

# Nez Perce Tribe Water Quality Assessment

## Clean Water Act 106



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## Executive Summary

This Clean Water Act (CWA) Section 305(b) Tribal water quality assessment report is an overview of the status and overall condition of Tribal waters within the exterior boundaries of the Nez Perce Tribe Reservation of 1863 and other waters affecting the Reservation. The 305(b) assessment was conducted by the Nez Perce Tribe's Water Resources Division (WRD), which is housed within the Department of Natural Resources. Funding for this assessment was obtained through the CWA Section 106 Water Pollution Control Program. It is the primary means by which the Nez Perce Tribe and the U.S. Environmental Protection Agency (EPA) evaluates Tribal waters on the Reservation with respect to: 1) The quality of rivers, streams, lakes, wetlands, and groundwater; 2) identification of pollutants and pollutant sources causing water quality impairment; 3) prioritization and evaluation of water quality management programs; and 4) the need for comprehensive monitoring and assessment plans.

The Nez Perce Tribe is currently working with the EPA to adopt water quality standards for the Reservation. Since the water quality standards are in the early phase of development, the Nez Perce Tribe considers this confidential information; therefore, some of the information in this report is incomplete, uses Federal guidance criteria, or uses the state of Idaho standards and 303(d) listings. The use of Idaho's water quality standards does not constitute agreement or approval of these standards by the Nez Perce Tribe.

A map of Reservation waters and the degree of beneficial use support for these waters is provided in this report. The Tribe's Water Resources Division is working on an interactive map that will show beneficial use support status and the associated impairments for Reservation waters. Almost all rivers and streams and all lakes on the Reservation are classified as not supporting. Groundwater is supporting but threatened and wetlands are unassessed. Major causes of impairments of Reservation waters include: flow alteration, sediment, temperature, bacteria, nutrients, and habitat alteration. Sources of impairments include: agricultural, roads, septic leakage, livestock grazing, and industrial. The lack of toxins data for Reservation waters is a concern of the Nez Perce Tribe and the overall impacts from industry are unknown.

## Introduction

The objective of the Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” In order to achieve this objective, it has been declared that one of the national goals is to provide for the “protection and propagation of fish, shellfish, and wildlife and provide for recreation in and on the water.” The CWA also directs states and authorized tribes to establish water quality standards that define the goals and pollution limits for all waters within their jurisdictions. Water quality standards have three major, interrelated components. First, they must designate beneficial uses of waterbodies to reflect human uses and ecological conditions that are officially recognized and protected. Second, they must establish water quality criteria, which are descriptions of the conditions considered necessary to protect each designated use. Finally, an antidegradation policy is required to protect all existing uses, keeping clean water clean and giving strict protection for outstanding waters.

The Nez Perce Tribe is a federally recognized Indian Tribe with an aboriginal territory of more than 13 million acres extending from northeastern Oregon and southeastern Washington, through north-central Idaho, to southwestern Montana. The Tribe’s 1855 treaty with the United States acknowledged and guaranteed a variety of retained off-reservation fishing, hunting, and gathering rights. The current Nez Perce Tribal Reservation is approximately 770,483 acres in size, and many tribal members continue to practice a subsistence-based lifestyle to this day. Clean water is valued for its cultural, spiritual, and economic uses, and the Tribe has a vested interest in protecting the quality of water both on Reservation and throughout the Clearwater, Snake, and Columbia River Basins (Figure 1).

The Nez Perce Tribe’s Water Resources Division (WRD) is responsible for assuring that Nez Perce Tribe Reservation (Reservation) waters are drinkable, fishable, swimmable, and are suitable for cultural and ceremonial uses. The WRD, along with other tribal departments, local agencies, state agencies, and federal agencies, is working to protect human health and restore Nacó’x (Chinook salmon) and Hé-yey (steelhead) populations, which are critical in sustaining a vital food source for the Nez Perce Tribe (Tribe). The WRD is protecting and restoring water quality on the Reservation by:

- Monitoring water quality for trends and current status
- Providing technical assistance and outreach
- Implementing best management practices (BMPs) to reduce nonpoint source pollution
- Developing water quality standards for Reservation water that will be protective of all beneficial uses, including protection of public health, recreational activities, spiritual/religious/ceremonial uses, aquatic life, and water supply

## Cultural

This document uses the NiMiiPuu timpt (Nez Perce language) for fish, creeks, and water. It is important to use the Nez Perce language, both written and orally, to preserve this important piece of cultural heritage. Table 1 provides common NiMiiPuu timpt.

**Table 1. NiMiiPuu timpt and pronunciation guide to common words.**

English Word	Nez Perce Spelling	Phonic Spelling
Fish (In General)	Cúuy'em	Tsu Yem
Chinook	Nacó'x ←	Nah Tsoak
Steelhead	Héeyey	Hey Yey
Rainbow Trout	Píickatyo	Peets Cut Yo
Coho	K'állay	Ka lie
Eel	Héesu	Haa' Sue
Sturgeon	Qíilex ←	Kee Lahx
Water	Kuus	Koos
Creek	Weele	Waah Lah
River	Piik'un	Pee Qoon

*\*The phonic spelling is as close to English pronunciation as possible. Many of the sounds used in the NiMiiPuu timpt are difficult to spell in the English language.*

Reservation waters support spring and fall Nacó'x (Chinook salmon), Hé-yey (steelhead), K'állay (coho salmon), and Heesu (Pacific lamprey) (Fisheries, 2008). The Clearwater River historically supported white Qíilex (sturgeon), however, the operation of Dworshak dam has caused water temperature in the Clearwater River to be too cold and to fluctuate too drastically to support white Qíilex.

Many Reservation waterbodies are used for ceremonial and religious purposes. It was stated by a Tribal elder that “The water that runs through Mother Earth’s veins is the blood of life to all beings” (Allen Slickpoo, Sr., Nez Perce Tribal elder). Ceremonial and religious practices involve intimate uses of surface water, including drinking.

## Geography

The Nez Perce Reservation is located in north-central Idaho and encompasses 770,483 acres, which accounts for most of the Clearwater River Basin. The Reservation boundaries extend into Nez Perce, Clearwater, Idaho, Lewis, and Latah counties. Major towns located within the Reservation boundaries include Lapwai, Kamiah, Orofino, Kooskia, Nezperce, Winchester, and Craigmont. There are several smaller communities scattered throughout the Reservation.

## Hydrologic Background

Primary water features on the Reservation are aquifers, springs, streams, and rivers, with groundwater serving as the primary source of drinking water for the Reservation population. There is an estimated 1,590 miles of streams and rivers in 19 subbasins within or intersecting the Reservation boundary that drain almost exclusively to the Clearwater River. These stream miles do not include all intermittent and ephemeral waterbodies. Within the Reservation, springs and seeps are common, and there are historical accounts of cold-water “fountains” and artesian wells throughout the basin. These resources are not well documented or assessed but have been used by the Tribal community for domestic, cultural, and spiritual purposes from time immemorial.

The Lewiston Basin Aquifer and the Clearwater Uplands Plateau are the primary aquifers on the Reservation with carbon-14, oxygen, and carbon isotope data indicating the residence time of the water in the Lewiston Aquifer is between 2,830 and 34,670 years (Brackney, 2006). The Lewiston Basin Aquifer was designated as a sole source aquifer in 1988.

## Climate

Elevations on the Reservation range from 800 feet near Lapwai, Idaho, to 4,800 feet near Winchester, Idaho. The project area is arid to semi-arid with hot dry summers and moderately cold winters. Annual precipitation ranges from 12-14 inches to 28-32 inches in the upper elevations. The Clearwater River valley is maritime influenced, and rain on snow events are common from January through April. Average snowfall in January ranges from 20.1 inches at



Winchester to 6.1 inches at Dworshak Fish Hatchery (University of Idaho Climate Center, 30 year record). The annual growing season on the Reservation averages about 84 days to 201 days.

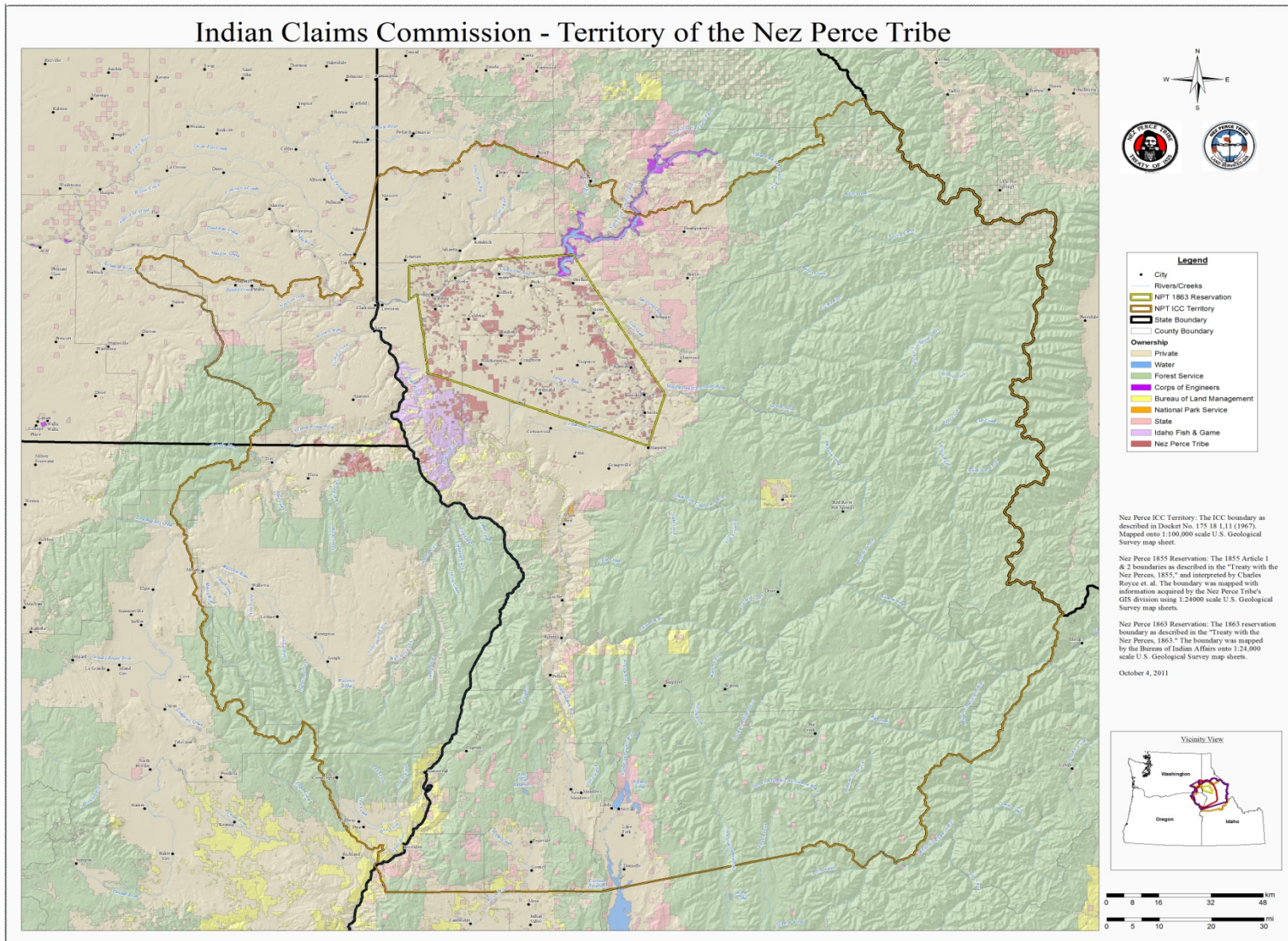


Figure 1. Nez Perce Tribe Reservation and ceded territory.

## Atlas of Tribal Resources

A summary of Tribal resources is listed in Table 2 below.

**Table 2. Atlas of Tribal Resources.**

Topic	Value
Reservation Area (acres)	770,469
Reservation Population	12,256
Total Miles of Piik'un (Rivers) and Weele (Streams)	1,590
- Miles of perennials streams	602*
- Miles of intermittent streams (Does not include unnamed streams)	85*
Number of Lakes/Reservoirs/Ponds	8
Acres of Lakes/Reservoirs/Ponds	2,883
Miles of Assessed Weele and Piik'un by the Nez Perce Tribe	329
Miles of Total Assessed Weele and Piik'un	980
Miles of Impaired Waterbodies	687

## Water Quality Standards

Developing water quality standards is a critical component for protecting human health and aquatic life. They are the cornerstones of the Clean Water Act and are delegated to states and federally recognized Tribes. The Nez Perce Tribe is currently working with the EPA to adopt water quality standards for the Reservation.

Since the Nez Perce Tribe does not have approved water quality standards, the Water Resources Division used the 2004 303(d) listing coupled with water quality data collected by the Tribe to develop the designated support status table. An old 303(d) list was used for this report for two reasons: 1) the Lower Clearwater River Tributaries Total Maximum Daily Load was based on this list and has not yet been approved by the EPA, and 2) the 2008 303(d) list compiled by the Idaho Department of Environmental Quality does not accurately reflect the

water quality of Reservation streams. The Tribe also has unique designated beneficial uses for Reservation waters. These uses are not reflected in the 2008 303(d) list.

As a part of the draft water quality standards developed by the Tribe, designated beneficial uses are being proposed for each waterbody. These uses have not been approved by the Nez Perce Tribe Executive Committee or the EPA. Any designated use listed in this document is preliminary and subject to change. Proposed designated beneficial uses of Tribal waters, including wetlands, are:

- Agriculture
- Aesthetics
- Cold water habitat
- Domestic water supply
- Fish propagation
- Groundwater Exchange
- Industrial
- Outstanding Tribal Resource Waters
- Primary Contact Ceremonial
- Primary Contact Recreation
- Salmonid Spawning
- Secondary Contact Recreation
- Streambank and shoreline stabilization
- Wildlife habitat

## **Nonpoint Source Program**

The Nez Perce Tribe has a Section 319 Nonpoint Source program. Grant funds through Section 319 of the Clean Water Act are critical in restoring waters of the Reservation. The WRD generally receives funds through EPA competitive and base grants to implement best

management practices (BMPs) on the Reservation. Table 3 lists the best management practices implemented by the WRD through the CWA 319 program since 2005.

**Table 3. Nonpoint source projects funded through CWA 319 grants on the Reservation.**

<b>Year</b>	<b>Project</b>
2005	Direct Seed Initiative Program
	East Fork Sweetwater Fencing
	Milepost 59 Fire Rehabilitation
	Noxious Weed Management-Allotment 1277
	Road Improvement- Mud Springs
2006	Direct Seed Initiative Program
	Allotment 365 Offsite Water/Fencing
	Catholic Creek Culvert-to-Bridge Project
	Lapwai Creek Riparian Planting
	Mud Springs Fencing, Offsite Water, Planting Project
	Cold Springs Reserve Fencing and Riparian Planting
	Headwaters Webb Creek Fencing and Planting
2007	Cottonwood Creek Riparian Planting
2009	Cold Springs Creek - Offsite Water, Fencing, Planting
	Coyote Creek Riparian Planting
	Holes Creek Riparian Planting and Fencing
2010	North Fork Willow Creek Livestock exclusion and planting
	Unnamed Tributary to Lawyer Creek Livestock exclusion and planting

The Nez Perce Tribe's Department of Fisheries Watershed Division also implements best management practices in two of the Reservation watersheds (Big Canyon and Lapwai creeks) through Bonneville Power Administration funds. Other agencies implementing BMPs on Reservation waters include the Lewis County Soil and Water Conservation District, the Clearwater Soil and Water Conservation District, the Nez Perce County Soil and Water Conservation District, the Idaho Soil Conservation Commission, and the Natural Resources Conservation Commission. The WRD is currently working to develop comprehensive maps of BMPs implemented on Reservation water to improve program efficiency and coordination with various agencies.

## National Pollutant Discharge Elimination System Permits/Point Source Pollution

The EPA issues all National Pollutant Discharge Elimination System (NPDES) permits on the Reservation and within the state of Idaho. There are eight facilities within the Reservation with NPDES permits and nine that are outside of the boundaries but on waterbodies that affect Tribal waters. There is one general permit--Confined Animal Feeding Operations--and one draft general NPDES permit--Small Suction Dredging--that apply to waters of the Reservation. The permits are listed in Table 4 below.

**Table 4. NPDES Permits for waters of the Reservation.**

NPDES Permits on the Reservation			
Facility	Permit Number	Waterbody	TMDL
Ahsahka Water and Sewer	ID-002522-4	Clearwater River	None
City of Orofino Water Treatment Plant	ID-0001058 ID-002015-0	Clearwater River	None
City of Kamiah	ID-0028002	Clearwater River	None
City of Kooskia	ID-002181-4	Clearwater River	None
City of Culdesac	ID-0024490	Lapwai Creek	Lower Clearwater River Tributaries TMDL- Draft
City of Winchester	ID-002018-4	Lapwai Creek	Lower Clearwater River Tributaries TMDL- Draft
City of Nezperce Wastewater Treatment Facility	ID-002039-7	Long Hollow Creek	Lower Clearwater River Tributaries TMDL- Draft
City of Craigmont	ID-002128-8	John Dobbs Creek	Lower Clearwater River Tributaries TMDL-Draft
Riverside Independent Water District WWTP	ID-0021237	Clearwater River	None
Lapwai WWTP		Clearwater River	None
NPDES Permits off Reservation that Affect Tribal Waters			
City of Cottonwood	ID002184-9	Cottonwood Creek	Cottonwood Creek TMDL
North Idaho Correctional Facility	ID-002588-7	Cottonwood Creek	Cottonwood Creek TMDL
City of Deary	ID-002078-8	Potlatch River	Potlatch TMDL
City of Bovill	ID-002286-1	Potlatch River	Potlatch TMDL
City of Troy	ID-002360-4	WF Little Bear Ck	Potlatch TMDL
City of Julietta	ID-002376-1	Potlatch	Potlatch TMDL

City of Kendrick	ID-002455-4	Potlatch	Potlatch TMDL
City of Grangeville	ID-002003-6	Threemile Creek	South Fork Clearwater River TMDL
General NPDES Permits			
Confined Animal Feeding Operation	IDG-010000		
Small Suction Dredging	IDG-370000	SF Clearwater River	SF Clearwater River TMDL

## Cost/Benefit Assessment

The Nez Perce Reservation is a conglomerate of Tribal trust, Tribal fee, Tribal allotment, private, and state lands. The responsibility of the Nez Perce Tribe as a sovereign government is to ensure that the management of the natural resources within the Nez Perce Reservation and ceded territories are managed to protect human health, preserve traditional lifestyles, protect treaty rights, and provide economic benefits. Protecting the salmon and steelhead fisheries is a major component of the preservation of traditional lifestyles.

