2001

State of the Environment Report

The Idaho Department of Environmental Quality (DEQ) is pleased to present the State of the Environment report for the year 2001. This report provides an overview of current environmental conditions in Idaho and discusses environmental data collected throughout the State. This information on the environment can be used in subsequent investigations as "indicators" of the health of the environment. This report will be revisited and updated regularly to display trends and help prioritize activities.

Indicators of Environmental Conditions and Trends Used In This Report

- Air Quality
- Drinking Water Quality
- Ground Water Quality
- Surface Water Quality
- Areas of Waste Contamination

There are six major river basins in Idaho: Panhandle, Clearwater, Salmon, Southwest, Upper Snake, and Bear River. "Basins" are essentially a larger grouping of "watersheds"— areas that contain a particular drainage. In this report, the State is divided into five basins. For presentation of information, the Upper Snake and Bear River Basins are combined. Typically, watersheds and the larger basins are established from ridgeline-to-ridgeline boundaries of an area, from which water flows into large streams or rivers.

The five resulting basins correspond with Idaho's Air Quality Control Regions. The Air Quality Control Regions contain "airsheds" that are similar in concept to watersheds. The air in an airshed flows in one geographical area bounded by mountains, prevailing winds, and upper atmosphere circulation, so that the air mass is mostly confined to a specific and definable geographic area. Selected airsheds are discussed in this report. The next section presents an overview of statewide conditions.

DEQ

Our Mission

To preserve the quality of Idaho's air, land, and water for use and enjoyment today and in the future.

As always, your input is a valuable and needed resource. Please let us know how you think we are doing. Contact DEQ to express your opinion or visit our website to learn more about Idaho's environment, DEQ, or the programs discussed in this report.

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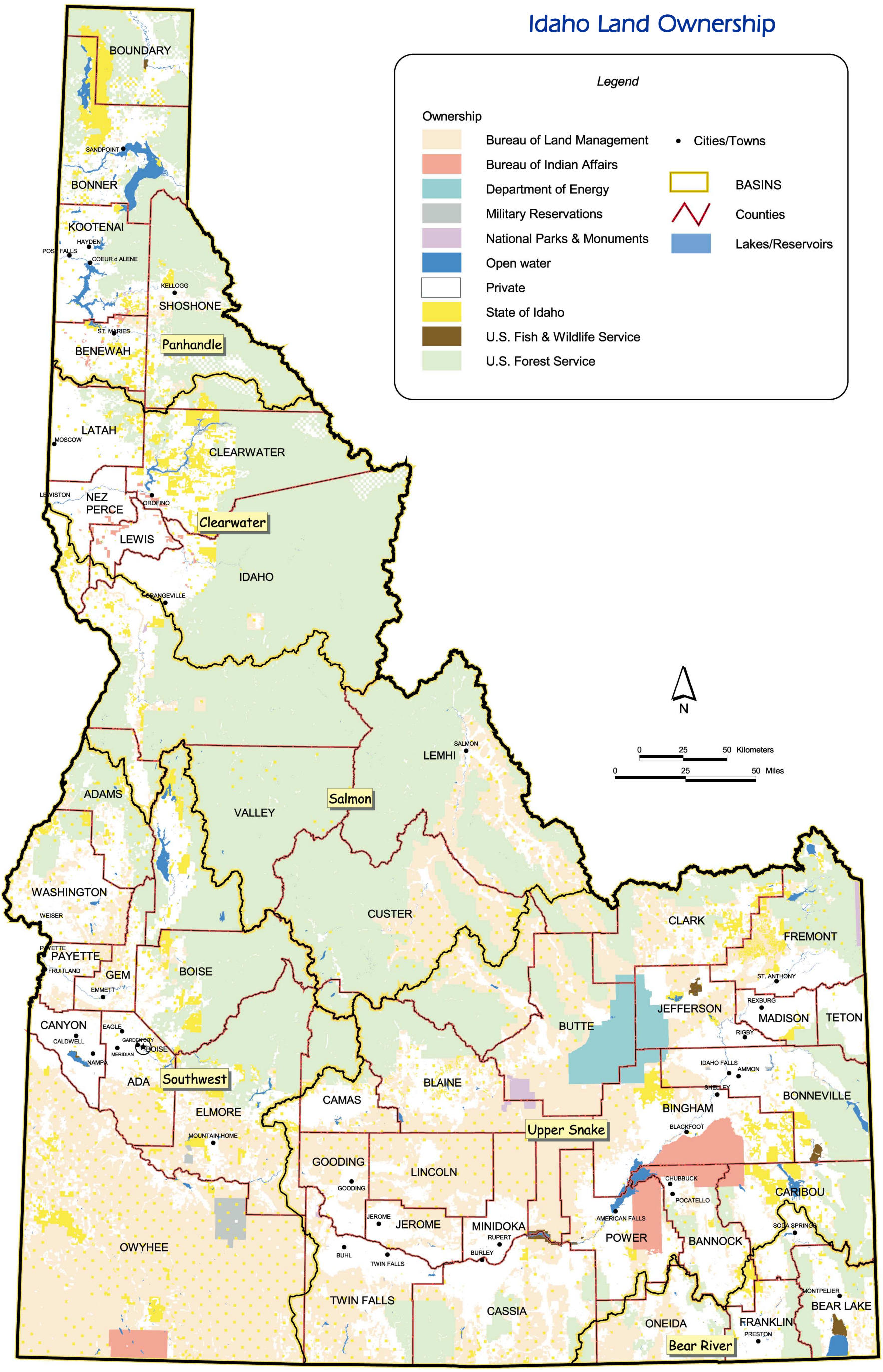
Idaho Land Ownership
Legend
Ownership
Bureau of Land Management
Bureau of Indian Affairs
Department of Energy
Military Reservations
National Parks & Monuments
Open water
Private
State of Idaho
U.S. Fish & Wildlife Service
U.S. Forest Service
Cities/Towns
BASINS
Counties
Lakes/Reservoirs
N
0 25 50 Kilometers
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Panhandle
Clearwater
Southwest
Salmon
Upper Snake
Bear River
BOUNDARY
BONNER
KOOTENAI
SHOSHONE
BENEWAH
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
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BLAINE
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CARIBOU
JEROME
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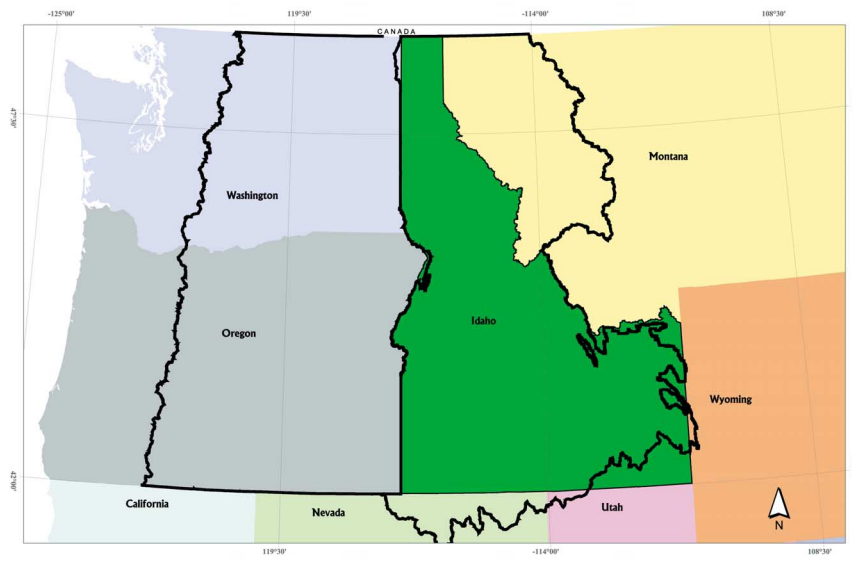
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
FRANKLIN
BEAR LAKE
SANDPOINT
HAYDEN
POST FALLS
COEUR d ALENE
KELLOGG
ST. MARIES
MOSCOW
LEWISTON
OROFINO
ORANGEVILLE
SALMON
WEISER
PAYETTE
FRUITLAND
EMMETT
CALDWELL
NAMPA
EAGLE
GARDEN CITY
BOISE
MERIDIAN
MOUNTAIN HOME
GOODING
JEROME
TWIN FALLS
BUHL
RUPERT
BURLEY
AMERICAN FALLS
CHUBBUCK
POCATELLO
SODA SPRINGS
ST. ANTHONY
REXBURG
RIGBY
IDAHO FALLS
AMMON
SHELLEY
BLACKFOOT
MONTPELIER
PRESTON

