly precise and provides statistically viable data for modeling forest growth, mortality, and composition trends. This data is also used to determine the Annual Allowable Cut (AAC), in addition to identifying landscape-level trends in land use that would otherwise be difficult to detect and track, such as loss of forest cover to housing and infrastructure development. The information can be used to describe individual forest cover types, to measure how much change has occurred, and to estimate how much timber can be harvested at sustainable levels with a changing forest ecosystem.

Datasets currently available include soils, LIDAR ,and multiple sets of photography, including: 1991 black and white, 2001 color infrared, and true color photography from 2003, 2006, 2008, 2009 and 2010. The 2008 imagery also has an infrared band available.

Timber Sales

The Timber Sales section is responsible for all phases of timber harvest, including the preparation, administration, and supervision of commercial timber sales, in accordance with the objectives of the Red Lake Indian Nation, with direction provided by the Red Lake Tribal Council. Ordinances and standards include the 25 CFR (Code of Federal Regulations) Part 163, General Forestry Regulations; the Red Lake Timber Use Policy Statement (TUPS); and Red Lake tribal resolutions applicable to timber sales.

a. Timber Sale Preparation

Timber sale preparation includes individual stand selection, followed by field recon, sale boundary marking, and cruising. A Forestry Walkover Field Coverage Report is conducted during cruising to locate and exclude any cultural sites from harvest activities. Cruise information is used to appraise the value of each sale. A Forest Officers Report (FOR) is prepared for each timber sale from information collected during the cruise. The FOR includes a silvicultural

prescription, which details the harvest method, slash treatment, regeneration objective, follow-up treatment as necessary, and a map of the sale area. From the appraisal and FOR a contract or permit is prepared for each timber sale.

b. Timber Sale Administration

When the timber sale contract or permit is approved, and a performance bond is collected, harvest operations commence, at which point timber sale administration begins. Timber sale administration includes contract compliance monitoring, ensuring that contract or permit provisions are being met; scaling forest products as necessary; the collecting stumpage payments; and maintaining account balances for each logger and timber sale.

Although the economic significance of the Red Lake forest for employment and income cannot be ignored, forest management decisions are not based on monetary values alone. The Red Lake forest is a complex ecosystem influenced by soils, aspect, moisture, past management history, and other factors. Red Lake forest management involves management of wetlands, waters, wildlife, recreation, roads, aesthetics, and cultural resources. The Red Lake forest resource is managed for the benefit of all tribal members, and a well regulated, sustained forest will provide multiple-use resources for many generations.

Forest Development

The Forest Development Center in Red Lake is home to the forest development program and greenhouse complex (new in 2009). Their mission is to establish, maintain, and enhance reservation forests consistent with Tribal goals and objectives, and in accordance with Regional Forest Development Plan, 25 CFR, and the 53 BIAM. These objectives will be accomplished through treeplanting, pre-commercial thinning, and timber stand improvement (TSI) projects.

1.) Reforestation Strategies

While almost 90% of the harvest on Red Lake lands is in hardwoods, predominately aspen species, reforestation efforts have focused entirely on coniferous species. Many of the species on the reservation that have commercial value are also fire dependent, an evolutionary strategy that provides for regeneration after catastrophic fire. Aspen, the most important species commercially, has evolved root suckering as well as seed to regenerate, while red, white and jack pine rely solely on seed distribution and site disturbance (fire). Many stands that were historically dominated by conifer cover are now aspen and other hardwood, due in part to the lack of successful plantation establishment. Reestablishing coniferous species has been, and will continue to be, the focus for forest development's tree planting program.

Supplemental funding to support a more aggressive pine restoration strategy has become available from a permanent trust fund established for the Red Lake Nation. Under the terms from the settlement of a lawsuit against the BIA for mismanagement of the Tribal forests, dividends are available from the trust and paid to the Tribe based on a submitted and approved annual expenditure plan with the goal of reestablishing 50,000 acres of pine on the Red Lake landscape.

a. Stand Selection

All current pine stands will be maintained as pine. Additional stands will be incorporated based on selection criteria including soils and ecological habitat classifications. Primary emphasis will be placed on well-drained sandy soils for conversion to red and jack pine. White pine and white spruce are more shade tolerant and better adapted to the loamy soils underneath many current aspen and northern hardwood stands.

Forest development will evaluate the site using all available tools including, but not limited to: GIS, soils information, stand history records, and habitat typing. After the assessment a prescription is developed which details schedules for site preparation, planting, survival surveys, crop tree release, or TSI work.

b. Site Preparation and planting

Site preparation options include mechanical clearing, prescribed fire, and chemical application, with the goal of removing undesirable vegetative competition for selected crop trees. Once sites have been prepared, contracts for planting the tree seedlings are given to Red Lake tribal members. Sites are checked upon completion to measure correct density (trees per acre) and proper planting techniques were used.

c. Plantation Management

To ensure plantation success, it will be followed by survival surveys at year one, two, three, and five. The results will be evaluated for survival, density, growth and mortality and mitigation measures if needed. These measures may include hand or chemical release, fill-in planting and complete replant in extreme circumstances.

2.) *Timber stand improvement*

Timber stand improvement (TSI) focuses on the improvement of crop trees and desirable understory vegetation, such as blueberry, in Red Lake forests.

TSI projects consist of release (both chemical and mechanical), pre-commercial thins, and limb pruning. Removing undesirable vegetation allows seedlings and crop trees to increase diameter, develop larger and more robust crowns, and improve the quality of

future forest products. TSI can also reduce the amount and change the structure of forest fuels, lowering the chance of damaging wildfires.

3.) Greenhouse

The greenhouse which grows pine and spruce seedlings to supply the needs of forest development planting projects, will have a capacity of one million seedlings annually. Some of the seedlings are grown from seed collected from one of three seed orchards (White spruce, White pine, Jack pine) that the program manages. The seed orchards were originally designed to serve as a warehouse of locally-sourced, genetically superior stock.

4.) Fire Management

The Red Lake fire management program has protection responsibility on the Diminished Reservation. The Minnesota DNR has protection responsibility on the Ceded Lands. Along the boundaries of the reservation, the state and tribal resources often cooperate on fire suppression. Also, some large or complex fires require additional resources from other agencies. Formal agreements have been prepared and approved to allow use of resources from other reservations and agencies within the Minnesota Incident Command System (MNICS) organization. Documents that are prepared to support the fire program include: Fire Management Plan, Aviation Plan, Annual Fire Plan, Mobilization Plan, National Fire Management Analysis, Interagency Initial Attack Analysis, Reimbursement Agreement, helicopter contracts, and other documents which are updated periodically.

Total protected acres are about 415,000 acres. The Red Lake Diminished Reservation averages 392 fires and 13,693 acres burned each year (2001-2010 data). But in the last three years, yearly averages were 144 fires and 1,484 acres. Success in reducing the number of fires and acres burned each year can be traced to changes made in the fire program stemming from the adoption of the National Fire Plan by the U.S. Department of Interior and the U. S. Department of Agriculture Forest Service in 2000. At that time the federal government began providing increased funding for the tribal fire programs, including funding for increases in number of firefighter position, equipment, fire prevention programs and hazardous fuels reduction projects.

The Red Lake DNR began a formal fire prevention program in the fall of 2004. The program has emphasized education of schoolchildren and dissemination of information to other residents regarding fire prevention issues on the Reservation, the encouragement of homeowners' participation in the fire permitting process and investigation of cases of arson. Wildfire prevention will be key in implementing the mandate to restore the forest on the Reservation, as many thousands of acres of pine plantations are established over the next fifty years.

Prescribed fire is used for hazard fuel reduction, natural regeneration of pine, slash reduction and wildlife habitat improvement. The Red Lake fire program has personnel

trained to keep these fires within prescribed conditions and under control. The Red Lake Tribal Council has supported these efforts through its resolutions and the approval of hiring staff dedicated to these specific objectives. The fire program control-burns more acres annually on the Red Lake Reservation than on any other Indian reservation and all but three Department of Interior programs in the United States.

The Red Lake fire program still faces a formidable task in dealing with a high number of fires occurring within a relatively short time frame. The main wildfire occurrence is in or near the communities of Little Rock, Red Lake, Redby and Ponemah. This wildland-urban interface creates complex and potentially dangerous situation with damage to the natural resources and structures, however, protection of life and firefighter safety are top priorities.

Further fire management information can be found in the Red Lake Fire Management Plan available at the forestry office.

6.4.3 Issues and Concerns

Issues

- Loss of forest habitat
- Impacts of logging
- Forest health
- Jobs in the forest
- Impacts of wildfires
- Timber theft
- Conflicts of forest management activities with other uses
- Public education on forestry issues
- Tribal Council support of forestry
- Historical decline of pine acreage

6.4.4 Goals and Objectives

Goals

- Enforce timber sale contract specifications and requirements
- Maintain a healthy, vigorous forest
- Manage forest at sustainable levels
- Improve cooperation with law enforcement to control arson and theft problems
- Protect sensitive cultural sites
- Educate the public on forest practices
- Increase cooperative efforts with other Tribal departments
- Increase pine component of forest ecosystem

Objectives

- To better enforce logging contracts; prepare presale plan and improve logging specifications to best regenerate the sale areas; Lobby for support from the DNR staff and Tribal Council
- To maintain a healthy forest; implement Minnesota's Best Management Practices (BMPs) guidelines to help protect the forest from wildfire, insects, and diseases
- To manage the forest at sustained yield levels, calculate Annual Allowable Cut (AAC), and change emphasis from employment first to forest first
- To work with law enforcement on arson and theft problems; increase enforcement and prosecution, increase Smokey Bear education, develop penalties, cross train law enforcement and forestry personnel, and provide theft report to law enforcement
- Identify cultural sites and uses, and protect them from timber sale activity
- Plant more pine
- To educate the public; identify forestry demonstration areas, set aside school forests, provide logger education training, establish regular logger-forestry meetings, involve public affairs officer with regular forestry newsletter articles, participate in yearly economic summit, and establish a positive public image
- Communicate on a regular basis with other DNR staff (staff meetings). Seek input from other disciplines on special problems
- To increase pine acres; increase funding, expand greenhouse production, promote natural regeneration when possible, increase use of managed fire, encourage use of herbicides, match species to best site, obtain soils maps, and improve survival

6.4.5 Alternatives

There are two basic alternatives: 1) no change, 2) practice the optimum level of forest management.

Alternative 1 (No Change)

Continue the forestry program at existing funding and staffing levels. This might be considered the no change alternative, but in reality the forestry program has undergone both subtle and significant changes over the past few years at the same funding level.

As a Tribal program, forestry was slightly restructured. This restructuring and hiring has resulted in improvements in harvest planning; timber sale preparation; timber sale administration, particularly in stumpage revenue accountability and collections; and backlogged forest inventory database maintenance. Even without major increases in forestry staffing, forestry has already experienced changes, and with increased Tribal support, further changes and improvements can be expected.

Alternative 2

Increase pine acres and planting efforts as the program can manage. Find and implement new strategies for adding pine acres, managing inventories, timber sale records, and databases. Add more staff to the forestry program as needed.

The Red Lake forest can be regulated to provide a sustained yield of timber as well as other resources but management should be determined by the needs of the forest and not the needs of the logger. Good forest management also goes hand-in-hand with good management of wetlands, waters, wildlife, recreation, roads, aesthetics, and cultural resources. Better coordination to identify the conflicts and opportunities is needed.

Increase prevention efforts and enforcement of arson cases to help reduce the large number of fires and acres burned each year.

6.4.6 Decision Matrix

Description of goal/objective	Meets goal/objective?	
	Alt. 1	Alt. 2
Improve logging specifications	No	Yes
Implement Best Management Practices	No	Yes
Manage forest at sustained yield levels; calculate annual allowable cut	Yes	Yes
Increase enforcement and prosecution	No	Yes
Identify and protect cultural sites	Yes	Yes
Educate public	Yes	Yes
Communicate and coordinate with other DNR staff	Yes	Yes
Increase pine acres	No	Yes

6.4.7 Integrating Resource Management

To provide increased integration of the overall management of Red Lakes natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Forestry Resource**.

Cultural and Traditional Resource

1. Develop specific regulations for timber sales regarding cultural resource protection
2. Provide input on future projects such as increased pine planting and prescribed burning for blueberry production
3. Need to cooperate on grave site information

Fishery Resource

1. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat
2. Work together to implement best management practices (BMPs) to prevent erosion and maintain water quality and fish habitat

Wildlife Resource

1. Cooperate on wildlife population and habitat management
2. Coordinate to maintain diversity of forest cover types and ages to benefit wildlife
3. Evaluate specific practices, such as prescribed burns, on specific wildlife habitats

Water Resource

1. Work together to implement best management practices (BMPs) to prevent erosion, minimize debris left at the logging sites, and prevent improper disposal of petrochemicals
2. Work to draft and adopt enforcement codes
3. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat

Wetland Resource

1. Cooperate in implementing and enforcing Best Management Practices
2. Coordinate on the identification and development of Tribal Scenic and Natural Preservation Areas
3. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat

Environmental Protection

1. Coordinate on the development of an enforcement code regulating chemical spills
2. Coordinate on monitoring chemical spills
3. Coordinate to ensure BMPs are properly implemented
4. Cooperate in the development of a study to determine the viability of chemical applications for reforestation projects
5. Coordinate with the development of Tribal air quality codes relating to prescribed burning

Conservation Enforcement

1. Coordinate on the development of an enforcement code regulating chemical spills, trespass and arson investigations
2. Coordinate enforcement of regulations dealing with harvesting and transportation of forest products
3. Coordinate traffic control around prescribed burns and wildfires

6.4.8 References

- Anon. Date Unknown. *Red Lake's Turn*. Unpublished document USDI Bureau of Indian Affairs Red Lake Agency files. 5pp.
- Bates, Peter C., C.R. Blinn, and A.A. Alm. 1991. Regenerating Quaking Aspen: Management Recommendations. Minnesota Extension Service, University of Minnesota, St. Paul, Minnesota. 8pp.
- Benzie, John W. 1977. Manager's Handbook for Red Pine in the North Central States. USDA Forest Service General Technical Report NC-33. North Central Experiment Station, St. Paul, Minnesota. 22 p.
- Benzie, John W. 1977. Manager's Handbook for Jack Pine in the North Central States. USDA Forest Service General Technical Report NC-32. North Central Experiment Station, St. Paul, Minnesota. 18 p.
- BIA. 1983. Handbook on Forest Management Inventories and Use of Data in Management Planning. USDI Bureau of Indian Affairs, Branch of Forest Resources Planning, Portland Oregon.
- BIA. 1979. The Red Lake Indian Reservation: Its Resources and Development Potential, Report No. 253. USDI Bureau of Indian Affairs, Planning Support Group, Billings, MT. 321 pp.
- BIA. 1975. Environmental Profile of the Red Lake Reservation (draft). USDI Bureau of Indian Affairs, Midwest Regional Office. 14 pp.
- BIA. 1973. Continuous Forest Inventory Tables: Ceded Lands M-3 1972-1973. USDI Bureau of Indian Affairs. 13 pp.
- BIA. 1973. Continuous Forest Inventory Tables: NW Angle M-2 1972-1973. USDI Bureau of Indian Affairs. 17 pp.
- BIA. 1971. Continuous Forest Inventory Tables: Diminished Reservation M-3 1970-1971. USDI Bureau of Indian Affairs. 58 pp.
- BIA. 1971. Forest Management Plan: Red Lake Diminished Reservation, M-3 Revision (draft). USDI Bureau of Indian Affairs.
- BIA. 1967. Timber Operating Plan: Red Lake Indian Reservation Restored Ceded Lands 1967-1973 (draft). USDI Bureau of Indian Affairs.

- BIA. 1965. Timber Management for the Red Lake Diminished Indian Reservation (draft M-2 revision). USDI Bureau of Indian Affairs. 23pp.
- BIA. 1964. Continuous Forest Inventory Tables: Diminished Reservation M-2 1963-1964. USDI Bureau of Indian Affairs. 8 pp.
- BIA. 1962. Timber Management Plan for the Red Lake Indian Reservation Restored Ceded Lands 1962-1967. USDI Bureau of Indian Affairs. 30 pp.
- BIA. 1961. Plan of Forest Management for the Red Lake Diminished Indian Reservation (M-1 version). USDI Bureau of Indian Affairs. 77 pp.
- BIA. 1959. Industrial Development Report on the Red Lake Reservation, Minnesota. USDI Bureau of Indian Affairs, Minnesota Agency. 18 pp.
- BIA. 1953. Management Plan for All Scattered Lands, Red Lake Reservation. USDI Bureau of Indian Affairs. 24 pp.
- BIA. 1953. Management Plan for the Red Lake Diminished Reservation. USDI Bureau of Indian Affairs. 102 pp.
- Birdsey, R.A. 1990. Inventory of carbon storage and accumulation in U.S. forest ecosystems. pp. 24-31. In H.E. Burkhardt et al. (eds.). Research in forest inventory, monitoring, growth and yield. Proceedings IUFRO World Congress, Montreal. 5-11 August, 1990. School of Forestry and Wildlife Resources Publication FWS-3-90. Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- Chisholm, L.W. 1963. Silvicultural Aspect of Forest Stands on the Diminished Red Lake Reservation. USDI Bureau of Indian Affairs, Minnesota Agency. 5 pp.
- Cook, W.E. 1995. 1992 Forest Inventory Report and Management Alternatives. USDI Bureau of Indian Affairs, Red Lake Agency. 345 pp.
- Day, W.C. et al. 1993. Geochemical Data of Diamond Drill Core Samples Adjacent to the Red Lake Indian Reservation, Northern Minnesota (preliminary report). Open-File Report 93-572A Text. USDI United States Geological Survey, Denver, Colorado.
- Erdmann, G.G., T.R. Crow, R.M. Peterson, Jr., and C.D. Wilson. 1987. Manager's Handbook for Black Ash in the North Central States. USDA Forest Service General Technical Report NC-115, North Central Experiment Station, St. Paul, Minnesota. 10 p.

- Fins, Lauren. 1993. Paper presented at the Twenty-second Southern Forest Tree Improvement Conference, June 14-17, 1993. Atlanta, Georgia. 7 pp.
- Folwell, William Watts. 1930. History of Minnesota, Volume 4. Minnesota Historical Society, St. Paul, Minnesota. ??pp.
- Frisby, S.A. 1934. Report on Merchantable Timber on the Point (incl. map). USDI Bureau of Indian Affairs, Red Lake Agency. 4 pp.
- Grigal, D.F. and L.F. Ohmann. 1992. Carbon Storage in Upland Forests of the Lake States. Soil Sci. Soc. Am. J. 56:935-943.
- Heinselman, M.L. 1974. Interpretation of Francis J. Marschner's Map of the Original Vegetation of Minnesota. USDA Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota. 25 pp.
- Heinselman, M.L. 1973. Fire in the Virgin Forests of the Boundary Waters Canoe Area, Minnesota. Quaternary Research 3:329-382.
- Hennings, Kim; Jon Parker; and James Hansen. 1980. Red Lake Wildlife Management Area Master Plan, 1980-1989. Minnesota Department of Natural Resources, St. Paul, Minnesota. 82pp.
- Heritage, William and George Kephart. 1936. Preliminary Forest Management Plan, Red Lake Indian Forest and Reservation. USDI Bureau of Indian Affairs. 173 pp.
- Heritage, William. 1940. Forest Assessment Report. USDI Bureau of Indian Affairs. 35 pp.
- Holt, T.M. and W.F. Leaf. 1949. Instructions for Conducting Timber Inventory Survey. USDI Bureau of Indian Affairs Red Lake Agency. 47 pp.
- Johnston, William F. 1977. Manager's Handbook for Black Spruce in the North Central States. USDA Forest Service General Technical Report NC-34. North Central Experiment Station, St. Paul, Minnesota. 18 pp.
- Johnston, William F. 1977. Manager's Handbook for White-cedar in the North Central States. USDA Forest Service General Technical Report NC-35. North Central Experiment Station, St. Paul, Minnesota. 18 pp.
- Klein, T.L., et al. 1992. Assessment of Shear Zone-Hosted Gold Deposits for the Red Lake Indian Reservation, Northern Minnesota. In: Manydeeds, S.A. (ed.). 1992 Mineral Frontiers on Indian Lands. Bureau of Indian Affairs General Publication

- G-92-2. USDI Bureau of Indian Affairs, Division of Energy and Mineral Resources, Golden, Colorado. pp 89-106.
- Laitala, Raymond, et al. 1983. Interim Forest Management Plan: Red Lake Indian Reservation (Diminished), Minnesota 1984-1986. USDI Bureau of Indian Affairs. 62 pp.
- Lowmaster, James O. 1985. Forest History of the Red Lake Diminished Indian Reservation. USDI Bureau of Indian Affairs, Red Lake Agency. 54 pp.
- Lowmaster, James O. Date Unknown. History of Red Lake Reservation (Including Sawmill). USDI Bureau of Indian Affairs, Red Lake Agency. 6 pp.
- Marschner, F.J. 1930. The Original Vegetation of Minnesota, (map). Republished in 1974 by USDA Forest Service, North Central Forest Experiment Station, Minneapolis, Minnesota.
- MDNR. 1993. Minnesota's Native Vegetation. Minnesota Department of Natural Resources, St. Paul, MN. 111 pp.
- MDNR. 1991. Forest Insect & Disease Report 1990. Forest Insect and Disease Unit, Division of Forestry, Minnesota Department of Natural Resources, St. Paul, MN. 67 pp.
- MDNR. 1990. Forest Insect & Disease Report 1988-89. Forest Insect and Disease Unit, Division of Forestry, Minnesota Department of Natural Resources, St. Paul, MN. 67 pp.
- MDNR. Serial. Forest Insect & Disease Newsletter. Forest Insect and Disease Unit, Division of Forestry, Minnesota Department of Natural Resources, St. Paul, MN.
- Mittelholtz, Erwin F. 1957. Historical Review of the Red Lake Indian Reservation. Beltrami County Historical Society, Bemidji, Minnesota. ??pp.
- Perala, Donald A. 1977. Manager's Handbook for Aspen in the North Central States. USDA Forest Service General Technical Report NC-36. North Central Experiment Station, St. Paul, Minnesota. 30pp.
- Sander, Ivan L. 1977. Manager's Handbook for Oaks in the North Central States. USDA Forest Service General Technical Report NC-37. North Central Experiment Station, St. Paul, Minnesota. 35pp.