The Tribe manages several hatcheries on the Reservation and within the ceded territory to help restore and preserve historic fish runs. Salmon and steelhead are critical for subsistence and ceremonial purposes. Although fish runs are being maintained by hatcheries, wild populations continue to decline. It is also unknown whether consumption rates at historic/current amounts are safe due to a lack of toxins data in the headwaters of the Columbia basin.

Potential contamination sources that affect the salmon and steelhead fisheries are pesticides from agricultural lands, leaking septic tanks, erosion from roadways, sediment and nutrients from agricultural and grazed lands, and a myriad of toxins from landfills and recycling centers in floodplains. Fish tissue, sediment, and water quality monitoring for toxins is needed to better understand the health risks of fish consumption and cultural uses of surface waters, what specific toxins pose the greatest health risks, and where to focus toxins reductions efforts.

The benefits of addressing nonpoint pollution sources and toxins monitoring to improve water quality include: 1) protecting human health through the reduction of toxins in waterways and drinking water; 2) improving and protecting fish, wildlife, and riparian habitats; 3) protecting cultural and traditional uses of waterbodies and Tribal lands; and 4) improving economics and recreational opportunities. Providing these benefits is paramount in sustaining the Nez Perce Tribe's traditional lifestyles and improving economic conditions for the future. In the long term, it is more cost effective to protect water quality than to restore water quality through best management practices and remediation efforts.

## Assessing Water Quality

### Assessing Water Quality in Surface Waters

The Nez Perce Tribe WRD began participating in watershed assessments on the reservation in the early 1990's. Water quality data was collected at 35 monitoring sites to assess overall water quality on the Reservation and in the ceded territory. Some of these sites have very limited data. In 2002, the WRD was awarded funding from the EPA to collect water quality data for the development of the Lower Clearwater River Tributaries TDML. The Lower Clearwater Rivers Tributaries TMDL addresses 14 of the 19 watersheds on the Reservation, and 31 sites were monitored over a three year period. Figure 2 shows the monitoring locations for both monitoring projects. The Lower Clearwater River Tributaries TMDL is currently being reviewed by the EPA and is expected to be approved in the spring of 2012.

In 1999, the Tribe and Idaho Department of Environmental Quality (IDEQ) jointly completed the Upper Lapwai Winchester Lake TMDL and South Fork Clearwater River TMDL. The Potlatch and Cottonwood TMDLs were completed by the IDEQ, with assistance from the Tribe. The Lolo Creek and Orofino Creek TMDLs are not yet complete. Table 5 provides a list of TMDLs and their status for Reservation watersheds.



The Nez Perce Tribe Water Resources Division developed a Water Quality Assessment strategy in 2007. The strategy is designed to provide high-quality data on Reservation waters that address:

- Status and trend of water quality;
- Variations of water quality throughout the Reservation;
- Deviation of water quality from standards; and
- Which pollutants are impairing water quality.

This strategy drives all current water quality monitoring and will be incorporated into future 305(b) assessments.



**Table 5. Summary and status of TMDLs for Reservation waters.**

TMDL Waterbody	Status	Date
South Fork Clearwater River	Complete	2002
Lower Clearwater River Tributaries	Draft sent to EPA	Pending
Cottonwood Creek	Complete	2000
Potlatch River	Complete	2008
Upper Lapwai Watershed and Winchester Lake	Complete	2000
Lolo Creek Watershed	In progress	2010*
Jim Ford Creek	Complete	
Orofino Creek	In progress	2011
Clearwater River	Not planned	NA
Five-Year TMDL Review		
Cottonwood Creek	In progress	2010*
Upper Lapwai Watershed and Winchester Lake	In progress	2010*

## Assessment Methodology

Waterbody assessments are all based on water chemistry, habitat surveys, biotic indices, modeling, and remotely sensed data: LiDAR and Thermal Infrared (TIR). The remotely sensed data is not included in this report; however, the data will be available on an interactive map on the Water Resources Division website in early 2010. As mentioned in Section 4.1, water quality data was collected primarily for two purposes; general assessment and for the Lower Clearwater River Tributaries TMDL. Quality Assurance Project Plans (QAPP) and Standard Operating Procedures were developed and approved by the EPA for all water quality monitoring projects. These QAPPs and monitoring procedures are incorporated by reference (Water Resources, 2002; Water Resources, 2005; Water Resources, 2006).

Data collected in early 2000 typically included water chemistry data (temperature, pH, specific conductivity, DO, nitrate plus nitrite, ammonia, total Kjeldahl nitrogen, and phosphorus) and bacteria data (*Escherichia coli* and total coliform). Appendix A lists each monitoring site, the location, parameters sampled, and the year monitored. The data collected for the Lower

Clearwater River Tributaries TMDL included water chemistry and bacteria data along with physical habitat (width to depth ratios, cobble embeddedness, Wolman pebble counts, streambank stability, canopy cover, sinuosity, gradient), macroinvertebrates, and algae communities (periphyton, pheophyton, and chlorophyll-a). The results from benthic macroinvertebrates data is described in more detail in section 4.3 below, and physical habitat results are discussed in section 4.4.

Oil and grease samples were collected at sites (Big Canyon Creek, Little Canyon Creek, Holes Creek, Lawyer Creek at the mouth and Reservation boundary, Sixmile Creek, Sevenmile Creek, Orofino Creek, Whiskey Creek, and Hatwai Creek). Only two sites were above the detection limit of 0.1 mg/L: Hatwai Creek and Big Canyon Creek. There are several waterbodies that are listed for oil and grease on the 303d list that have not been sampled for this pollutant.

Generally, the WRD would prefer to use data that is less than 5 years old to assess water quality on the Reservation. However, more recent data for many the Reservation watersheds are unavailable, and land uses have not change dramatically enough see a significant change in water quality. For those waterbodies where the Tribe has not collected water quality data, data from the IDEQ and Idaho Association of Soil Conservation Commission was used.

## **Biotic Indices**

From 2003 to 2005, benthic macroinvertebrates were collected at each monitoring site for a total of 33 samples following EPA EMAP field sampling protocols. All samples were collected in riffles for distances ranging from 60 to 150 meters during late May through July. Each sample was composited for analysis. A number of community metrics were calculated and a selection of these are presented and discussed below.

The Helsenhoff Biotic Index (HBI) describes the overall pollution tolerance of the taxa collected. It incorporates nutrient enrichment, high sediment loads, low dissolved oxygen, and thermal impacts into its methodology. Individual taxa are assigned a pollution tolerance value that

ranges from 0 to 10, with 0 being pollution intolerant and 10 being pollution tolerant. Sites with HBI values of 0-2 are considered clean, 2-4 slightly enriched, 4-7 enriched, and 7- 10 polluted.

All sites were above three, meaning that no waterbody with biotic data can be considered clean. Two waterbodies had a value above seven: Long Hollow Creek (mouth) and Big Canyon Creek (Upper). Species richness, EPT Taxa richness, EPT abundance, Dominant Taxa, and Species Diversity were all determined for the monitored waterbodies (Appendix C). The highest species richness was found at the mouth of Webb Creek, with high values also found at Sweetwater Creek (mouth) and Tom Taha Creek. The lowest values were found in Lapwai Creek below the Winchester Waste Water Treatment Plant (WWTP) and below the Culdesac WWTP. Long Hollow Creek, below the WWTP, also had very low species richness values. EPT Taxa richness is the portion of the community made up of the total number of Ephemeroptera, Plecoptera, and Trichoptera, which require high water quality. The lowest values of EPT Taxa richness were also found below the WWTPs on Lapwai Creek and Long Hollow Creek. The highest richness was found in East and West Forks of Sweetwater Creek. The data for EPT abundance, percent dominant taxa, and species diversity follows this same pattern.

### **Physical Habitat Surveys**

In 2003 and 2004, stream habitat surveys were conducted on seven tributaries in the Clearwater River for developing the Lower Clearwater River Tributaries TMDL (Draft Lower Clearwater River TMDL, 2009). Surveys began at the TMDL monitoring sites located at the mouth of each tributary and extended for a minimum of 150 meters. Catholic Creek, Tom Taha Creek, Jack's Creek, and Sixmile Creek were surveyed beginning at the mouth. Cottonwood Creek had both a lower and a middle reach survey, and Lawyer Creek had a lower, middle, and upper reach surveyed. Results were summarized according to "Matrix of Pathways and Indicators of Watershed Condition for Chinook, Steelhead, and Bulltrout," Local Adaptation for the Clearwater Basin and Lower Salmon, National Marine Fisheries Service, Cottonwood BLM,

Clearwater NF, and Nez Perce NF, (1998). Large woody debris was evaluated using Overton's Natural Conditions in the Salmon River Basin, Idaho (1995) rating system.

All reaches had suboptimal pools per mile, although Lawyer Creek (reaches 2 and 3) had values very close to the desirable level. Generally, levels of large woody debris were inadequate. Only two reaches—Sixmile and Lawyer Creek, reach 3—met or exceeded PACFISH large woody debris recommendations. Surface fines results are mixed. The majority of reaches rated moderate to high quality for percent surface fines <6 mm. However, all reaches rated low quality for cobble embeddedness, with the majority of values well above 30 percent embeddedness. All the A and B Rosgen channel types (except Catholic Creek) rated as low quality for bank stability, with values below 90 percent. All channel reaches surveyed, with the exception of Jack's Creek, exceeded the mean wetted width to depth ratio of Idaho natural condition stream surveyed by Overton (1995) and would be considered low quality habitat by this reference. Specific stream reach results can be found in Appendix C of the draft Lower Clearwater River TMDL (Storror, 2005).

## Support Status Descriptions

There are five categories of use support for designated uses of waterbodies: fully supporting; fully supporting but threatened; partially supporting; not supporting; and not attainable. Definitions of these uses are discussed below.

**Fully Supporting:** no impairment as indicated by all data types.

**Fully Supporting but Threatened:** no impairment as indicated by all data types, but there is an apparent decline in water quality over time or there are potential water quality problems requiring additional data or verification, or other information suggests a threatened determination.

**Partially Supporting:** impairment as indicated by one or more data types.

**Not Supporting:** impairment as indicated by all data types.

**Not Attainable:** a use attainability analysis has been provided to the WRD providing reliable data that the designated use of a waterbody cannot be met because of natural, physical, or socioeconomic conditions.

**Not Assessed:** sufficient data is not available to determine the support status.

All of the waterbodies that have been assessed were determined to be either partially supporting or not supporting. Subsequently, all of the watersheds have TMDLs with the exception of Orofino Creek and Clear Creek, which are in progress.

## Designated Use Support

For purposes of this 305b report, stream lengths are not broken down into segments. Shorter stream segments will be delineated in the Tribe's Water Quality Standard and, once approved, will be applied to future 305b reports. In this report, entire streams are listed for impairments or as unassessed, even if portions of the stream are off Reservation. Although portions of these streams are off Reservation, the impacts to Reservation waters are potentially significant. However, tributaries to these waterbodies that are entirely off the Reservation are not included in this assessment unless the Tribe collected water quality data for those waterbodies (South Fork Cottonwood Creek). Designated use support status for each waterbody is described in Table 6.

**Table 6. Use support status for Reservation waterbodies. The stream names in bold under waterbody name are the larger waterbodies of each watershed while the streams below those are tributaries to that primary stream.**

<b>Waterbody Name</b>	<b>Total Stream Miles</b>	<b>Total Impaired Stream Miles</b>	<b>Designated Uses</b>	<b>Degree of Use Support</b>	<b>Impairment</b>	<b>Sources</b>	<b>Perennial/ Intermittent</b>
<b>Bedrock Creek</b>	10.53	10.53	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NH3, NUT, O/G, SED, TEMP	Agriculture	Perennial
Louse Creek	5.2	5.2	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, NUT, HALT, QALT	Agriculture, Roads, Residential, Grazing	Perennial
<b>Big Canyon Creek</b>	33.18	33.18	DWS, AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	BAC, DO, QALT, HALT, NH3, O/G, PST, TEMP	Agriculture, Grazing,	Perennial
Cold Springs	9.18	9.18	SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	NUT, TEMP	Agriculture, Grazing	Perennial
<b>Little Canyon Creek</b>	18.5	18.5	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NH3, SYN-ORG, PST, TEMP	Agriculture, Grazing	Perennial
Holes Creek	9.07	9.07	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, TEMP	Agriculture, Grazing	Perennial
Long Hollow Creek	34.64	34.64	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, NUT, TEMP, QALT	Agriculture, Grazing, Storm water, WWTP	Perennial
<b>Catholic Creek</b>	9.59	9.59	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NH3, NUT, ORG, SED, TEMP	Agriculture, Grazing	Perennial
<b>Clearwater River</b>	67.1	31	OWR, DWS, AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Supporting but Threatened	<i>TDG- NF Clearwater River to mouth</i>	Hydro power plant	Perennial
Baldy Creek	2.41		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
<b>Cottonwood Creek (NP)</b>	16.65	16.65	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NH3, NUT, SED, TEMP	Agriculture, Grazing, Roads, Stream Alteration	Perennial
Coyote Creek	5.31	5.31	SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	SED, BAC, NUT, QALT, HALT-	Agriculture, Grazing, Roads, stream Alteration	Perennial
Magpie Creek	3.87	3.87	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, BAC, NUT, QALT, HALT	Agriculture, Roads, Livestock, Residential	Perennial
Pickle Canyon Star Mill Creek	3.24	3.24	SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	QALT,	Grazing	Intermittent
<del>Nez Perce Tribe Water Quality Assessment Report, 305(b)</del>	<del>5.92</del>		<del>SS, CWB, PCR, PCC, SCR, WH</del>	<del>Not Assessed</del>			
<b>Fivemile Creek</b>	5.5	5.5	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED	Agriculture	Perennial



Jacks Creek	9.61	9.61	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED, TEMP	Agriculture, Grazing	Perennial
Jim Ford Creek	26.96	29.96	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, TEMP, NUT, BAC, AM, O/G, QALT, HALT	Timber, Agriculture, Grazing, Roads	Perennial
Lapwai Creek	32.54	32.54	DWS, AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED, TEMP	Roads, Agriculture, Septic Systems, Stream Alteration, Grazing, Timber, Storm water, Irrigation Diversions	Perennial
Tom Beall Creek	1.14	1.14	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, BAC, TEMP, SED	Agriculture	Perennial
NF Tom Beall	6.03	6.03	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	GET DATA FROM SPRINGS	Agriculture	Perennial
SF Tom Beall	5.89	5.89	SS, CWB, PCR, PCC, SCR, WH	Not Assessed		Agriculture	Intermittent
MF NF Tom Beall	3.34	3.3	SS, CWB, PCR, PCC, SCR, WH	Not Assessed		Agriculture	Intermittent
Garden Gulch	5.72	5.72	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting		Agriculture, Road, CAFOs	Perennial
Sweetwater Creek	9.29	9.29	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, QALT, HALT, NUT, SED, TEMP	Agriculture, Grazing, Roads, Irrigation Diversions	Perennial
East Fork Sweetwater Creek	8.39	8.39	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED, TEMP	Timber, Grazing	Perennial
West Fork Sweetwater Creek	7.87	7.78	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, ORG, PEST, SED, TEMP	Timber, Grazing, Irrigation Diversions, Agriculture	Perennial
Hamilton Canyon	4.96		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
Lyle Gulch	3.38		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
Mission Creek	23.47	23.47	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, QALT, HALT, TEMP, NUT, SED	Timber, Mining, Irrigation Diversions, Agriculture, Roads, Grazing	Perennial
Rock Creek-trib to Mission Creek	10.68		SS, CWB, PCR, PCC, SCR, WH	Not Assessed		Agriculture, Stream Alteration, Roads, Timber, CAFO, Grazing	Intermittent
Rock Creek-trib to Lapwai Creek			SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, QALT, HALT	Agriculture, Stream Alteration, Roads, Timber	Perennial

Mill Creek	5.87		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
Packers Gulch	5.54			Not Assessed			
Spring Creek	0.7	0.7	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, NH3	Septic Systems, Grazing, Agriculture	Perennial
Theisen Gulch	5		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
Webb Creek	18.79	18.79	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED TEMP	Irrigation Diversion, Agriculture, Grazing,	Perennial
<b>Lawyer Creek</b>	41.93	41.93	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO QLAT, HALT, NH3, NUT, ORG, SED, TEMP	Agriculture, Grazing, Stream Alteration, Industry, Timber	Perennial
NF Willow Creek	8.55	8.55	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	HALT, QALT, SED	Grazing, Agriculture, Flow Alteration	Intermittent
Sevenmile Creek	7.24	7.24	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, NH3, NUT, SED, TEMP,	Industry, Timber, Grazing, Agriculture	Perennial
Willow Creek	7.92	7.92	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, NH3, NUT, SED, TEMP	Grazing, Agriculture	Perennial
John Dobbs Creek	3.87	3.87	CWB, PCR, WH, SCR	Not Supporting	NUT, BAC, TEMP	WWTP, Grazing, Agriculture	Intermittent
Meadow Creek	6.34	6.34	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	*		Perennial
<b>Lolo Creek</b>	45.32		ORW, SS, CWB, PCC, PCR, SCR, WH	Partially Supporting	TEMP, pH	Timber, Roads, Grazing	Perennial
Jim Brown Creek	13.32	13.32	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, TEMP, NUT	Timber, Roads, Grazing, Agriculture	Perennial
Musselshell Creek	12.49	12.49	SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	SED	Timber, Roads	Perennial
<b>Middle Fork Clearwater River</b>	68.5		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			Perennial
Maggie Creek	13.1	13.1	SS, CWB, PCR, PCC, SCR, WH	Supporting but Threatened	TEMP		Perennial
Nikessa Ck	5.52	5.52	SS, CWB, PCR, PCC, SCR, WH	Partially Supporting	NUT, QALT, HALT	Water withdrawals, roads, grazing	Perennial
Clear Creek	21.54	21.54	SS, CWB, PCR, PCC, SCR, WH	Supporting but Threatened	???		Perennial
Leitch Creek	4.71	4.71	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, QALT, HALT	Roads, Agriculture	Intermittent