Overview of the State

The State of Idaho encompasses 82,677 square miles and is located in the upper Pacific Northwest range of the United States. Idaho is bounded by six states: Montana, Wyoming, Utah, Nevada, Oregon, and Washington. (See map below.) Its uppermost boundary is shared by the country of Canada. The eastern boundaries of the State are delineated by the Bitteroot mountain range, causing dominant westward watershed drainage.

State Boundaries



Population Changes from 1990 to 1999
(Statewide and in select counties)

	1990	1999	% Change	Pop. Change
Statewide	1,006,749	1,251,700	24%	244,951
Ada County	205,775	283,402	38%	77,627
Boise County	3,509	5,311	51%	1,802
Custer County	4,133	4,089	-1%	-44
Kootenai County	69,795	104,807	50%	35,012
Shoshone County	13,931	13,654	-2%	-277

The State lies in the Upper Columbia River Basin, a regional watershed delineated by the Columbia River system, to which most of the major rivers in the basin drain. The Columbia River flows to the Pacific at the borders of Oregon and Washington. Idaho has eight major river systems: Snake, Boise, Clearwater, Salmon, Coeur d'Alene, Pend Oreille, Kootenai, and Bear. Four of these rivers flow through the State, converge with the Snake River, and meet the Columbia River in eastern Oregon. The Bear River enters Idaho from Wyoming and flows southward into the Great Basin in Utah.

As depicted on the "Idaho Land Ownership" map (opposite page), the federal government is the largest "land owner," with over 65 percent of the land being managed by either the U.S. Department of Agriculture (U.S. Forest Service) or the U.S. Department of the Interior (Bureau of Land Management). The map also displays lands managed by Idaho, Indian tribal governments, the military, and the U.S. Department of Energy (Idaho National Engineering and Environmental Laboratory — INEEL).

The State's population increased by 24 percent between 1990 to 1999. (See the "Population Changes" table at left.) Ada County experienced the largest increase with 77,627 more people living in the county in 1999 than in 1990. This represents a 38-percent increase. However, the fastest growing county was Boise County, which saw its population grow by 1,802 people, or a 51-percent increase. The second largest, a 50-percent increase, was in Kootenai County.

Some counties experienced very little change, and a few had a decrease in population between 1990 and 1999. Shoshone County saw a two-percent reduction from 1990 to 1999, and Custer County lost one-percent of its population during the decade.

The following sections discuss environmental indicators to highlight conditions in the five basins, starting north in the Panhandle, and continuing southeast to the Upper Snake/Bear Valley.

Monitoring Our Environment

Various State and federal agencies, along with Native American tribes, monitor Idaho's water and air quality. Routine sampling and analysis identify trends in how clean our air and water is now and what might be expected in the future.