- Tubbs, Carl H. 1977. *Manager's Handbook for Northern Hardwoods in the North Central States*. USDA Forest Service General Technical Report NC-39. North Central Experiment Station, St. Paul, Minnesota. 29 pp.
- USDI, 2000 Plan Distribution Docket 189 C, Red Lake Indian Reforestation Plan 2008-2058.
- Von Ohlsen, Edward. 1963. *Report on Forest Inventory (CFI Measurement 1 of the Red Lake Indian Reservation Restored Ceded Lands [incl. NW Angle]* USDI Bureau of Indian Affairs. 29 pp.
- Von Ohlsen, E.F. 1959. *Report on the Resummary of the Red Lake Reservation Sawtimber Cruise 1957-1958 (incl. maps)*. USDI Bureau of Indian Affairs, Red Lake Agency. 16 pp.
- Webb III, T., E.J. Cushing, and H.E. Wright, Jr. 1983. *Holocene Changes in the Vegetation of the Midwest*. pp. 142-165. In Wright, H.E., Jr. (ed.), 1983. *Late-Quaternary Environments of the United States*. Vol. 2. *The Holocene*. University of Minnesota Press, Minneapolis.
- Wickstrom, E.B. 1967. *Report on Depletion Cruise Operable Spruce Lands, Northwest Angle of Red Lake Indian Reservation Restored Ceded Lands (incl. maps)*. USDI Bureau of Indian Affairs, Red Lake Agency. 34pp.
- Wickstrom, E.B. 1969. *Report of Pine Inventory Red and White Pine Timber Types, Red Lake Diminished Reservation*. USDI Bureau of Indian Affairs, Red Lake Agency. 26 pp.

6.4.9 Acronyms and Terms

Annual Allowable Cut: The AAC is a volume of wood that can be safely harvested from the forest. Principles of sustained yield guide the definition of “safe.” Sustained yield can only be obtained from a regulated forest condition. In an unregulated forest condition, the AAC may be greater or less than the volume calculated if the resource were regulated. However, the goal of an AAC in an unregulated situation should be achieving a regulated state.

Basal Area: A measure of forest density expressed as square feet per acre, basal area is the cross-sectional area at DBH of all trees on one acre.

Board Foot: A measure of merchantable volume, one board foot is a solid block of wood the equivalent 1” X 1” X 12”. Board foot measure of a tree bole includes only the wood that can be manufactured into boards, accounting for waste. The conversion factor to cords is MBF x 2.

Ceded Lands: The more complete term is the “Restored Ceded Lands;” referring to approximately 156,700 scattered acres of Red Lake Band lands that were part of the treaty cessions to the U.S. government but later restored to Red Lake ownership. The NW Angle is technically part of the restored ceded area, but is sometimes treated as a separate management unit.

CFI: Continuous Forest Inventory. A systematic grid of one-fifth acre plots from which forest information is collected on a periodic basis.

Cord: A measure of merchantable volume; a cord is a stack of 100 inch pole-sized wood four feet high and four feet wide. The conversion factor to MBF is Cords x 0.5. The conversion factor to cubic feet is Cords x 79.

Cover Type: A classification of surface or land use characteristics. There are 46 defined cover types on the Red Lake Reservation, 26 of which are forested cover types.

DBH: Diameter Breast Height is the diameter of a tree trunk at a height 4.5 feet from the ground.

Diminished Reservation: The main, continuous, block of land owned by the Red Lake Band of Chippewa, approximately 649,000 acres; referencing the historical downsizing of Tribal lands by treaty with the U.S. government. It is treated as the primary forest management unit. Other units are the Ceded Lands and the Northwest Angle.

Forest Stand: Refers to a *timber* or *forest* stand (or simply stand), meaning a group of trees similar in species association, age structure, size structure, density/stocking, and other biological characteristics.

Forest Succession: The changes, over time, of forest community species composition and other ecological factors on a given site; a predictable sequence of events on many sites.

Forest Type: A classification of trees of the same species or a particular association of species. A forest type occurs Reservation-wide depending upon site characteristics and forest history. There are 26 forest types recognized on the Red Lake Reservation. Forest types are forested cover types.

GIS: Geographic Information System is a computerized set of maps containing information for each map feature. A GIS has the capability to relate one set of map features to other map features.

High-grading: An improper tree harvest technique where the most merchantable, usually the best quality, trees are removed leaving a stand of sub-merchantable, usually low quality, trees. Little regard is given to the ecological effects or future of the stand. High-grading generally results in long-term reduction of timber and forest values.

Northwest Angle: A largely contiguous block of Red Lake Band lands, 52,841 acres, located on the Northwest Angle of Minnesota, which is located on the northwest side of Lake of the Woods. The only land access is through Manitoba. The NW Angle is technically part of the restored ceded area, but treated as a separate forest management unit, as is the Diminished Reservation and the balance of the restored ceded lands.

OpInv: Operations Inventory is a stand level inventory containing information on age, size-class, volume and condition of each forest stand on the Reservation and is updated periodically.

Regulated Forest: This is a resource management strategy whereby the age class, size class, growth, mortality, and harvest are balanced to provide a long-term sustained yield on an even-flow basis for a given covertime. The forest is managed to provide optimum productivity with appropriate species growing on variable sites.

Stand: Refers to a *timber* or *forest* stand, meaning a group of trees similar in species association, age structure, size structure, density/stocking, and other biological characteristics. Same as forest stand.

Stocking: The relative density/acre of a forest stand is commonly measured by volume, basal area, and the number of seedlings/saplings, depending on the size of the trees within that particular stand.

Succession: The change, over time, of ecological communities and characteristics on a given site; it is a predictable sequence of events on many sites.

Sustained Yield: Yield refers to products derived from the forest, most commonly timber products, although non-commercial and non-timber products are also included. Sustained refers to an even-flow of products, consistent with the capabilities of the land, over a very long period of time, without environmental degradation.

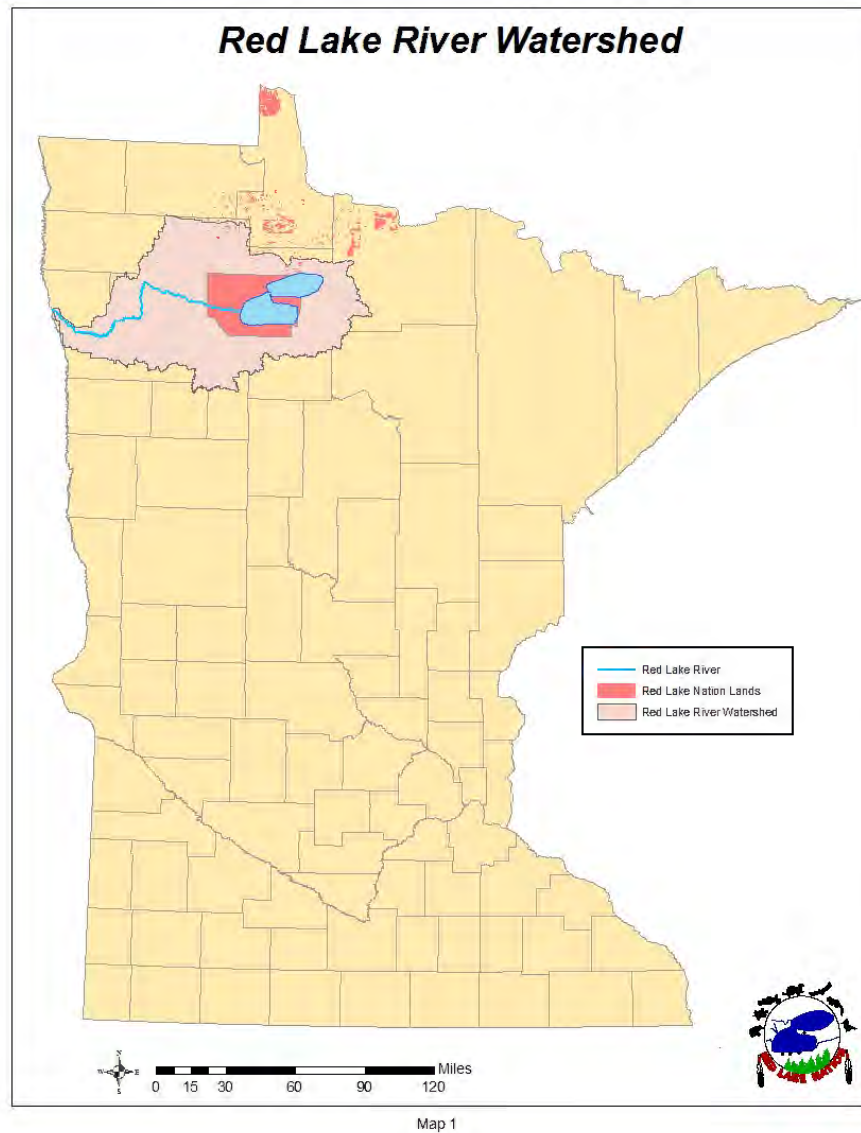
This page left intentionally blank.

6.5 The Water Resource

6.5.1 Description of the Affected Environment

Surface Waters: Lakes and Streams

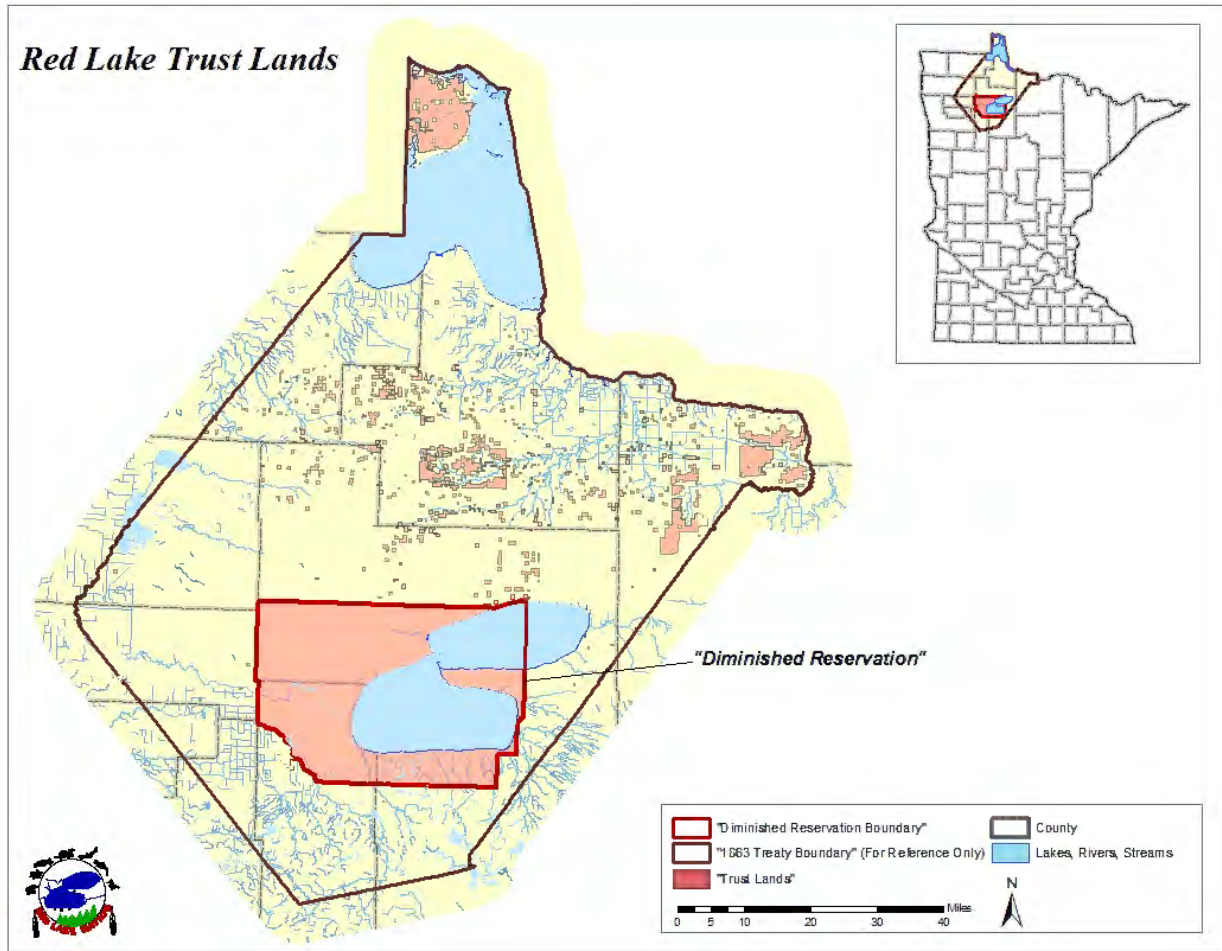
Over 241,000 acres of the Red Lake Band's 836,000 total acres are water. In addition to the more than 135 lakes, there are over 242 miles of rivers and streams on Band land. The largest lakes on, and adjoining, Band lands are Upper and Lower Red Lakes, which cover 119,334 and 164,928 acres, respectively. Of the 284,262 total acres comprising the Red Lakes, 236,513 (83%) are owned and managed by the Band (Figures 6-5 and 6-6).



Source:

Figure 6-5
Red Lake Watershed Ownership

This page left intentionally blank.



Source:

Figure 6-6
Ownership of the Red Lakes

This page left intentionally blank.

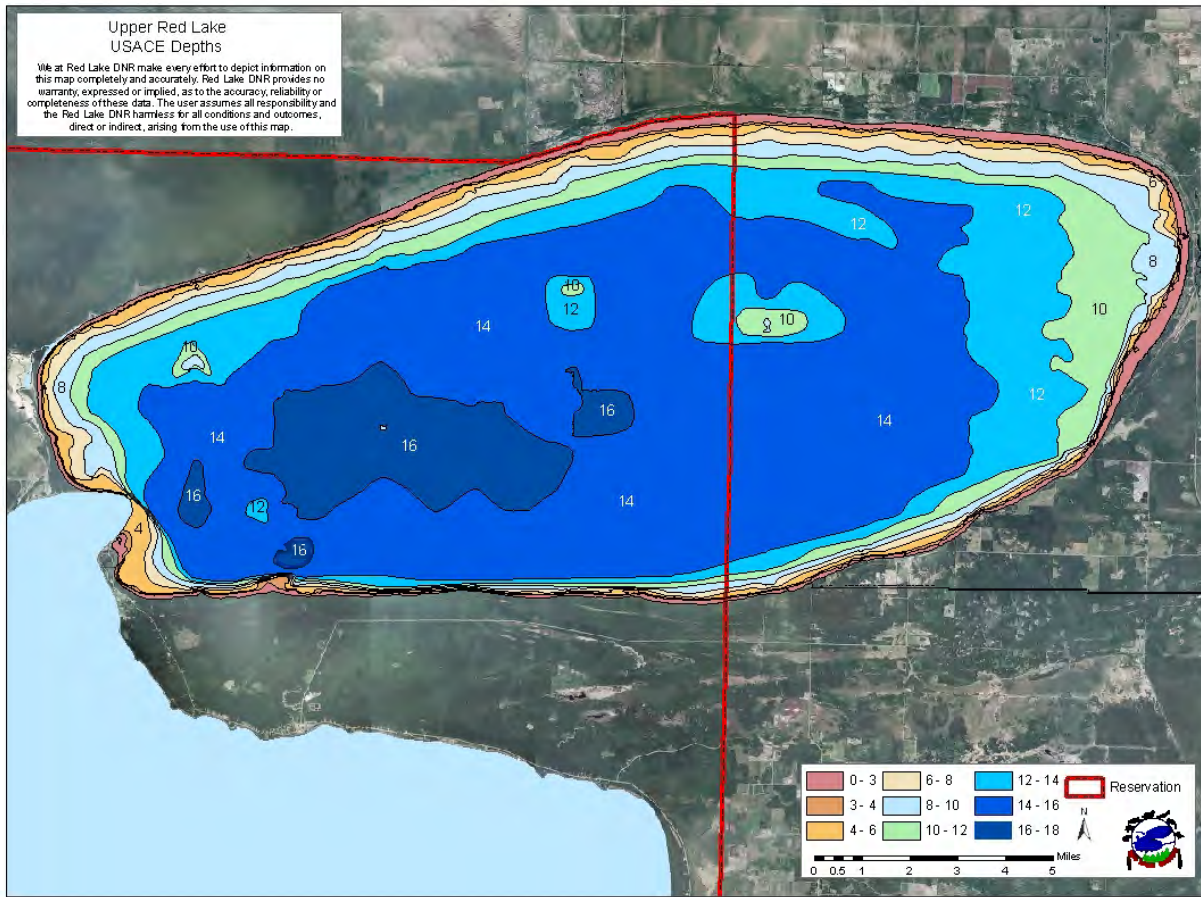
The Red Lakes are shallow, windswept, and generally do not stratify (Figures 6-7 and 6-8). Upper and Lower Red Lake open water temperature closely approximates mean air temperature. A dam, located on the west end of Lower Red Lake and operated by the Army Corps of Engineers, controls the level of both basins. Three lake level gauges are located on the lakes. The first, in operation since the mid-thirties, is located just above the dam. The second and third gauges, which were more recently installed, are located near the mouth of the Tamarack River at Waskish, MN (1995) and near the mouth of the Battle River near Saum, MN (1996).

Located at the headwaters of the Red River drainage, which is part of the greater Hudson Bay drainage system, many of the Tribal lakes and streams are minimally impacted (low in nutrients, minimal shoreline development, etc.) due to minimal development within the relatively small watersheds. Most of the smaller Tribal lakes are located in a narrow band that parallels the southern shore of Lower Red Lake. Nearly all of the tributaries enter Upper and Lower Red Lake on the south and east shores.

Most of the surface waters are hard, alkaline, and of the calcium-magnesium-bicarbonate type which helps buffer the effects of acid rain. pH values are generally neutral to basic. Phosphorus is typically the limiting growth nutrient in many of the local aquatic systems, and controlling the loading of phosphorus is key to maintaining healthy lake and river ecosystems. Phosphorus levels are normally not considered excessive in the lakes we have sampled to date, although we have documented high total and orthophosphorus levels in the Blackduck watershed, especially during spring run-off and following storm events. In a recent Red Lake Department of Natural Resources (RLDNR) and Army Corps of Engineers (ACOE) cooperative study of nutrient loads to the Red Lakes, the Blackduck River watershed was found to have the highest nutrient load of all watersheds studied to date. A random sampling of the smaller Reservation lakes found that most are dimictic, exhibit thermal stratification, and many are almost pristine in nature. Most lakes monitored to date have oxygen and temperature profiles that appear capable of supporting year around aquatic life.

Chlorophyll-a, a pigment extracted from algae, is used as an indicator of primary (first level or algal) production in lakes. From the information we have gathered to date, we know primary production in many of the smaller Tribal lakes is low to moderate, thus most are accordingly termed oligotrophic or mesotrophic. The Red Lakes, because of their shallow, wind-swept nature, contain moderate amounts of nutrients and high residence time (the time it takes to "exchange" the volume of water in a lake - in the case of the Red Lakes, about 10 years), are considered eutrophic or highly productive. The bulk of the analysis we do is aimed at determining the trophic status of a particular waterbody and monitoring its ability to sustain aquatic life. By gathering, assessing, and comparing this data over time, we are able to monitor changes and implement steps toward protecting and maintaining the existing water quality of Tribal lakes and streams.

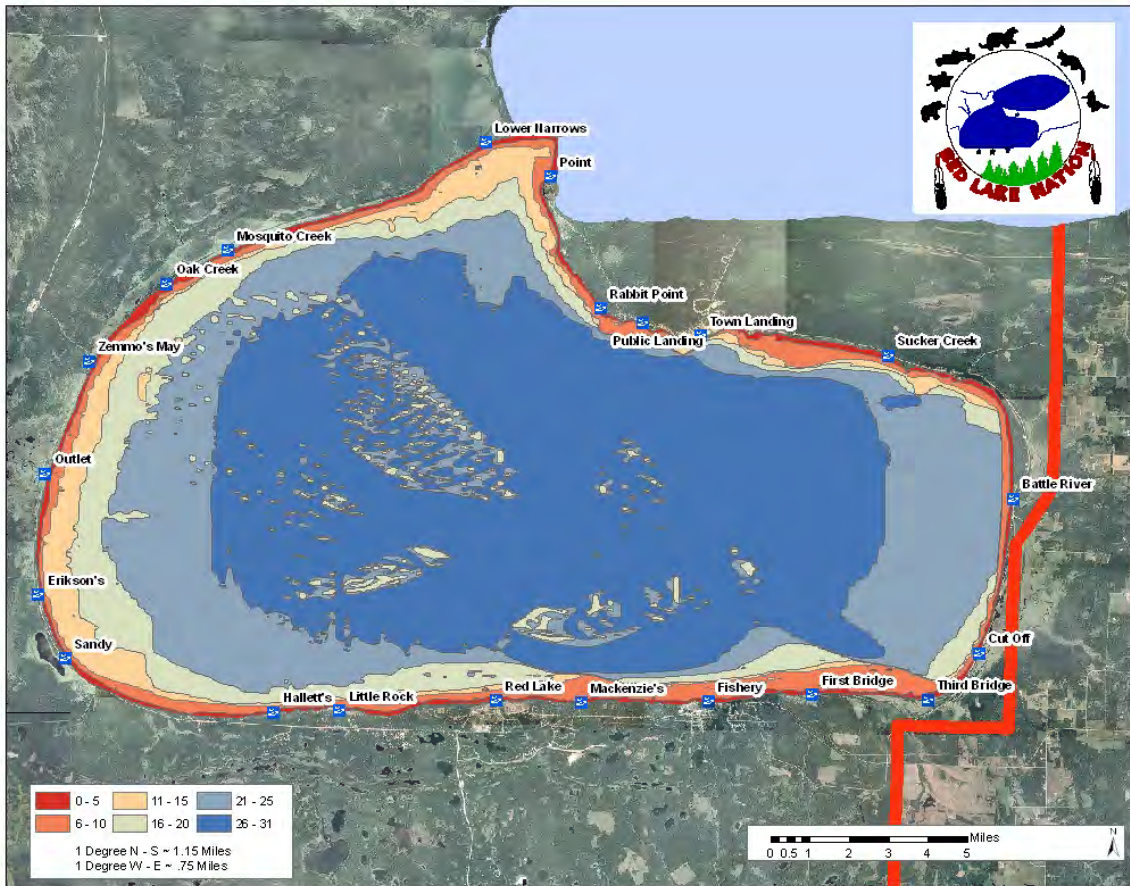
This page left intentionally blank.