<b>Pine Creek</b>	11.93	11.93	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NUT, SED, TEMP	Agriculture, Grazing	Perennial
<b>Potlatch River</b>	54.5	54.5	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, NUT, TEMP, SED	WWTP, Roads, Agriculture, Irrigation Diversions, Mining, Grazing, Stormwater	Perennial
Howard Gulch	3.3			Not Assessed			
Little Potlatch Creek	18.25	18.25	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, BAC, TEMP, SED	WWTP, Agriculture, Grazing, Timber	Perennial
<b>Orofino Creek</b>	40.1		SS, CWB, PCR, PCC, SCR, WH	Supporting but Threatened	TEMP, pH,	Timber, Residential, Roads, Grazing	Perennial
Whiskey Creek	16.2		SS, CWB, PCR, PCC, SCR, WH	Supporting but Threatened	NUT	Timber,	Perennial
<b>Six Mile Creek</b>	8.08	8.08	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, QALT, HALT, NH3, NUT, ORG, PST, SED, TEMP	Agriculture, Grazing	Perennial
Effie Creek	4.99		SS, CWB, PCR, PCC, SCR, WH	Not Assessed			
<b>South Fork Clearwater River</b>	12.8 (Reservation)	12.8	DWS, AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, TEMP	Timber, Roads, CAFO, Grazing	Perennial
Butcher Creek	12.3	12.3	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, TEMP	Stormwater, Agriculture, Grazing	Perennial
Threemile Creek	18.2	18.2	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED, TEMP, DO, BAC, NUT	WWTP, Agriculture, Grazing, CAFO, Stormwater	Perennial
<b>Cottonwood Creek (ID)</b>	31.2	31.2	AWS, IWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	NUT, SED, DO, TEMP, NH3, BAC, HALT, QALT	Agriculture, Grazing, Stream Alteration, WWTP	Perennial
Red Rock Creek	11.1	11.1	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	SED	Agriculture, Grazing,	Intermittent
Stockney Creek	26.48	26.48	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, SED	Agriculture, Grazing, Stream Alteration	Intermittent
Shebang Creek	14.5	14.5	AWS, SS, CWB, PCR, PCC, SCR, WH	Not Supporting	UNKNOWN	Agriculture, Grazing, Stream Alteration	Intermittent
South Fork Cottonwood	6.9	6.9	CWB, PCC, PCR, SCR, WH	Not Supporting	BAC, QALT, HALT, TEMP, NUT	Agriculture, Grazing	Perennial
<b>Tom Taha Creek</b>	8.9	8.9	SS, CWB, PCR, PCC, SCR, WH	Not Supporting	BAC, DO, AQLT, HALT, NUT, SED	Timber, Industry, Grazing	Perennial

Designated uses: SS=salmonid spawning; CWB=cold water biota; PCR=primary contact recreation, PCC= primary contact ceremonial; SCR=secondary contact recreation; WH=wildlife habitat, AWS=agricultural water supply; DWS=domestic water supply.

Impairments: BAC=bacteria; DO=dissolved oxygen; QALT=flow alteration, HALT=habitat alteration, NUT=nutrients, SED=sediment, NH3=Ammonia; TEMP=water temperature; ORG=organics; PST=pesticides; O/G= oil and grease.

\*Data from Idaho Association of Soil Conservation Districts

## Section 303(d) Waters

The Clean Water Act Section 303(d) states that Tribes and states develop a list of impaired waterbodies under their jurisdiction. The Nez Perce Tribe does not have Treatment in the Same Manner as a State under Section 518 of the Clean Water Act for 303(d) designations. Currently, the Idaho Department of Environmental Quality (IDEQ) develops a 303(d) list for Idaho waters. This list, however, does not accurately reflect the true quality of waters on the Reservation. The Tribe has begun a more active role in working with the EPA and the IDEQ to develop a more accurate list of impaired waters on the Reservation.

The Tribe is currently using the 303(d) list developed in 1998 and revised in 2002 by the State of Idaho with guidance from the EPA.

## Summary of Causes and Sources of Water Quality Impairments

All waterbodies monitored were found to be impaired by at least one pollutant. The primary cause of water quality impairments on the Reservation is nonpoint source pollution from agricultural and grazed lands. As shown in Table 8, the greatest percentage of land use in Reservation watersheds is cropland followed by forested land and pasture lands. Causes and sources of water quality impairments are described below.

**Unknown Toxicity**- There are several areas on the Reservation that pose a risk concern to water quality based on Tribal personnel's verbal and photographic information of toxins illegally buried in landfills within floodplains, car recycling centers within floodplains, junk yards within

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floodplains, lumber yards that treat logs with creosote, and many underground leaking petroleum tanks. Six sites that pose the greatest health risk for contamination of surface and groundwater are listed in Table 7. All the potential pollutants, unfortunately, are unknown and have not been listed. It is unknown what the potential for contamination to surface and groundwater is from the locations described in Table 7; however, it is likely that petroleum products, pesticides, and other various toxins are leaching into surface and groundwater since these sites are located in groundwater recharge zones or floodplains.

**Table 7. Possible contamination sites for surface and groundwater.**

Site	Potentially Contaminated Waterbody	Potential Contaminant
Simmons Sanitation Landfill	Lawyer Creek	Petroleum, Unknown
Simmons Sanitation Transfer Station	Lawyer Creek/Sevenmile Creek	Petroleum, Unknown
Lapwai School District	Groundwater/ Lapwai Creek	Pesticides
Craigmont Air Service	Holes Creek/Groundwater	Pesticides
Leroy Howel- Recycling Center	Sevenmile Creek/Lawyer Creek	Petroleum, Transmission Fluids, Acids, Unknown
Donaldson's Recycling Center	Sevenmile Creek/Lawyer Creek	Petroleum, Transmission Fluids, Acids, Unknown

**Pesticides-** The large amount of agriculture on the Reservation increases the potential for the contamination of surface and groundwater by pesticides. Pesticides have been found in surface water and groundwater through monitoring efforts by the Idaho State Department of Agriculture (ISDA). The ISDA collected pesticide samples in surface and groundwater on the Reservation. Groundwater results are discussed below in Section 6.0. Surface water data was collected in 2004, throughout the Clearwater River Basin (Campbell, 2007). Eight tributaries to the Clearwater River were sampled and a total of 47 detections were confirmed. Metribuzin was the most commonly found pesticide followed by Diuron, Dicamba, and Atrazine. The concentration of all the pesticides found was below chronic or acute. The streams sampled were: Cottonwood Creek, Catholic Creek, Potlatch River, Big Canyon Creek, Little Canyon Creek, Lapwai Creek, Jacks Creek, and Lawyer Creek. Each site was sampled from April through July during both the peak flows and when land owners are likely to be applying pesticides. The ISDA

and the WRD have not sampled for pesticides attached to sediments on the stream bed or in fish tissue samples. This is an area where monitoring is needed.

The ISDA is sampling for pesticides throughout North Central Idaho in 2011. This data will not be available until early 2012. INSERT SITES AND PESTICIDES HERE and ANY PRELIMINARY DATA.

The Idaho Department of Transportation and county Highway Districts treat roadsides throughout the Reservation with pesticides. Most major roadways on the Reservation follow a stream or river which increases the likelihood of pesticide contamination of surface water. It is unknown how much and what types of pesticides are being applied by each of these entities.

**Nutrients** – Most Reservation surface waters are impaired by nutrients. Phosphorus is typically the limiting nutrient in Reservation waters. Nutrient sources are from agricultural lands, grazed land and Confined Animal Feeding Operations, leaking septic tanks, and Waste Water Treatment Plants.

There are several streams that have exceptionally high Nitrate+ Nitrite levels. These streams include Big Canyon Creek, Little Canyon Creek, Garden Gulch, Magpie Creek, and Coyote Creek. Nitrate+ Nitrite levels in these streams were often greater than 10 mg/L and levels were greater than 16 mg/L in Magpie Creek. Most of these sub-watersheds are dominated by agricultural lands where fertilizers are applied in excess during the fall months. Nutrient management plans should be developed for all the watersheds, beginning with those with such excessive Nitrate+ Nitrite concentrations.

**Sediment**- Most Reservation surface waters are impaired by sediment. Sediment impairments include cobble embeddedness, which reduces habitat for macroinvertebrates and fish and can smother redds, direct species impacts from suspended sediments (gill abrasion for fish), and

altered hydrologic regimes. Sediment in Reservation watersheds was measured using turbidity, total suspended sediment as composite or grab samples, and cobble embeddedness.

The primary causes of sediment are agricultural crop production, roads, and grazing. Based on Revised Universal Soil Loss Equation (RUSLE) runs, which generally focuses on erosion from agricultural lands, most 2<sup>nd</sup> order and higher streams require over a 90 percent reduction in sediment to meet water quality standards.

Roads within the riparian area are one of the greatest sources of habitat degradation from increased sediment from road surfaces, increased potential from mass failure, disruption of surface and subsurface flows, and increase in peak flows. Based on Water Erosion Prediction Project (WEPP), 12 tons per acres per year of sediment is added from in the Big Canyon Creek watersheds and 1,400 tons per acres per year in the Lapwai Creek watershed (Reaney et al. 2005a; Reaney et al. 2005b). There are at least 1,159 miles of road in the Lapwai Creek watershed (3 miles/square mile) and 193 miles in the Big Canyon Creek watershed. The Lapwai Creek watershed has the greatest amount of roads in any of the Reservation watersheds. A study was currently conducted in the Lolo Creek watershed for sediment delivery from roads using the GRAIP model. This data is currently being assessed and will be included in the 2010 305(b) assessment.

**Table 8. Watershed acres and land cover percent.**

Watershed	Total Area	Area on Reservation	Watershed Cropland %	Watershed Coniferous Forest %	Watershed Meadow/Pasture %	Watershed Other %
Bedrock Creek	24,650	10,678	60	26	7	4
Big Canyon Creek	84,825	84,825	66	5	14	15
Little Canyon	60,170	60,170	99	<1	<1	<1
Catholic Creek	12,400	6,857	60	0	26	<1
Cottonwood Creek	42,080	42,081	69	5	20	<1
Cottonwood Creek (Idaho)	83,853	56,543	79	2	13	6
Fivemile Creek	7,945	7,945	99	<1	<1	<1
Jacks Creek	13,145	13,145	98	<1	<1	<1
Jim Ford Creek	19,101	4,037	33	34	18	15

Lapwai Creek	171,000	145,065	35	42.6	11	11.4
Lawyer Creek	137,360	112,146	81	6.3	10.3	2.4
Lolo Creek	19,713	7,789	4	89	6	1
Orofino Creek	21,068	5,786	10	65	17	10
Potlatch	31,040	10,454	83	14	8	<1
Pine Creek	144,495	2,070	72	6	12	10
Sixmile Creek	15,805	15,807	99	<1	<1	<1
Tom Taha Creek	13,295	2,970	11	83	4	2
Clearwater River face drainages	84,825	84,825	1	3	2	94

**Temperature-** The majority of Reservation watersheds are impaired by temperature. The Nez Perce Tribe used the EPA guidance criteria for determining impairment (13°C salmonid spawning; 18° C non-core juvenile rearing; 20°C migration). Based on data collected at each monitoring site, water temperature exceeded these standards at all sites monitored in 2000, except South Fork Cottonwood Creek and Spring Creek (first order tributary to Lapwai Creek) and in 2003-2006, except Big Canyon Creek Upper, John Dobbs Creek (tributary to Lawyer Creek), and Sevenmile Creek.

Stream temperature data for the Lower Clearwater River Tributaries TMDL was assessed using TIR remote sensing. This data shows a vertical gradient of water temperature from the mouth to the headwaters and areas of thermal refuge from upwelling of hyporeic waters and springs. TIR data does show that Big Canyon Creek and Sevenmile are impaired by stream temperature. The South Fork Cottonwood Creek and John Dobbs Creek were not assessed using TIR and Spring Creek met water quality criteria guidance for temperature.

**Hydrologic Alteration-** There is one major impoundment, Dworshak Reservoir, and several smaller reservoirs that impact stream flow on the Reservation (Talmaks Reservoir, Mud Springs, Bud Herr, and Winchester Lake). The Lewiston Orchards Irrigation District (LOID) operates two large water diversions in the Lapwai watershed that greatly impact flow in Lower Lapwai Creek. Mud Springs and Winchester Lake impact stream flow in upper Lapwai Creek. Other flow impacts and alterations have been noticed throughout the Reservation from individual



landowners withdrawing water legally or illegally. The loss of water in Reservation streams reduces habitat for fish species, increases stream temperatures, stresses riparian vegetation, reduces dissolved oxygen, and alters the impacts of nutrients and toxins in these waterbodies.

Another hydrologic alteration that is often overlooked is the loss of wetlands in watershed headwaters. Many of the streams originate on the Camas Prairie, which was historically meadow, grasslands, and wetlands. Most of the headwaters have been converted to agricultural lands (small grains) drained by tiles or ditching, or simply plowed under. The loss of these wetlands, which historically acted as “sponges” that slowly drained water throughout the summer and fall, exacerbates the peak flows and reduces the base flows in these watersheds. Wetlands on the Reservation are discussed more thoroughly below in Section 7.0.

**Bacteria-** Almost all Reservation waterbodies are impaired by *E. coli*. *E. coli* is a parasite found in the gut of warm-blooded animals, including humans. Sources of bacterial contamination are livestock grazing, CAFOs, leaking septic tanks, and wild and domestic animals. Since many of the Reservation waterbodies are used for cultural and ceremonial purposes by Tribal members, the impairment of these streams greatly reduces the quality of life for Tribal members and increase health risks.

## Groundwater Assessment

Groundwater quality on the Reservation has been assessed by the Nez Perce Tribe Water Resources Division (WRD) and the Idaho State Department of Agriculture (ISDA). The WRD has primarily monitored groundwater for nutrients and bacteria and recently monitored 12 wells for trace metals. The ISDA has focused their monitoring efforts on pesticides. Below is a summary of the ISDA and the WRD’s groundwater quality findings.

The ISDA, in 2005 and 2006, collected groundwater samples for pesticides, with a large majority of the wells tested on the Camas Prairie. Their studies have found groundwater wells to be

contaminated with Atrazine, Triallate, Bromacil, Dacthal, Metalachlor, Desethyl atrazine, Diruon, Picloram, Metribuzin, 3,5 Dichloroben, and 2,4 DCBA. Atrazine was the most commonly found pesticide and at levels greater than the 3 ug/L maximum contaminate level set by the EPA (ISDA, 2006). More information can be found on the ISDA web site at: <http://www.agri.state.id.us/Categories/Environment/water/waterPDF/pestsummary>.

The WRD began collecting groundwater samples in the Lapwai Valley in 2005. The purpose of the project was to develop a geologic, geochemical, and hydrologic interpretation of the Lapwai Valley aquifer (Brackney, 2006). Fifty-four wells were sampled following an EPA approved Quality Assurance Project Plan. All of the wells were sampled for nitrate, nitrite, ammonia, total coliform, and *E. coli*, among other parameters. Two of the 54 wells sampled were greater than 10 mg/l for nitrate (10.8 mg/l and 13 mg/L), which exceeds the EPA drinking water criteria. One well, in the Sweetwater area, was greater than 6 mg/l and one in the Lapwai Valley was greater than 4 mg/l. Eight additional wells had nitrate levels greater than 2 mg/l. Only two wells had nitrite levels that were detectable in the study area (0.04 mg/l and 0.01 mg/l). Ammonia was detected in only one well at a level of 10.1 mg/l. This well is directly downstream of the Lapwai Sewer Lagoons and also had high levels of total coliform (435 cfu) and *E. coli* (387 cfu). Fourteen wells, including the one mentioned above, were positive for total coliform and seven were positive for *E. coli*. The data for the groundwater monitoring is shown in Appendix B.

In 2009, the WRD sampled six groundwater wells in the Lapwai Valley, and six wells in the Kamiah area. Parameters monitored included: nitrate, nitrite, ammonia, total coliform, *E. coli*, ions, and trace metals. Only one well in the Kamiah area had nitrate levels greater than the detection limit of 0.01 mg/l (1.5 mg/l). However, all but one of the wells in the Lapwai Valley had nitrate levels greater than the detection limit (ranging from 1.6 mg/l to 5.6 mg/l). Two of the twelve wells sampled were positive for total coliform while one well was positive for *E. coli*. In the Kamiah area all but one well tested positive for arsenic and two of these wells were greater than the 10 ug/L EPA drinking water criteria (26 ug/l and 92 ug/L).

The primary sources of contaminants to groundwater on the Reservation are agriculture (pesticides and nitrates), leaking septic tanks (nutrients and bacteria), and industry (unknown toxins). The natural geology in areas of the Reservation renders groundwater unsuitable for consumption. Contaminants of groundwater are being addressed by the WRD's Leaking Underground Storage Tanks, Underground Storage Tanks, and Brownsfield programs and the ISDA's Pesticide Management Plan. A new Waste Water Treatment Plant for the Lapwai Valley will be online in 2012. This will reduce the amount of groundwater pollutants from leaking septic tanks in the Lapwai Valley.

## Wetlands

Wetlands on Tribal land on the Reservation were inventoried and assessed from 2003 to 2007 (Figure 3). Additional wetlands on Tribal fee lands off the Reservation were added in 2008; non-tribal, privately owned lands were assessed in 2009 (Water Resources Division & Watershed Sciences, 2009). Wetlands on the Reservation are most often found in low-lying areas near streams. About a third of inventoried wetlands are adjacent to a perennial stream as a floodplain or riparian area, almost a quarter are adjacent to an intermittent stream, and over a fifth form the headwaters of an intermittent stream or draw (Table 9). The majority of the wetlands are classified as the palustrine emergent wetland type according to the Cowardin classification and as riverine according to the hydrogeomorphic (HGM) classification. The most commonly occurring hydrology regimes are seasonally flooded, temporarily flooded, and saturated.