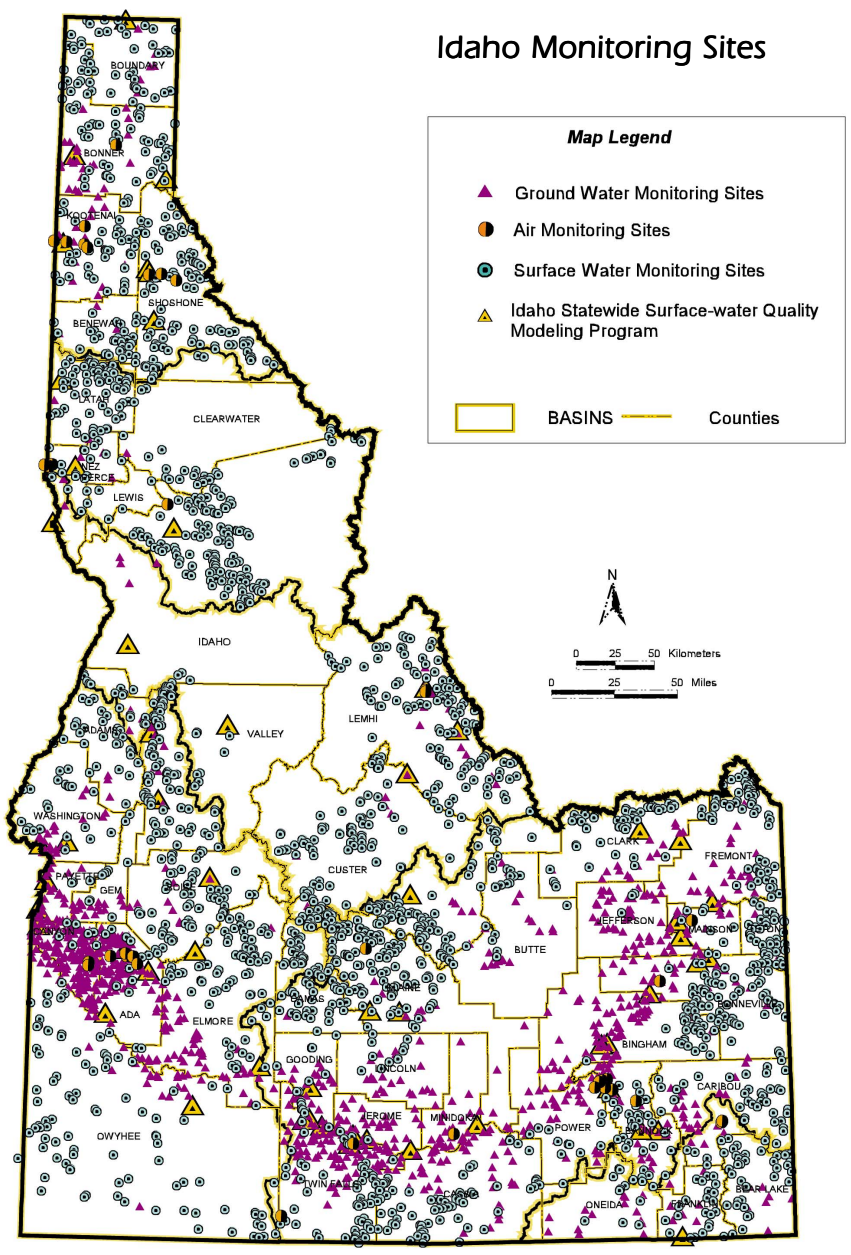
Sixty-seven air monitoring stations are located in 24 cities and on Indian reservations in Idaho. Each monitoring station is customized to evaluate certain pollutants that are known or expected to be present in that area. The monitoring locations have been determined by both population and air pollution sources.

In 1990, sampling began at 56 surface water sites: annually at five sites, biannually at 19 sites, and triannually at 32 sites. Each year, 25 of the 56 sites are sampled. From 1990 to 1996, chemical analyses of the samples were conducted. Beginning in 1996, biological analyses were added to the monitoring program. Between 1993 and 1996, over 2,000 sites on Idaho's rivers and streams have been monitored and assessed to determine if the waters can support the protection of species and human uses. Between 1997 and 2000, another 2,000 sites have been sampled and are in the process of being assessed.

The main sources of information on ground water quality are from a statewide monitoring network and routine monitoring of public drinking water systems. The statewide monitoring network consists of over 1,500 wells throughout the state. The network samples wells in areas that are proportionate to the population densities.

Of the 1,500 wells, 400 are sampled each year, so that all sites are sampled at least once every four years. In addition to the statewide monitoring network, ground water quality information is utilized from monitoring of the 2,000 drinking water systems, which rely on over 2,900 wells as their source.

Idaho Monitoring Sites



Air Quality

Generally, Idaho enjoys an abundance of clean air. However, during certain periods, Idaho citizens can be affected by significant air pollution from human and natural sources. Over the past three decades, Idaho, like much of the nation, has implemented controls on major industries, and significant reduction of the pollutants has occurred from such sources. Over the last two decades, Idaho and the Intermountain West have seen dramatic growth in urban population with increasing use of vehicles. In the Treasure Valley, and in the area from Spokane to Coeur d'Alene, monitoring is recording increasing amounts of air pollutants from transportation sources. In the Portneuf Valley, and in the Treasure Valley, pollutants called secondary aerosols from industrial and non-industrial sources can cause the formation of significant concentrations of particulate matter at certain times during the year. Across Idaho, smoke from agricultural burns, prescribed forest fires, and wild fires can cause the build-up of high concentrations of particulate matter in the summer and fall.

In the past, DEQ has recorded exceedances of the State and federal health-based standards for particulate matter, carbon monoxide, and sulfur dioxide. These exceedances have triggered federal planning requirements to address compliance with the appropriate standards in specific areas. DEQ has embarked upon an airshed management strategy for the entire State to ensure proactive protection of the public health at the local and State level prior to the initiation of any federal control strategies.