Source:

Figure 6-7
Bathymetric Map of Upper Red Lake

This page left intentionally blank.



Source:

Figure 6-8
Bathymetric Map of Lower Red Lake

This page left intentionally blank.

The Secchi disk is one tool used to assess water quality. The Secchi disk is a 30 cm weighted black and white disk used to measure lake transparency (clarity); the higher the value, the clearer the water. Accordingly, lakes with high Secchi disk values would be considered oligotrophic and waters with low values would be eutrophic. The Secchi disk readings for the small Tribal lakes are generally quite high (very clear) with a few of the readings having approached 35 feet -which are some of the highest values in northern Minnesota. Secchi disk readings for the Red Lakes are substantially lower, largely due to higher color levels and to the wind-swept nature of the lake which results in high levels of suspended solids and nutrients. Both of these conditions, along with a resulting higher algal level, will reduce transparency readings making the Red Lakes slightly eutrophic.

Trophic status index (TSI) values are derived from a lake’s mean summer chlorophyll-a, Secchi disk and total phosphorus values. TSI values range from a low of 0 to a high of 100 and are used to compare waterbodies or to track changes in water quality over time. The TSI values for the Red Lakes typically fall in the mid to upper 50's (eutrophic) with the smaller lakes ranging from the mid 30's to the mid 40's (oligotrophic to mesotrophic).

More detailed water quality data for the major lakes and streams from 1990 to the present has been assembled into a comprehensive report detailing the current water quality of Tribal lakes and streams. Copies of the report entitled *"2008 Red Lake Band of Chippewa Indians Surface Water Assessment"* (April, 2009) are available by contacting the Red Lake DNR Water Resources Department. The following table summarizes selected lake and stream water quality parameters we monitored and compiled from 1990 - 1992. These data were included in the last IRMP and have not been updated as existing data have not changed our current decisions.

**Table 6-5
Select Water Quality Parameters, RLDNR, 1990-92**

Parameter	Waterbody	Range of annual mean values (1990-92)
TSI	Small lakes	34.9 - 46.8
	Red Lake	53.2 - 61.2
Secchi Disk	Small lakes	7.0 - 25.0 ft
	Red Lake	2.0 - 5.0 ft
Chlorophyll-a	Small lakes	<1.0 - 5.8 ppb

Parameter	Waterbody	Range of annual mean values (1990-92)
	Red Lake	5.9 - 18.4 ppb
Total Phosphorus	Small lakes	8.7 - 40.4 ug/l
	Red Lake	25 - 46 ug/l
	Streams	42 - 132 ug/l
pH (sfc)	Small lakes	7.01-9.18
	Red Lake	7.84-8.87
	Streams	6.92-9.25
Alkalinity	Small lakes	114 - 206 mg/l
	Red Lake	127 - 147 mg/l

Source:

Clean water has always been important to Tribal members and the importance of clean water and contaminant-free fish were once again confirmed in the IRMP questionnaire results. Surface water monitoring and protection efforts currently underway within the Red Lake Department of Natural Resources Water Resources Program include:

1. Intensive nutrient and physical parameter monitoring of ten in-lake stations on the Red Lakes
2. Basic nutrient and physical parameter monitoring of 135 smaller Tribal lakes on a rotating basis (approximately 35/year)
3. Basic nutrient and flow data collection on the major tributaries to Red Lake
4. Monitoring of contaminants in fish and wildlife, especially mercury in fish tissue
5. Development of Tribal water quality standards
6. Establishment of a biological database (fish, invertebrates) using EPA Rapid Bioassessment Protocols and Minnesota Pollution Control Agency (MPCA) Biological Monitoring Standard Operating Procedures (SOPs)

Groundwater

Generally, little data is available on the groundwater resources of the area. The most comprehensive groundwater data currently available are *Water Resources of the Red Lake Indian Reservation, Northwestern Minnesota* (USGS, 1991), the *2006 Annual*

Monitoring Report, Closed Landfills, Red Lake, MN (BARR, 2006), well logs and sampling records from the landfill monitoring wells, and a select few private wells that may have data available. Other than this information available for the Diminished Reservation, no other data is available for Tribal lands, including the Northwest Angle and restored ceded lands.

The USGS report briefly covers groundwater availability, yield, flow, and quality. In general, all appear to be adequate throughout the Diminished Reservation, and water quality parameters meet the drinking water standards set forth by the United States Environmental Protection Agency. As ground and surface water quality are so closely related, special planning efforts will be needed in the future to protect all of the vast water resources of the area. Local issues and concerns brought forth in the IRMP survey include protecting and providing a safe drinking water supply and preventing groundwater contamination around the landfills.

Groundwater protection efforts currently underway within the RLDNR include:

- Monitoring of the sixteen landfill monitoring wells at the four landfills three times per year when funding is available.
- Delineation of wellhead protection areas (WHPA's) for municipal wells
- Location, mapping, and sealing of all active and abandoned wells on the Reservation

6.5.2 Issues and Concerns

Surfacewater: Lakes and Streams

- Maintain, improve, and protect the biological and chemical integrity of Tribal waters
- Monitor for contaminants in fish, wildlife, and waters

Groundwater

- Prevent the contamination of drinking water supplies
- Maintain groundwater and drinking water quality
- Continue testing landfill monitoring wells per the *Red Lake Landfill Closure Plan*

6.5.3 Goals and Objectives

Surfacewater: Lakes and Streams

Goals:

- Conserve, protect and enhance surface water quality on Tribal lands
- Maintain water quality to support all uses
- Protect riparian areas and lake and stream water quality by maintaining contiguous streambank vegetative cover and watershed wetlands
- Work to prevent exotic/invasive species introduction
- Develop and adopt water quality standards (WQS) for Tribal lakes and streams

Objectives:

- Continue annual baseline water quality data collection on priority Tribal lakes and streams. Computerize data annually so data is readily accessible
- Implement watershed BMP's and work towards joint watershed management in an effort to preserve water quality (e.g. septic and land use codes, development set-back zones, etc.)
- Install detention/treatment ponds to treat major stormwater discharge points
- Health concerns: continue to monitor contaminants in fish and wildlife and update health advisories as needed. Disseminate new information as it becomes available and publish current advisories on a regular basis
- Work with other basin agencies to prevent exotic species introductions to the basin. Monitor for exotics as part of our on-going biological assessment program
- Upon "treatment-as-a-state" approval from EPA, our goal would be to complete the development and adoption of Tribal water quality standards within one year.

Groundwater

Goals:

- Conserve, protect and enhance Tribal groundwater resources
- Locate and seal abandoned wells. Inventory and track status of all wells on the Reservation (e.g. active, abandoned, sealed, future use, etc.)
- Continue to test landfill monitoring wells per *Red Lake Landfill Closure Plan*

Objectives:

- Expand the groundwater database on Tribal lands
- Continue to test landfill monitoring wells per the Red Lake Landfill Closure Plan and recommendations put forth in the annual landfill monitoring well reports
- Establish wellhead protection zones (WHPA's) or "high value areas" to protect

sensitive groundwater and groundwater recharge areas; these areas would be off-limits to industry, etc

- Implement development planning (zoning). Coordinate with other agencies to plan housing, industrial, and other forms of development so they have the least long-term impact on groundwater resources Identify contaminated groundwater areas

6.5.4 Alternatives

Alternative 1 (No Change)

Base water office funding still in place. The Red Lake DNR would continue baseline water quality monitoring and working cooperatively with state agencies to best manage the Red Lake watershed. We would work toward development of a bioassessment program integrating water quality and biotic data to assess waters of the Reservation. Water Quality Standards (WQS) would be developed by the Band upon "treatment-as-a-state" approval from EPA. We would continue testing landfill monitoring wells and reporting on an annual basis to meet federal reporting requirements. Locating, identifying, and sealing abandoned wells, and delineating WHPA's for community water systems would be done if funding and staffing permitted.

FTE's: 8.00

Budget: \$88,900 (BIA) + \$370,100 (EPA)

Surfacewater:

The Red Lake DNR Water Resources Department would continue collecting baseline lake and stream nutrient data and flow data to the extent that existing funding allows. Continued development of a bioassessment program would allow us to more appropriately assess the water quality of the waters of the Reservation. Annual assessments of the data would be made to look at any impacts or trends that may be developing. We would continue working on developing Tribal water quality standards (WQS) with a goal of adopting WQS within one year of receiving "treatment-as-a-state" status from EPA. We would continue to work cooperatively with on and off reservation agencies in watershed management, including implementation of best management practices (BMP's) throughout the watershed. Efforts to prevent the introduction of exotic species to Tribal waters would continue to the best of our ability, and we would work with Tribal planning in development planning (zoning) to aid in protecting water quality by providing lake and stream buffer strips and protecting riparian areas from development.

Due to staffing and budget constraints, assessment efforts would remain focused on the three sub-watersheds surrounding the Red Lakes. Every effort will be made to pursue grant or BIA project funds to initiate specific pollution prevention projects such as stormwater detention/treatment ponds.

Groundwater:

Under this alternative, the Red Lake DNR Water Resources Department would continue testing the existing sixteen landfill monitoring wells. Groundwater protection efforts would include increased efforts in locating active and abandoned wells, locating underground storage tanks, storing the data in our GIS database, and delineating wellhead protection areas for the community water systems. Abandoned wells would be sealed if funding is available.

Alternative 2

Base funding increase. The Red Lake DNR would expand the existing water quality monitoring program to include the restored ceded lands and the Northwest Angle. We would continue working cooperatively with state agencies to best manage the watersheds that contain Band lands. Water Quality Standards (WQS) would still be developed by the Band upon "treatment-as-a-state" approval from EPA. We would continue testing landfill monitoring wells and reporting on an annual basis to meet federal reporting requirements. Efforts to locate and map abandoned well locations and data and delineating WHPA's for community water systems would increase. We would expand our programs reach by cooperating with the Red Lake Nation College, and outside institutions to develop pertinent research projects on Tribal waters.

FTE's: 9.5 (additional biologist and seasonal technician)
Budget: \$177,800 (BIA) + \$370,100 (EPA)

Surfacewater:

The baseline program set forth in alternative one would continue. Additional tasks would include the expansion of lake and stream nutrient data and flow data collection to cover the remaining seven watersheds (those that contain restored ceded and Northwest Angle lands) to the extent that increased funding would allow and to increase the intensity of monitoring efforts in those watersheds already monitored. Under this alternative, extensive fish and wildlife contaminant tissue testing may be possible. Every effort would continue to be made to pursue grant or BIA project funds to initiate specific pollution prevention projects such as stormwater detention/treatment ponds.

Groundwater:

Under this alternative, the Red Lake DNR Water Resources Department would continue testing the existing sixteen landfill monitoring wells. Additional groundwater protection efforts would include locating all active and abandoned wells, locating underground storage tanks, storing the data in our GIS database, and delineating wellhead protection areas for the community water systems. Abandoned wells would be sealed if funding is available.

6.5.5. Decision Matrix

Goals:	Meets goal?	
	Alternative 1	Alternative 2
Conserve, protect and enhance surface water quality on Tribal lands	Likely - diminished land	Likely - all land
Maintain water quality to support all uses	Likely - diminished land	Likely - all land
Protect riparian areas and lake and stream water quality by maintaining contiguous streambank vegetative cover and watershed wetlands	Likely - diminished land	Likely - all land
Work to prevent exotic species introduction	Likely	Likely
Develop and adopt water quality standards (WQS) for Tribal lakes and streams	Likely	Likely
Conserve, protect and enhance Tribal groundwater resources	Likely - diminished land	Likely - all land
Locate and seal abandoned wells. Inventory and track status of all wells on the Reservation (e.g. active, abandoned, sealed, future use, etc.)	Likely - diminished land	Likely - all land
Continue to test landfill monitoring wells per Red Lake Closure Plan	Yes	Yes
Objectives:	Meets objective?	
	Alternative 1	Alternative 2
Continue annual baseline water quality data collection on priority Tribal lakes and streams. Computerize data annually so data is readily accessible	Yes - diminished land	Yes - all land
Implement watershed BMP's and work towards joint watershed management in an effort to preserve water quality	Likely - diminished land	Likely - all land
Install detention/treatment ponds to treat major stormwater discharge	Unlikely	More likely
Health concerns: continue to monitor contaminants in fish and wildlife and update health advisories as needed.	Unlikely	Likely
Work with other basin agencies to prevent exotic species introductions to the basin; monitor for exotics as part of our on-going biological assessment program	Likely - diminished land	Likely - all land
Upon "treatment-as-a-state" approval from EPA our goal would be to complete the development of and adopt Tribal water quality standards within one year	Likely	Likely
Expand the groundwater database on Tribal lands	Unlikely	Likely
Continue to test landfill monitoring wells per the Red Lake Landfill Closure Plan and recommendations put forth in the annual landfill monitoring well reports	Yes	Yes

Objectives:	Meets objective?	
	Alternative 1	Alternative 2
Establish wellhead protection zones (WHPA's) or "high value areas" to protect sensitive groundwater and groundwater recharge areas	Unlikely	Likely
Implement development planning (zoning).	Unlikely	Likely

6.5.6. Integrating Resource Management

To provide increased integration of the overall management of Red Lakes' natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Waters Resource**.

Cultural and Traditional Resource

1. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource
2. Cooperate on development of site identification and documentation
3. Coordinate on cultural resource protection

Fishery Resource

1. Coordinate to sample lakes and formulate updated fish consumption advisories. Share data collected with the Tribal Conservation Department so they can relay the information to the public
2. Cooperate on the collection of data on the overall productivity of Tribal lakes and streams
3. Cooperate on monitoring and managing lake levels to promote water quality and fish habitat
4. Cooperate on studying lake level fluctuations effect on spawning habitat
5. Lake levels should be managed to promote water quality and fish spawning and nursery habitat

Wildlife Resource

1. Work together monitoring water quality and water levels and the effect they have on area lakes, streams, wetlands, and wildlife management areas
2. Share information regarding wildlife species affecting and affected by water level manipulation caused by natural factors, wildlife or humans
3. Share rapid bioassessment data related to lake and stream surveys
4. Share noxious weed data and surveys
5. Share contaminant data

Forest Resource

1. Work together to implement best management practices (BMPs) to prevent erosion, minimize debris left at the logging sites, and prevent improper disposal of petrochemicals
2. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat
3. Work to draft and adopt enforcement codes

Wetland Resource

1. Cooperate on development of new resource regulations and codes
2. Work together monitoring water quality and water levels and the effect they have on area lakes, streams, wetlands, and wildlife management areas
3. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource
4. Cooperate on the development of a Well Head Protection Program and Drinking Water Protection Areas
5. Share rapid bioassessment data related to lake and stream surveys
6. Share noxious weed data and surveys
7. Work together to assess and restore previously degraded areas such as the Zah Gheeng marsh
8. Share contaminant data
9. Cooperate on management of aquatic beds (i.e., bulrushes) and lake and stream buffer strips

Environmental Protection

1. Cooperate on the development of a Well Head Protection Program and Drinking Water Protection Areas
2. Assist in performing water quality surveys
3. Share groundwater monitoring well data, jointly review the annual landfill monitoring well report and landfill closure plan on an annual basis
4. Work together to develop water quality standards and environmental codes

Conservation Enforcement

1. Work together on development and enforcement of water quality standards and codes, and illegal dumping enforcement
2. Notify enforcement if water quality problems or violations are encountered that would threaten human health or the natural resources of the Reservation
3. Share fish and wildlife contamination data we collect. Provide updates to the fish consumption advisory for Tribal Lakes as needed
4. Work on developing Tribal codes, rules, and regulations to protect the resource

6.5.7. References

- Barr Engineering Company. May 1998. *1997 Annual Monitoring Report, Closed Landfills, Red Lake, MN.*
- Barr Engineering Company. April 1999. 1990-1998 Water Quality Assessment of Selected Reservation Lakes and Streams.
- Holder, Bobby J. August, 1991. Clearwater River Environmental Study. Red Lake Watershed District Project #72. Northwest Experiment Station, U of MN Crookston.
- Red Lake Watershed District and HDR Engineering, Inc. June 6, 1994. Clearwater River Nonpoint Study.
- Red Lake Watershed District, Thief River Falls, MN. 1993. Water Quality Report: Project #46.
- Widseth, Smith, Nolting and Associates, Inc. January, 1990. Good Lake Impoundment Project Preliminary Engineers Report for Red Lake Watershed District.
- U.S. Army Corps of Engineers, U.S. Army Engineer District, St. Paul, MN. 1964. Reservoir Regulation Manual, Red Lake Dam and Red Lake Reservoir.
- ACOE Water Resources Study Branch. 1993. Phase I Hydrologic and Water Quality Monitoring Review. U.S. Army Corps of Engineers, U.S. Army Engineer District, St. Paul, MN. 27pp.
- Ruhl, James F. 1991. Water Resources of the Red Lake Indian Reservation, Northwestern Minnesota. United States Geological Survey. Water-Resources Investigations Report 90-4163.
- Red Lake Department of Natural Resources. 1993. Water Resources of the Red Lake Band of Chippewa Indians (Draft). (unpublished).
- Manydeeds, Stephen A. (editor). 1992. 1992 Mineral Frontiers on Indian Lands. United States Department of the Interior, Bureau of Indian Affairs, Division of Energy and Minerals, Golden, Colorado 80401. General Publication G-92-2.
- USGS. 1993. Nutrients, Suspended Sediment, and Pesticides In Waters of the Red River of the North Basin, Minnesota, North Dakota, and South Dakota, 1970-1990. Water-Resources Investigations Report 93-4231.

- St. Paul District, U.S. Army Corps of Engineers. March, 1975. Final Environmental Impact Statement Upper and Lower Red Lakes, Operation and Maintenance Activities, Red Lake River Basin, Minnesota. Department of the Army. 1135 U.S. Post Office and Custom House. St. Paul, MN 55101.
- St. Paul District, U.S. Army Corps of Engineers. December, 1980. Red River Of The North Reconnaissance Report: Red Lake River. Final Report.
- Megard, Robert O. May, 1980. Limnological Survey Of Reservoirs In Minnesota, North Dakota and Wisconsin Operated By The St. Paul District U.S. Army Corps Of Engineers. Part 1: Transparency, Concentrations of Planktonic Algae, and Concentrations of Phosphorus. Department of Ecology and Behavioral Biology. 108 Zoology Bldg. University of Minnesota, Minneapolis, MN 55455. Final Report for U.S. ACOE contract #DACW37-78-C-0167.
- Megard, Robert O. November, 1980. Limnological Survey Of Reservoirs In Minnesota, North Dakota and Wisconsin Operated By The St. Paul District U.S. Army Corps Of Engineers. Part II: Tabulation of Data. Department of Ecology and Behavioral Biology. 108 Zoology Bldg., University of Minnesota, Minneapolis, MN 55455. Final Report for U.S. ACOE contract #DACW37-78-C-0167.
- Megard, Robert O. November, 1980. Limnological Survey Of Reservoirs In Minnesota, North Dakota and Wisconsin Operated By The St. Paul District U.S. Army Corps Of Engineers. Part III: Summary Tables and Graphs. Department of Ecology and Behavioral Biology. 108 Zoology Bldg., University of Minnesota, Minneapolis, MN 55455. Final Report for U.S. ACOE contract #DACW37-78-C-0167.
- Megard, Robert O. April, 1981. Limnological Survey Of Reservoirs In Minnesota, North Dakota and Wisconsin Operated By The St. Paul District U.S. Army Corps Of Engineers. Part IV: Concentrations of Inorganic Ions. Department of Ecology and Behavioral Biology. 108 Zoology Bldg., University of Minnesota, Minneapolis, MN 55455. Final Report for U.S. ACOE contract #DACW37-78-C-0167.
- Elwell, A.S., Holt, C.S. and C.H. Fuchsman. 1973. Environmental Biological Aspects Of Water Management Alternatives In The Red River Subbasin Minnesota. Center For Environmental Studies, Bemidji State College, Bemidji, MN.

6.5.8 Acronyms and Terms

ACOE: Army Corps of Engineers

BIA: Bureau of Indian Affairs

BMP's: Best management practices

Chlorophyll "a": An algal pigment

DO: Dissolved oxygen

EPA or USEPA: United States Environmental Protection Agency

Eutrophic: High productivity

IRMP: Integrated resources management plan

Mesotrophic: Moderate productivity

Oligotrophic: Low productivity

pH: A measure of hydrogen ion concentration; <7 is acidic, 7 is neutral and >7 is basic

RLDNR: Red Lake Department of Natural Resources

Secchi disk: A 10-inch weighted white disk used to measure lake transparency

TP: Total phosphorus

TSI: Trophic status index; mathematically derived from mean Secchi sick, chlorophyll-a and total phosphorus values; scale ranges from 0 (low production) to 100 (high production)

WQS: Water quality standard

6.6 The Wetland Resource

6.6.1 Description of the Affected Environment

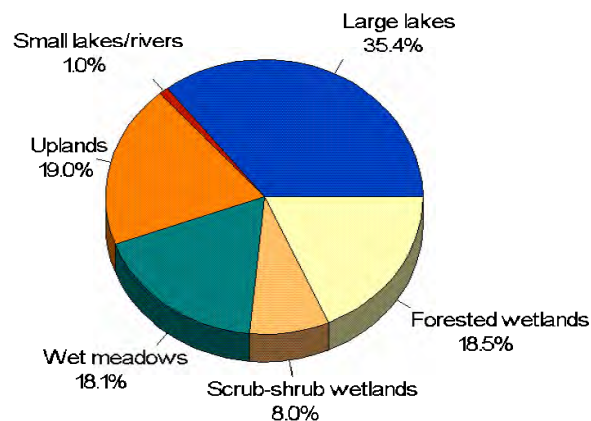
The wetland resources of the Red Lake Nation are both vast and diverse. These wetlands consist of emergent wetlands, wet meadows, scrub-shrub wetlands, forested wetlands, and various combinations of these types. Vegetation in these wetlands consists of various compositions of vegetative types, ranging from purely deciduous (hardwoods) to purely coniferous (pines including tamarack), as well as mixtures thereof. Hydrological regimes range from temporarily flooded to seasonally flooded, permanently saturated, and permanently flooded types.