**Table 9. HGM wetland classes found on tribally owned land on the Nez Perce Reservation, sorted by frequency of occurrence.**

<b>HGM Wetland Class</b>	<b>No. of Wetlands</b>
Riverine (nonperennial)	99
Riverine (upper perennial)	63
Riverine (lower perennial)	63
Depression (closed)	26
Slope	24
Depression (open, surface)	23

water)	
Depression (open, groundwater)	19
Organic soil flats	13
Lacustrine fringe	5

Total number of wetland areas classified 335\*

\* Some wetlands are comprised of more than one wetland type

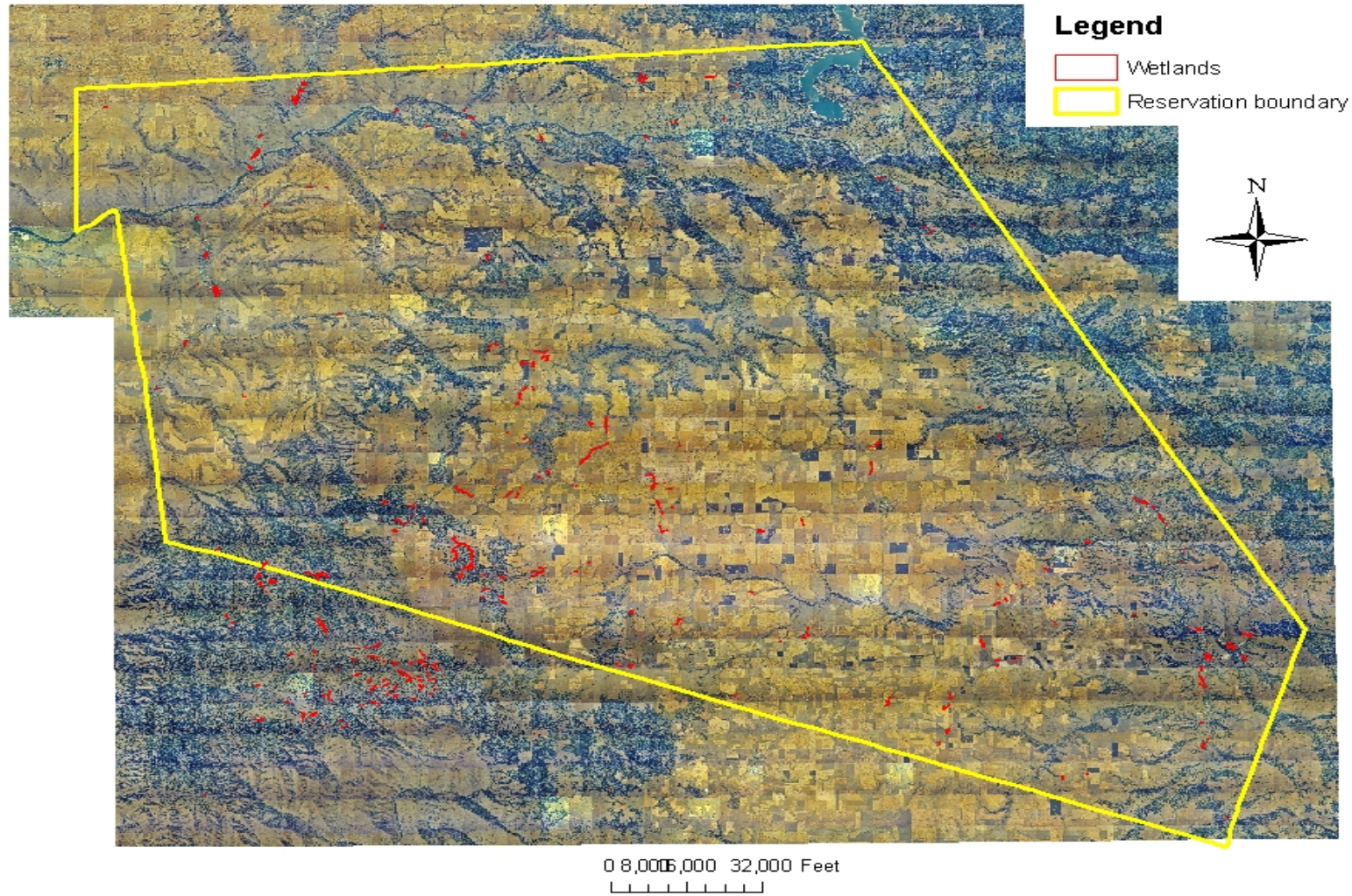


Figure 3. Surveyed wetlands on the Nez Perce Tribe Reservation.

Lawyer Creek watershed accounts for 28 percent of Tribal wetlands and is closely followed by 27 percent in the Lapwai Creek watershed (Table 10). Twenty-two percent of the wetlands occur along the Clearwater River, and 11 percent in Big Canyon Creek watershed. Many of the wetlands are small; over a third are less than 1.25 acres (Table 11). The predominant land use for Tribal wetlands is grazing, followed by agriculture, and timber production (Table 12). The assessment of wetlands did not include historic wetlands that are currently drained and used for agriculture and do not resemble wetlands. The assessment of historic wetlands is currently being conducted.

**Table 10. Number of wetlands assessed in each watershed.**

<b><u>Name of Watershed</u></b>	<b><u>No. of Wetlands</u></b>
Lapwai Creek	56
Lawyer Creek	34
Clearwater River	29
Deer Creek	26
Maloney Creek	24
Big Canyon Creek	14
Cottonwood Creek (Idaho Co.)	13
S. Fk. Clearwater River	13
Potlatch River	12
Bedrock Creek	7
Little Canyon Creek	5
Cottonwood Creek (Nez Perce Co.)	3
Sixmile Creek	3
Browns Creek	2
Jim Ford Creek	2
Middle Fk. Clearwater River	2
China Creek	1
Clear Creek	1
Hatway Creek	1
Lolo Creek	1
Pine Creek	1
Catholic Creek	0*
Jacks Creek	0*

Total no. of wetlands assessed            250

\* The tribal allotments in this watershed contain no wetlands.

**Table 11. Size distribution of assessed wetlands (in hectares). Wetlands ranged in size from 0.06 ha to 20.11 ha.**

<b>Size Range (ha)</b>	<b>(ac)</b>	<b>No. of Wetlands</b>
0 – 0.5	0 – 1.24	95
> 0.5 – 1.0	1.24 – 2.47	47
>1.0 – 1.5	2.47 – 3.71	35
> 1.5 – 3.0	3.71 – 7.41	41
> 3.0 – 5.0	7.41 – 12.36	21
> 5.0 – 10.0	12.36 – 24.71	7
<u>&gt; 10.0</u>	<u>&gt; 24.71</u>	<u>2</u>

Total no. of wetlands 248\*

\* No GPS area available for two wetlands.

**Table 12. Number of wetlands and buffers impacted by certain land use activities.**

<b>Type of Impact</b>	<b>No. of wetlands affected</b>
Evidence of livestock grazing	124
Roads	122
Agricultural fields	92
Presence of livestock*	51
Timber harvest	42
Dikes/dams	38
Waste disposal sites	28
Other land disturbing activities	27
Off Road Vehicle (ORV) use; ruts	21
Water control structures	12
No impacts	8
Impervious surfaces	2
Mining	0

\* Wetlands in this category are also included in the category “Evidence of livestock grazing” (e.g., 62 wetlands showed evidence of livestock grazing, and in 32 of them livestock was present at the time of the site visit).

Two plant species that were most often found in and around these wetlands are reed canarygrass—an invasive wetland species—and Canada thistle—a noxious weed. Black hawthorn predominates in shrubby wetlands. Other commonly found plant species are broadleaf cattail, willow, black cottonwood, poison hemlock, yellow monkey flower, Himalayan blackberry, and various species of sedges and rushes.

Most wetlands on the Reservation are impacted to some degree. The most common impacts are roads, agriculture, livestock grazing, timber harvest, and dikes or dams. Protection and restoration of vulnerable wetlands is important due to their significant role in preserving water quality and reducing or eliminating the adverse impacts of nonpoint source pollution. Besides improving water quality, wetlands and riparian areas provide stream shading, floodwater retention, shoreline stabilization, erosion control, groundwater recharge, and habitat for a variety of species.

## **Public Health Concerns**

There are several major health concerns based on water quality on the Nez Perce Tribe Reservation. These concerns include groundwater contamination from leaking septic tanks, many of which are improperly built or located, and pesticides; contamination of surface waters from pesticides; contamination from unknown toxins from improperly zoned areas (floodplains) with landfills and recycling centers, illegal dumping of garbage in waterways and ephemeral draws, and lack of toxins data for reservation waters. Other concerns include contamination of spiritual and cultural waters with bacteria. There are several winter feeding operation on the Reservation in the headwater of springs that are used for sweat houses. The intimate use of water contaminated by bacteria has the potential to cause illness in Tribal members.



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**Appendix A. Monitoring sites and locations, parameters monitored, and years monitored.**

Site Name	Site ID	Latitude	Longitude	Parameters Monitored	Year(s) Monitored
Broady Creek at mouth	10101	455732	1170350	DO, Temp, Turb, Cond, pH	2002
Basin Creek at mouth	00101	455559	1170329	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS	2001-2002
Bedrock Creek at mouth	00201	463112	1163513	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000-2002/ 2004-2005
Bennett Creek at mouth	00301	462946	1155920	NA	
Big Bear Creek at mouth	00401	452823	1145747	NA	
Big Canyon Creek at mouth	00501	462951	1162602	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005-2006
Big Canyon Creek NR Winchester	00527	461611	1163213	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005-2006
Big Creek at mouth	00601	462422	1164706	NA	
Butcher Creek at mouth	00701	460022	1155740	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli,	2001-2002/ 2004-2005
Catholic Creek at mouth	00801	462739	1164719	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2006
Cedar Creek at mouth	00901	462855	1160546	NA	
Clear Creek at mouth	01001	460802	1155704	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E. coli, Coli	2000
Coldspring Creek at mouth	01101	461638	1161637	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E. coli, Coli	2005-2006
Cottonwood Creek at mouth (ID)	01401	460450	1155847	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000-2001/ 2004-2005
Cottonwood Creek at Newman bridge (ID)	01402	460452	1155837		
Cottonwood Creek at Columbia Crossing (ID)	01412	460209	1160824	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E. coli, Coli	2000-2004-2005
Cottonwood Creek at mouth (Nez)	01501	462955	1164241	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E. coli, Coli	2000-2002
Cottonwood Ck at S. Tom Beall Rd	01507	462548	1163935		
East Fork Sweetwater Creek at mouth	08108	461531	1165032	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004
Fivemile Creek at mouth	02501	462114	1160943	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005-2006
Garden Gulch Creek at	02701	462342	1164735	DO, Temp, Turb, Cond, pH, NO2+NO3,	1999-

mouth				NH3, TKN, TP, OP, TSS, E.coli, Coli	2001
Holes Creek at mouth	03101	461740	1161651	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005-2006
Horse Creek at mouth (OR)	03201	455917	1170322	DO, pH, Turb, Cond, Temp	2001-2003
Jacks Creek at mouth	03301	463021	1163307	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000-2002\ 2004-2005
Jim Ford Creek at mouth	03501	462620	1161240		2004-2006
Lapwai Creek at mouth	03801	462703	1164907	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000 2004 2009
Lapwai Creek at USGS Gauging Station	03802	462535	1164821		
Spring Creek	03805	462337	1164753	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Ion, Trace Metals	
Lapwai Creek US Sweetwater	03806	462212	1164745	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004
Lapwai Creek DS Culdesac	03809	462222	1164204	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004
Lapwai Creek US Culdesac	03812	462222	1163923	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004
Lapwai Creek US Winchester Lake	03827	461336	1163726	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000 2001
Lapwai Creek DS Winchester Lake	03825	461718	1163707	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004 2009
Lapwai Creek NR Woodside Rd	03828	461258	1163626	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000
Lapwai Creek at Heitstuman's	03830	461239	1163545	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000
Lapwai Creek US Mud Springs Reservoir	03831	461157	116354		
Lawyer Creek at mouth at Hill St. bridge	03902	461306	1160147	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2004
John Dobbs Creek at mouth	03930	460946	1161426	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2004
Lawyer Creek at Hwy 162	03915	461201	1162504		2004
Lawyer Creek at Rolling Hills Rd bridge	03920	460910	1162827		2004

Lawyer Creek NR Reservation Boundary	03945	460759	1163054	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2004
Little Canyon at mouth	04201	462804	1162505	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000- 2002
Lolo Creek at mouth	04401	462220	1161006	DO, Temp, Turb, Cond, pH	2000- 2001
Long Haul Creek at mouth	04501	462219	1161016	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000
Long Hollow Creek at mouth	04601	461741	1161649	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	
Long Hollow Creek at TA 1363	04602	461642	1161543		
Long Hollow Creek DS Nezperce WWTP	04604	461340	1161437	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005- 2006
Long Hollow Creek US city Nezperce	04606	461341	1161436	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005- 2006
Louse Creek at mouth	04701	460831	1155624		
Maggie Creek at mouth	04801	460833	1155630	DO, Temp, Turb, Cond, pH	2001- 2002
Mission Creek at mouth	05301	462202	1164411	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000
Mud Springs Reservoir NR outlet	05401	461201	1163504	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2001 2005- 2006
Orofino Creek at mouth	05801	462835	1161502	NA	
Pine Creek at mouth	06001	463137	1163846	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000 2004- 2005
Potlatch River NR Reservation Boundary	06305	463121	1164344	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2001- 2002
Red Rock Creek at mouth	06401	460403	1160558		
Red Rock Creek at Red Rock Rd	06404	460522	1160949		
Rock Creek @ mouth					
Sevenmile Creek at mouth	06901	461233	1160421	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2004- 2005
Shebang Creek	07101				2000
Sixmile Creek at mouth	07301	461805	1160744	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2005- 2006
Sixmile Creek headwaters	07307	461512	1161323		
South Fork Cottonwood Creek	07501			DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000
Stockney Creek at mouth	07801			DO, Temp, Turb, Cond, pH, NO2+NO3,	2000

				NH3, TKN, TP, OP, TSS, E.coli, Coli	
Suzie Creek at mouth	07901	461246	1160722		
Swamp Creek at mouth	08001				
Sweetwater Creek at mouth	08101	462211	1164746	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2005
Tom Beall Creek at mouth	08501	462503	1164800	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000-2003-2004
Tom Taha Creek at mouth	08601	461410	1160127	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2000-2004-2005
Webb Creek at mouth	08801	461950	1165007	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004-2009
Webb Creek DS Soldiers Meadow	08806	461008	1164416	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004-2009
West Fork Sweetwater Creek at mouth	08107	461446	1164846	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli, Chla, Pheo, Peri,	2003-2004
Winchester Lake					
near discharge area - surface	09401 A	461411	1163711	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
near discharge area - bottom	09401 B	461411	1163711	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
Johnson Creek inlet - surface	09401 C	461400	1163735	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
Johnson Creek inlet - bottom	09401 D	461400	1163735	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
Lapwai Creek inlet - surface	09401 E	461356	1163718	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
Lapwai Creek inlet - bottom	09401 F	461356	1163718	DO, Temp, Turb, Cond, pH, NO2+NO3, NH3, TKN, TP, OP, TSS, E.coli, Coli	2000-2001
Nikesa Creek at mouth	01010 1	461228	1160036		
Nikesa Creek US First Church	00101 5	461212	1160001		
Whiskey Creek				NA	
Willow Creek				NA	
North Fork Willow Creek				NA	
DO= dissolved oxygen; Temp= water temperature; Turb= turbidity; Cond= specific conductivity; NO2+NO3= nitrate plus nitrite; NH3= ammonia; TKN= Total Kjeldahl Nitrogen; TP= total phosphorus; OP= orthophosphorus; TSS= total suspended sediment; E. coli= Escherichia coli; Coli= Total coliform; chla= Chlorophyll a; Pheo= Pheophyten; Peri= Periphyton; NA= not assessed					
DS= downstream; US= upstream; NR= near					