Surface Water

Activities throughout a watershed affect the quality of the water. Statewide, the predominant water quality problems are caused by runoff from land. Surface water concerns include human health and the biological integrity of rivers, lakes, reservoirs, and streams. Monitoring is the collection of biological and physical information designed to document water quality trends in a watershed. Idaho has approximately 120,000 miles of rivers and streams. Of that amount, approximately 16,742 miles have been monitored, 8,434 miles meet water quality standards, and 8,312 do not meet water quality standards.

Definition of Surface Water Pollutants of Concern

- **Sediment –** Natural materials such as sand, silt, and soil in excess of normal conditions that run off of land and into water systems. Excessive sedimentation may adversely impact native fisheries. Sedimentation may come from natural conditions or human activities.
- **Temperature –** Increased temperature levels in rivers, creeks, and lakes that may adversely impact native fisheries. Increased temperatures may come from natural conditions or human activities.
- **Nutrients –** Elements or compounds essential to living organisms such as nitrogen, phosphorous, and potassium. Excessive levels of nutrients may cause excessive plant growth in rivers, streams, and lakes, thereby reducing oxygen levels for aquatic species.

Minimum Stream Flow

A minimum stream flow, also called an instream flow, may be designated by the Idaho Water Resource Board to protect natural resources. This flow provides for a certain amount of water to remain in a stream, river, or lake to protect resources such as:

- fish habitat
- wildlife habitat
- aquatic life
- water quality
- navigation
- transportation
- recreation
- aesthetic beauty

At this time, the State has designated 76 minimum stream flows, which cover 670 stream miles, and four million acre feet of water in the Priest, Coeur d'Alene, and Payette Lakes. The basin maps in this report display where minimum flows have been designated.

Ground Water

Impacted Ground Water Areas Statewide

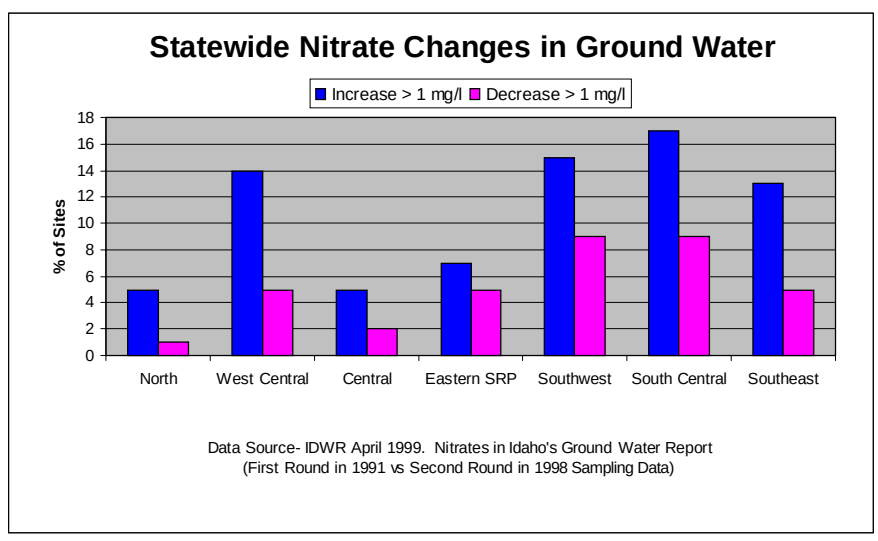
Beneficial uses of ground water in Idaho include drinking water, aquaculture, agriculture, mining, and industrial uses. Idaho relies upon ground water for drinking water supplies more than any other state in the nation.

In certain areas of Idaho, water management practices and land uses have adversely affected ground water quality. Ground water monitoring data collected over the past decade have identified areas of reduced ground water quality. Ground water quality information is categorized by the following contaminant groups: (For more information, see the 1998 Idaho Water Quality Status Report.)

- nitrates
- organic compounds
  - volatile and semi-volatile organic compounds
  - pesticides
- inorganic compounds
  - arsenic
  - fluoride
  - cadmium
  - selenium

Degraded ground water areas also include the Idaho National Engineering and Environmental Laboratory (INEEL), with ground water contaminated by radionuclides, inorganic compounds, and organic compounds.

Increased levels of nitrate in ground water are a concern statewide. The nitrate data shown in the bar chart below compare the statewide program's first-round sampling (1991-1994) to the second-round sampling (1995-1998). Of significance is that four of the areas had more than 10 percent of the sites with nitrate increases exceeding one milligram per liter (mg/l) (from the Idaho Department of Water Resources Technical Results Summary #1, April 1999).