Amongst the variety of wetland ecosystems native to the Red Lake Reservation are bogs and fens, the latter being some of the least common wetland systems in the world. Included in Red Lake's vast peatlands are areas of what have been termed "patterned peatlands". Patterned peatlands have a characteristic landscape expression exhibiting (raised) bogs and water tracks. In the water tracks, a network of parallel, linear peat ridges (strings) and water-filled depressions (flarks) can be seen that have developed perpendicular to the direction of water flow. There are a number of these areas, either within the primary block of the Red Lake Reservation (for example: south of the Butcher Knife Chain, and east of the Kiwosay), or amongst the restored ceded lands north of the primary block. The area north of the primary block, commonly known as the Red Lake Peatlands, contains some very large water track features which have been the object of worldwide research into peatland development and processes. Minnesota, with approximately 6.7 million acres of peatlands, contains the largest peatland area in the United States (excepting Alaska). Much of these peatlands lie within, or adjacent to, Red Lake's land base.

The Red Lake patterned peatlands have received worldwide scientific recognition. More importantly, though, is the recognition historically placed upon these swamplands by the Anishinabe people. During treaty negotiations, and especially during the days of the Volstead Act, the Red Lake leaders were adamant in voicing their opinion that the swamplands were central to the people's way of life. The Anishinabe people realized that these swamplands nurtured many of their critical resources. As they understood it, the entire Anishinabe subsistence cycle of hunting, fishing, and gathering depended upon the region's water system which itself was intricately connected to the region's vast wetland resources. Anishinabe traditional knowledge recognized that these wetlands were not only crucibles of life for a vast number of plants and animals but were an integral part of the people's life. The Anishinabe Elders recognized that the existence of these wetland systems was inevitably and undeniably linked to their own existence.

The lands of the Red Lake Band of Chippewa Indians are situated in north central Minnesota, in an area formerly dominated by Glacial Lake Agassiz approximately 10,000 years ago. The Red Lakes are, in fact, the most notable remnants of Lake Agassiz. The main block of the reservation is positioned at the southernmost extent of this ancient glacial lake in this area. The soils of these lands are composed of two basic types. One type is the organic soils which compose the lowland peatland areas mentioned above. Underlying the areas of organic soil and also composing the upland, or topographically higher areas, are mineral soils. The mineral soils consist of sands, silts, clays and gravels which were deposited in and along the lake bed and then reworked by glacial processes. The area south and east of Lower Red Lake as well as the Ponemah peninsula features mildly hilly topography consisting of ancient beach ridges and minor glacial moraines with predominantly mineral soils. The area north and west of Lower Red Lake is best typified as flat with predominantly organic soils. Here, the poor drainage resulting from the flatness of the topography in this area combined with the generally cold climate have produced vast areas of (peatland) bogs and associated fens, most of which have developed within the last 5,000 years (*Wright, Jr. 1992*).

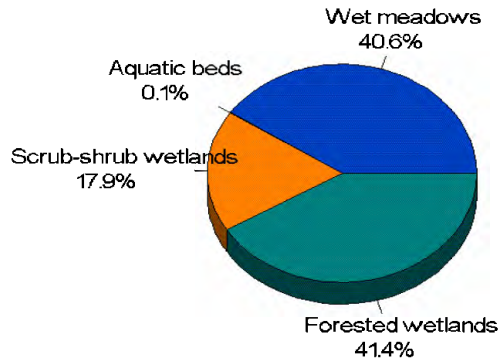
Considering the total resource base (both land and water) within the primary block of the Red Lake Reservation (650,000+ acres), we find that wetlands constitute 44% (289,681 acres) of the resource base, open water constitutes 37% (236,671 acres), and uplands constitute the remaining 19% (123,596 acres). Just considering the land (or terrestrial) portion of the resource base, wetlands constitute 70% of the land base, and uplands 30%. Therefore, while water constitutes the largest component of the Red Lake resource base, wetlands are clearly the next largest component. Although we have not yet compiled figures for the restored ceded lands, we believe that those figures will probably indicate that the area is more heavily dominated by wetlands than the primary block.



Source:

Figure 6-9
Habitat Types by Percentage of Total Diminished Reservation Base

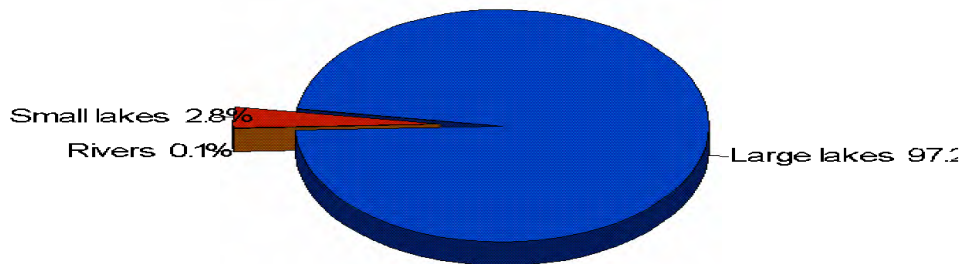
Looking (in terms of Wetland habitats) at the entire land (and water) base of approximately 655,537 acres which comprises the main block of the Red Lake Reservation, wetlands (that is the combined acreages of all wetland types) make up the largest component at 44% of the 'land' base. Coming in a close second is the category consisting of the open waters of the Red Lakes, other large lakes (greater than 20 acres), small lakes, and rivers. Upland acreage on the main block constitutes just less than 20% of the entire 'land' base.



Source:

Figure 6-10
Wetland Habitat Types by Percentage of Diminished Reservation Wetland Base

Looking just at the acreages of wetlands on the primary block, the dominant wetland type is Forested Wetlands, with Wet Meadows coming in a close second, and the Scrub-Shrub wetland type consisting of approximately half the acreage of either of the other two categories. The combined acreage of wetlands on the primary block of the Red Lake Reservation comes to better than 289,681 acres.

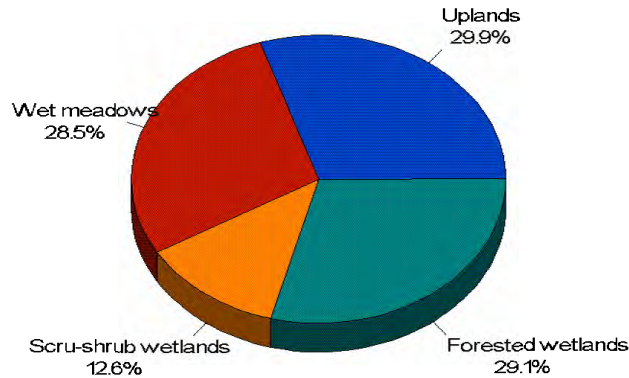


Source:

Figure 6-11
Open Water Habitat Types by Percentage of Diminished Reservation Water Base

A look at acreages of open water shows that the combined acreages of all the Small Lakes (less than 20 acres) makes up only 3% and the acreages of open water in the rivers less than 1% of the total open water area on the primary block of the Red Lake Reservation. The Large Lake category, or all lakes greater than 20 acres, makes up 97%

of the open water area at Red Lake. The total acreage of all open waters within the primary block is about 236,657 acres.



Source:

Figure 6-12
Terrestrial Habitat Types by Percentage of Diminished Reservation Land Base

Taking a look at just the land area within the primary block (without any open water component), Wetlands constitute 70% of the land area while Uplands constitute 30%.

Wetlands have always played an essential role in the subsistence economy of the Red Lake people. This is even evidenced in the fact that the Ojibwe language reveals clear distinctions between swampy areas and what might be interpreted as peat areas.

Vegetation commonly found in wetland areas was important as food and medicine, in religious and magical rituals, as raw materials for mats and baskets, and in the construction of houses and canoes. Many food plants were harvested from northern Minnesota marshes and swamplands. The most important of these included the wild turnip, the wild lily, and wild rice. Wild rice was a particularly important food source, and the prevalence of wild rice in northern Minnesota freshwater habitats was one factor that was considered by prehistoric and historic Indians in selecting settlement locations for the summer and fall.

A number of peatland plants provided medicines for the Ojibwe, including *Acorus calamus* (sweet flag), used as an analgesic; *Sagittaria arifolia* (arrowleaf), boiled as a digestive aid; and *Typha latifolia* (cattail) down used as a burn dressing. Another important species of the region was *Cornus stolonifera* (red osier dogwood) which when mixed with tobacco was called kinikinic which was smoked for religious and ceremonial purposes as well as for pleasure. A number of tree species common in peatland areas were also used. Birchbark was a critical resource - used for making canoes, summer house coverings, and containers. Mats for floor coverings were woven from the fibers of a number of plant species including *Scirpus validus* (bullrush). Several kinds of trees were used in the construction of summer lodges and winter tipis

including the various *Pinus* species. Pitch from the coniferous trees found in and around peatlands was used as glue and sealant for canoes and containers.

Animal resources, especially those which frequented or inhabited wetlands, were also important to the Indian way of life. Muskrat were particularly important for their pelts during the historic fur trade period in Minnesota (roughly 1775-1850). Beavers were also an important resource both historically as part of the fur trade and prehistorically. Other small and medium-sized mammals found in peatlands or the surrounding uplands included skunks and otters. These species were used for their pelts as well as their meat. Historic references indicate that otter skin, bear skin, and beaver skin were highly prized representations of wealth for display, exchange, and payment of debts. Other animals utilized included ducks, geese, fish, and turtles. Historians also speculate that prehistoric peoples may have utilized peatlands by driving large animals such as moose, caribou, and bison into boggy areas in order to dispatch them more easily.

The peatlands to the north and east of the Red Lake Reservation are part of a regional water network and play an intrinsic role in filtering the waters entering Upper and Lower Red Lake. Over the course of the past century, Reservation leaders have expressed an understanding of the area they inhabit as an ecosystem central to sustaining their way of life. Despite attempts to privatize their collectively held land base, to ditch and drain the peatlands, and to mine peat for fuel, the Red Lakers have steadfastly maintained their commitment to preserving the integrity of the ecosystem. Peatlands and wetlands have played a key role in that effort.

In defending their resources, the Red Lake leaders sought to protect the quality of their environment as well as their land base. Various state and federal programs throughout the years threatened to alter the water level of Red Lake - the backbone of the Red Lake Ojibwe subsistence economy. Red Lake leaders understood that the long-term survival of their culture rested on their continued ability to adapt their subsistence base successfully to the changing conditions around them.

In 1908, the Red Lake Band was confronted with the Volstead Act which aimed at draining the public swamplands in northern Minnesota. Red Lake leaders expressed a sophisticated understanding of ecological relationships as they protested against both the drainage project and the proposed use of their Tribal funds. Ojibwe leaders explained that, because of its influence on the level and quality of the waters of Red Lake, the swampland supported plant and animal life central to their people's subsistence. The wetlands environment nurtured many of their critical resources. The network of lakes, peatlands, and forest supported the entire Ojibwe subsistence cycle.

In the 1920's and 1930's, Euroamericans who had settled downstream toward Thief River Falls favored building a dam at the outlet of Lower Red Lake to regulate the flow of the Red Lake River and stem downstream flooding. Considering problems generated by the drainage of peatlands subsequent to the Volstead Act, Red Lake

leaders could support a dam that would also regulate the water level of Red Lake. However, rather than allowing the dredging of the entire length of the Red Lake River within the Reservation and straightening its sluggish, meandering channel, Red Lake leaders fought to keep their portion of the river intact.

In the 1970's the Red Lake Tribal Council found itself confronted with yet another threat to the ecosystem when the Minnesota Gas Company (Minnegasco) proposed to mine peat from the lands north of Red Lake as an alternative energy source. Concerned that mining the peatlands would have threatened the water quality of Red Lake, potentially harming the Red Lake fishing industry in particular, Red Lake Tribal leaders passed a resolution to preserve the peatlands untouched. Their action was in keeping with a decades-long commitment to the integrity of their ecosystem.

The Red Lake DNR's Wetland program is un-staffed but will increase by one FTE and has a budget of approximately \$80,000. The Program provides wetland consultation and GIS mapping services. Programs benefiting from these services include the Red Lake Tribal Roads program, Red Lake Builders, the Red Lake Planning Department, the DNR Programs of Forestry and Waters, and other programs as needed. Among the benefits realized by the Band are the incorporation of wetland avoidance in various construction projects, planning for and accomplishment of compensatory mitigation where impacts cannot be avoided, and the existence of an efficient interface for securing Corps of Engineers Wetlands Permits where needed. The Wetlands Specialist also provides a voice for the Red Lake Band on various committees and boards involved in decision-making with regards to natural resource issues in the Red Lake and Red Lake River basins. Amongst these are the Beltrami County Soil and Water Conservation District, the Red River Basin Board's Guiding Principles Task Force, the Red River Basin Flood Damage Reduction Work Group, and the Minnesota Pollution Control Agency's Water Quality Planning Process for the Red River Basin. Additionally, the Red Lake Wetlands Program provides outreach services and training in wetland and wetland-related issues for the tribes in the USEPA's Region V (consisting of Michigan, Minnesota, and Wisconsin). Funding for the Red Lake Wetlands Program is acquired through grants from the USEPA. The Wetlands Program is currently in need of an additional FTE (for a total of 2) to provide more efficient services to the Band. This cannot be accomplished within the current budget allotment.

At the present time there is minimal development pressure on wetlands. For the near future, development pressure on wetlands will probably continue to be dominated by logging activities and/or the siting of new homes adjacent to lakes and stream corridors. Both of these activities can be expected to gradually increase over time. The use of heavy machinery in wetland areas, both from logging and home siting, can and has caused considerable damage in the past, and will likely continue. Logging and home siting near lakes and streams may also result in siltation and an overall reduction in water quality.

Although current logging contracts include language which dictates the use of Best Management Practices (BMPs), there are simply insufficient resources available to adequately monitor logging operations or to enforce against infractions. A program designed to monitor and enforce the use of BMPs would be a very valuable tool to preserve wetland ecosystems and water quality.

6.6.2. Issues and Concerns

- Lack of adequate biological inventory of Red Lake Nation lands
- Potential loss or alteration of wetlands acreages due to:
 - 1) filling for development, e.g. road-building
 - 2) alterations to groundwater hydrology as a result of: the utilization of logging roads and winter-roads; and the use of clearcutting
- Lack of wetland and wildlife preservation areas
- Loss of species diversity due to clearcutting techniques, drainage, and water quality issues
- Degradation of wetlands and waters due to point and non-point discharges
- Control of nuisance & exotic plant species (cattail & purple loosestrife)
- Red Lake should be the sole permitting agency (404) over its own lands

6.6.3. Goals and Objectives

Goals

- Maintain and refine the Red Lake Nation's Wetlands Inventory
- Implement Tribal Wetlands Protection Codes
- Develop a Red Lake Scientific and Natural Area program/designation
- Create Red Lake Wetland and Wildlife Preservation Areas
- Maintain/enhance biodiversity of Red Lake Nation lands
- Create/enhance more wetland areas: along streams, (including oxbow restorations), at stormwater discharge points, and at treatment pond outlets
- Minimize future alterations to Hydrology of Red Lake Nation ecosystems
- Prevent/control infestation of wetland areas by nuisance & exotic species
- Effect Assumption of Section 404 Regulatory Authority (over Wetlands Permitting) by the Red Lake Nation on all Tribal lands

Objectives

- Work through grants to expand and update the existing inventory
- Have Tribal Council approve and implement a wetland code on the Reservation
- Develop an inventory of suitable areas for Tribal Council consideration
- Develop an inventory of suitable sites and draft management plans for Tribal Council consideration
- Develop special projects (e.g., NAWCA, etc.) to enhance biodiversity

- Work with Forestry to improve harvest plans to incorporate more biodiversity
- Work cooperatively with Roads, Builders, Housing, and other departments towards creative planning and development of mitigation sites
- Encourage use (and preservation) of Buffer Strips along stream corridors and lakeshore areas. (Implement through Wetlands Code and Forestry's Silvicultural Policy)
- Institute monitoring and enforcement of BMP's in Forestry's Harvest Plans
- Institute, monitor, and enforce wetlands code on Reservation lands
- Develop plan and funding source to perform periodic search (and eradication) of exotics, include an educational component
- Determine costs of Red Lake assuming and running the regulatory program - bring to Tribal Council for consideration

6.6.4. Alternatives

To a large degree, the importance of the preceding commentary is that it clearly documents the Red Lake people's understanding that their livelihood, as well as their culture's continued existence, is directly related to the conservation (and preservation) of the Reservation's wetland resource. The Anishinabe-Ojibwe culture has historically relied upon an oral tradition to transfer its values and understandings from one generation to the next. However, in the face of mounting societal pressures, it is becoming increasingly important for the Red Lake people to consider codifying the long-held environmental policies and knowledge passed on from the Elders into a written form of law. In so doing, they will become armed with a tool that seeks not only to preserve the wetlands resource but also the future of the Red Lake people as a whole.

Due to recent controversies concerning wetlands and wetland protection throughout the United States and especially within the state of Minnesota, it has become more important than ever for the Red Lake people to take a stand concerning the protection of their valuable wetland resource. In as much as the Anishinabe people are the protectors of the Earth, the vast wetland resources of the Red Lake people constitute a vital key to the protection of the Red Lake water resource. To this end, we must consider some means of protecting the wetland resource so as to ensure that the future generations of the Red Lake Nation will have clean waters as well as a supply of good meat, fish, plant foods, and medicines for their subsistence.

In addition to the benefits mentioned above, there is one more factor that must be considered in regard to development and institution of a wetlands protection plan for the Red Lake Nation. That factor actually involves the issue of sovereignty. At the present time, the Corps of Engineers, in its capacity as a federal agency tasked with maintaining wetlands protection throughout the United States, maintains that it has jurisdiction over the waters of the Red Lake Nation. The Red Lake Tribal Council does not agree with this presumption although ultimately the issue would most certainly

require litigation in federal court to obtain resolution. There currently is, however, a mechanism for Red Lake to assert its own jurisdiction over Tribal waters. In order to do this, Red Lake would first have to adopt some form of wetland protection codes. With those codes in place, Red Lake could apply to the federal government for assumption of Section 404 of the Clean Water Act. (Section 404 is the federal permitting program which regulates activities in wetlands.) With wetlands protection codes and a permitting program in place, the assumption of Section 404 would mean that Red Lake would maintain the primary control over Tribal waters and wetlands. Accordingly, Red Lake would make the permitting decisions, etc., on its own lands, with the backing of the federal government.

As part of the IRMP process, we must consider the implications of possible alternatives for wetlands protection. Therefore, we offer the following four alternatives regarding wetlands protection for the consideration of the people of Red Lake: *(each is provided with a brief listing of major features)*

Alternative 1: No-action

Following this alternative would, in essence, be a continuation of business as usual on the Red Lake Reservation. Under this alternative, the Wetlands program would continue to provide the services that it currently does, but there would be no wetlands protection code implemented. Peatlands, however, would continue to be afforded protection under the existing Tribal Council Resolution. Other areas such as lowland woodlands and wet meadows would only be protected in designated wildlife areas.

As noted previously, at the present time there is currently little development pressure (other than logging and/or housing) on wetlands. However, making the assumption that silvicultural activities and demands for housing will continue at their current pace (at least), there will eventually come a time when there are few upland areas left for development. Furthermore, activities on those areas that remain, by essence of their proximity, will have an even more direct impact to the wetland resource. As that time approaches, wetland areas will become increasingly more susceptible to development impacts. The longer that this current mode of development on the Red Lake Nation continues (without an enforceable wetlands protection code in place) the greater the impact to, and loss of, wetland habitat will be. Eventually there will come a time when the Red Lake Nation will be compelled to institute a program to preserve the wetland habitat their subsistence depends upon. Therefore, it is important to consider the development of wetlands codes as well as the institution of an enforceable wetland protection program at this point in time, when many of the wetland resources are essentially yet intact. Although pursuing this no-action alternative has very little current monetary cost, it could conceivably be very costly (both in terms of dollars and subsistence-based resources) when eventual institution of an enforceable wetland protection program occurs.

With no wetlands code or permitting program in place, Red Lake will still be subject to the Corps of Engineers presumption that the Corps maintains ultimate jurisdiction over Tribal waters and wetlands. Fragmentation of the wetland resource, loss of biodiversity, and continued alteration of the hydrology of Red Lake's ecosystems would be some of the results of this no-action alternative. As the wetland resource begins to diminish, there will be resultant declines in fish and game populations, as well as losses of natural (plant) food sources and medicines.

The following alternatives consist of differing approaches to the development of an enforceable wetlands protection program at Red Lake.

Alternative 2: Designation of Wetlands of Special Resource Value

The second alternative we might consider is the creation of a wetlands protection program based on a ranking of wetlands (and wetland habitats) according to their resource value. This categorization would most probably designate low, medium, and high value wetlands, and possibly wetlands of special resource value. Once the various wetland habitat types are ranked according to their inherent plant, animal, and water-related resource values, Red Lake would make a determination of which, if any, of these might remain susceptible to development. Contemporaneously, there would be a determination of certain wetlands which would be designated as being protected from development and development-related impacts.

Following this policy, Red Lake could choose to allow certain development activities to occur in low value wetlands while allowing a more restrictive list of activities to occur in medium value wetlands. In regards to those wetlands designated to be of high value, a decision would be made to either prevent any development activity whatsoever or to allow only those certain types of activities that have been designated as having either the lowest or no impact. In currently established programs of this nature, generally those wetlands designated to be of special resource value are protected from any and all impacting activity. In addition, while allowing certain activities to occur in (certain) wetlands, conditions could be established which would provide for the use of best management practices to guide the activity such that impacts are either minimized or avoided. Furthermore, there could be a size criteria established. For example, wetlands less than an acre in size could be exempted from regulation.