**Appendix B. Groundwater wells evaluated for Lapwai Valley Source Water Protection Project.**

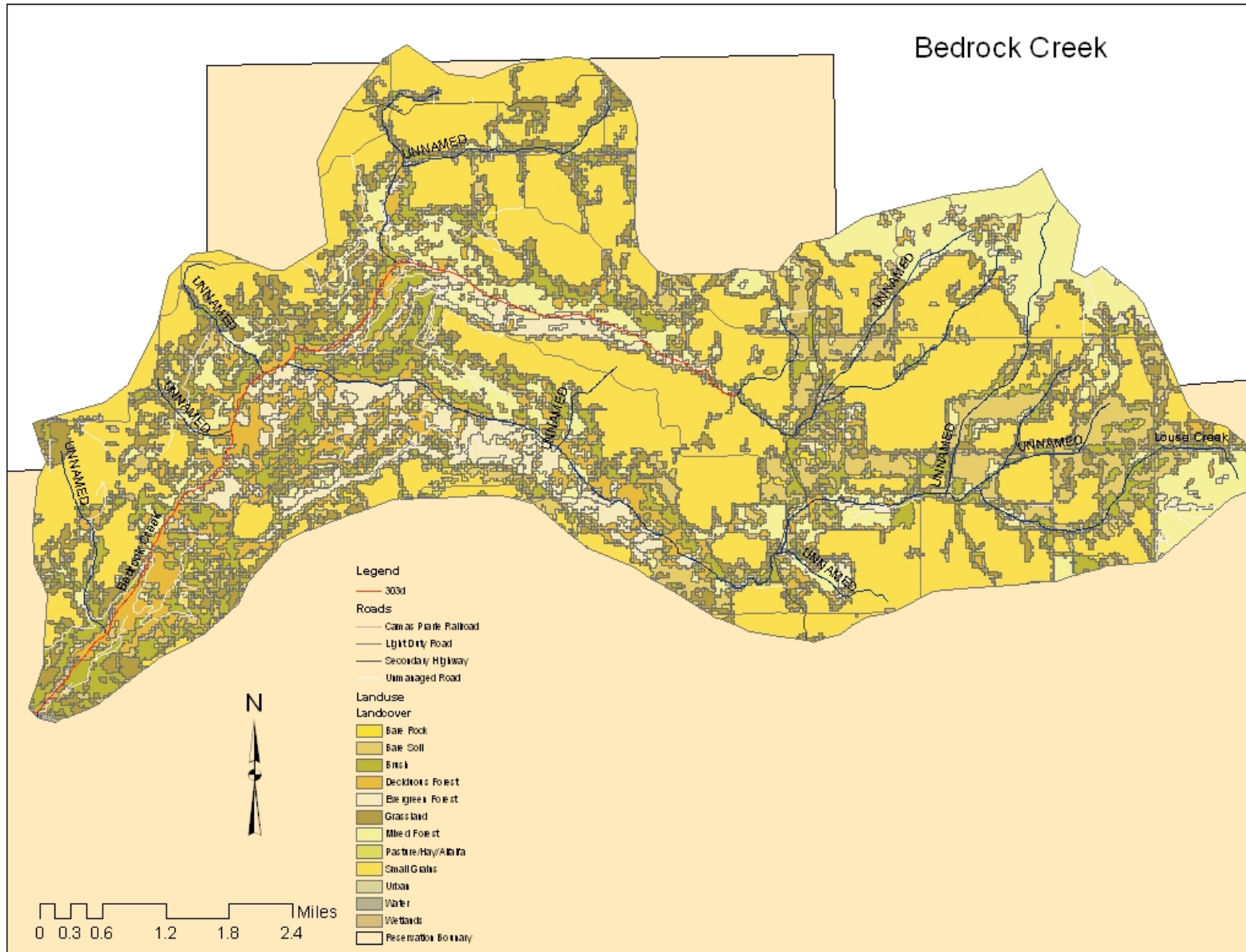
Appendix B								
Ground Water Wells Evaluated for Lapwai Valley Source Water Protection Project, 2005								
Subarea	Sample ID	Date	NO3/N mg/L	ortho-P mg/L	Fe mg/L	TDS mg/L	NH3/N mg/L	E. coli cfu
<b>Spalding</b>	NHP-UPPER	9/8/05	0.02	0.07	0.28	260		
	NHP-LOWER	9/8/05	0.08	0.03	0.42	293		
	N LAPWAI #1	9/20/05	2.54	0.05	0	213	ND	0
	N LAPWAI #2	9/20/05	2.70	0.05	0	247	ND	0
	D. JOHNSON	9/14/05	4.41	0.07	0.29	272		0
	CLEARWATER - SPALDING	9/8/05	0.01	0.02	0.04	27		
	LAPWAI @ T-HILL	9/8/05	0.61	0.10	0.02	189		
	N LAPWAI CK @ FISH	9/12/05	0.41	0.07	0.01	210		
	L-SMITH-SPG	9/29/05	10.80	0.04	0	301		
	F RICKMAN WELL	9/21/05	1.54	0.06	0	243	ND	0
	D CALKINS - WELL	9/27/05	1.12	0.06	0	177	ND	0
	26058 MCATTY RD	9/15/05	0.76	0.06	0	160	ND	0
	A CALKINS	9/22/05	8.33	0.05	0	277	ND	0
	L CALKINS	9/15/05	3.15	0.07	0	234	ND	0
	B WHITE - OLD	9/15/05	3.84	0.07	0	221	ND	
B WHITE - 2001	9/15/05	3.29	0.05	0	201	ND	0	
J POWELL	9/15/05	4.12	0.07	0	239	ND	0	
SOLDIERS CK	9/27/05	1.19	0.18	0.04	256	ND		
D CALKINS - SPG	9/27/05	1.29	0.16	0.04	337	0.2	179	
F RICKMAN SPG	9/21/05	0.20	0.02	8.2	495	10.1	387	
TOM BEAL	9/14/05	1.83	0.07	0.02	226			
<b>Lapwai</b>	BIA #1	9/14/05	2.05	0.04	0	209	ND	0
	S LAPWAI #1	9/14/05	1.03	0.03	0	189	ND	0
	LAPWAI JD	9/21/05	1.30	0.05	0	187	ND	0
	LAPWAI #5	9/21/05	2.32	0.05	0	232		
	LAPWAI SD-TRACK	9/28/05	2.33	0.07	0	190		0
	BIOCONTROL	9/14/05	3.33	0.04	0	259		
	BEAVER CK SPG	9/12/05	6.09	0.12	0	301		
<b>Sweetwater</b>	L. DUGGER	9/13/05	2.93	0.07	0	205	ND	201
	F. PAISANO	9/13/05	6.98	0.04	0	252	ND	0
	M. STARKEY	9/13/05	2.87	0.05	0	248	ND	2
	NPT-HORSE SHOP	9/20/05	2.49	0.08	0	233	ND	1
	NPT-HORSE FAC	9/20/05	0.44	0.05	0	164	ND	
	H WILKINS	9/19/05	1.26	0.1	0	186	ND	1
	NPT-WATERSHED	9/19/05	0.04	0.04	0.03	184	ND	0
	SW-AQUA #2	9/21/05	0.99	0.03	0	210		
	SW-AQUA-3-SHALLOW	9/22/05	0.00	0.02	0.03	191		
	SW-AQUA-3-DEEP	9/22/05	0.00	0.01	0.07	198		
	SCHWAB MACHINE	9/27/05	0.02	0.03	0.01	163	ND	0
	G SCHWAB	9/21/05	0.00	0.04	0.11	204		
	SW-AQUA SPRING TILE	9/22/05	2.86	0.04	0	242		
	CANNON SPG.	9/19/05	1.97	0.05	0	222		
	SPRING CK-SPG	9/12/05	2.72	0.1	0	212		
GARDEN GULCH CK	9/12/05	0.66	0.08	0.02	165			
SWEETWATER CR	9/19/05	0.64	0.06	0.02	187			
	3158 LUPINE LN	9/22/05	13.00	0.03	0	356		34
<b>Mission Creek</b>	CULDESAC #1	9/27/05	3.45	0.03	0	183	ND	0
	CULDESAC #2	9/27/05	1.90	0.03	0	188	ND	0
	J-RIGGS-WELL	9/29/05	0.84	0.19	0	139	ND	0
	B-EWING - WELL	9/29/05	1.67	0.06	0	191	ND	0
	LAPWAI-CK @ J RIGGS	9/29/05	0.74	0.14	0.02	166		
	LAPWAI-CK @ ELK HORN RD	9/29/05	0.79	0.1	0.01	160		
	MISSION CREEK	9/20/05	0.47	0.07	0.02	173		

**Appendix C. Biotic indices for Lower Clearwater River monitoring sites.**

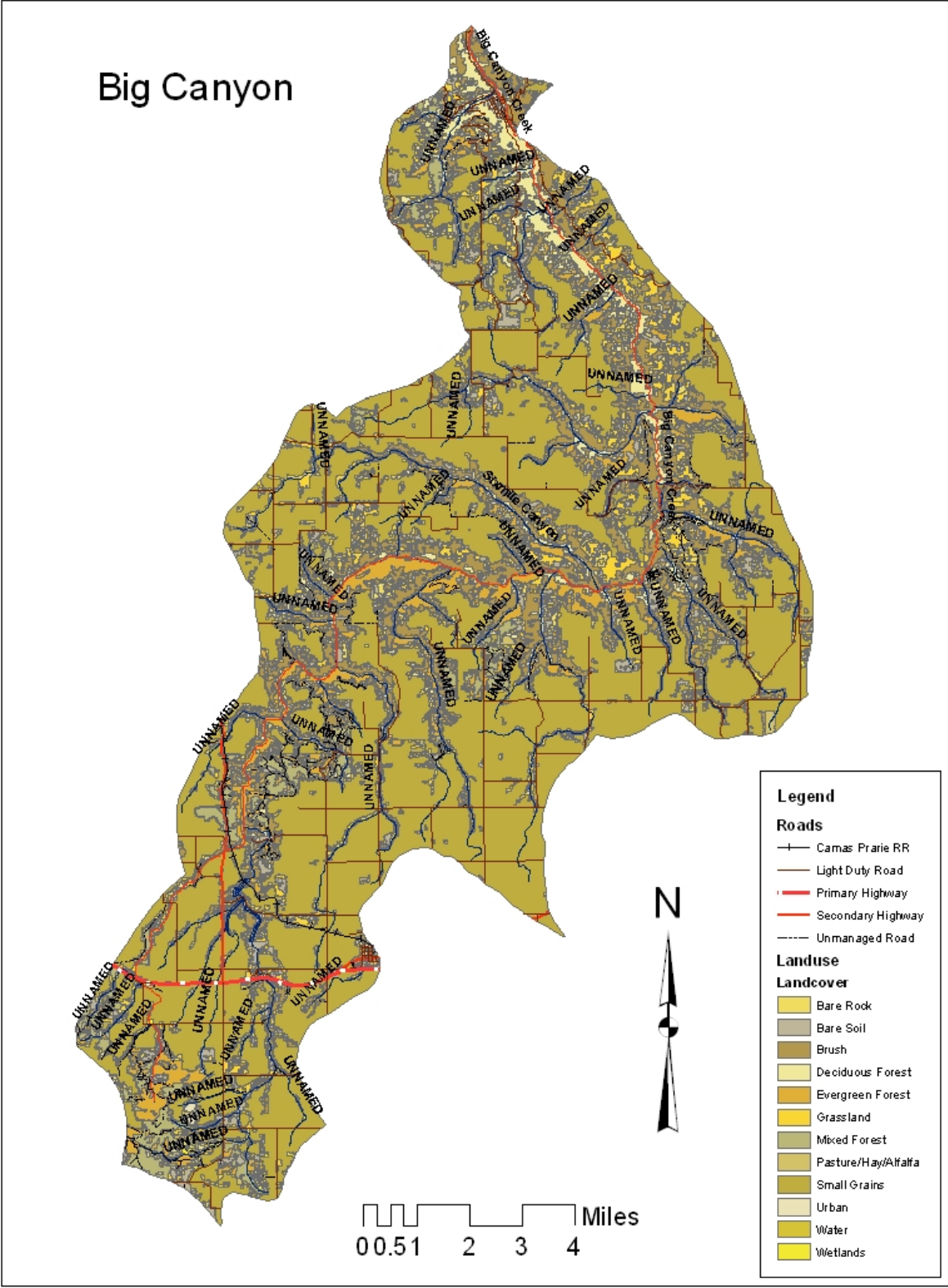
Lower Clearwater Monitoring Site	Site #	Species Richness	EPT Taxa Richness	EPT Abundance (%)	Dominant Taxa (%)	Species Diversity
Catholic Creek (mouth)	00801	39	10	42.29	27.26	2.71
Cottonwood Creek Nez Perce County (mouth)	01501	47	17	50.84	14.82	3.00
Cottonwood Creek (Upper mainstem)	01506	35	8	29.84	32.56	2.42
Lapwai Creek (mouth)	03801	48	13	35.82	19.50	2.85
Lapwai Creek (upstream confl. with Sweetwater Cr)	03806	50	17	22.70	20.45	3.04
Lapwai Creek (downstream Culdesac)	03809	23	3	0.56	44.61	1.55
Lapwai Creek (upstream Culdesac)	03812	50	16	38.00	13.80	3.19
Lapwai Creek (DS Winchester Lake Dam and WWTP)	03825	9	0	0	96.81	0.20
Mission Creek (mouth)	05301	52	19	21.79	16.20	2.95
Webb Creek (mouth)	08801	66	25	54.35	11.01	3.46
Webb Creek (Downstream Soldier's Mdw Reservoir)	08806	31	7	6.05	36.11	2.42
Sweetwater Creek (mouth)	08101	61	17	21.26	20.36	3.12
West Fork Sweetwater Creek (Flat Iron Road Crossing)	08107	41	21	71.08	18.99	2.78
East Fork Sweetwater Creek (Below Flat Iron Rd Crossing)	08108	47	21	40.73	18.73	2.79
Tom Beall Creek (mouth)	08501	34	4	4.31	30.00	2.32
Lawyer Creek (mouth at Hillstreet Bridge)	03902	44	12	57.34	22.97	2.79
Lawyer Creek (mid-canyon at Hwy 162 bridge)	03915	32	17	82.08	29.87	2.40

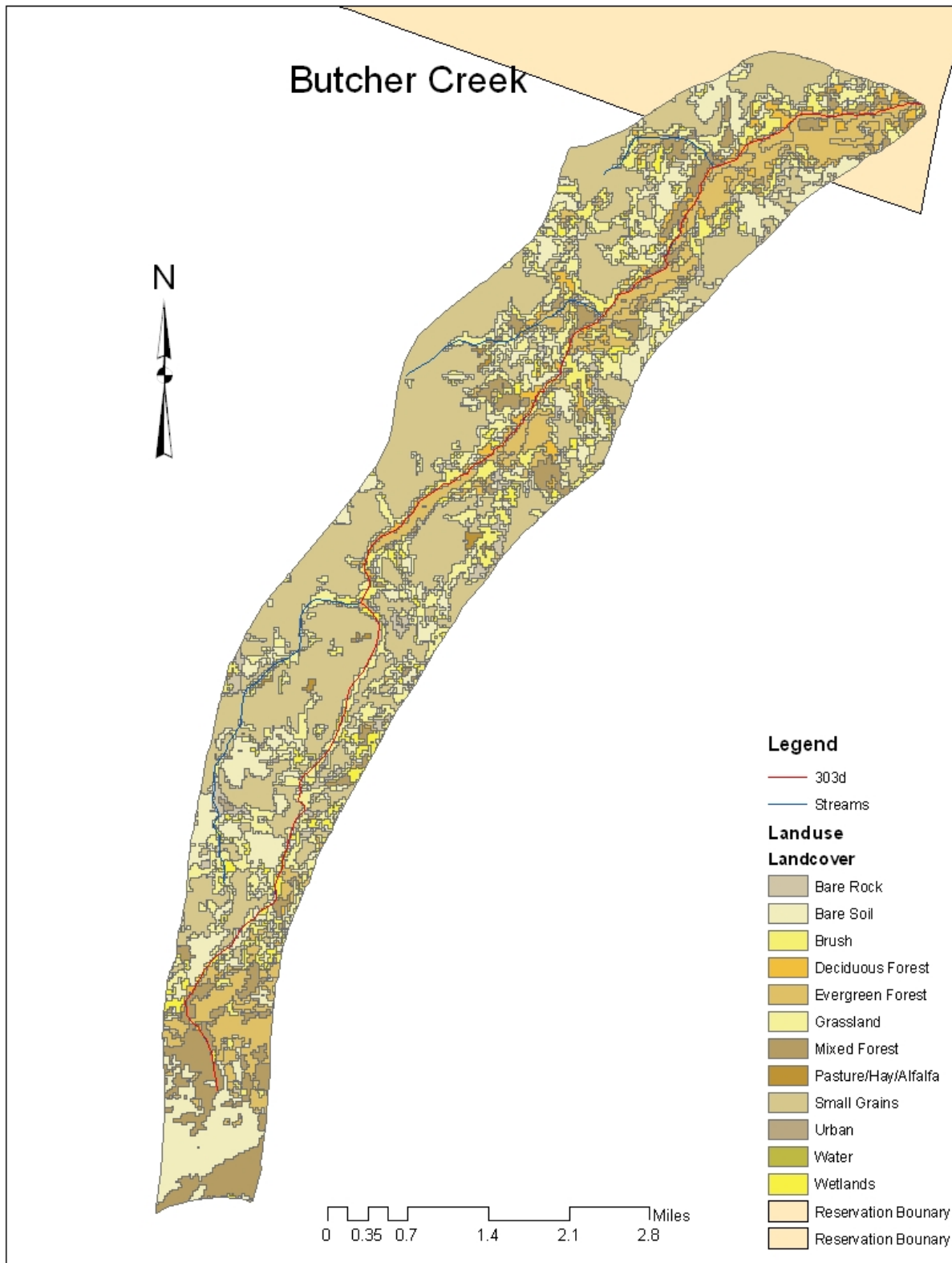
John Dobbs Creek-tributary to Lawyer Creek (DS Craigmont)	03930	48	12	21.83	32.94	2.83
Lawyer Creek (upper mainstem at R. Hills Bridge)	03920	31	14	53.09	27.03	2.33
Sevenmile Creek (mouth)	06901	38	17	67.99	48.56	2.23
Tom Taha Creek (mouth)	08601	58	19	36.23	13.22	3.28
Jacks Creek (mouth)	03301	43	18	53.49	16.99	2.85
Pine Creek (mouth)	06001	38	14	40.96	22.88	2.60
Bedrock Creek (mouth)	00201	32	15	47.68	39.70	1.91
Big Canyon Creek (mouth)	00501	44	17	50.90	31.59	2.64
Little Canyon Creek (mouth)	04201	48	21	68.21	27.91	2.72
Cold Springs Creek (mouth)	01101	33	7	8.48	49.90	2.04
Big Canyon Creek (upper mainstem)	00527	28	3	0.59	58.61	1.75
Holes Creek (mouth)	03101	33	5	5.09	20.55	2.60
Long Hollow Creek (mouth)	04601	23	1	0.40	52.88	1.62
Long Hollow Creek (US sewer lagoon and City of Nezperce )*	04605	17	1	8.41	19.14	2.27
Fivemile Creek (mouth)	02501	29	17	76.76	44.14	1.98
Sixmile Creek (mouth)	07301	33	9	17.92	35.28	2.31