Definition of Impacted Ground Water Areas and Sites

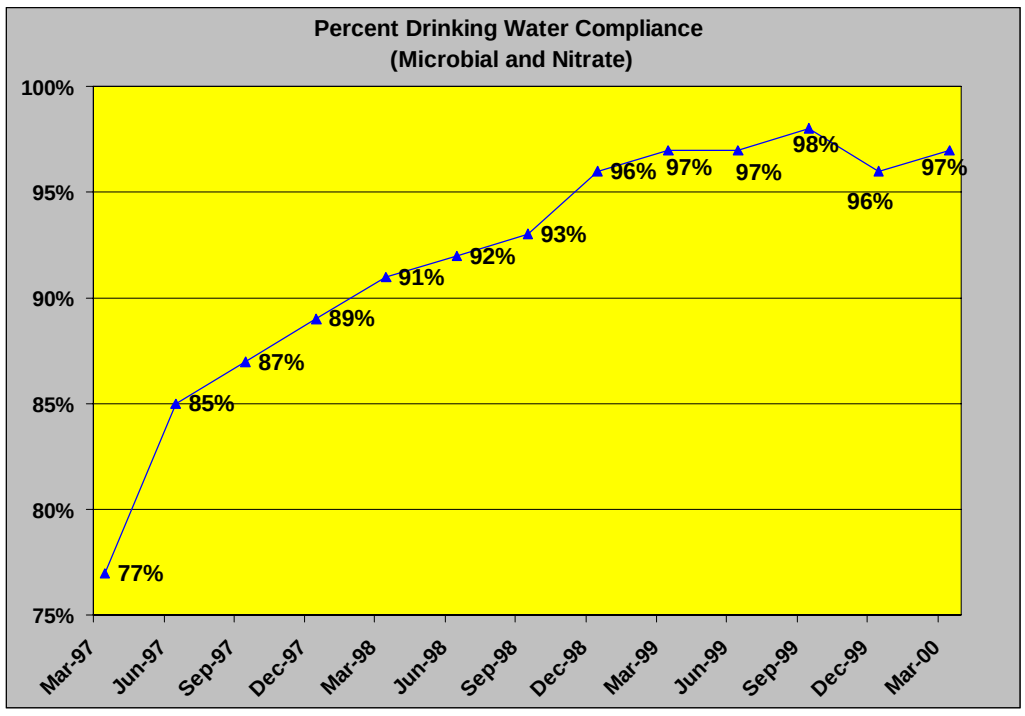
The following types of impacted ground water areas are shown on the basin maps and described in the associated sections:

- **Nitrate Priority Area:** Thirty-three nitrate priority areas have been identified throughout Idaho. These areas have significant ground water quality impacts due to nitrate contamination. These nitrate priority areas have greater than 25 percent of their ground water wells over 5 mg/l, which is one half of the drinking water standard.
- **Group 1 Sites:** Also shown on the maps are Group 1 sites. These sites are based on ground water data collected from single sample locations. These sites show sampling points for pollutants that have values greater than the drinking water standard or health advisory information (e.g., greater than 10 mg/l for nitrates). These sites indicate a contamination problem where regional or local ground water quality monitoring may be needed for additional characterization, source identification, and/or trend analysis.

Drinking Water

Approximately 96 percent of the State's drinking water comes from ground water sources. The remaining drinking water is supplied from surface water such as streams, rivers, and springs. Idaho's 2,085 public water systems serve approximately 995,000 Idahoans, representing over 80 percent of Idaho's population. The remainder of Idaho's population is served by private water wells, surface water, or other sources.

The percentage of Idaho's public water systems in compliance with microbial and nitrate contaminants has increased dramatically from 77 percent in March of 1997 to 97 percent in March of 2000. (See the "Percent Drinking Water Compliance" graph at right.) Most drinking water violations in Idaho occur in the smaller systems. Therefore, the population affected is also relatively small.



Endangered Species

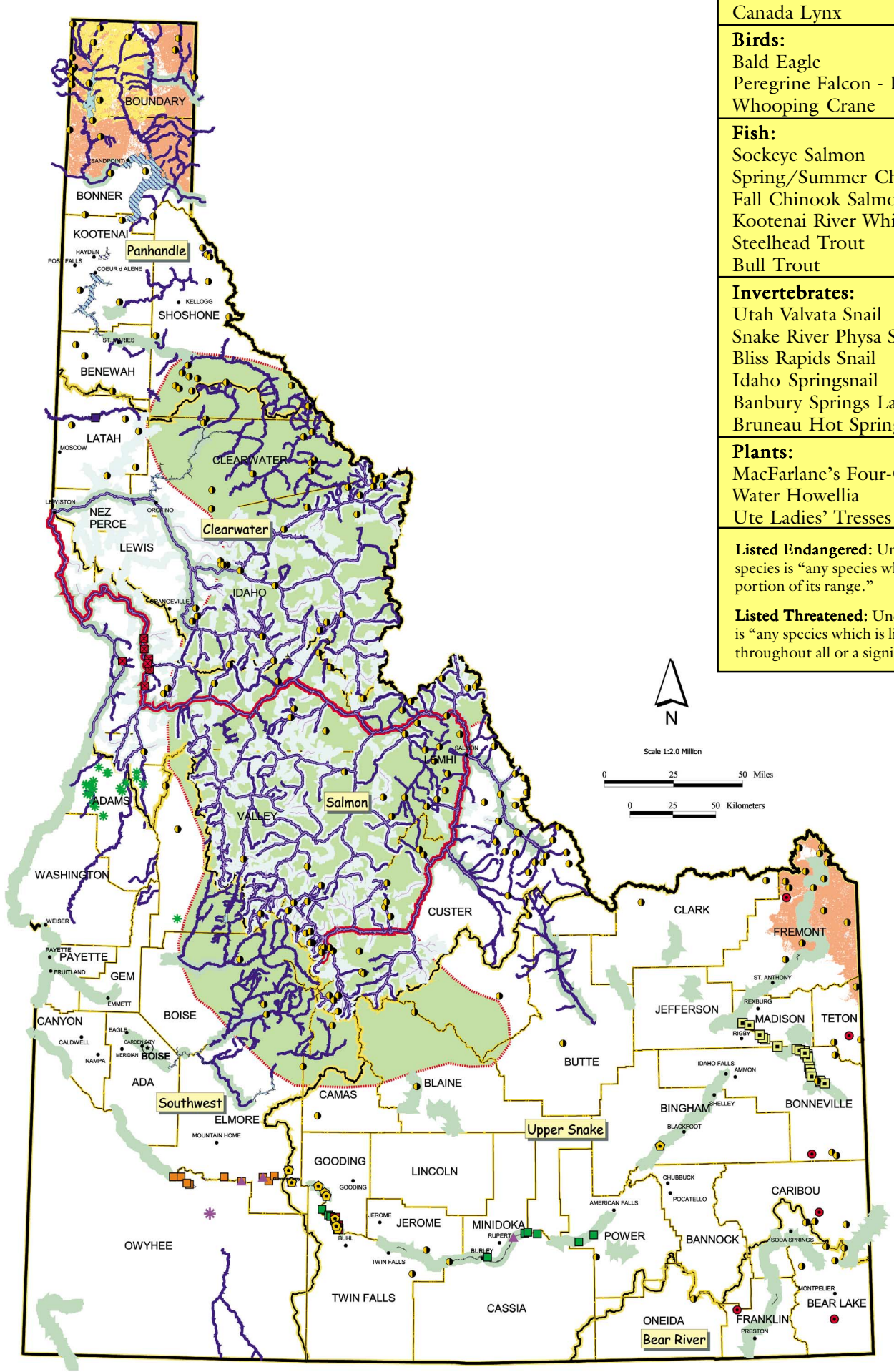
There are currently 22 mammals, birds, fish, plants, and invertebrates in Idaho listed as either threatened or endangered under the federal Endangered Species Act. Ten species are currently under active consideration for Endangered Species Act listing, and the Bald Eagle is under consideration for de-listing.