To properly institute this alternative, it would be necessary to implement a permitting process whereby each and every proposed activity would be evaluated according to both its potential impacts and the type of wetland it would affect. In order for this system to be effective, some method of establishing monitoring and enforcement would have to be implemented. Additionally, set guidelines would have to be established along with penalties (civil and/or criminal) which could be implemented subsequent to disregard of the established policy. The establishment of a regulatory, monitoring and enforcement presence would require funding for several full-time positions, as well as

required transportation and office space. Some of the costs could be recouped in the form of fees levied to apply for a permit and/or fines assessed on perpetrators of illegal (wetlands impacting) activities. Additionally, we would suggest forming a Council of Elders to screen permitting decisions prior to Council action to further ensure that decisions are made with traditional values in mind for the good of the people as a whole.

This alternative would provide a moderate measure of protection for Red Lake's wetland resource. However, the grouping of wetlands into categories according to their resource values could be both difficult and time-consuming and it would be a highly subjective process. While affording some measure of protection for wetlands, this system is subject to some serious drawbacks. Allowing the degradation of low and/or medium value wetlands would, over time, cumulatively result in the gradual loss of these types of wetlands. In many cases, wetlands provide a filter or buffering affect against impacts to other wetlands. If that buffer is lost, those adjacent wetlands are even more at risk. In comparison to other forms of wetland protection policy, this could prove to be a very cumbersome policy that would present difficulties for both the monitoring and enforcement efforts. This policy would probably require the most effort in terms of public education and awareness, and certainly the most effort in terms of public cooperation.

To be most effective, this protection policy should include a provision for the implementation and enforcement of the use of buffer strips between any impacting activity and a regulated wetland area. While the adoption of an Alternative 2 type of protection policy would provide some protection of the Red Lake wetlands resource, the protection of one particular wetland type would actually be at the expense of another wetland type. Alternative 2 might prove sufficient for the assumption of Section 404 regulatory authority, although it is unlikely, considering today's regulatory atmosphere.

One additional consideration, in conjunction with adoption of an Alternative 2 type of protection policy, would be the institution of a Red Lake Scientific and Natural Area program and the creation of Red Lake Wetland and Wildlife Preservation Areas.

Staffing at a level of 2 FTE's would most probably be adequate to pursue this alternative. *NOTE:* This does not include any increased law enforcement needs.

Alternative 3: "No Net Loss" Wetland Protection

Another alternative for wetland protection would be a model based upon the philosophy of "no net loss". This alternative is somewhat similar to that of alternative 2 in that it would also require assessing potential actions based upon their impacts. However, the basis of this particular policy is to start from the current point in time and to allow no overall loss of wetlands from that point forward. The "no net loss" policy

basically involves several steps. First in the process is the identification of the existing amount of wetlands, i.e., an inventory at a certain point (i.e., a “snapshot”) in time. From that point in time forward, this program would require that any time a wetland is impacted, that there be a replacement made (i.e., mitigation) for the wetland acreage impacted. Mitigation is generally performed by either restoration or creation. Some programs (such as those currently existing in the state of Minnesota) go so far as to require mitigation to be performed up front, before a project disturbing a wetland begins. Most mitigation policies require replacement of an impacted wetland on an acre to acre basis. However, since different types of wetlands provide different wetland functions, we would propose to conduct mitigation on a functional basis. This alternative would require post-mitigation monitoring in order to ensure that the mitigation is successful.

The “no net loss” model clearly sets itself apart from the approach used in alternative two. Under the alternative two model it is possible to have a cumulative loss of wetlands over time while this approach strives to maintain, as it is named, no net loss. This model is currently the most popular model for wetland protection in the United States where it is estimated that approximately 53% of pre-settlement wetlands have been lost since the 1700’s. Wetland losses within the state of Minnesota (mostly in the southern region) have been estimated at somewhat less than the national average at 42%, although locally it is estimated that upwards of 94% of pre-settlement wetlands still exist.

Designing a protection plan based upon the no net loss model would have some distinct advantages for the Red Lake Nation, although it would entail some budgetary and infrastructure requirements similar to the alternative two approach. A protection plan based upon the no net loss model would inherently provide some important features to the people of Red Lake. Perhaps the most notable feature would be in establishing that, from this point in time forward, there would be no future loss of wetland resources. By adopting this policy, the Red Lake people would be ensuring that the future generations at Red Lake should derive the same benefits as those provided by today’s wetland resource. The no net loss model of itself causes an individual who is contemplating the impact of wetland resources to undergo a three-step process. The first step would be to avoid whatever impacts are possible; the next step would be to minimize those impacts which are deemed unavoidable (by limited avoidance and implementation of best management practices); and as a last step, to replace any wetland acres that must be impacted. Therefore, this policy is, in many cases, an optimal approach that brings about the avoidance of as much wetland impacts as possible while ensuring that whenever some amount of wetland is impacted, there is no overall loss of wetlands within the system. This would be a very important feature to the Red Lake people who reside on a fixed land base and are experiencing a continual population increase. These two factors alone point to ever increasing demands for clean water, fish and game harvests, as well as wild and medicinal plant gathering.

As in the case of Alternative 2, the no net loss protection policy would be most effective if it includes the use of buffer strips between any regulated activity and any wetland areas not being directly impacted. Additionally, there should be some provision for enforcement of BMPs.

Again, as in the case of Alternative 2, we would suggest forming a Council of Elders to do preliminary decision-making. Additionally, this Alternative would require initiation of a permitting and enforcement structure to monitor potentially impacting activities in wetlands. Additionally, we would suggest the creation of a Red Lake Scientific and Natural Area program as well as the creation of Red Lake Wetland and Wildlife Preservation Areas. By instituting all these components in one protection plan, Red Lake would benefit from the greatest possible protection of the wetland resource.

If adopted, the no net loss model of protection would provide for an increased level of safekeeping for the biodiversity of all of Red Lake's wetland systems and help to reduce future alterations to the hydrology of those systems. It would also provide a mechanism which could be used to enhance, and even "create", more wetland areas. Wildlife management and nuisance species control are additional topics which should benefit from the adoption of a no-net-loss wetland protection policy at Red Lake. As a final note, adoption of a no-net-loss wetlands protection policy would put Red Lake in a prime position to apply to the federal government to assume the Section 404 wetlands regulatory authority from the Corps of Engineers.

To pursue this alternative, additional staffing of 1 FTE and a budget increase of approximately \$60,000 would most probably be required. *NOTE:* This does not include any increased law enforcement needs.

Alternative 4: Strict Wetland Protection

The last alternative we might consider is what we herein term "strict" wetland protection. This plan would be designed to prevent any and all impacting activities from occurring in any wetlands. This protection policy would provide the most complete wetland protection for the Red Lake people. From the standpoint of protecting the wetland resource, it would certainly be the most effective. However, it would allow no flexibility whatsoever in regards to the future development needs of the Red Lake Nation. While it would afford the highest possible protection for the resource, the exclusion of any and all impacting activities would impose an impasse in such instances as when a new road is proposed that must cross a wetland area.

This policy would probably be the most effectual means of preserving biodiversity as it exists today, although it would necessarily entail the exclusion of such activities as logging in and around wetlands. Therefore, it may present more opposition than the other alternatives as it would potentially present the greatest economic burdens. The

need for emplacement of a monitoring and enforcement structure would be similar to that of alternatives 2 and 3. Also, this program would require an ongoing and concerted effort of monitoring to ensure that the laws are being observed. While there would be no need to implement a very detailed permitting program (i.e., all wetlands protected and no permits granted for any cause), more effort would need to be focused on monitoring activities.

As in the case of Alternatives 2 and 3, we would recommend the creation of an advisory Elders Council to provide some oversight on the implementation of this policy. Additionally, we would suggest the use of enforceable buffer zones between activities in the uplands and the wetlands which lie adjacent to them.

Adoption of a strict wetlands protection policy would be advantageous in a bid for Red Lake to assume primary Section 404 authority over Tribal wetlands and waters. A strict wetlands protection policy would, in itself, serve nearly the same function as the institution of Red Lake Wetland and Wildlife Preservation Areas and Red Lake Scientific and Natural Areas programs. Wildlife management and nuisance species control activities should also benefit from the adoption of a strict wetlands protection policy.

To pursue this alternative, additional staffing of 1 to 2 FTE and a budget increase of approximately \$60,000 - \$80,000 would most probably be required. *NOTE:* This does not include any increased law enforcement needs.

Summary of Alternatives

Alternative 1: No-action (maintain status-quo)

- Continue the Wetlands Program as is
- Proceed with no additional special restrictions on activities impacting wetlands (other than currently-in-place Forestry BMPs and Lakeshore setbacks)

Alternative 2: Designation of Wetlands of Special Resource Value (low measure of protection)

- Categorization of wetlands into groups based upon resource value
- Categorization of (desired) activities based upon resultant impacts
- Allow broad range of impacting activities in low value wetlands
- Allow some impacting activities on medium value wetlands
- Exclude impacting activities on high value wetlands
- Institute permitting program
- Institute a Council of Elders advisory council to aid in decision-making
- Institute enforcement program

Alternative 3: No Net Loss Wetland Protection (medium measure of protection)

- Protect all wetland types/categories

- Set “allowable limit” of impacts to wetlands
- Require replacement for wetlands impacted by activities
- Require buffers between disturbances and wetlands
- Institute permitting program
- Institute a council of elders advisory council to aid in decision-making
- Institute enforcement program

Alternative 4: Strict Wetland Protection (highest measure of protection)

- Protect all wetland types/categories
- Restrict/exclude any impacting activities from occurring on any wetland
- Institute permitting program
- Institute enforcement program

6.6.5. Decision Matrix

Description of goal/objective	Meets goal/objective?			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Maintain and refine the Red Lake Nation's Wetlands Inventory	No	Yes	Yes	Yes
Implement Tribal Wetlands Protection Codes	No		Yes	Yes
Develop a Red Lake Scientific and Natural Area program/designation	No	Yes*	Yes*	Yes*
Create Red Lake Wetland and Wildlife Preservation Areas	No	Yes*	Yes*	Yes*
Maintain/enhance biodiversity of Red Lake Nation lands	No	No	Yes	Yes
Minimize future alterations to Hydrology of Red Lake Nation ecosystems	No	No	Yes	Yes
Create/enhance more wetland areas	No	No	Yes	Yes
Prevent/control infestation of wetland areas by nuisance & exotic species	No	No	Yes	Yes
Contribute to the Assumption of Section 404 Regulatory Authority	No	Possible	Yes	Yes

** provided that these components are included as part of the wetlands protection code*

6.6.6. Integrating Resource Management

To provide increased integration of the overall management of Red Lakes natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Wetlands Resource**.

Cultural and Traditional Resource

1. Cooperate on cultural resource site identification, documentation, and protection
2. Cooperate in the development of a cultural sites map data base on GIS system, and protocols to protect the confidentiality of the data
3. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource

Fishery Resource

1. Cooperate on detection and control of nuisance aquatic species, such as purple loosestrife
2. Cooperate and coordinate on the use of impoundments for fish rearing

Wildlife Resource

1. Cooperate on monitoring the effects of wetland alterations (including the development of mitigation sites) on resident wildlife populations
2. Cooperate on development of monitoring efforts for threatened aquatic populations such as frogs and dragonflies
3. Cooperate on water level management on impoundments for optimal wildlife habitat benefits
4. Coordinate on the identification and development of Tribal Scenic and Natural Preservation Areas
5. Cooperate on the development of wetland restoration and creation, and monitor the effects on wildlife populations

Forest Resource

1. Consult on the development of timber harvest permits
2. Cooperate in implementing and enforcing Best Management Practices
3. Coordinate on the identification and development of Tribal Scenic and Natural Preservation Areas
4. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat

Wetland Resource

1. Consult on the development of timber harvest permits.
2. Cooperate in implementing and enforcing Best Management Practices
3. Coordinate on the identification and development of Tribal Scenic and Natural Preservation Areas
4. Coordinate on the development of riparian buffer zones to maintain water quality and fish habitat

Water Resource

1. Cooperate on development of new resource regulations and codes

2. Work together monitoring water quality and water levels and the effect they have on area lakes, streams, wetlands, and wildlife management areas
3. Work together to assess impacts of natural and manmade changes in lake and stream water levels on the fishery, plant species (in particular wild rice or plants used for traditional medicine), or the archeological resource
4. Cooperate on the development of a Well Head Protection Program and Drinking Water Protection Areas
5. Share rapid bioassessment data related to lake and stream surveys
6. Share noxious weed data and surveys
7. Share contaminant data

Environmental Protection

1. Cooperate on assessment and control of nuisance species such as purple loosestrife
2. Cooperate on water quality surveys and overall protection of wetlands
3. Cooperate on the development of a Well Head Protection Program and Drinking Water Protection Areas

Conservation Enforcement

1. Coordinate on the development of an enforcement code regulating chemical spills, trespass, and arson investigations

6.6.7. References

- Anderson, J.P., and W.J. Craig. 1984. *Growing energy crops on Minnesota's wetlands: The land use perspective*. Center for Urban and Regional Affairs, University of Minnesota. Publication No. 84-3.
- Bureau of Indian Affairs. 1907-1950. *National Archives and Records Service. Record Group 75*. Red Lake Agency. Central Classified Files, 309.
- Bureau of Indian Affairs. 1907-1950. *National Archives and Records Service. Record Group 75*. White Earth Agency. Central Classified Files, 309.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish & Wildlife Service Pub. FWS/OBS-79/31, Washington, D.C.
- Deloria, V., and C. Lytle. 1984. *The nations within: The past and future of American Indian sovereignty*. Pantheon, New York, New York, USA.
- Densmore, F. 1928. *Uses of plants by the Chippewa Indians*. Bureau of American Ethnology, Annual Report 44:275-397.
- Eastman, C. 1902; reprint 1971. *Indian boyhood*. Dover, New York, New York.
- Gilmore, M.R. 1919. *Uses of plants by the Indians of the Missouri River region*. Bureau of American Ethnology, Annual Report 33:43-154.
- Hazard, E.B. 1982. *The mammals of Minnesota*. University of Minnesota Press, Minneapolis, Minnesota.
- Hoxie, F.E. 1984. *A final promise: The campaign to assimilate the Indians, 1880-1920*. University of Nebraska Press, Lincoln, Nebraska.
- Jenks, A.E. 1900. *The wild rice gatherers of the upper lakes: A study in American primitive economics*. U.S. Bureau of American Ethnology, 19th Annual Report, 1897-1898 (2):1013-1137.
- Mitsch, William J., and James G. Gosselink. *Wetlands*. 2nd ed. 1993. Van Nostrand Reinhold, New York, New York.
- Moerman, D. 1977. *American medical ethnobotany, a reference dictionary*. Garland Press, New York, New York.
- Pond, S.W. 1908. *The Dakotas or Sioux in Minnesota as they were in 1834*. Collections,

- Minnesota Historical Society 12:319-501.
- Prucha, F.P. 1984. *The Great Father: The United States government and the American Indians*. University of Nebraska Press, Lincoln, Nebraska.
- Rhodes, R.A. 1985. *Eastern Ojibwa-Chippewa-Ottawa dictionary*. Mouton Publications, New York, New York.
- Riggs, S.R. 1890. *A Dakota-English dictionary*. In J.O. Dorsey, editor. Contributions to North American ethnology no. 7. Government Printing Office, Washington, D.C.
- Schoolcraft, H.R. 1854. *Information respecting the history, condition and prospects of the Indian tribes of the United States*. Lippincott, Grambo & Co., Philadelphia, Pennsylvania.
- Shay, C.T. 1971. *The Itasca bison kill site: An ecological analysis*. Minnesota prehistoric archaeology series no. 6. Minnesota Historical Society, St. Paul, Minnesota.
- Tiner, R.W. 1984. *Wetlands of the United States: Current Status and Recent Trends*. National Wetlands Inventory, Fish and Wildlife Service, U.S. Department of the Interior, Washington D.C.
- U.S. Congress. 1890-1965. *Serial Set*. U.S. Government Printing Office, Washington, D.C.
- U.S. Congress. 1887-1950. *Statutes at Large*. U.S. Government Printing Office, Washington, D.C.
- U.S. General Accounting Office. 1950. *United States General Accounting Office Report re. Petitions of the Minnesota Chippewa Tribe et al., and Red Lake Band, et al., August 21, 1950*. Indian Claims Commission 188, 189,189-Amended, 189-A, 189-B, and 189-C.
- Walter Butler Company, Inc. 1978. *Peat utilization and the Red Lake Indian Reservation*. For the Minnesota Department of Natural Resources, Division of Minerals, requisition 13657. Walter Butler Company, Inc., St. Paul, Minnesota.
- Wedel, W. 1978. *The prehistoric plains*. Pages 183-219 in J.D. Jennings, editor. Ancient Native American. Freeman, San Francisco, California.
- Welsch, David J., D.L. Smart, J.N. Boyer, P. Minkin, H.C. Smith, and T.L. McCandless. 1995. *Forested Wetlands: Functions, Benefits and the Use of Best Management Practices*. USDA Forest Service Pub. NA-PR-01-95, USDA Forest Service,

Northeastern Area, Radnor, Pennsylvania.

Whelan, M. 1987. The archaeological analysis of a 19th century Dakota economy. Dissertation. University of Minnesota, Minneapolis, Minnesota.

Williamson, J.P. 1886. An English-Dakota school dictionary. Yankton Agency, Dakota Territory.

Wright, H.E., Jr., Barbara A. Coffin, and Norman E. Aaseng, editors. 1992. *The Patterned Peatlands of Minnesota*, University of Minnesota Press, Minneapolis, Minnesota.

6.7 Environmental Protection

6.7.1 Description of the Affected Environment

The Environmental Office (EO) is funded by the Environmental Protection Agency (EPA) under the General Assistance Program (GAP), Brownfields Program, and the Clean Air Act. The EO is located within the Department of Natural Resources and maintains a permanent staff of four. The main role of the EO is to assure that the Tribe is in compliance with federal environmental regulations. Responsibilities of the EO include solid waste issues, development of environmental codes and regulations, emergency response planning, and underground storage tank compliance as well as overall protection of the land, water and air. The EO works closely with the other offices within the DNR, especially the Water Resources Office, to assure that tribal resources are well protected.

6.7.2 Issue Areas

6.7.2.1 Municipal Solid Waste

Red Lake has had a history of indiscriminate open dumping of household and program wastes. Prior to 1992 the Tribe maintained four dump sites: Red Lake, Redby, Ponemah, and Shell Lake. All are formally inactive and in the process of being cleaned up and properly closed with professionally engineered capping plans. Presently, the Red Lake and Ponemah landfills are capped and under post closure maintenance. The material that had been placed in the dumps is almost exclusively household trash of very low toxicity, much of which has been burned. There were no industrial or hazardous wastes dumped at these sites. Groundwater monitoring wells have been installed at these four main dump sites with very little contamination detected thus far.

A number of illegal dump sites exist on the Reservation. Most have been documented and “No Dumping” signs have been posted at the site. These illegal dump sites need to be cleaned up and efforts made to eliminate illegal dumping activities.

Currently the removal of fish wastes remains a concern. Historically these have either been buried on tribal lands, or dumped or composted at a landfill. With the closure of all landfills there isn’t currently an acceptable method for removing these wastes.

Municipal Solid Waste: Issues and Concerns

1. Comply with federal regulations regarding landfill closure
2. Reduce the possibility of leachate from refuse piles contaminating groundwater
3. Eliminate litter and illegally dumped household wastes from tribal lands for environmental and aesthetic reasons

4. Maintain capped landfills while monitoring explosive gases and nearby groundwater
5. Proper removal of fish wastes must be attained

Municipal Solid Waste: Goals

1. Continue to cap, inspect, and monitor landfill sites as required by federal law to minimize leachate production and groundwater contamination
2. Determine current and potential risk to the quality of surface and ground waters near landfill sites
3. Eliminate illegal dumping
4. Develop and promote waste reduction, recycling, and household hazardous waste collection
5. Complete, implement, and update as needed the tribal Solid Waste Management Plan

Municipal Solid Waste: Objectives

1. Secure necessary financial resources to fully implement the Landfill Closure and Post Closure Management Plan
2. Maintain transfer station at Red Lake
3. Provide community education materials on proper solid waste management
4. Maintain groundwater monitoring activity near landfills
5. Develop a plan for the proper disposal of fish wastes

Municipal Solid Waste Alternatives

Municipal Solid Waste Alternative 1 (No Change)

One alternative is to continue solid waste management with no change. Currently the tribe has a Solid Waste Management Plan, Landfill Closure and Post Closure Management Plans, and 16-Groundwater Monitoring Wells located at four closed dump sites with an additional four monitoring wells planned. The Band also maintains one solid waste transfer station and has contractual agreements with a waste management company (Thief River Falls Transfer Station) for the disposal of household wastes. Ultimately, these wastes are delivered to the Grand Forks, North Dakota landfill for disposal. The Band has a tribal ordinance prohibiting illegal dumping. The tribal Ordinance on Solid Waste and Resource Recovery has been adopted by the Tribal Council but is still in need of revision and editing. Red Lake landfill has been capped and Ponemah landfill is in the process of being capped. The Shell Lake landfill is probably best left alone. There currently is no tribal recycling program.

The present program maintains information, ordinances, and the operation of one solid waste transfer stations. This provides the reservation with an economically and

environmentally sound solid waste and recycling system assuming that Thief River Falls Transfer Station remains operating. The current Solid Waste and Resource Recovery Ordinance lacks administrative implementation and enforcement.

Municipal Solid Waste Alternative 2

An alternative solution would be to locate additional funding to update, implement, and enforce tribal solid waste ordinances; implement recycling of some household waste materials; and provide annual pick up of household hazardous wastes. Full closure activity consists of: capping, installation of gas vents, explosive gas monitoring, and groundwater monitoring. Due to limited tribal financial tribal resources additional funding will need to be secured.

Implementation of alternative 2 would further provide protection of the water and air quality and bring the Tribe into compliance with federal regulations. The updating, implementation, and enforcement of tribal ordinances and codes would further enhance the Tribe's ability to control illegal dumping and reduce surface and ground water contamination. The implementation of a tribal recycling program would decrease the amount paid in tipping fees, reduce pressure on waste facilities, and educate members about solid waste concerns. Annual collection of household hazardous wastes would reduce the amount of hazardous materials that are combined with non-hazardous materials or illegally dumped.