**Appendix D. Maps of Reservation Watersheds**



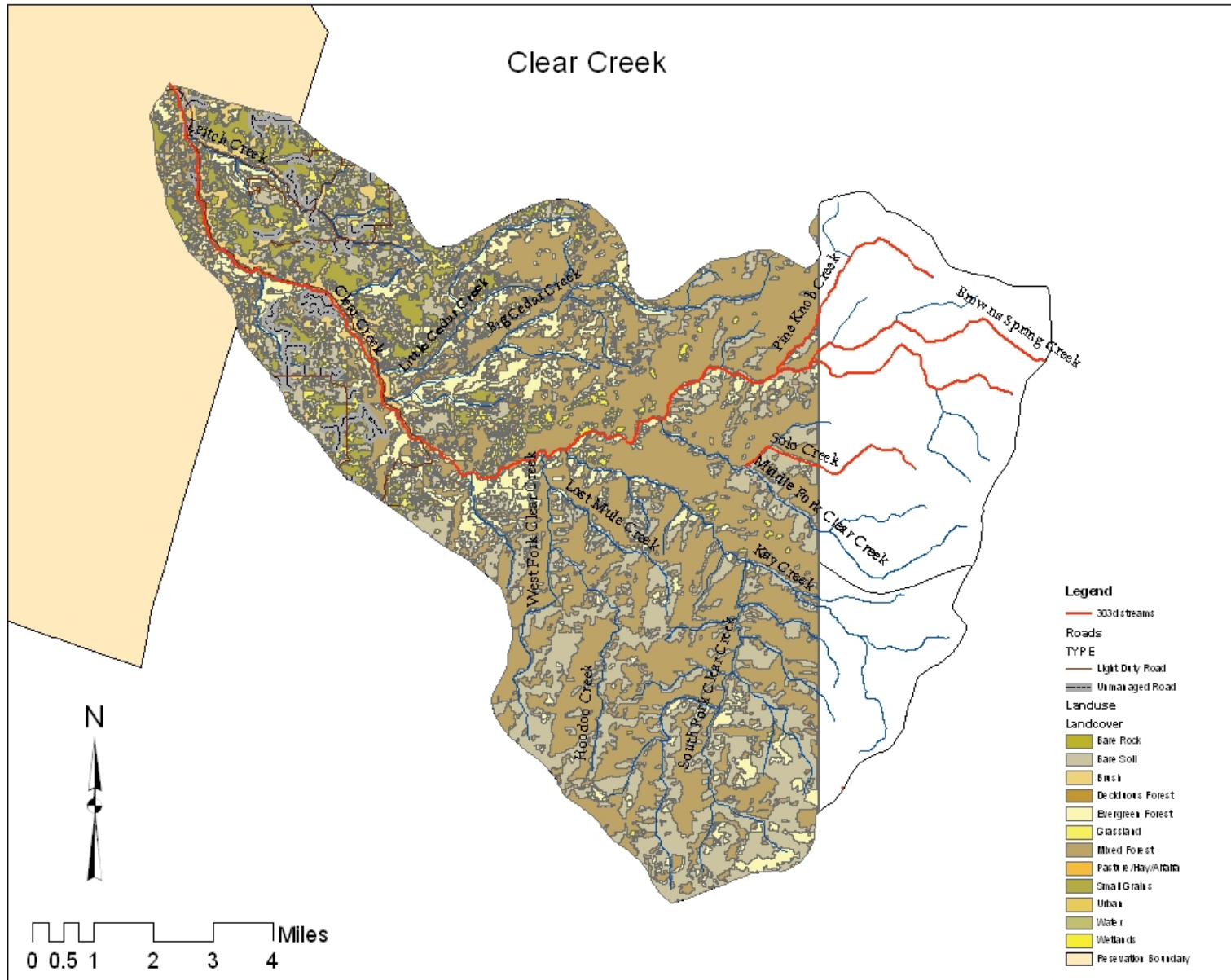
Nez Perce Tribe Water Quality Assessment Report, 305(b)



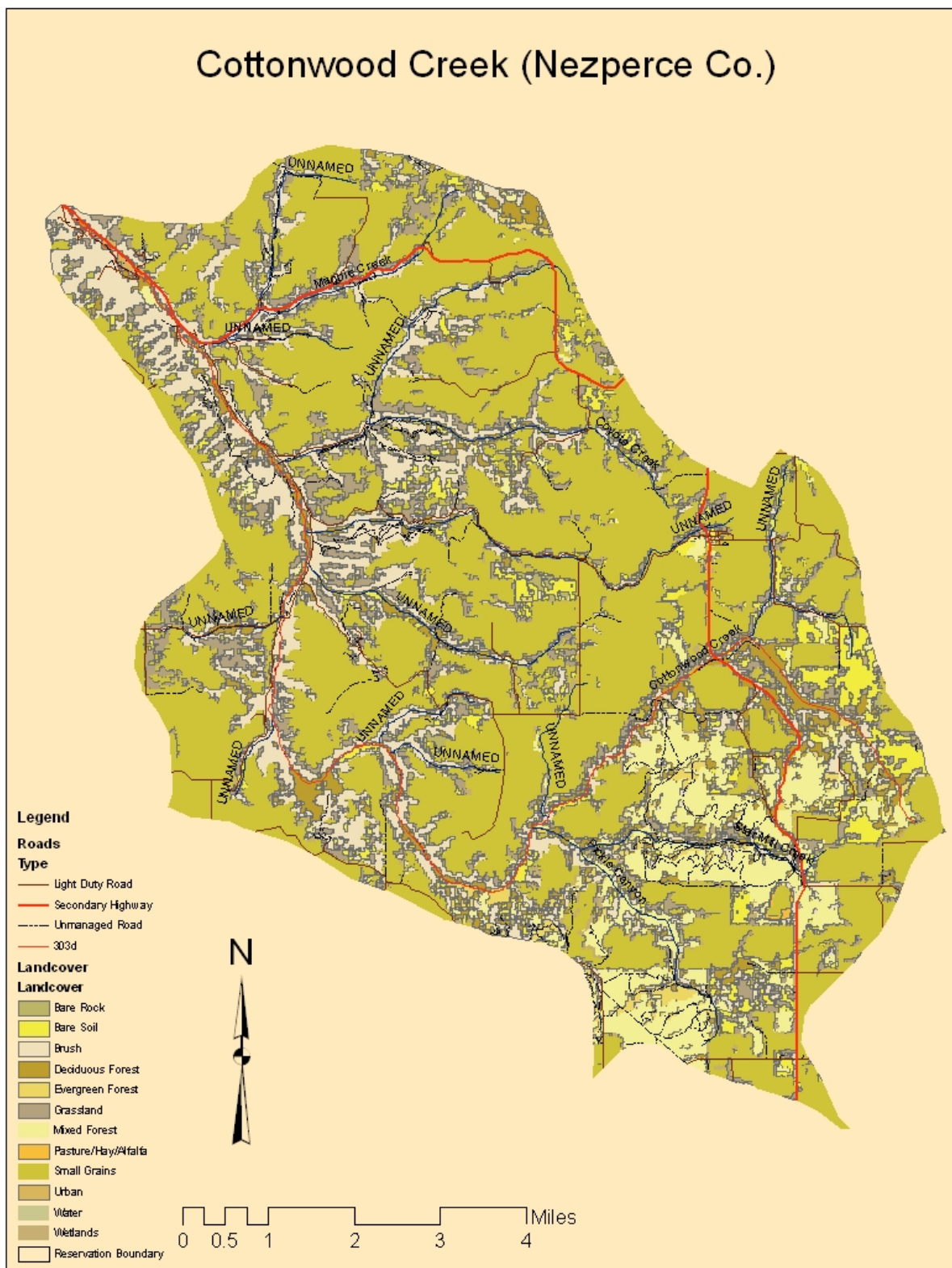


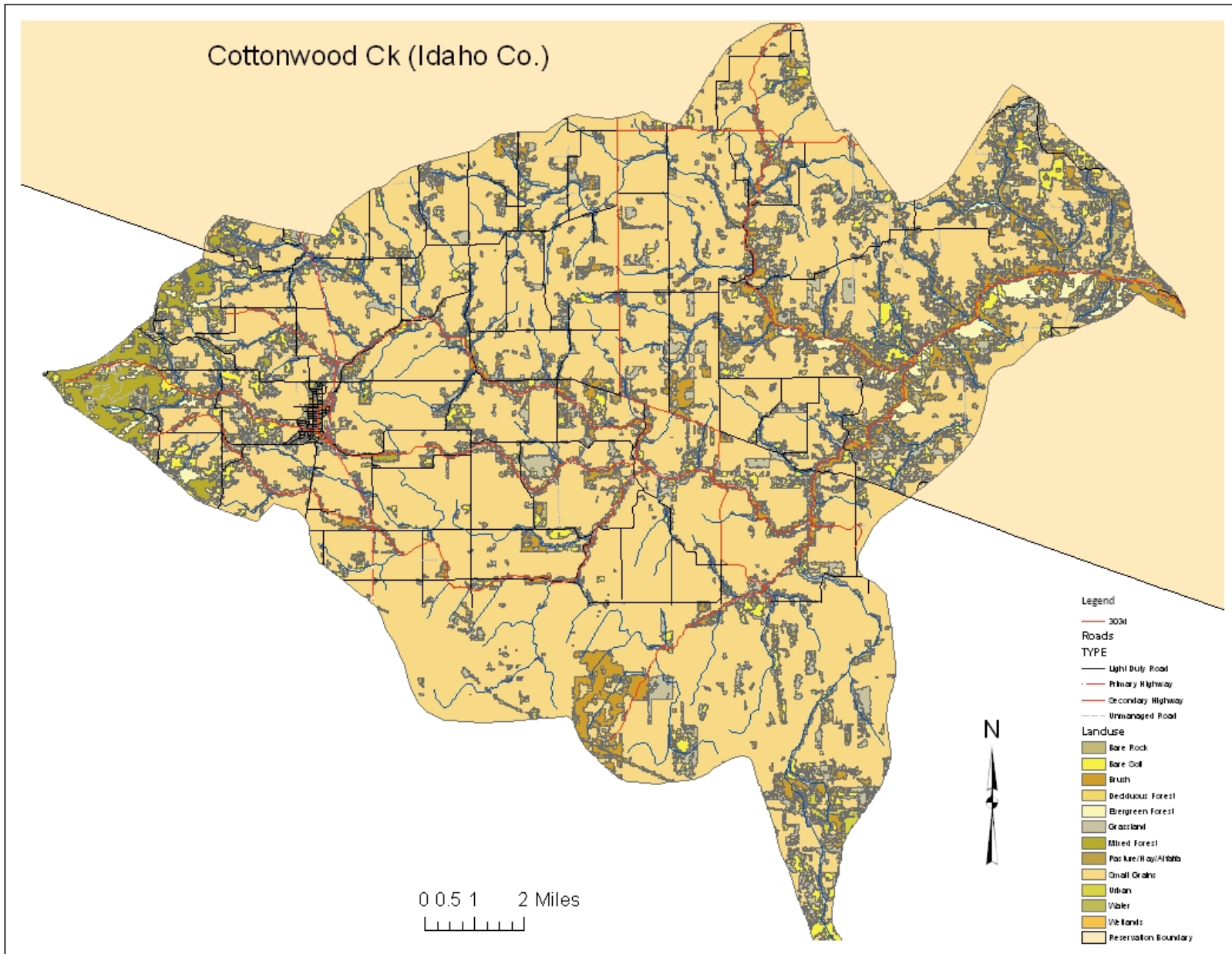


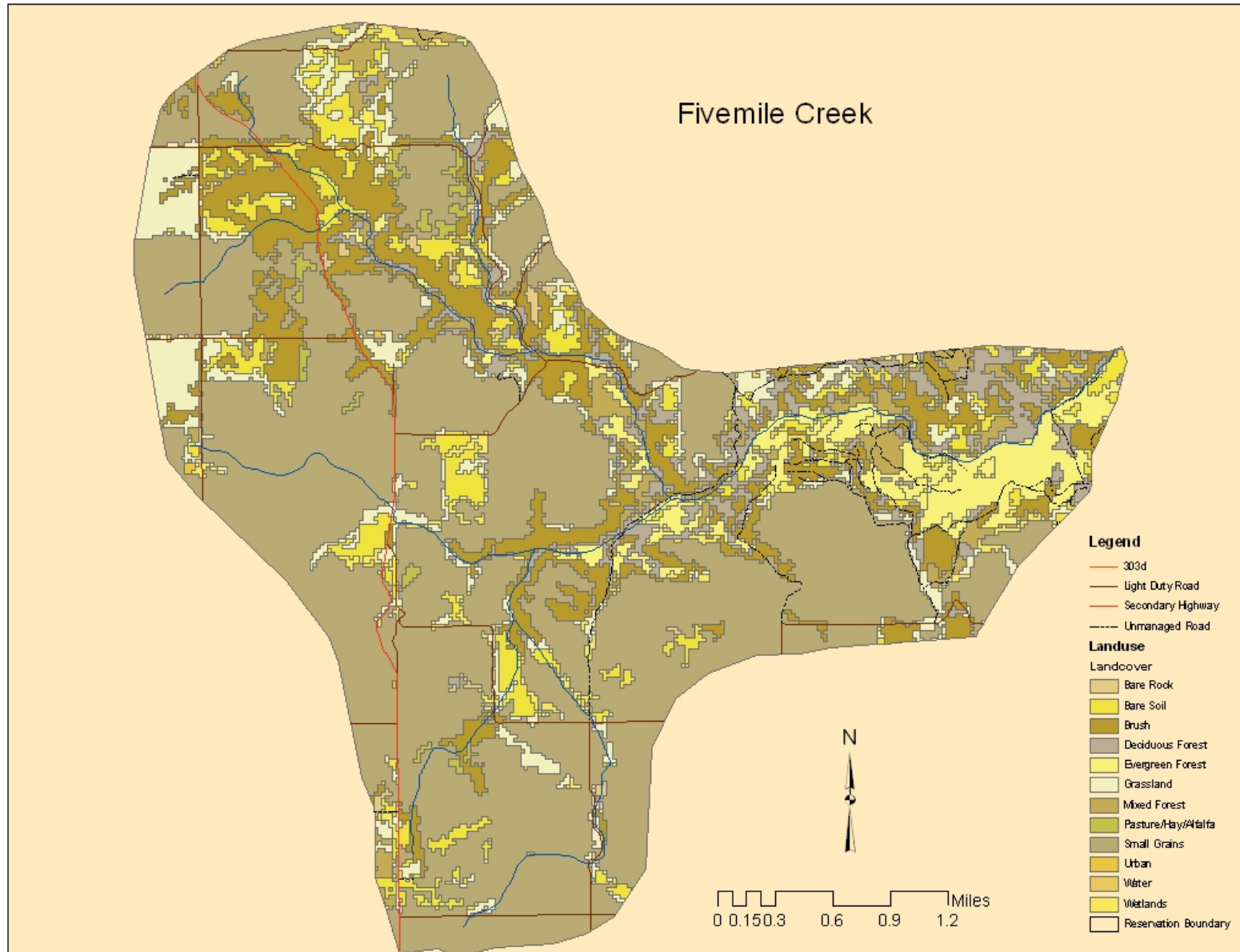




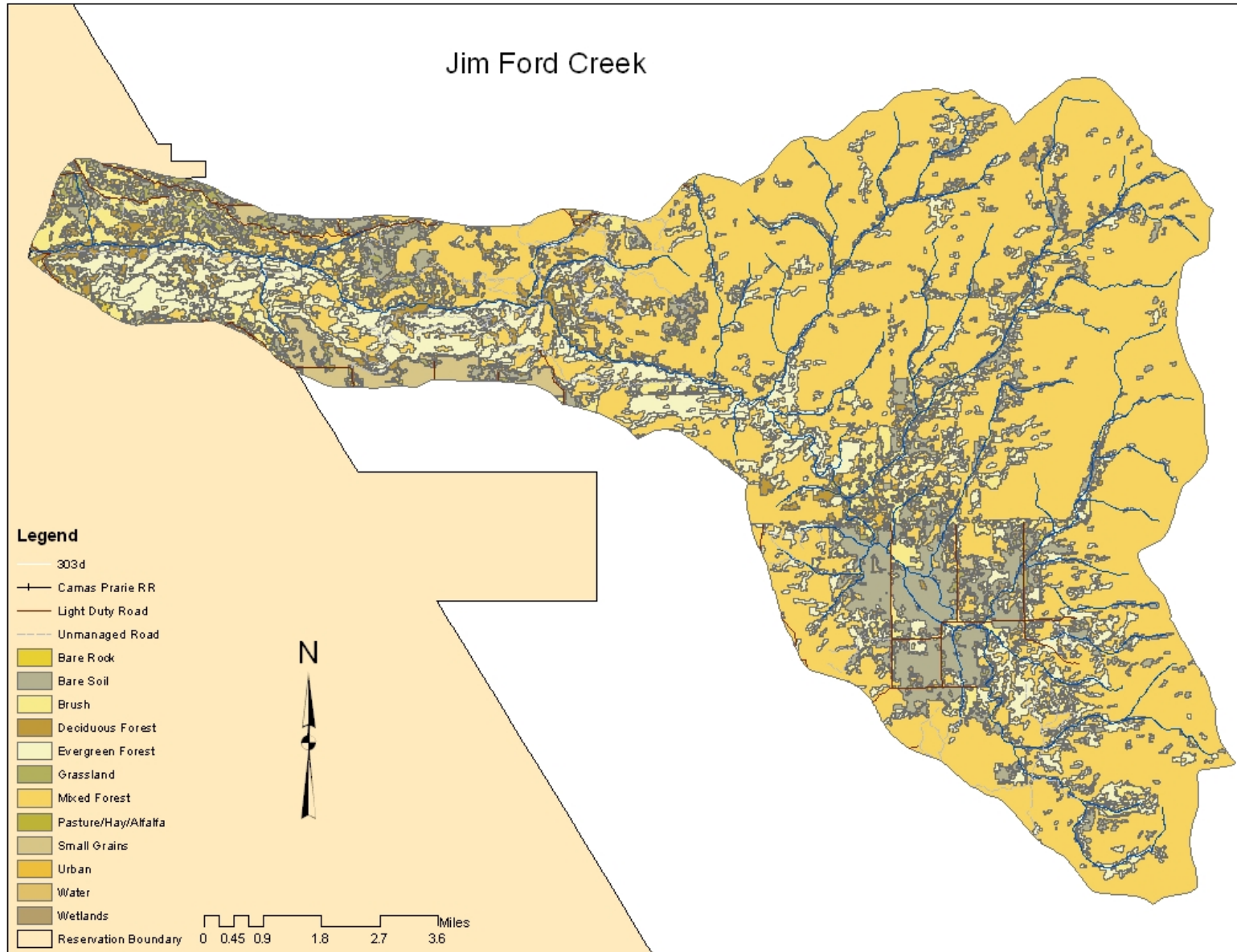
Nez Perce Tribe Water Quality Assessment Report, 305(b)