Threatened or Endangered Species in Idaho

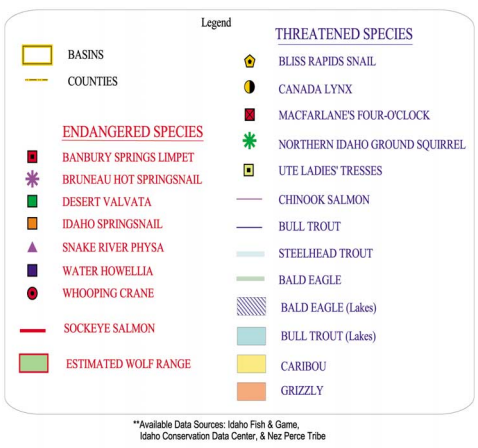
	Endangered	Threatened
Mammals:		
Gray Wolf	E	
Selkirk Mountains Woodland Caribou	E	
Grizzly Bear		T
Northern Idaho Ground Squirrel		T
Canada Lynx		T
Birds:		
Bald Eagle		T
Peregrine Falcon - Recovered	Removed	
Whooping Crane	E	
Fish:		
Sockeye Salmon	E	
Spring/Summer Chinook Salmon		T
Fall Chinook Salmon		T
Kootenai River White Sturgeon	E	
Steelhead Trout		T
Bull Trout		T
Invertebrates:		
Utah Valvata Snail	E	
Snake River Physa Snail	E	
Bliss Rapids Snail		T
Idaho Springsnail	E	
Banbury Springs Lanx	E	
Bruneau Hot Spring Snail	E	
Plants:		
MacFarlane's Four-O'Clock		T
Water Howellia		T
Ute Ladies' Tresses		T

Listed Endangered: Under the federal Endangered Species Act, an endangered species is "any species which is in danger of extinction throughout all or a significant portion of its range."

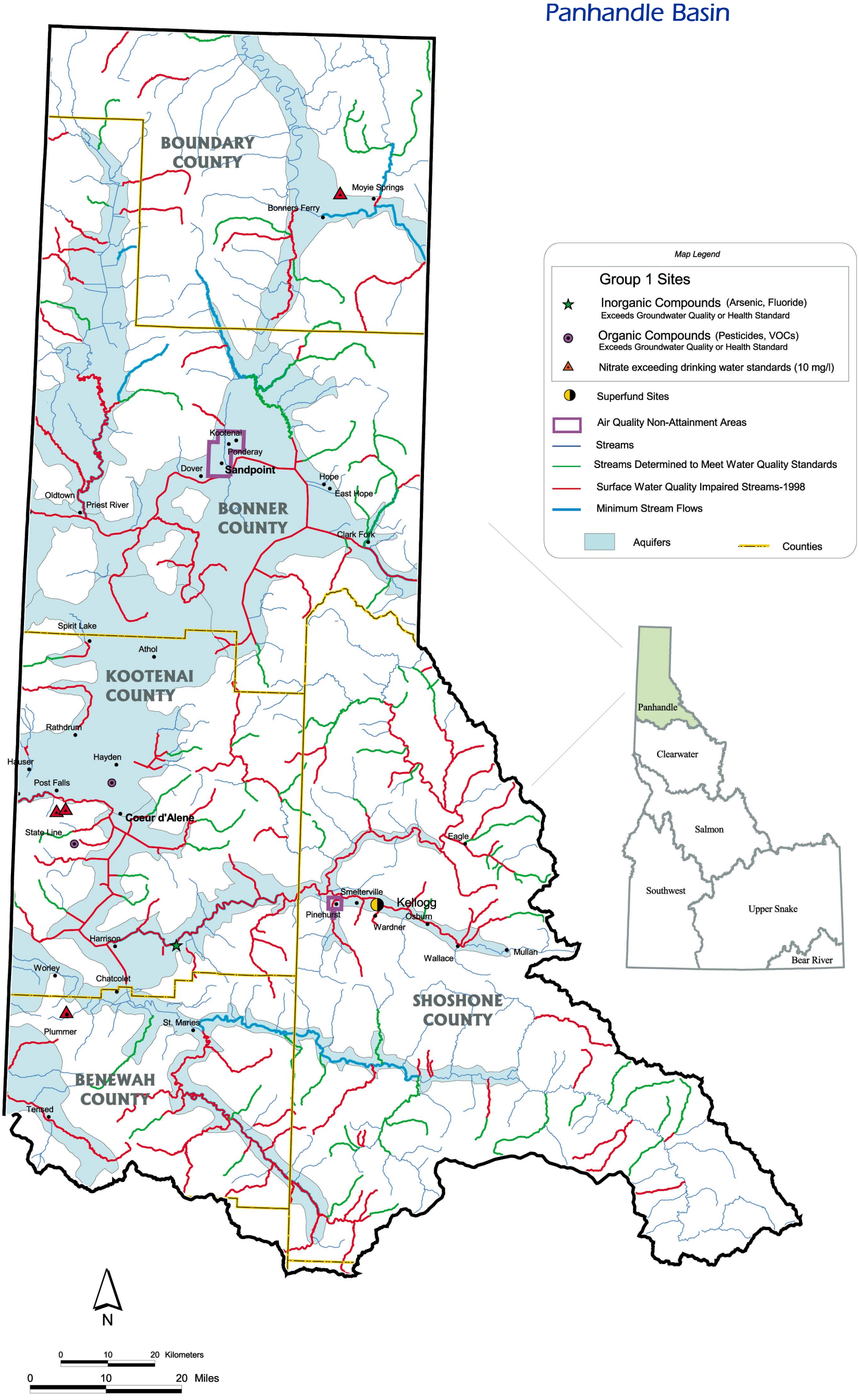
Listed Threatened: Under the federal Endangered Species Act, a threatened species is "any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range."