6.7.2.2 Storage Tanks

Red Lake reservation has approximately 65 underground storage tanks (USTs) ranging in size from 500 gallons to 20,000 gallons. The average age of these tanks is 18 years and most are lacking corrosion protection and leak detection systems and, hence, are not in compliance with federal regulations which took effect on December 22, 1998. New regulations require spill, overfill, and corrosion protection devices on all tanks except those less than 1000 gallons and containing heating oil. Out-of-service tanks require either removal or closing. Responsible parties of these tanks include the Red Lake Tribe, Indian Health Service, Bureau of Indian Affairs, and private individuals including Red Lake enrolled members and non-enrolled members on fee lands in Redby. The Indian Health Service is currently remediating a leaking underground storage tank (LUST) site that has a plume of petroleum product flowing toward Red Lake. Storage tanks containing petroleum products may harm the environment either by air emissions or leaking product which can contaminate soil and groundwater with such toxics as benzene, toluene, ethyl benzene, petroleum hydrocarbons, and xylene.

Storage Tanks: Issues and Concerns

1. Leaking tanks could contaminate groundwater and, potentially, surface water
2. Uncertain as to whether or not all USTs have been identified

3. Many tanks remain unregistered with the federal government as required
4. Many tanks do not meet new federal requirements

Storage Tanks: Goals

1. Protect water, soil and air quality by minimizing the chance of leakage
2. Identify, assess, and register all storage tanks of 500 gallons or more capacity
3. Comply with federal regulations for the installation, maintenance and closure of all regulated USTs

Storage Tanks: Objectives

1. Develop and implement a tribal program for the management of USTs
2. Develop and adopt tribal Ordinance and Standards for installation, inspections, and remediation of spills
3. Train tribal staff on performing inspections
4. Periodically monitor groundwater quality near USTs
5. Develop and adopt tribal Ordinance and Standards for the removal, collection and disposal of petroleum contaminated soils

Storage Tanks Alternative 1 (No Change)

There is no current comprehensive assessment of site locations, identification of ground staining and biological stress, surface and groundwater flow, and general soil types. The federal agencies still do not have management plans on USTs. There are no tribal ordinances or standards on USTs. Not all tanks on tribal property are registered or meet new federal guidelines. To maintain the present status quo is to increase the potential for contamination of the water, soil and air, and to be out of compliance with federal regulations.

Storage Tanks Alternative 2

Develop and implement a tribal management for underground storage tanks, and tribal Ordinances and Standards on installation, construction, inspections and clean-up. Develop and implement tribal Ordinance and Standards for the removal, collection and disposal of petroleum contaminated soils. Ensure that all active tanks meet federal regulations for spill, overfill, and corrosion protection while all inactive tanks are removed or legally closed.

Implementation of this alternative will assure the protection of the environment and health of reservation inhabitants.

6.7.2.3 Accidental Chemical Releases to the Environment

Contaminants may accidentally be released into the environment in a variety of ways during transport, storage, production, or usage. A transport unit may explode and emit

toxins into the air and environment, a truck may turn over and spill toxics into the road and lake, or a gasoline tank leak may release fuel into the ground. Damages to property, personnel, and wildlife may occur from intense, short-term releases of chemicals. Federal regulations require all communities, including Tribes, to have Emergency Response Plans prepared to deal with chemical emergencies. An emergency response plan was developed and adopted in 2010 to assure that the Tribe is adequately able to respond to these potential accidental chemical releases. A Tribal Emergency Response Commission (TERC) and a Local Emergency Planning Committee (LEPC) have been formed.

Accidental Chemical Releases: Issues and Concerns

1. An accidental chemical release could result in acute or chronic health problems to emergency responders and/or citizens
2. The Tribe does not yet have an emergency response plan in place
3. The Tribe requires additional training and equipment in order to effectively respond to chemical emergencies

Accidental Chemical Releases: Goals

1. Protect the health and safety of individuals from accidental chemical releases
2. Protect the water, air and land resources from chemical contamination
3. Reduce the probability of an accidental chemical release occurring on or near tribal lands
4. Provide professional training and community education in the emergency response of hazardous materials

Accidental Chemical Releases: Objectives

1. Update the “all hazard” Tribal Emergency Response Plan that meets SARA III requirements as necessary
2. Identify and secure Memorandum of Understandings between the Tribe and local emergency responders where required in the implementation of a Tribal Emergency Response/HazMat Program
3. Develop and implement an annual emergency response training program to all first responders
4. Have a minimum of three persons trained to be incident commanders and prepared to command an emergency situation
5. Purchase equipment required to adequately respond to chemical emergencies

Accidental Chemical Releases: Alternative 1 (No Change)

A Tribal Emergency Response Commission (TERC) and Local Emergency Planning Committee (LEPC) have been formed and are currently developing an “All Hazards”

Emergency Response Plan. First responder's training has been provided to the Red Lake Police Department, Red Lake Fire Department, Tribal Ambulance Crew, Tribal DNR staff and game wardens. Certification was provided. Additional training needs must be identified and obtained. This alternative would not provide emergency responders with the necessary equipment.

Without the necessary equipment emergency responders will be unable to adequately respond to accidental chemical releases. This could result in liability issues of the Tribe, safety issues with humans, and negative impacts to the habitat and the environment.

Accidental Chemical Releases: Alternative 2

Develop and implement all pertinent Tribal Ordinances and a Tribal Emergency Response Plan (TERP). Provide certification training to all tribal and IHS emergency response personnel. Identify and acquire training and equipment necessary to adequately respond to chemical emergencies.

This would provide environmental protection mechanisms in accidental chemical releases thus protecting human health and the environment.

6.7.2.4 Pesticides/Herbicides

Pesticides on the Reservation are mainly used by the Forestry and Wildlife Departments and a few area farmers. Dangers from pesticides, which includes herbicides and fungicides, to humans, wildlife, and the environment exist. These dangers arise from infiltration into ground waters and runoff into surface waters, through inhalation of airborne contaminants, and through ingestion of treated foods and plants. There also exists risks to the people who must work with agricultural pesticides, including farm/ranch workers and tribal personnel who mix, load, and apply them. Disposal of mixed pesticide wastes can result in the generation of highly toxic, largely unknown byproducts that can enter the air and water. Bioaccumulation of pollutants compounds the dangers to people and other animals that are high on the food chain.

Pesticides/Herbicides: Issues and Concerns

1. Pesticides/herbicides are used by farmers and forestry and wildlife personnel to control pests and noxious weeds
2. Pesticides/herbicides can contaminate our air, soil and water
3. Humans can be adversely affected by pesticides/herbicides through digestion, inhalation, or dermal contact
4. Improper application of pesticides/herbicides can increase the risk of contamination

Pesticides/Herbicides: Goals

1. Protect tribal and residential public health and environmental quality by controlling the use of pesticides/herbicides
2. Provide training to the tribal policy makers, pesticide/herbicides users, interested tribal staff, and community members on the proper use of pesticides/herbicides

Pesticides/Herbicides: Objectives

1. Develop and adopt for implementation a Tribal Pesticide and or Herbicide Ordinance and Management Plan
2. Develop a training program for all tribal and federal personnel taking part in the pesticide application program

Pesticides/Herbicides: Alternative 1 (No Change)

Currently no tribal ordinances are developed on pesticide/herbicide management. This alternative would be to continue allowing, in some cases, unlimited use of pesticides on tribal lands.

The lack of ordinances increases the likelihood of pesticide/herbicide contamination of the environment and the endangerment to the health and well being of people and animals.

Pesticides/Herbicides: Alternative 2

This alternative would involve the development of a comprehensive management plan for pesticide usage including a tribal policy on pesticide management. Such a policy should include a Tribal Pesticide and Herbicide Ordinance and Standards for managing usage on tribal lands. This alternative would also include the development and implementation of a pesticide/herbicide training program.

Alternative 2 would increase the awareness of persons who use pesticides as to proper application methods and the dangers of the misuse of pesticides. The development, implementation, and enforcement of ordinances would help reduce the risk to human health and contamination of the environment.

6.7.2.5 Air Pollution

Air quality on the Reservation is considered to be very good as there are very few point sources of air pollutants on or near tribal lands. Presently there are no ambient air quality monitoring stations located on or near the reservation for criteria pollutants.

Collaborations with the EPA and Minnesota Pollution Control Agency have allowed for some ambient air toxics monitoring recently. Ambient concentrations of criteria pollutants on the reservation are almost certainly well below those found in urban areas.

Acid deposition most likely occurs although, due to fairly high buffering capacities, area lakes show no signs of major acidification. Although not directly responsible for major human health problems acidification of waters may pose significant ecological, social, and economic risks.

Atmospheric deposition of heavy metals, most notably mercury and cadmium, is a definite threat to tribal surface waters. Bioaccumulation of heavy metals in fish and animals cause humans to be at risk. Due to the fact that native populations generally eat more fish and wild game than does the general public, they tend to be more susceptible to contaminated animals.

Indoor air pollution may present a significant risk to tribal members. Radon is a naturally occurring, colorless, odorless, radioactive gas. A short-term study in 1990 for radon sampling data for buildings on the Reservation is available. Twenty percent (20%) of 185 locations tested had radon levels above the average atmospheric concentration of 4 picocuries per liter of air. (Note: a picocurie is a measure of radioactivity.) One result of radon contamination is increased susceptibility to lung cancer. This risk is greatly enhanced for persons who smoke, as do many Red Lake tribal members. The results of the short-term tests suggest that more thorough, long-term testing should be performed.

Other sources of indoor air pollution other than radon may present problems. Some older buildings may still contain asbestos. Many Red Lake Reservation homes contain at least one smoker putting non-smokers, particularly children, at risk due to second-hand smoke inhalation. Home heating is another very significant source of indoor air pollution. Many Red Lake homes are heated by wood burning, the form of home heating that produces the highest air pollution risks. A long cold season means that homes are often closed tightly and being heated, resulting in considerable inhalation of indoor air pollutants, should they exist.

Air Pollution: Issues and Concerns

1. Currently no ambient air monitoring on or near the Reservation exists
2. Acid deposition may be occurring on tribal lands and waters
3. Deposition of heavy metals most likely occurs, resulting in the contamination of fish and animals and, perhaps, making them unsuitable for consumption
4. Indoor air pollution is a concern including tobacco smoke, smoke from wood heaters, radon and, possibly, asbestos

Air Pollution: Goals

1. Protect the air quality of the reservation lands and buildings
2. Provide trained resource persons and staff in the area of air quality protection

Air Pollution: Objectives

1. Update inventory of sources on or near tribal lands and determine emissions from these sources tri-annually
2. Establish ambient air monitoring station(s) within the reservation boundaries
3. Conduct studies to determine if there are pollution problems from indoor sources
4. Develop a community education and outreach program
5. Based upon the data collected, evaluate and develop an Air Quality Management Plan

Air Pollution: Alternative 1 (No Change)

There is currently no air monitoring is done for criteria pollutants and no Tribal Ordinance or Standards on Air Quality exist.

If no change is implemented, this would result in possible negative impact of air quality and continued health risks to tribal members and employees.

Air Pollution: Alternative 2

Develop a Tribal Air Source Emissions Inventory Program. Staff an Air Quality Program Office. Educate tribal members about the effects of environmental tobacco smoke. Develop and implement a Tribal Air Code. Provide monitoring to determine indoor air pollution risks. Begin ambient air monitoring for major air pollutants.

The implementation of this alternative would determine the current state of air quality on the reservation and allow the Tribe to monitor any changes in air quality. Risks to human health could be determined and changes could be implemented to reduce those risks.

6.7.3 Decision Matrix

Description of Goal/Objective	Meets goal/objective?	
	Alt. 1	Alt. 2
<i>Solid Waste</i>		
Comply with federal regulations	Yes	Yes
Cap all three landfills	Yes	Yes

Description of Goal/Objective	Meets goal/objective?	
	Alt. 1	Alt. 2
Determine risk to nearby water	Yes	Yes
Eliminate illegal dumping	No	Yes
Recycle and collect hazardous materials	No	Yes
Complete Solid Waste Management Plan	Yes	Yes
Maintain transfer stations	Yes	Yes
Provide community education	No	Yes
Maintain groundwater monitoring	Yes	Yes
Proper disposal of fish wastes	Yes	Yes
<i>Storage Tanks</i>		
Minimize chance of leakage	Partly	Yes
Identify, register and assess all tanks	Yes	Yes
Comply with federal regulations	Yes	Yes
Develop and implement tribal tank program	No	Yes
Develop Ordinance and standards	No	Yes
Train staff to perform inspections	No	Yes
Monitor groundwater quality near USTs	No	Yes
<i>Accidental Chemical Releases</i>		
Protect human health from accidental releases	Yes	Yes
Protect environment from contamination	Yes	Yes
Reduce probability of a chemical release	Yes	Yes
Provide training and education	Yes	Yes
Meet federal requirements	Yes	Yes
Develop "all hazards" response plan	Yes	Yes
Secure necessary MOUs	Yes	Yes
Provide annual training	Partly	Yes
Have a minimum of three ICOs trained	Yes	Yes
Have necessary equipment	No	Yes
<i>Pesticides/Herbicides</i>		
Protect public health	No	Yes
Provide training	No	Yes
Develop tribal ordinance and plan	No	Yes
<i>Air Pollution</i>		
Provide trained resource persons	Partly	Yes
Develop a Tribal Air Program	No	Yes
Protect air quality	No	Yes
Develop a source inventory	Yes	Yes
Establish ambient air monitoring stations	No	Yes
Conduct indoor air pollution studies	No	Yes
Community education and outreach	Partly	Yes
Develop Management Plan	No	Yes

6.7.4 Integrating Resource Management

To provide increased integration of the overall management of Red Lakes natural resources; departmental divisions work cooperatively on development of policies, planning, project implementation and monitoring. The following are some of the key cross resource management areas for the **Environmental Protection**.

Cultural and Traditional Resources

1. Coordinate to ensure compliance with preservation laws, ordinances and policies

Fisheries Resource

1. Cooperate on methods to reduce fisheries byproducts (fish waste)
2. Coordinate to ensure protection of fish habitat

Wildlife Resource

1. Coordinate on the identification of species that might be utilized as biological indicators and identify potential projects that evaluate local environmental quality
2. Coordinate on the development of codes regulating nuisance animals

Forestry Resource

1. Coordinate on the development of an enforcement code regulating chemical spills
2. Coordinate on monitoring chemical spills
3. Coordinate to ensure BMPs are properly implemented
4. Cooperate in the development of a study to determine the viability of chemical applications for reforestation projects
5. Coordinate with the development of tribal air quality codes relating to prescribed burning

Waters Resource

1. Cooperate on the development of a Well Head Protection Program and Drinking Water Protection Areas
2. Assist in performing water quality surveys
3. Share groundwater monitoring well data, jointly review the annual landfill monitoring well report and landfill closure plan on an annual basis
4. Work together to develop water quality standards and environmental codes

Wetlands Protection

1. Cooperate on assessment and control of nuisance species such as purple loosestrife
2. Cooperate on water quality surveys and overall protection of wetlands

3. Cooperate on the development of a Well Head Protection Program and drinking water protection

Conservation Enforcement

1. Cooperate on detecting and reporting of enforcement of codes
2. Coordinate on the development of codes regulating nuisance animals

APPENDIX: A

**RED LAKE NATURAL
RESOURCE QUESTIONNAIRE**

PREFACE TO READING THE SURVEY SUMMARIES

It is important to remember that the response *rate* from Band members was low, about 6.5 percent. What this basically means is that the data are probably too few to say for *certain* that the results reflect the views of the population at large. However, these data are the only known quantitative information available about Band member attitudes and opinions. Because the sample size is so small (about 155 from roughly 2400), response percentages are probably not precise. However, questions with strong responses most likely reflect the sentiments of the population at large. Ranking differences of only a few percentage points may not be reliable, but wide ranges, margins, and general trends are most likely representative.

The results are presented by topical groupings that pretty much follow the groupings in the survey itself. A few questions were regrouped when it seemed appropriate. Each topical summary begins with a listing of each question and the response to that question. The "question & answer" section is followed by some observations about the responses. These observations are certainly NOT exhaustive or fully thought through. Hopefully, they will serve to catalyze some discussion, particularly among the resource managers and program directors.

The results clearly indicate a concern about environmental quality and protection. Respondents are willing to support increased regulation and, *perhaps*, accept a reduction of jobs and income as a trade off. Overall, the results were not as harsh to current resource utilization as expected, although particular *practices* need to "clean up their act" to become acceptable. Respondents want the walleye back and environmental restrictions placed on logging, but seem to accept fishing and logging as legitimate resource uses. Incorporating traditional values into resource policy and practice are important. What this means and how to do it must be better defined. Some methodology should be adopted that will better protect traditional use areas from degradation by development activities. There appears tremendous need for public education regarding natural resources and natural resource management. To complement this need, the respondents indicated an interest in learning. The Red Lake DNR and BIA Forestry should take active roles in this endeavor, which may also raise their sagging public image.

The results of these summaries should be gleaned or further summarized for presentation to the Red Lake public, government representatives, and other interested parties. A variety of media should be used. Repetition is probably a good idea. These survey results will be integrated into the long-term natural resource plan process, but should not be regarded as the last word in public opinion. Discussion about resource management among the public, the resource managers, and Tribal officials should be an ongoing process.

TABLE OF CONTENTS

FISHERY SECTION.....	1
CLEARCUTTING SECTION.....	4
HERBICIDE & PESTICIDE SECTION.....	6
WILDLIFE MANAGEMENT SECTION	8
FOREST MANAGEMENT SECTION	11
TRADITIONAL USE SECTION	16
WETLAND ISSUES SECTION.....	19
WATER RESOURCE SECTION	21
FOREST RESERVE SECTION.....	23
OTHER TOPICS SECTION.....	25
DEMOGRAPHY SECTION.....	28
COMMENTS BY RESPONDENTS	29

This questionnaire consisted of 108 questions and 384 responses, and will become part of the Integrated Resource Management Plan for the Red Lake Reservation. About 2400 copies were distributed to Reservation residents in March, 1994. The return rate was low at about 6.5 percent, with only 155 completed questionnaires. The results of this questionnaire probably do not statistically represent the population, but are still the best quantitative source of information regarding attitudes towards natural resource management on the Reservation.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE
 SURVEY RESULTS - FISHERY SECTION
 16 June, 1994

QUESTION 1 Unless fishing pressure is reduced, walleye populations are not expected to recover to their former levels. Although a number of things can be tried to enhance walleye populations, a reduction in fishing effort will be necessary. Which of the following 'effort reduction' and 'population enhancement' methods would be acceptable? *NOTE: Percentages do not add up to 100 because respondents could check more than one.*

Effort Reduction Methods

72% said "fish only when fishery is set"
 68% said "limit the number of commercial fishers"
 65% said "enforce the nets/fisher regulation"
 25% said "increase legal mesh size to 4 inches"
 24% said "enforce ban during spawning season"
 23% said "restrict size of boats & motors"
 18% said "other methods"
 8% did not respond

Population Enhancement Methods

78% said "increase hatchery output"
 61% said "assess & enhance spawning habitat"
 30% said "stock walleye from other waters"
 11% said "other methods"
 10% did not respond

QUESTION 2 Which commercial fish species are most important to you? (rank 1-9)

NOTE: All respondents answered this question. The species are ranked by popularity based on numeric averages of the responses for each species. Blank responses were assigned a value of 9. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-9. These responses were tallied as given.

1.63 walleye	4.79 northern pike	7.34 suckers
2.94 perch	5.54 goldeye	8.10 sheepshead
4.37 whitefish	6.30 crappies	8.71 other species

QUESTION 3 Who should determine how to resolve fishery issues?

NOTE: Percentages do not add up to 100 because respondents could check more than one.

68% said "all band members"	27% said "Red Lake DNR"
55% said "fisheries association"	19% said "Tribal council"
3% did not respond	

QUESTION 4 Should Red Lake try to restore walleye populations to their former levels, even if it were to mean a reduction in jobs and income from commercial fishing?

<i>***Percentage Response***</i>		
Yes/No	Not Sure	None
67/14	19	--

QUESTION 5 Do you believe that Red Lake Conservation Enforcement staff effectively enforce fishery regulations?

14/69	17	--
-------	----	----

QUESTION 6 Should the Tribal Council seek additional funding for more Conservation Wardens to enforce commercial fishing regulations?

<i>***Percentage Response***</i>	6/19	12	1
----------------------------------	------	----	---

	<i>***Percentage Response***</i>		
	<u>Yes/No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 7</u> Federal regulations state that all Red Lake commercial nets must be identified with owner tags. Should this regulation be enforced?	81/8	10	--
<u>QUESTION 8</u> Do you believe fish from Tribal waters are contaminated with mercury or other chemicals?	39/16	44	1
<u>QUESTION 9</u> Would you support an increase of penalties for people violating Red Lake commercial fishery regulations?	80/8	10	1
<u>QUESTION 10</u> Would you support adjusting the walleye quota each year based on the number of harvestable-sized walleye available?	74/6	19	1

OBSERVATIONS ABOUT THE FISHERY SECTION

1) Walleye and perch are the most preferred species by a good margin.

Question 2 ranks both species considerably ahead of the third preference (whitefish). Walleye also top the list in question 31 in the wildlife management section.

2) Respondents want walleye restored to former levels and are willing to reduce jobs & income and support increased regulation enforcement to do so.

67% said "yes" to restoring walleye, even at the expense of jobs & income (question 4). Respondents would support more funding for CLE staff (68%), enforcement of most existing regulations (65-81%), and increased penalties for violators (80%).

3) Three effort reduction methods and two population enhancement methods were popular to restore walleye.

Reduction: Fish only when fishery is setting (72% of respondents).
 Limit the number of commercial fishers (68% of respondents).
 Enforce the number of nets/fisher rule (65% of respondents).

Enhancement: Increase hatchery output (78% of respondents)
 Assess & enhance spawning habitat (61% of respondents).

Other methods listed in question 1 were far less popular. Additionally, question 10 indicated 74 percent support for annual quota adjustments based on available walleye.

4) Uncertainty about fish contamination was high among the response.

In question 8, 83 percent indicated they believed either fish were contaminated or they were not sure. Assuming the fish are safe, this issue calls for some public education.