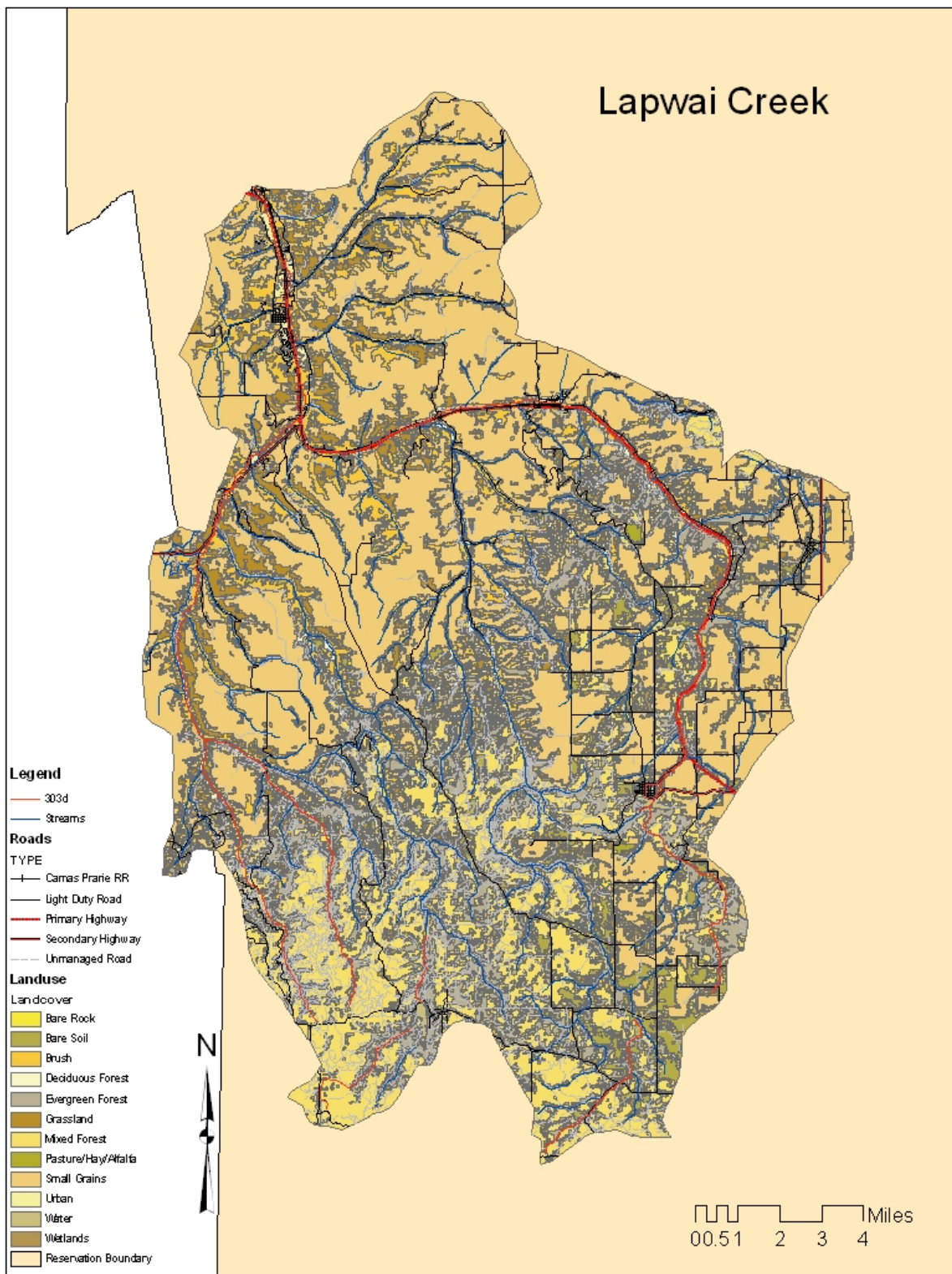




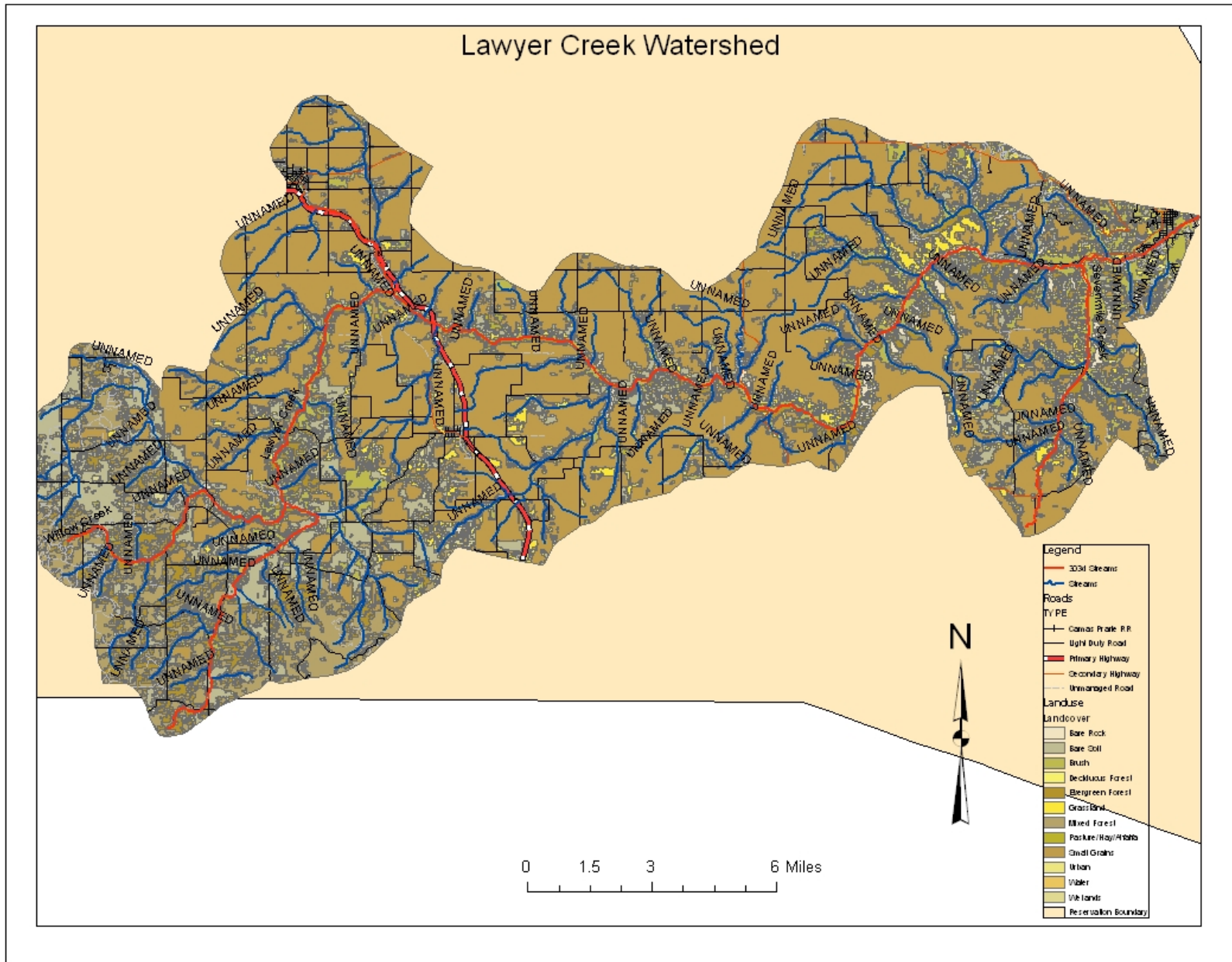


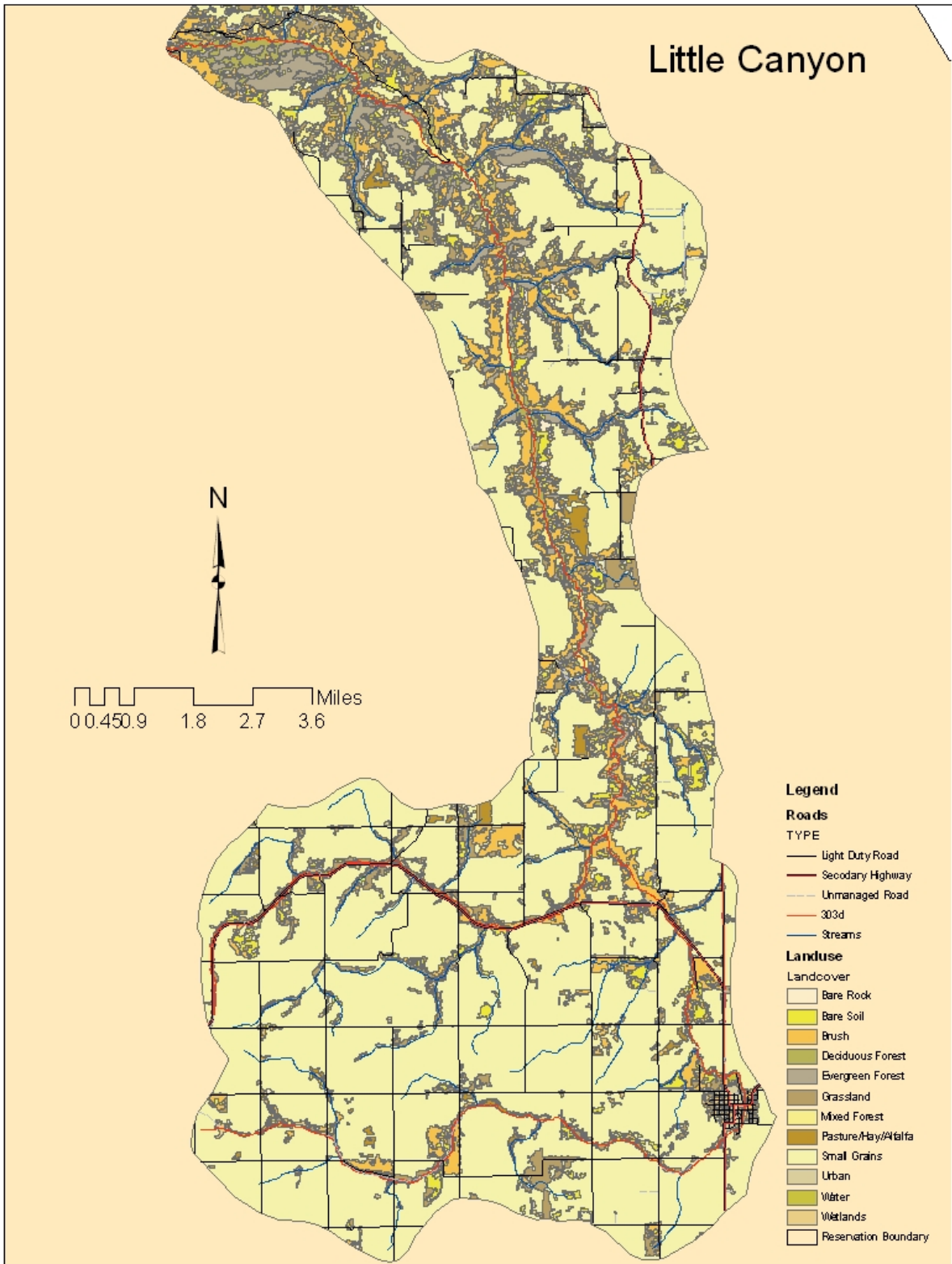


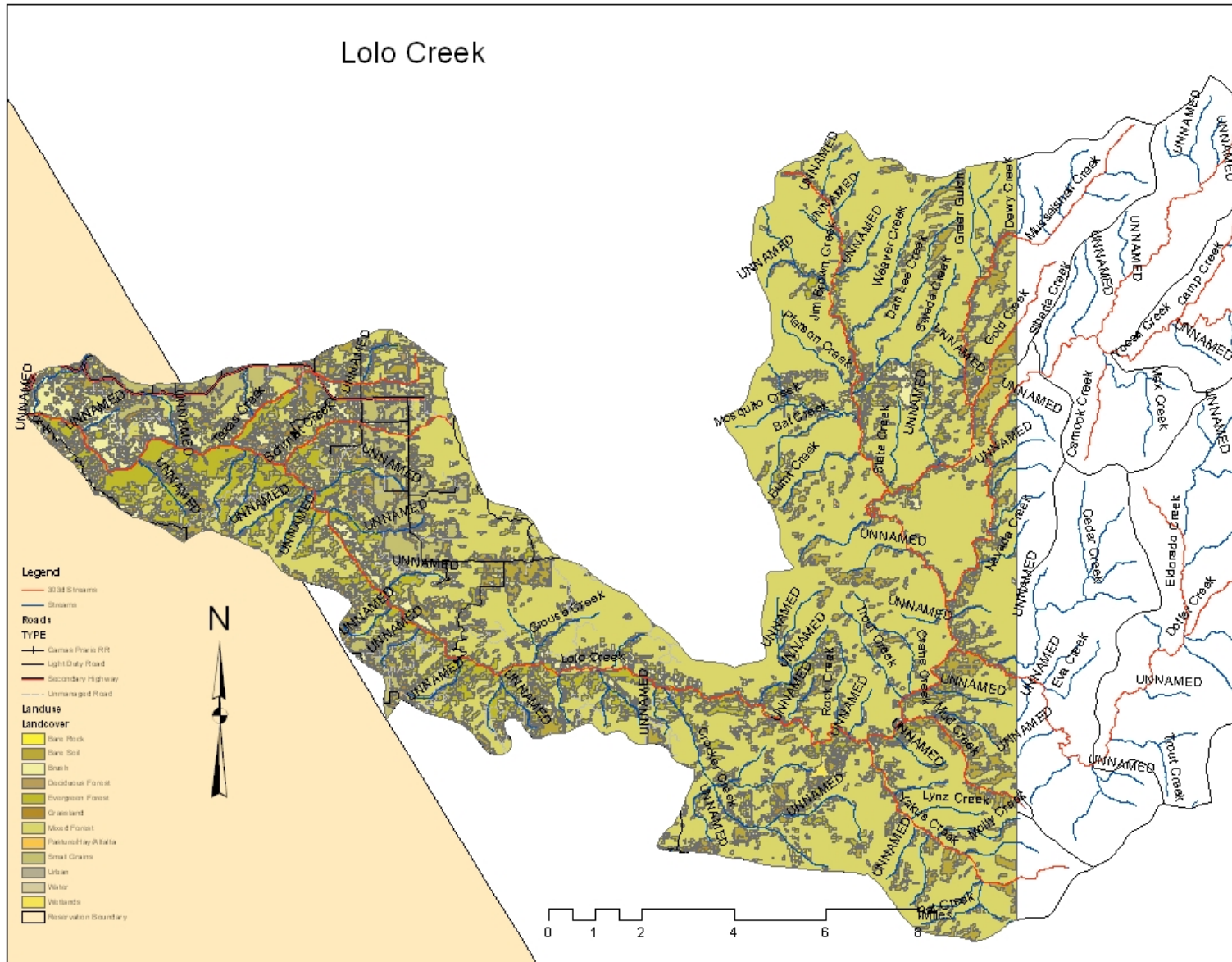


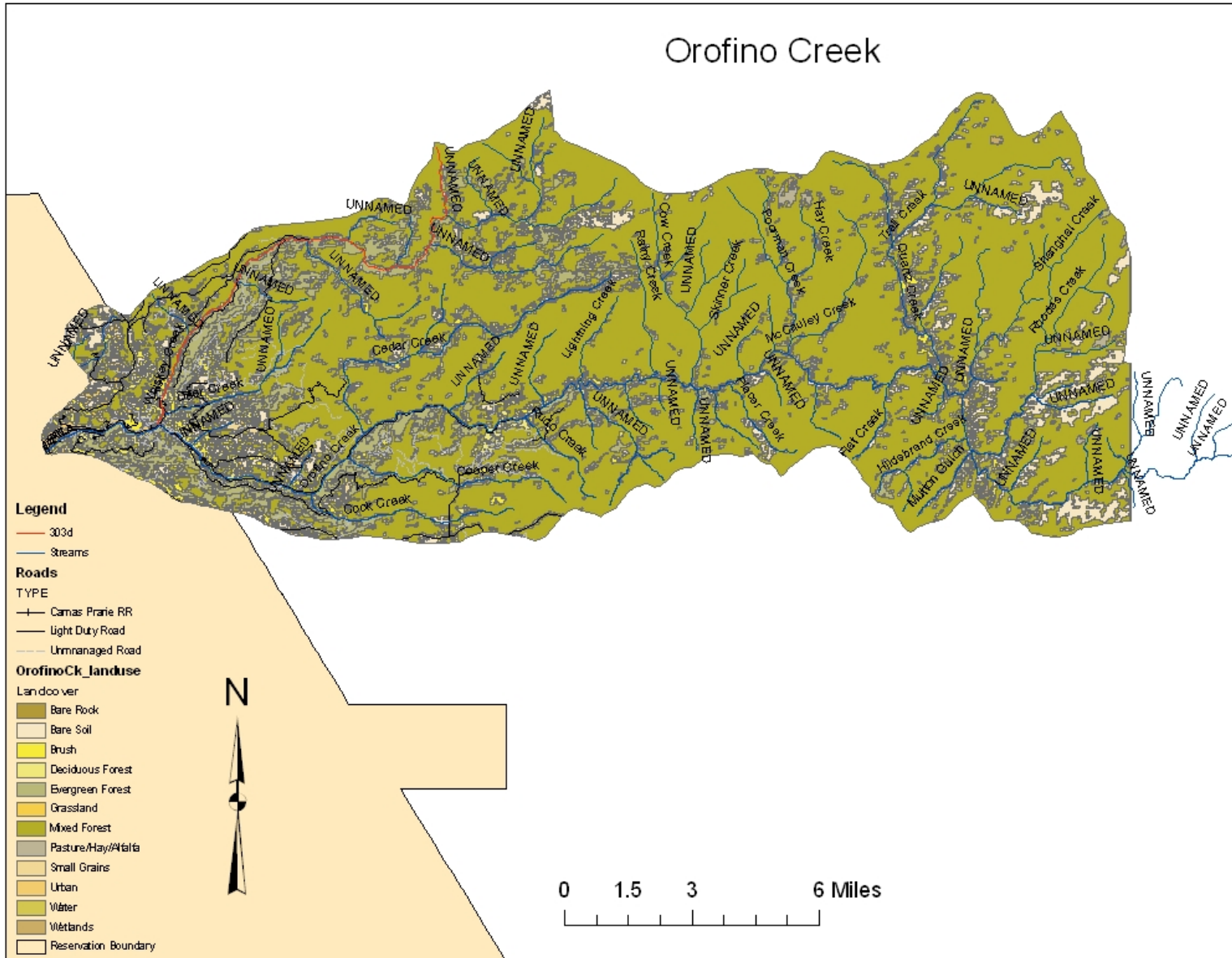


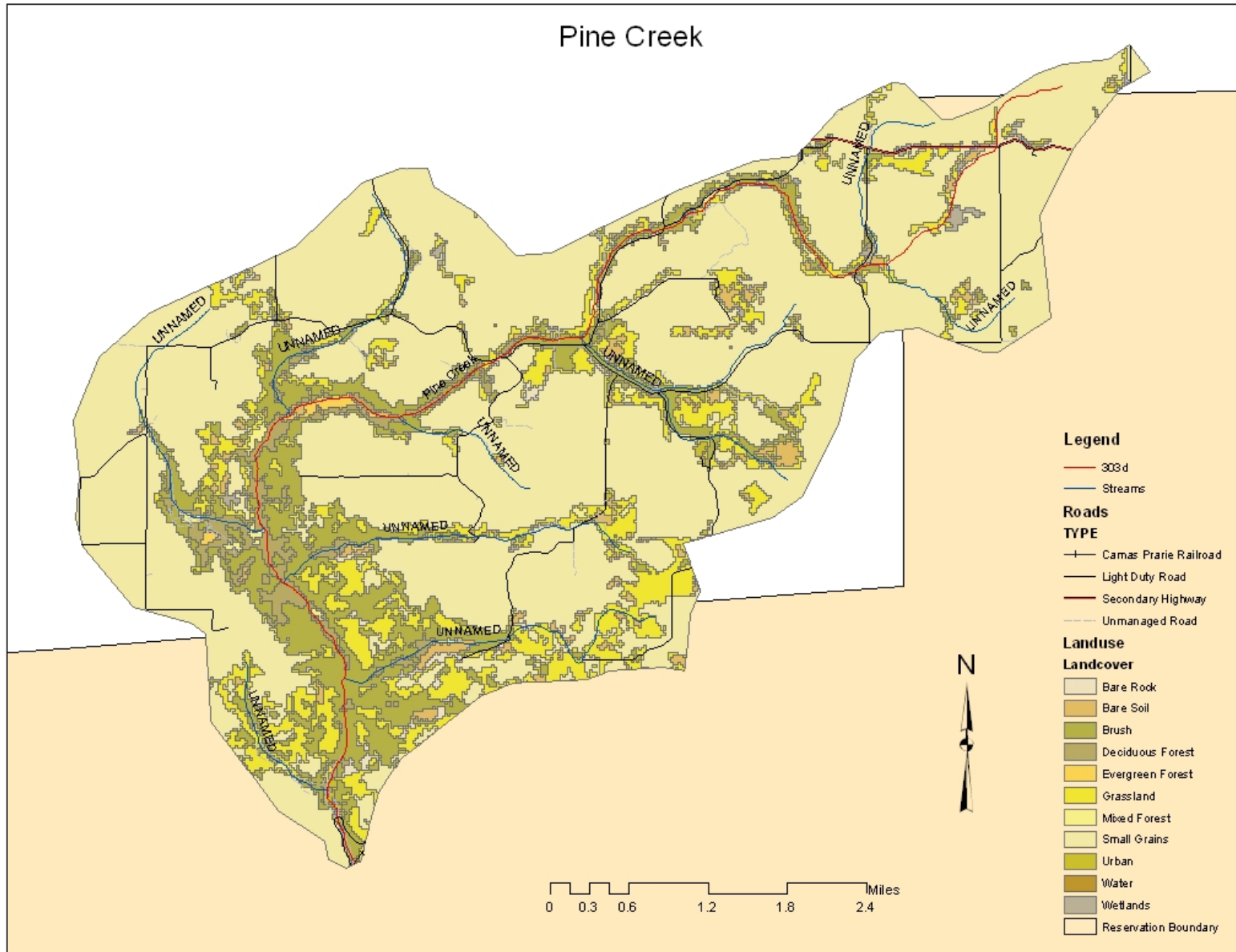