Endangered Species in Idaho



Panhandle Basin

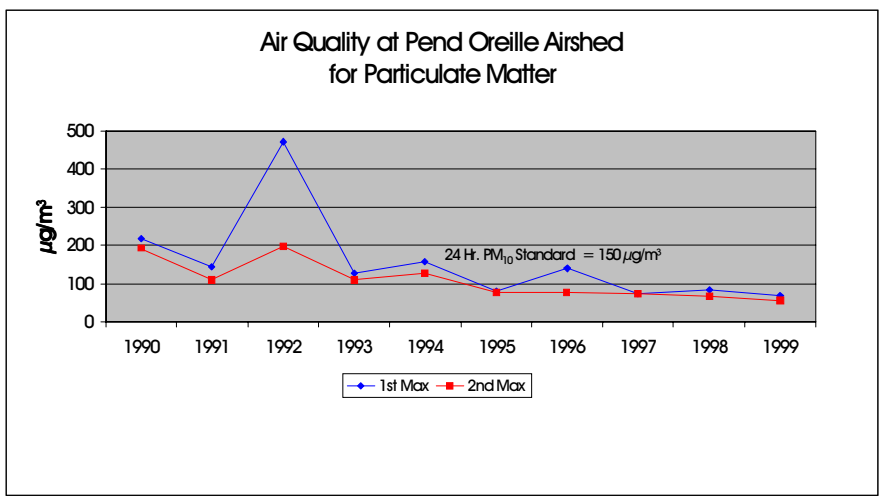


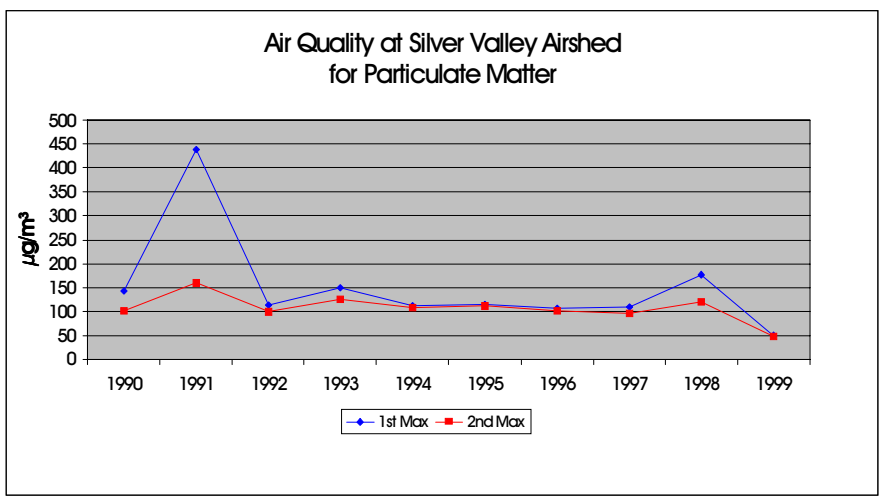
Panhandle

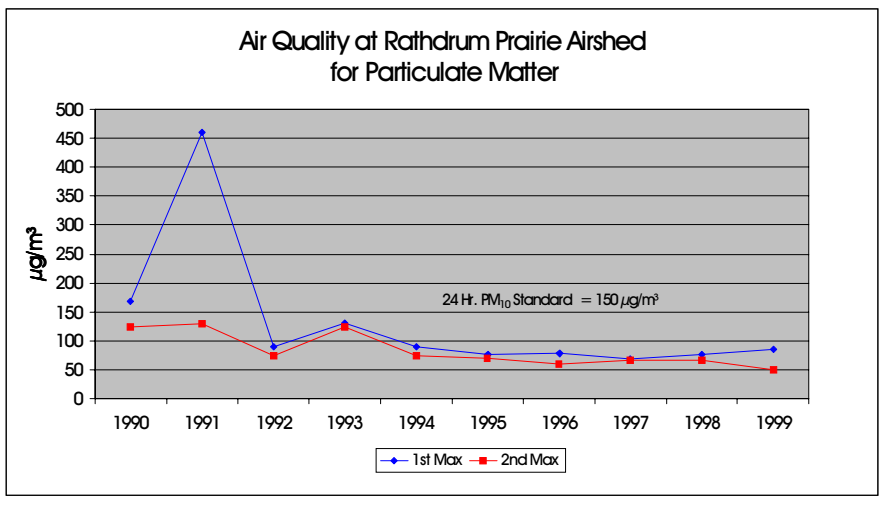
The Panhandle Basin is known for its large lakes — Priest, Pend Oreille, and Coeur d'Alene — as well as numerous smaller lakes. As a result, surface waters are utilized as drinking water sources more than in any other region of the State. The Rathdrum Prairie Aquifer underlies a portion of the basin and is the source of drinking water for over 400,000 people in the region. The Panhandle is heavily forested and the principle industries are timber, mining, and recreation. This basin is drained by the Spokane, Pend Oreille, and Kootenai Rivers.