5) Respondents believe fishery issues should be resolved primarily by all Band members and the fisheries association.

More emphasis (68% of respondents) was placed on "all Band members" than on "fisheries association" (55% of respondents). Neither the Tribal Council or the Red Lake DNR were rated highly.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE
 SURVEY RESULTS - CLEARCUTTING SECTION
 16 June, 1994

	Percentage Response			
	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 11</u> Do you believe that clearcutting should never be used in forest management?	37	32	28	3
<u>QUESTION 12</u> Would you support clearcutting when applied only to the proper tree species and if more consideration was given to the environmental impacts and the way the final harvest area looks?	61	24	12	3
<u>QUESTION 13</u> Some aspen areas have enough seedlings of other tree species to assure a new, but different kind of forest in the future. Should the aspen in these areas be allowed to die out naturally and convert to other forest types even if the new type will have a lower economic value?	31	44	22	3
<u>QUESTION 14</u> Would you support clearcutting certain areas of aspen if it were the only way to prevent the area from turning into brush after the aspen died?	64	19	14	3
<u>QUESTION 15</u> Without harming the environment, should forest management try to maximize jobs and income, even though that would include clearcutting?	41	39	16	3
<u>QUESTION 16</u> Should loggers be required to repair road damage before moving to the next sale area?	82	8	7	3
<u>QUESTION 17</u> Most aspen areas have a few hardwood trees (like oak, maple, etc.) mixed in. Hardwood is difficult to sell but makes good firewood. Should the tribe use part of the money they receive from loggers to pay the loggers to bring hardwood trees to a road so Tribal members can use them for firewood?	67	19	11	3
<u>QUESTION 18</u> Should forest managers try to provide a healthy forest for the future?	96	0	1	3

OBSERVATIONS ABOUT THE CLEARCUTTING SECTION

1) The respondents were not as critical about or antagonistic to clearcutting as anticipated.

Only 37 percent said CLEARCUTTING should *never* be used, 60 percent said no or were not sure. Nearly two-thirds said it was OK to use clearcutting if applied properly or was the only way to prevent brush succession.

2) Respondents were less committed to hardwood succession of aspen stands than anticipated.

Only 31 percent indicated a desire to allow hardwood succession, 66 percent said no or were not sure. Question 36 (forest mgt. section) corroborates this attitude where 80 percent of the respondents wished to maintain or increase the amount of aspen. More public education should be devoted to this issue.

3) The response to maximizing jobs & income was mixed.

The response to question 15 was split. Respondents highly value jobs in the forest sector (question 35 in the forest mgt. section), but are very concerned about forest health (question 35 in the forest mgt. section and question 18 in this section). These contrasting values may reflect the split on this question.

4) Respondents would like to see the Tribe use stumpage monies to bring hardwood to the landings for firewood.

Two-thirds answered yes to question 17. Bringing the hardwood to the landings would also serve to help clean up harvest areas, another strong priority.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - HERBICIDE & PESTICIDE SECTION

16 June, 1994

QUESTION 19 If all precautions and safeguards are taken, would you support the application of herbicides for certain purposes if applied by qualified people?

40% said "never"
37% said "maybe"
21% said "yes"
2% did not respond

QUESTION 20 In which geographical area of the Reservation would you support herbicide use?

NOTE: Percents do not add up to 100 because respondents could check more than one.

51% said "no place"
30% said "ceded lands only"
23% said "main reservation"
6% did not respond

QUESTION 21 On which types of vegetation would it be OK to use herbicides?

NOTE: Percents do not add up to 100 because respondents could check more than one.

48% said "none"
33% said "brush"
15% said "grass"
12% said "forest"
10% said "wetland/aquatic"
5% did not respond

QUESTION 22 For which purposes would it be OK to use chemicals such as herbicides or pesticides?

NOTE: Percents do not add up to 100 because respondents could check more than one.

38% said "none"	17% said "pine plantations"
35% said "nuisance weed control"	10% said "dry land farming"
32% said "brush control"	6% said "lake management"
21% said "lawn/garden use"	5% said "rice farming"
18% said "roadside use"	2% said "others"
5% did not respond	

QUESTION 23 If Red Lake experienced a severe epidemic of a forest damaging insect, would a properly applied insecticide be an acceptable control measure if there were no other choice?

66% said "yes"
16% said "not sure"
14% said "no"
4% did not respond

OBSERVATIONS ABOUT THE HERBICIDE & PESTICIDE SECTION

1) While respondents did not favor chemical use, the attitude was not as negative as anticipated.

58% said "yes" or "maybe" to properly applied herbicides (question 19).

47% indicated support of herbicide on at least one type of vegetation (question 21).

57% indicated support of chemicals for at least one purpose (question 22).

66% said "yes" to insecticide use during a forest insect epidemic (question 23).

2) The responses are ambivalent. It appears that general reactions to chemical use are negative, but reactions to specific needs are more accepting. A successful education campaign may win the acceptance of chemical release for plantations or other special needs.

Of the 62 who answered "never" to question 19, 15 (24%) checked-off a use in either question 21 or 22.

Of the 75 who said "none" in question 21, 22 (29%) checked-off one of the uses in question 22.

Of the 52 that checked "none" to both questions 21 & 22, 24 (46%) checked "yes" to question 23.

66% of the respondents said "yes" to insecticide use for a forest insect epidemic.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE
 SURVEY RESULTS - WILDLIFE MANAGEMENT SECTION
 16 June, 1994

		<i>***Percentage Response***</i>			
		<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 24</u>	Should uncommon plants and plant communities be protected?	87	7	5	1
<u>QUESTION 25</u>	Are you a hunter or do you use meat obtained by a hunter?	87	11	1	1
<u>QUESTION 26</u>	Should more land be set aside as wildlife management areas?	72	14	13	1

QUESTION 27 If so, what percentage of the land?

- 8% 1-10 percent
- 26% 10-25 percent
- 19% 25-50 percent
- 8% 50-75 percent
- 13% All lands
- 12% No more lands
- 14% Did not respond

QUESTION 28 How do you believe clearcutting affects deer populations?

- 40% said "decreases"
- 22% said "not sure"
- 21% said "increases"
- 15% said "little or no affect"
- 2% did not respond

QUESTION 29 Which species of wildlife should management focus on? (rank 1-7)

NOTE: The species are ranked by popularity based on numeric averages of the responses for each species. No response was assigned a value of 7. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-9. These responses were tallied as given. Blanks were recorded as a 7.

- | | |
|----------------|------------------------------|
| 2.38 Deer | 4.20 Rare/endangered species |
| 2.50 Eagles | 4.93 Songbirds |
| 2.84 Moose | 6.55 Other species |
| 3.85 Waterfowl | 0 Did not respond |

QUESTION 30 Which activities should **NOT** be permitted in a wildlife management area? *NOTE: Percentages do not add up to 100 because respondents could check off more than one item.*

- | | | |
|-----------------|------------------------|-------------------------|
| 89% Dumps | 32% Trapping | 11% Sugar bushes |
| 70% Logging | 30% Hunting | 10% Medicinal gathering |
| 65% Housing | 28% Firewood cutting | 1% Others |
| 57% Gravel pits | 25% Birch bark peeling | 6% Did not respond |
| 47% New roads | 12% Food gathering | |

QUESTION 31 Please indicate which wildlife species are **MOST** important to you. *NOTE: Five percent did not respond. Species were rated 0-5, 5 being the most important. The numerical ranking was obtained by computing the average response to each item. The calculation summed an individual column and divided the sum by the number of responses, including zero responses.*

- | | | | | |
|-----------------|---------------|-------------------|-----------------|----------------------|
| 4.70 Walleye | 3.86 Grouse | 3.61 Hawks & owls | 2.79 Turtles | 4.58 Deer |
| 3.75 Waterfowl | 3.46 Bear | 2.30 Amphibians | 4.55 Perch | 3.75 Endangered spp. |
| 3.46 Other fish | 2.23 Reptiles | 4.48 Eagles | 3.74 Small game | 3.35 Furbearers |
| 2.22 Insects | 4.34 Moose | 3.65 Songbirds | 3.33 Beaver | 0.77 Others |

OBSERVATIONS ABOUT THE WILDLIFE MANAGEMENT SECTION

1) The most important species of wildlife to the respondents are walleye, deer, perch, eagles, and moose.

There was little surprise in this result, as these species are either economically or traditionally important (or both). Question 31 ranked them closely at 4.70, 4.58, 4.55, 4.48, and 4.34, respectively. The priority of these species are also supported by question 29.

2) Respondents are very interested in game species, but not particularly interested in other species.

Respondents were reasonably interested in learning more about hunting and game management in question 95 (other topics section). Hunting and fishing are common activities of respondents (question 57 in the traditional issue section). Question 35 (forest management section) rated game population the number one issue in forest management, but rated species diversity and non-game populations 13 and 14 out of 18.

3) Most respondents wish more land to be set aside as wildlife management areas.

Nearly three-quarters said "yes" to setting aside more land (question 26), but did not agree on how much land (question 27). Those that said "all lands" or "none" were about the same. 45 percent indicated a desire for 10-50% of the land be set aside for wildlife management. Wildlife management rated fairly well in question 101 (other topics section), scoring 3.94 on a scale of 0-5. Habitat improvement projects were the only highly favored wetland activity supported in question 63 (wetland issues section).

4) "Set aside" can be defined in almost any way. The primary land use exclusions identified by respondents are dumps, logging and housing.

Question 30 rated 13 potential land use exclusions. At least two-thirds of the respondents would exclude dumps (89%), logging (70%) and housing (65%). The likelihood of these types of use in potential wildlife management areas is low, if the Ki-Wo-Say and Zah-Geeng refuges are used as examples. Resource use conflicts could arise if "better" land is suggested for set asides. Traditional uses, including hunting, were largely acceptable. Similar uncertainty was expressed regarding forest reserve areas.

5) Respondents should be made aware of the effect of clearcutting on deer populations.

The perceived negative effect of clearcutting on deer populations by 40 percent of the respondents is contrary to most research and management histories. Clearcutting should be particularly beneficial to the Red Lake herd because the Reservation is more heavily forested than surrounding lands and that forest is largely mature (condition not especially favorable to deer). This should be a key education issue.

6) Respondents indicated a high level of interest in protecting uncommon plants and plant communities.

87 percent of respondents to question 24 said "yes" to protecting uncommon plants and plant communities. Endangered species rated moderately high in question 31 (8th of 20), but moderately low in question 29 (5th of 7).

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - FOREST MANAGEMENT SECTION

16 June, 1994

QUESTION 33 Which tree species would you most like to see planted? (rank 1-9)

NOTE: The species are ranked by popularity based on numeric averages of the responses for each species. Blank responses were assigned a value of 9. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-9. These responses were tallied as given. Blanks were recorded as a "9."

3.24 Red/Norway Pine	4.46 Cedar	5.30 Sugar Maple
3.54 Jack Pine	4.98 Red Oak	6.39 Paper Birch
4.17 White Pine	5.03 Spruce	8.43 Other Species

QUESTION 34 Which forest improvement activities should be most important? (rank 1-6)

NOTE: The forest improvement activities are ranked by popularity based on numeric averages of the responses for each species. Blank responses were assigned a value of 6. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-9. These responses were tallied as given. Blanks were recorded as a "6."

2.52 Clean up old harvest areas	3.54 Increase pine quality
2.72 New plantations	4.09 Increase hardwood quality
3.12 Maintain current plantations	5.74 Other activities

QUESTION 35 In your opinion, how important should each of the following items be in forest management? (circle number in scale 0-5, with 0 being unimportant and 5 being extremely important).

NOTE: 5% did not respond to this question. The numerical ranking was obtained by computing the average response to each item. The calculation summed an individual column and divided the sum by the number of responses, including zero responses.

4.43 Game populations	3.78 Firewood cutting	2.98 Species diversity
4.42 Forest reproduction	3.76 Visual quality	2.81 Non-game populations
4.41 Forest health & improvement	3.70 Trad/ceremonial use	2.80 Monies to tribe
4.21 Water quality	3.43 Timber production	2.56 Fir bough cutting areas
4.00 Job opportunities	3.28 Road construction	2.45 Monies to logger
3.95 Soil fertility	3.09 Christmas tree ptns	0.64 Others

QUESTION 36 Aspen is a common northern Minnesota tree species and has become very important for the Minnesota forest industry. It is also important to many species of popular wildlife. How much of the Red Lake forest should be devoted to aspen management?

NOTE: In order to maintain or increase the current area of aspen, clearcutting (or its equivalent) is required. The general public is probably not aware of this fact. This represents an important need for education.

- 48% said "about the same as now"
- 32% said "more than now"
- 12% said "less than now"
- 8% did not respond

QUESTION 37 Which management philosophy best describes your viewpoint.

- 51% said "The forest was created to be used by man, but not abused."
- 32% said "Let nature take its course and keep the forest for the forest, allowing only such human activities as firewood cutting, gathering of wild plants, or hunting."
- 17% did not respond

	Percentage Response			
	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
	58	14	20	8
<u>QUESTION 38</u> Should forest managers increase the use of practices that use natural or ecological principles? (example: burning, thinning, small cuts, etc.)	54	20	20	6
<u>QUESTION 39</u> Would you support the long term improvement of the forest resource if that meant some loss of income and jobs?	81	4	8	7
<u>QUESTION 40</u> Would you support increased restrictions on logging in order to better protect the environment?	88	2	4	6
<u>QUESTION 41</u> Should logging contractors be required to finish one sale area before moving onto a new sale area (season & weather permitting)?	90	2	4	4
<u>QUESTION 84</u> (from other topics section) Fire is a significant cause of tree damage and loss of forest acreage. Should Red Lake stiffen arson laws?	39	43	10	8
<u>QUESTION 42</u> Did you know that loggers pay for the wood they cut and these monies go to the Tribe?	72	8	12	8
<u>QUESTION 43</u> Do you believe a maximum limit or quota on cut timber should be set for individual logging contractors?	70	5	19	6
<u>QUESTION 44</u> Do you believe wood is stolen from Red Lake?				
<u>QUESTION 45</u> If so, how much (stolen wood)?				
3% said "not much"				
22% said "some"				
49% said "a lot"				
	32	30	32	
<u>QUESTION 46</u> Do you believe the BIA forestry department is capable of managing the forest in a scientific and environmentally sound manner?				

QUESTION 47 If not, who should be responsible for forest management?

NOTE: "other" usually includes both Band members and Tribal agencies.

- 27% said "Red Lake DNR"
- 21% said "other"
- 9% said "Tribal Council"
- 5% said "outside agency"
- 38% did not respond

QUESTION 48 Should Tribal timber be sold on a competitive bid basis or should it be sold based on appraised rates?

- 39% said "competitive bidding"
- 43% said "appraised rates"
- 18% did not respond

QUESTION 49 Should Tribal timber be sold to:

- 47% said "Tribal members"
- 33% said "anybody"
- 20% did not respond

QUESTION 50 Where should buffer (no cut) zones be established?

NOTE: The percentages exceed 100% because respondents were asked to check as many as apply.

- | | | | | | |
|-----|-----------------|-----|---------------------------|-----|-----------------------------------|
| 72% | said "by homes" | 46% | said "by water" | 68% | said "by sacred/ceremonial sites" |
| 8% | said "nowhere" | 52% | said "next to main roads" | 5% | said "other places" |
| 9% | did not respond | | | | |

OBSERVATIONS ABOUT THE FOREST MANAGEMENT SECTION

1) Respondents do not highly value commercial use of the forest, but do value jobs in the forest sector.

Question 35 ranked monies to the tribe & logger low (2.80 & 2.45 on a scale 0-5), but ranked jobs 5th of 18 (4.00 on a scale of 0-5).

2) Forest values most important to the respondents include; game, future forest quality, water quality and jobs.

Game. Question 35 ranked game populations as top priority (4.43 on a scale of 0-5). The importance of game populations is further supported in the wildlife section. Question 36 indicates a favorable attitude towards aspen, based partly on its value to popular species of wildlife. The link between aspen harvest scheduling and benefits to popular species of wildlife needs to be repeatedly emphasized.

Future Forest Quality. Question 35 ranked forest reproduction and forest health/improvement as #2 and #3 priority (4.42 & 4.41 on a scale of 0-5). Question 34 ranked "new plantations" high at #2 (2.72 out of a 1-6 rank), and question 33 ranked the pines the highest in species to plant. Natural regeneration was not addressed in the survey, and may not be generally associated with forest reproduction. This may be a key education priority as most acres regenerated are post-harvest aspen areas. The most highly favored forest improvement activities were "cleaning up old harvest areas" and "creating new plantations." Both of these activities present difficulties. Cleaning up old sale areas can be dangerous and costly, but would be silviculturally and visually advantageous. New plantations (and maintaining current plantations) will require the use of herbicides for an acceptable level of success. Herbicide use is not highly favored. Question 18 (clearcutting section) also indicates a great desire to provide a healthy forest.

Jobs. Question 35 ranked jobs #5 (4.00 on a scale of 0-5). Currently, most forest-related employment comes from logging (about 75 people). Jobs in other forest management sectors could be created but would require major shifts in BIA funding as well as a better educated reservation work force (assuming the jobs would be for Indians). Question 39 suggests the public appears uncertain about the importance of responsible logging as a tool to obtain a healthier future forest. 54 percent said sacrificing some jobs to obtain long term forest improvement was OK, while 40 percent said no or not unsure. Educating the public on these issues, securing increased funding for forest development, and working to achieve quality logging are critical to provide future jobs.

3) Respondents strongly favor increased restrictions on logging activity.

Questions 34, 40, 41, 43, 16 (clearcutting section), and 85 (other topics section) indicate the desire to increase environmentally protective restrictions and increase control over logging activities. High effectiveness through writing restrictions into the annual timber cutting policy and approved by the Tribal Council, giving the BIA the support it needs to successfully implement restrictions.

4) Respondents appear to favor restrictions perceived as protecting the forest.

Question 84 indicates strong support for increased arson penalties and enforcement. Question 23 in the herbicide & pesticide section indicates support for chemical use to protect the forest, even though support for chemical use, in general, is not strong. Question 85 in the other topics section favors road closures for protective or preventive purposes.

5) Most respondents believe "a lot" of wood is stolen from Red Lake.

This is based, partially, on the misconception that weekend and off-hour hauling constitutes theft. The public should be educated about the consumer scale process. Additionally, there are many logging trucks which pass through the reservation from off-reservation sales. *However, the consumer scale process alone will not prevent theft.* There are a number of measures forestry and law enforcement staff could adopt or beef up that will reduce timber theft.

6) The BIA does not enjoy public confidence.

62 percent of the response to question 46 indicated "no" or "not sure" regarding the capability of the BIA. Reasons for this lack

of confidence should be explored and measures taken to improve the BIA image. Two key issues would probably be public education about consumer scale and implementing increased logging restrictions. Under staffing is recognized by some as a contributor.

7) Buffer zones are wanted next to homes and traditional/ceremonial sites.

It is fairly easy to implement buffer zones around known sites, such as homes, roads and sensitive aquatic areas. The BIA is, in fact, already doing this. However, traditional/ceremonial sites are largely unknown making buffer zone designations impossible. Efforts should be made to collect and record locations of traditional/ceremonial sites. This task may be difficult, as the public may not be inclined to divulge such information (see question 54 in traditional section).

8) Aspen is valued as a cover type, but clearcutting has a mixed review.

Question 36 suggests respondents value aspen, as 80% indicated the type should be maintained or increased. Clearcutting is required for maintaining aspen acreage. Refer to the clearcutting section for a response analysis.

9) The response divided about the role of humans in the forest.

The response to question 37 was divided, but 51% indicated a "use but not abuse" philosophy. One-third of the response indicated a "minimum use" attitude. 17 percent did not respond.

10) The process of stumpage payments by the loggers to the tribe is not understood.

Only 39 percent of the respondents were aware that loggers pay the tribe for stumpage. This is another important point for public education. How the stumpage monies are utilized by the tribe may help explain the issue to the public.

11) Some key public education issues.

- * Link between aspen, wildlife & clearcutting.
- * Aspen biology & succession.
- * General forest ecology.
- * Implementation of increased logging restrictions.
- * Plantation management obstacles & learned history.
- * How consumer scale works.
- * Stumpage monies to tribe.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - TRADITIONAL USE SECTION

16 June, 1994

	Percentage Response			
	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 53</u> Should there be some way, perhaps a committee of elders, to oversee and control development activities (i.e., construction, logging, roads, etc.) that are close to traditional use, religious or other culturally important sites?	66	7	22	5
<u>QUESTION 54</u> Would you be willing to divulge your family Gathering or Religious sites <i>in confidence</i> to a special committee (NOT TO THE GENERAL PUBLIC) if it meant that those places would be made off-limits to development activities?	27	25	36	12
<u>QUESTION 55</u> Should there be areas set aside and "managed" only for gathering traditional medicines and foods and for spiritual practices?	52	19	22	8
<u>QUESTION 32</u> (from wildlife management section) Should traditional values be considered in resource management?	88	5	--	7
<u>QUESTION 99</u> (from other topics section) Should resource managers be sensitive to the desires of Band members?	86	2	--	12
<u>QUESTION 90</u> (from other topics section) Are Red Lake cultural resources being properly identified and dealt with (such as sugar bushes, graves, ceremonial areas, historical sites, etc.)?	21	43	31	5
<u>QUESTION 99</u> (from other topics section) Should resource managers be sensitive to the desires of Band members?	86	2	--	12
<u>QUESTION 51</u> Either I or my family participate in the following activities. <i>NOTE: Percentages do not add up 100 because respondents could check more than one.</i>				
68% Use IHS for health care & medicine	27% Traditional burial practices			
65% Gather wild foods	25% Use wildland areas for fasting			
46% Gather on Main Reservation	25% Sacred or traditional meeting sites			
37% Gather on the Ceded Lands	23% Use wildland areas for ceremonial sites			
36% Spiritual ceremonies	22% Use wildland areas for religious sites			
36% Gather traditional medicines	16% Gather off-reservation			
33% Practice traditional medicine	3% Other activities			
9% Did not respond				
<u>QUESTION 52</u> Either I or my family have lost the following sacred or traditional areas due to development activities (i.e. construction, logging, roads, etc.). <i>NOTE: Percentages do not add up 100 because respondents could check more than one.</i>				
33% Hunting grounds	12% Burial sites			
32% I do not know of any lost sites	11% Sacred or traditional meeting sites			
23% Sites for gathering/medicine	8% Religious or ceremonial sites			
21% I do not use such areas	4% Other areas			
17% Did not respond				
<u>QUESTION 56</u> Please indicate the cultural or heritage resources which are important to you. <i>NOTE: Percentages do not add up 100 because respondents could check more than one.</i>				
85% Berry-picking patches	49% Trapping areas			
70% Burial sites	46% Archeological sites			

68% Sugar bushes	48% Historic places
66% Hunting grounds	43% Plant collecting areas
63% Ricing areas	3% Others
57% Sacred areas	7% Did not respond

QUESTION 57 Which traditional activities do you participate in on the Reservation? *NOTE: Percentages do not add up 100 because respondents could check more than one.*

71% Berry-picking	30% Maple syrup making
68% Hunting	28% Wild ricing
68% Fishing	17% Basketry
33% Herb gathering	15% Birch bark crafting
32% Bead work	6% Other activities
30% Trapping	10% Did not respond

QUESTION 98 (other topics section) Which specific plants would you like to see management for?