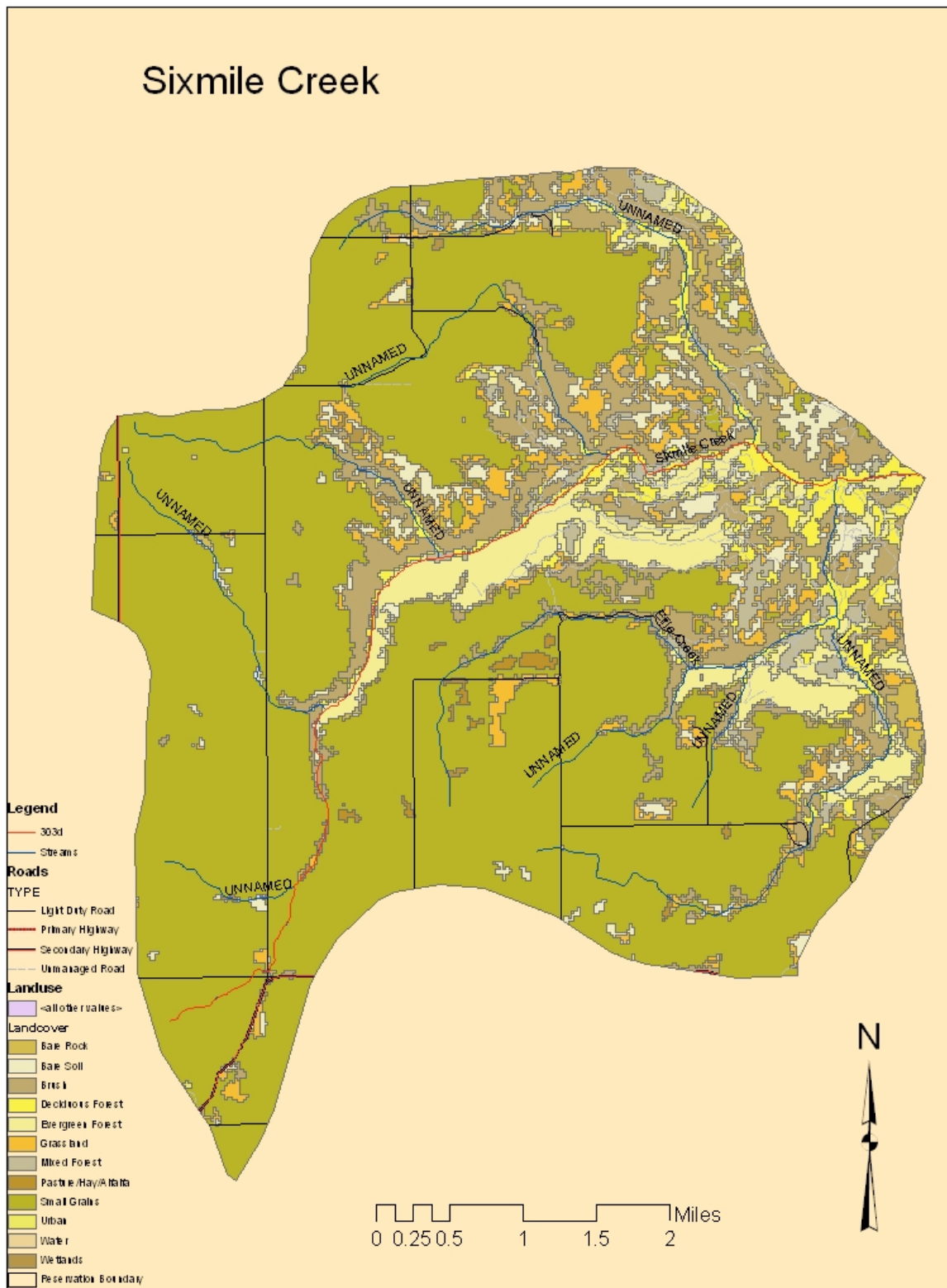


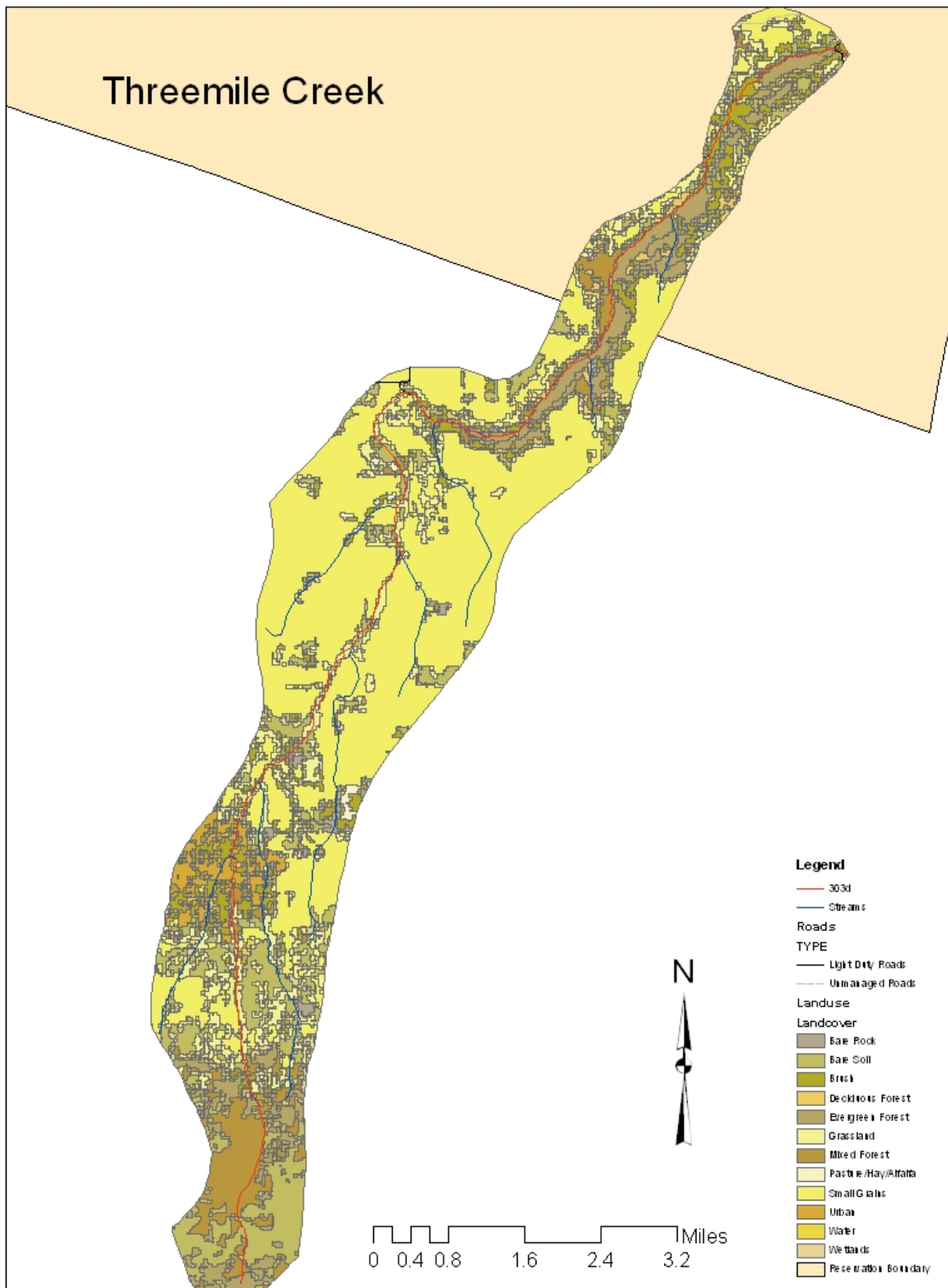


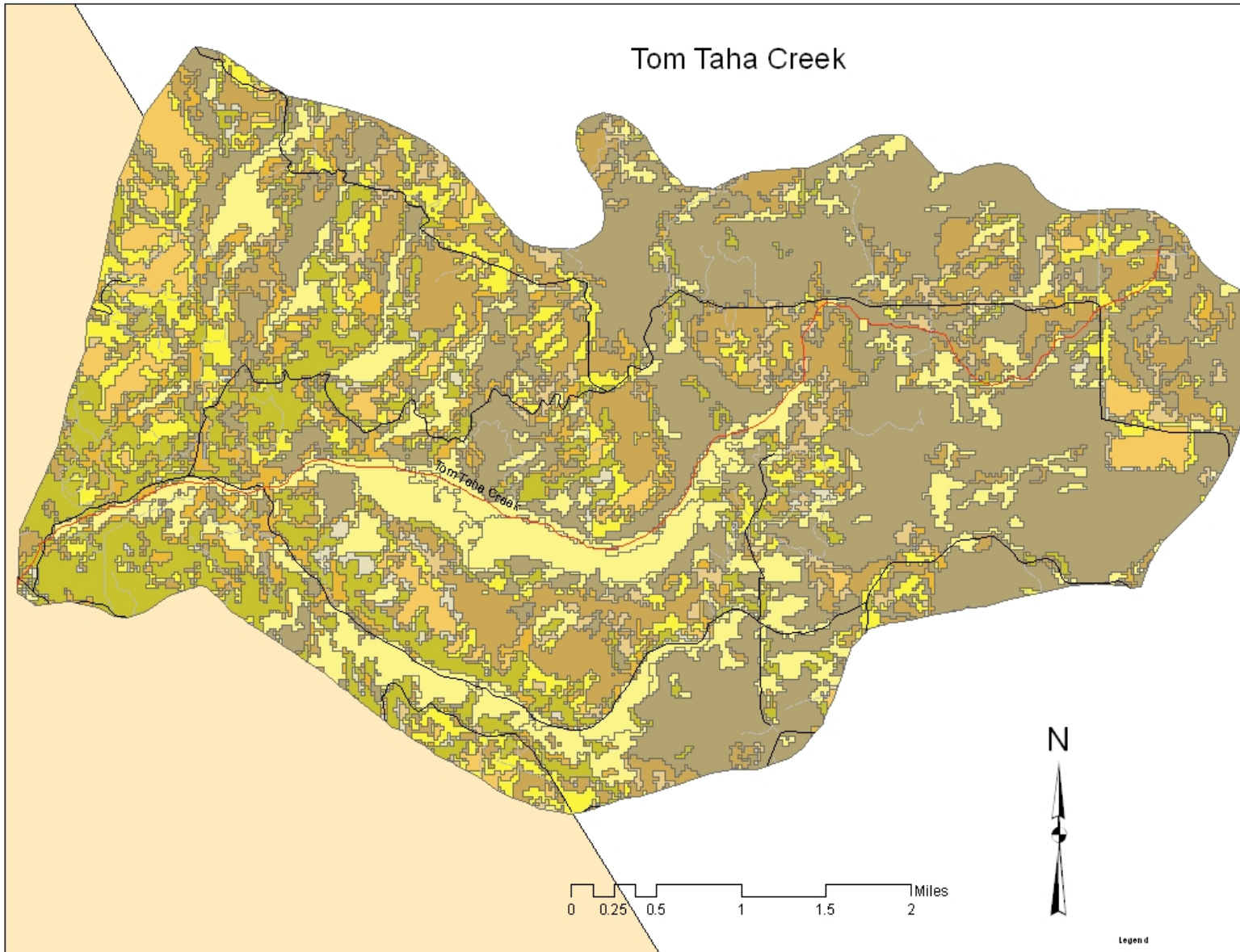




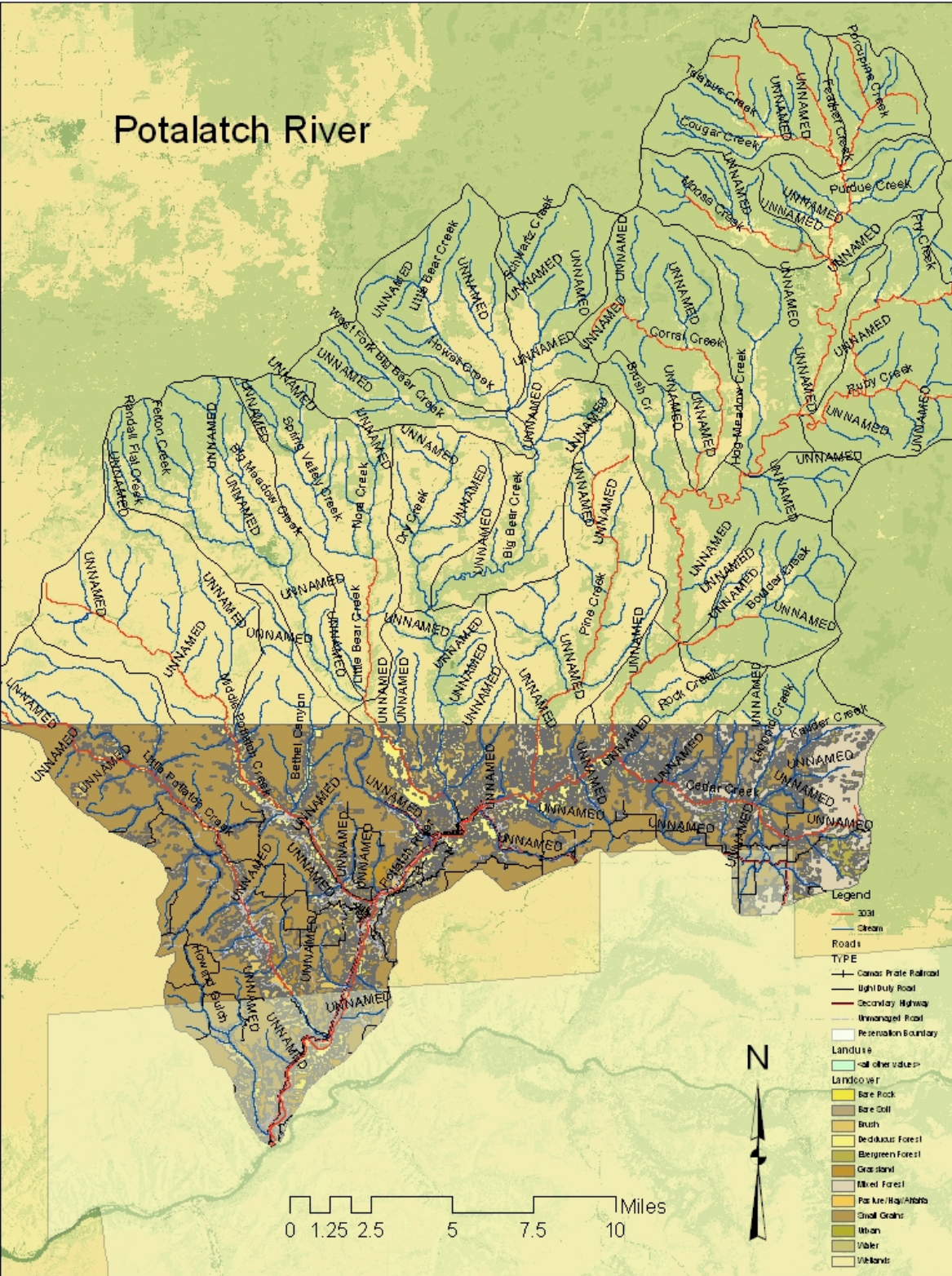












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