86% said "blueberries"	63% said "medicinal herbs"
83% said "wild rice"	50% said "rare plants"
72% said "raspberries"	3% said "other plants"
65% said "cranberries"	8% did not respond

OBSERVATIONS ABOUT THE TRADITIONAL USE SECTION

1) Respondents believe Indian traditional values should be incorporated into natural resource management.

Not surprisingly, questions 32 and 99 confirm this concept. Unfortunately, the survey does not help to define what traditional values are and how widely they are held by Band members.

2) Respondents lack confidence that cultural resources are properly identified and dealt with.

Nearly three-quarters of responses to question 90 were "no" or "not sure." Identification of cultural resources should be given a higher priority. Research would probably be best done by community-based groups who will work with natural resource managers.

3) Respondents want traditional use sites protected from development, but are reluctant to identify such sites.

Two-thirds of the respondents to question 53 indicated a desire to have some way to protect traditional sites, but 61 percent said "no" or were "not sure" about their willingness to divulge the locations of such sites. Current resource policy calls for traditional use site protection, but cannot be effective without knowledge of site location.

Less strongly, question 55 shows about half the respondents want set aside areas for traditional gathering of plants and for spiritual practices. Public education should explain the role of natural succession in species composition.

4) The most common traditional use is food gathering.

Questions 51 and 57 clearly identify "gathering of wild foods," "berry-picking," "hunting," and "fishing" as the preferred activities. Popularity of other activities drops off significantly.

5) Respondents are very interested in wild food plant management.

Question 98 shows strong support especially for blueberries and natural wild rice. Managers should probably explore the prevalence of food plants on the reservation and the cost of managing for such areas.

6) The most important cultural or heritage resources identified by respondents were berry-picking patches, burial sites, sugar bushes and hunting grounds (question 56).

7) Losses of sacred or traditional areas to development activities have occurred.

The two most common losses identified were "hunting grounds" and "sites for gathering/medicine," with check-offs from 33% and 23% of respondents, respectively. Both of these activities are probably easily transferred to other areas, as the ecological diversity of Red Lake lands has probably remained fairly constant. Aspen harvesting over the last ten years has undoubtedly benefited deer populations.

Perhaps more important, are the losses of sites which are less "mobile" or "transferrable," such as burial sites, meeting sites, and ceremonial sites. These sites are often difficult to identify. Resource managers and development personnel should be trained to recognize characteristics of as many traditional use sites as possible.

Clearly, resource development is impacting the traditional use of a significant portion of the reservation population. 39% percent of the respondents to question 52 indicated at least one lost area. Most of these were hunting or gathering areas. Conversely, 44% do not know of lost areas and/or do not use such areas (17% did not respond).

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - WETLAND ISSUES SECTION

16 June, 1994

	<i>***Percentage Response***</i>			
	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 58</u> Would you prefer that most of the Red Lake wetlands be left undeveloped?	50	19	28	3
<u>QUESTION 59</u> Should Red Lake seek to co-manage the Ceded Lands wetlands with State and local governments?	30	44	22	4
<u>QUESTION 60</u> Would you support conservation and aggressive management of Red Lake wetland areas in order to maintain or improve game habitat?	8	9	9	4
<u>QUESTION 61</u> Would you support more wetland projects aimed at enhancing water quality?	73	6	16	5
<u>QUESTION 62</u> Would you support the establishment of "buffer areas" around wetlands which would limit or prevent construction and development activities?	74	8	15	4
<u>QUESTION 63</u> Which activities in wetlands would you support?				
79% said "wildlife habitat improvement"				
48% said "cranberry production"				
38% said "rice paddy construction"				
25% said "more agricultural use"				
19% said "road building"				
17% said "dam & dike building"				
12% said "ditching"				
11% said "peat mining"				
3% said "other activities"				
7% did not respond				

OBSERVATIONS ABOUT THE WETLAND ISSUES SECTION

1) Respondents strongly support wetland values of wildlife habitat and water quality enhancement.

Strong favorable responses to questions 60, 61 and 62 support this statement. Question 63 indicated, by a wide margin, the preferred wetland activity would be "wildlife habitat improvement." Fifty percent of respondents favored no development activities at all (question 58).

2) Respondents are lukewarm towards or do not favor commercial development.

Question 63 ranked most commercial development activities low. Cranberry production and rice paddy construction were the best ranked commercial activities, but supported by only 48 percent and 38 percent of the respondents, respectively. Dams, dikes and ditches are required for these developments, but are among the least favored wetland activities.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - WATER RESOURCE SECTION

16 June, 1994

		<i>***Percentage Response***</i>			
		<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 66</u> Are you aware that there is a fish consumption advisory on Green Lake (along Highway 89)?		27	64	5	4
<u>QUESTION 67</u> Do you or your family members use a flowing well for drinking water?		57	36	2	5
<u>QUESTION 68</u> Are you aware that the Tribe has installed groundwater monitoring wells at the landfills at Ponemah, Redby, Red Lake and Shell Lake?		39	50	7	4
<u>QUESTION 69</u> Do you feel the water quality of Upper & Lower Red Lake has declined...		48	10	18	14
	in the past 5 years?	43	12	18	27
	in the past 10 years?	41	15	19	25
	in the past 20 years?				
<u>QUESTION 71</u> Do you feel the water quality of the smaller Reservation lakes has declined...		29	12	32	27
	in the last 5 years?	29	14	27	30
	in the last 10 years?	23	14	28	35
	in the last 20 years?				
<u>QUESTION 73</u> Do you believe the water you drink is safe?		39	25	32	5
<u>QUESTION 83</u> Do you believe Red Lake should set up protection areas to reduce the chances of contaminating groundwater and wells?		89	1	5	6
<u>QUESTION 74</u> What type of sewer system does your home have?					
	72% said "septic tank"				
	22% said "community sewer"				
	6% did not respond				
<u>QUESTION 75</u> How many wells are there on your land assignment?					
	82 said 1				
	69 said 0				
	3 said 2				
	1 said 12!				
How many used?					
	145 said 0	9 said 1	1 said 2		

OBSERVATIONS ABOUT THE WATER RESOURCE SECTION

1) Fewer people than hoped were aware of the Green Lake fish advisory and the groundwater monitoring well program.

This feedback may reflect readership of the *Red Lake Natural Resource Newsletter*. It may be advisable to repeat articles from time to time and use additional media routes to distribute information.

2) Respondents do not have confidence in Red Lake water quality.

Questions 69, 71 and 73 indicate fewer positive responses and more "not sure" responses than expected. The Red Lakes, more than the inland lakes and drinking water, have a low perception of quality among the respondents. This perception may, in part, be fueled by the belief that chemical contaminants from tributaries are eroding the lake quality. In any case, these results indicate a probable need for public education about Red Lake water quality.

3) Septic systems were the most common type of sewer system. Occupant knowledge of well locations on land assignments may be low.

Of the 35 respondents indicating they were hooked into a community sewer system ...

30 said they had no wells	35 said they had no unused wells
5 said they had 1 well	

Of the 111 respondents indicating they had septic systems ...

75 said they had 1 well	101 said they had no unused wells
32 said they had no wells	9 said they had 1 unused well
3 said they had 3 wells	1 said they had 2 unused wells
1 said they had 12 wells	

4) Respondents are very concerned about protecting groundwater quality. (question 83)

5) Definitions of water quality varied considerably.

Review of the comments from question 66 is interesting. Most comments defined high quality water as being able to support humans, fish and wildlife, to be chemical-free, and not cause illness or pose health risks. Many respondents expressed how they perceived water quality at Red Lake, rather than giving their definition of water quality. Many respondents apparently evaluated water quality at their tap. The comments are found at the end of this report.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE
 SURVEY RESULTS - FOREST RESERVE SECTION
 16 June, 1994

		<i>***Percentage Response***</i>			
		<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 76</u>	Do you like the idea of some kind of forest reserve system?	71	9	17	3
<u>QUESTION 77</u>	Is the reduction of reservation jobs, personal income and Tribal income a reasonable trade-off for establishing forest reserves?	42	23	30	5
<u>QUESTION 78</u>	What percentage of the forest should be placed under a reserve system?				
	27% said "10-15 percent"				
	23% said "All Forest"				
	19% said "25-50 percent"				
	10% said "50-75% percent"				
	7% said "1-10 percent"				
	6% said "None"				
	8% did not respond				
<u>QUESTION 79</u>	Which activities should be prohibited in a forest preserve?				
	80% said "dumps"	49%	said "new roads"		12%
	63% said "logging"	25%	said "birch bark peeling"		10%
	63% said "gravel pits"	19%	said "firewood cutting"		2%
	60% said "housing"	13%	said "hunting"		11%
			12% said "sugar bushes"		
			10% said "food gathering"		
			2% said "other activities"		
			11% did not respond		
<u>QUESTION 80</u>	If you would like forest reserves established, where do you think some good places would be? <i>NOTE: Only those responses who also answered "yes" or "not sure" to question 76 were tabulated (136 total).</i>				
	60% said "in each district"	43%	said "ceded/NWA"		
	51% said "Ponemah pine"	41%	said "hardwood areas"		
	47% said "groves out west"	35%	said "near roads"		
	45% said "conifers in narrows"	22%	said "aspen areas"		
	45% said "the ridge"	3%	said "other areas"		

OBSERVATIONS ABOUT THE FOREST RESERVE SECTION

1) Although respondents favored the establishment of a forest reserve system (question 76), a bit over half answered "no" or "not sure" if it would cost jobs and income (question 77).

Resource protection and jobs are both highly valued at Red Lake. Perceived conflict between the two values has consistently reduced indicated support for protection measures.

2) The amount of forest to place under a reserve system varied widely.

Question 78 rendered no clear preference. 40 percent wanted at least half the forest in reserves and 59 percent wanted less than half. Similar uncertainty was expressed regarding set asides for wildlife management areas.

3) Most respondents would exclude most development from forest reserves, but allow traditional uses.

About half or more of the respondents would exclude dumps, logging, gravel pits, housing and new roads from forest reserves. The majority, at least 75 percent, favor the practice of traditional activities.

4) Locating forest reserves in each district was the top choice in question 80.

60 percent of respondents thought reserves should be "in each district." The second choice was "Ponemah pine," nine points below "each district." Other choices gradually fell off in popularity and were all selected by less than half of the respondents.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE

SURVEY RESULTS - OTHER TOPICS SECTION

16 June, 1994

	Percentage Response			
	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>	<u>None</u>
<u>QUESTION 81</u> Do you depend directly on natural resources for at least a portion of your income (i.e. fishing, logging, craft materials, firewood, food, trapping, etc.)?	56	36	3	5
<u>QUESTION 82</u> Would support Tribal efforts to regulate land use? (Examples: where to locate housing, businesses, waste disposal sites, lake shore development, storm sewers, etc.)	72	9	14	5
<u>QUESTION 85</u> Should Red Lake develop a road closure program and close certain portions of some roads to reduce seasonal road damage, trash dumping, and timber trespass?	72	11	12	5
<u>QUESTION 86</u> If Red Lake had the opportunity to economically develop a mineral resource (like gold, uranium, etc.) do you feel the option should be explored?	42	32	21	5
<u>QUESTION 87</u> Do you believe litter and dumping of trash is a problem at Red Lake?	90	2	4	4
<u>QUESTION 88</u> Would you drive further than you currently do in order to use a waste disposal site that is environmentally safe?	77	10	8	5
<u>QUESTION 89</u> Do you favor economic development, in general, of Reservation natural resources?	62	12	19	7
<u>QUESTION 91</u> Do you believe the Tribal DNR is capable of managing Tribal natural resources in a scientifically and environmentally sound manner?	50	19	27	4
<u>QUESTION 92</u> If not, who should be responsible for the management? <i>NOTE: Percentages are for the 72 who responded "no" or "not sure" to question 91.</i>				
19% said "other"				
18% said "Tribal Council"				
17% said "outside agency"				
6% said "BIA"				
40% did not respond				
<u>QUESTION 93</u> Tourism is a very large industry in northern Minnesota. Would you favor proposals to allow non-Indian recreational use on the Reservation to increase jobs for Band members?	34	47	15	4
<u>QUESTION 94</u> If yes (to question 93), which types of recreational attractions might you favor? <i>NOTE: Percentages are for the 76 who responded "yes" or "not sure" to question 93.</i>				
59% said "nature observation"				
53% said "camping/hiking"				
49% said "guided hunting"				
49% said "x-country skiing"				
43% said "sport fishing"				
38% said "boating"				
30% said "snowmobiling"				
30% said "ATV trails"				
7% said "other attractions"				
15% did not respond (all "not sure" from Q93)				

QUESTION 95 Which topics should natural resources do more to inform the public about? (rank 1-10)

NOTE: Topics are ranked by popularity based on numeric averages of the responses for each species. A blank response was

assigned a value of 10. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-10. These responses were tallied as given.

3.59	Red Lake fishery	5.80	wetland concerns
4.24	logging & forestry	6.94	non-game wildlife mgt.
4.59	pollution control	7.66	tourism
4.92	hunting & game mgt.	9.48	other topics
5.63	use of chemical apps.	9.50	none

QUESTION 96 Do you burn firewood to heat your home?

34%	said "sometimes"
31%	said "most/all the time"
30%	said "rarely/never"
5%	did not respond

QUESTION 97 Which firewood cutting policy would you prefer? (rank 1-6)

NOTE: Topics are ranked by popularity based on numeric averages of the responses for each species. A blank response was assigned a value of 6. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-6. These responses were tallied as given.

3.25	said "hardwood piles left in timber sales"
3.70	said "only in designated firewood cutting area"
3.75	said "salvage cutting of trees & tops in timber sales"
3.98	said "unrestricted cutting anywhere"
4.61	said "buffer strips along roads"
5.88	said "other policies"
0	did not respond

QUESTION 100 In your opinion, which of the following categories should provide jobs on the Reservation? (rank 1-11)

NOTE: Topics are ranked by popularity based on numeric averages of the responses for each species. A blank response was assigned a value of 11. Ranking questions were unsuccessful in obtaining a ranking from all respondents. Commonly, people would simply "check-off" species which were important to them. The "check-offs" were assigned a value of 1. Some respondents scaled each species 1-11. These responses were tallied as given.

4.11	casinos	5.99	federal gov't.	5.04	guided hunting/fishing
4.15	Tribal gov't	6.28	services	8.72	tourism
5.39	comm. fishing	6.92	logging	10.52	other categories
5.81	industry/manufacturing	7.96	traditional	0	did not respond

QUESTION 101 What are the most important natural resource concerns facing the Red Lake Band in the next 10 years. (rate 0-5, 5 being the most important)

NOTE: 3 percent did not respond. The numerical ranking was obtained by computing the average response to each item. The calculation summed an individual column and divided the sum by the number of responses, including zero responses.

4.65	walleye depletion	3.95	soil conservation
4.32	water pollution	3.94	wildlife management
4.30	more jobs	3.81	air quality
4.29	wildfire protection	3.75	housing development
4.25	groundwater	3.66	wetland loss
4.23	public education	3.57	chemical use (herbicide/pesticide)
4.20	tree planting	3.41	land use planning/zoning
4.19	logging control	3.38	road access/building
4.13	conservation law enforcement	2.60	tourism development
3.97	clearcutting	0.51	other concerns

OBSERVATIONS ABOUT THE OTHER TOPICS SECTION

1) More respondents were supportive of natural resource economic development than those indicating at least a partially direct dependency on natural resources.

62% support natural resource economic development in question 89.

56% are at least partially directly dependent upon natural resources in question 81.

65% burn firewood sometimes or most of the time.

At least 20% of the respondents have resource extractive jobs.

2) Respondents are reluctant to support mineral resource development.

3) Respondents support measures to protect the environment.

72% favor land use regulation.

72% favor a road closure program.

77% would drive further to use a safe landfill.

Other survey section results support this observation.

4) Red Lake DNR enjoys a higher public confidence level than BIA forestry, yet only 50 percent of respondents believe they are capable.

Both agencies would likely benefit from a positive and truthful public relations effort. Much of what both agencies do is good, and both agencies receive blame for events that are at least partially out of their control. Public support will come only through increased public understanding.

5) Respondents are not keen on tourism development. Those that are somewhat prefer non-consumptive uses.

62% said "no" or were "not sure" about tourism development (question 93). "Nature observation" and "camping/hiking" were the top two preferences for tourism development. "Cross-country skiing" was tied with "guided hunting" for third. Question 101 places "tourism development" at the bottom of resource concerns over the next 10 years.

6) Respondents appear to favor public education about natural resources.

Question 101 ranked public education fairly high for resource concerns over the next 10 years. The preferred topics are the Red Lake fishery, logging & forestry, and pollution control; interests consistent throughout the survey. Public education should be given a higher priority than it currently has.

7) Jobs are of key importance to respondents, and casino employment and the Tribal government are clear preferences.

Question 101 ranked "more jobs" as the third most important resource concern over the next years.

Question 100 ranked casinos & Tribal government more than a full point ahead of the third choice.

RED LAKE NATURAL RESOURCE QUESTIONNAIRE & LOTTERY COUPON
COMPLETE AND TURN IN THIS SURVEY / COUPON TO ENTER THE PRIZE DRAWINGS

Are you a member of the Red Lake Band?

Have you ever lived off reservation more than a year (not including military service or school)

Do you currently live on or off the Reservation?

How old are you?

Are you male or female?

What type of work do you do?

It is impossible to associate any completed survey form with a person. All names are detached from the surveys and no record is kept.

The information below the line is detached for the prize drawings only

PRIZE DRAWING INFORMATION

NAME: _____

ADDRESS: _____

PHONE NUMBER: _____

COMMENTS BY RESPONDENTS

Written comments on the natural resource survey often provide interesting insight to an individual respondent's viewpoint or interpretation of particular question. No attempt has been made to categorize the comments, other than associate them with a specific question (where possible). Most respondents had at least one or two written comments, especially when prompted for one by a question. Answers to "essay questions" and extraneous comments were recorded in the survey database. A few respondents were so prolific that all their comments would not fit into the program. Many comments were paraphrased to fit into the space allotted. If a reader wanted to view the original comments, each response is referenced by a response number. The response number is shown under the "#R" column.

This confidence was, of course, intentional. It is possible that a reader may be able to figure out who a respondent is from the nature of their responses, but it seems unlikely.

The comments are grouped by the following categories. Each grouping is a document generated directly from the database program.

- 1) FISHERIES SECTION
- 2) WILDLIFE SECTION
- 3) FOREST MANAGEMENT SECTION
- 4) TRADITIONAL PRACTICES SECTION
- 5) WETLANDS & WATER SECTION (2 pages)
- 6) WATER QUALITY DEFINITION (2 pages)
- 7) OTHER TOPICS SECTION (2 pages)
- 8) STRAY COMMENTS (6 pages)

APPENDIX E

PLANNING TEAM 2000 IRMP

Planning Team (original team) 2000 IRMP

Harlan Beaulieu Agriculture, Housing	Red Lake Tribal Government Realty Officer
Lawrence Bedeau Director	Red Lake Tribal Government Department of Natural Resources
Dave Conner Administrative Officer	Red Lake Tribal Government Department of Natural Resources
Bill Cook Planning Forester	Bureau of Indian Affairs Red Lake Agency
Clair Fetzer Trust Forester	Bureau of Indian Affairs Red Lake Agency
Tom Goldtooth Environmental Coordinator	Red Lake Tribal Government Environmental Program
Pam May Public Information Officer	Red Lake Tribal Government Department of Natural Resources
Ken McBride Environmental Specialist	Red Lake Tribal Government Environmental Program
Chuck Meyer Wetlands Specialist	Red Lake Tribal Government Department of Natural Resources
Joel Rohde Waters Program Director	Red Lake Tribal Government Department of Natural Resources
Jay Huseby Wildlife Biologist	Red Lake Tribal Government Department of Natural Resources
Bob Lintelmann Forestry Program Director	Red Lake Tribal Government Department of Natural Resources
Craig Neubert Planning Forester	Red Lake Tribal Government Department of Natural Resources
Pat Brown Fisheries Biologist	Red Lake Tribal Government Department of Natural Resources

Les Peterson
Archaeologist

Red Lake Tribal Government
Roads Department

Tom Stillday, Jr.
Elder, Fisherman

Red Lake Tribal Council
Ponemah Representative

Assistance Providers

Ray Anderson

University of Wisconsin
Professor Emeritus

Jeff Asfoor

Minnesota DNR Regional Office
Division of Forestry

Chris Brokl

Northern Forestry, Inc.
Red Lake IRMP Consultant

Kathryn "Jody" Beaulieu

Red Lake Tribal Archivist

Skip Drake

Minnesota Historical Society
Forest History Center

Jeff Edmonds

Minnesota DNR Regional Office
Division of Forestry

Tim Hepola

Bureau of Indian Affairs
Midwest Regional Office

Robert Jackson

Bureau of Indian Affairs
Midwest Regional Office

George-Ann Maxson

Regional botanical enthusiast

Don Vandendriesche

Bureau of Indian Affairs
Branch of Forest Resource Planning