Air Quality

The Panhandle Air Quality Control Region of North Idaho has three recognized airsheds: the Pend Oreille, Rathdrum Prairie, and Silver Valley. Across the region, the main pollutant of concern is particulate matter. State and federal particulate matter health-based standards have been exceeded at monitoring sites in each of these airsheds during the past fifteen years. These exceedances have triggered federal planning requirements to ensure future compliance with the standards. Wildfires and prescribed fires for agricultural and wild land management contribute to particulate matter pollution. In the Silver Valley, lead is also still a concern from old mine wastes; and in Rathdrum Prairie, carbon monoxide and ozone from transportation sources on both sides of the Idaho-Washington border are a concern. The air quality graphs below show the highest and second highest maximum daily readings of particulate matter from annual monitoring.







Significant Areas of Contamination

The Bunker Hill site is located in the drainage of the Coeur d'Alene River. Cleanup activities have centered on a 21-square-mile inactive industrial mining and smelting area, which includes the communities of Kellogg, Pinehurst, Page, Wardner, and Smelterville. Historic discharges of waste from the mining activities in the area spread metals contamination including cadmium, lead, and zinc throughout the Coeur d'Alene River Basin and downstream to the Spokane River System.

Ground Water

Seven Group 1 Sites of concern have been identified in the Panhandle Basin. (See the "Panhandle Basin" map for locations. See "Definition of Impacted Ground Water Areas and Sites" on page 4 for explanation of these sites.). These sites consist of ground water sampling points that show values greater than the maximum contaminant level for nitrates, organic compounds, or inorganic compounds. (See the "Panhandle Basin" map for locations.)

Ground Water Pollutants of Concern
Panhandle Basin

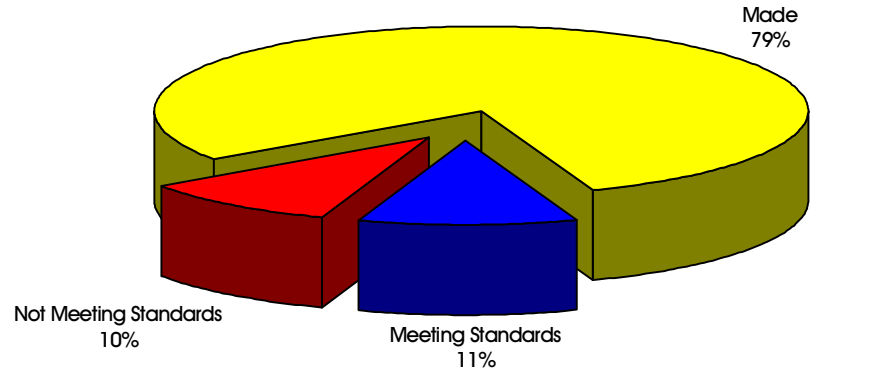
- ✦ Volatile Organic Compounds
  - Perchloroethylene
- ✦ Organics
  - Pesticides
- ✦ Nitrates
- ✦ Semi-volatile Organic Compounds
  - Pentachlorophenol
- ✦ Bunker Hill / Inorganics
  - Lead
  - Zinc
  - Cadmium

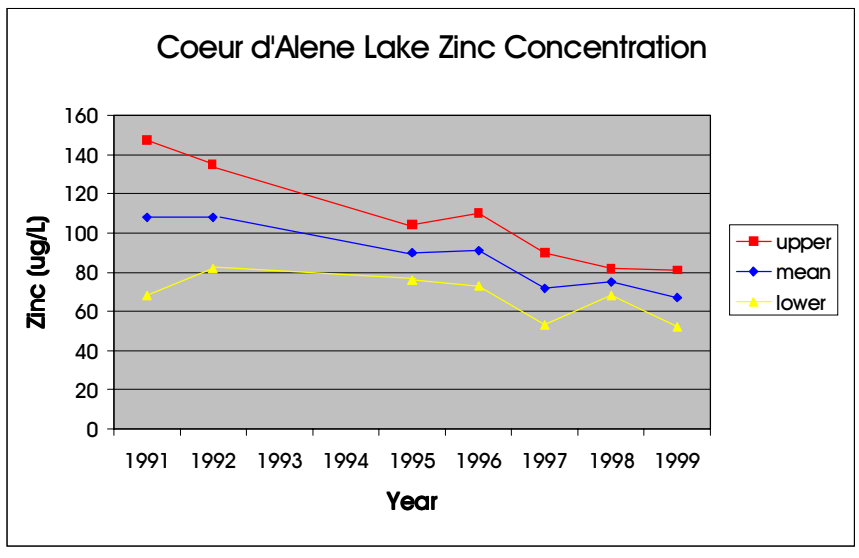
Surface Water

The Panhandle has 8,871 miles of rivers and streams. Approximately 1,856 miles of surface waters have been assessed for water quality in the Panhandle, and 904 of those miles do not meet Idaho water quality standards. The pie chart below shows the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made. The South Fork Coeur d'Alene River and its tributaries have elevated metals contamination, which includes cadmium, lead, and zinc. (See the graph below for zinc concentrations.) In addition to metals contamination in the Coeur d'Alene and Spokane River Systems, other water quality impairments of the basin include excessive nutrients, elevated water temperature, and sediment.

Surface Water Pollutants of Concern
Panhandle Basin

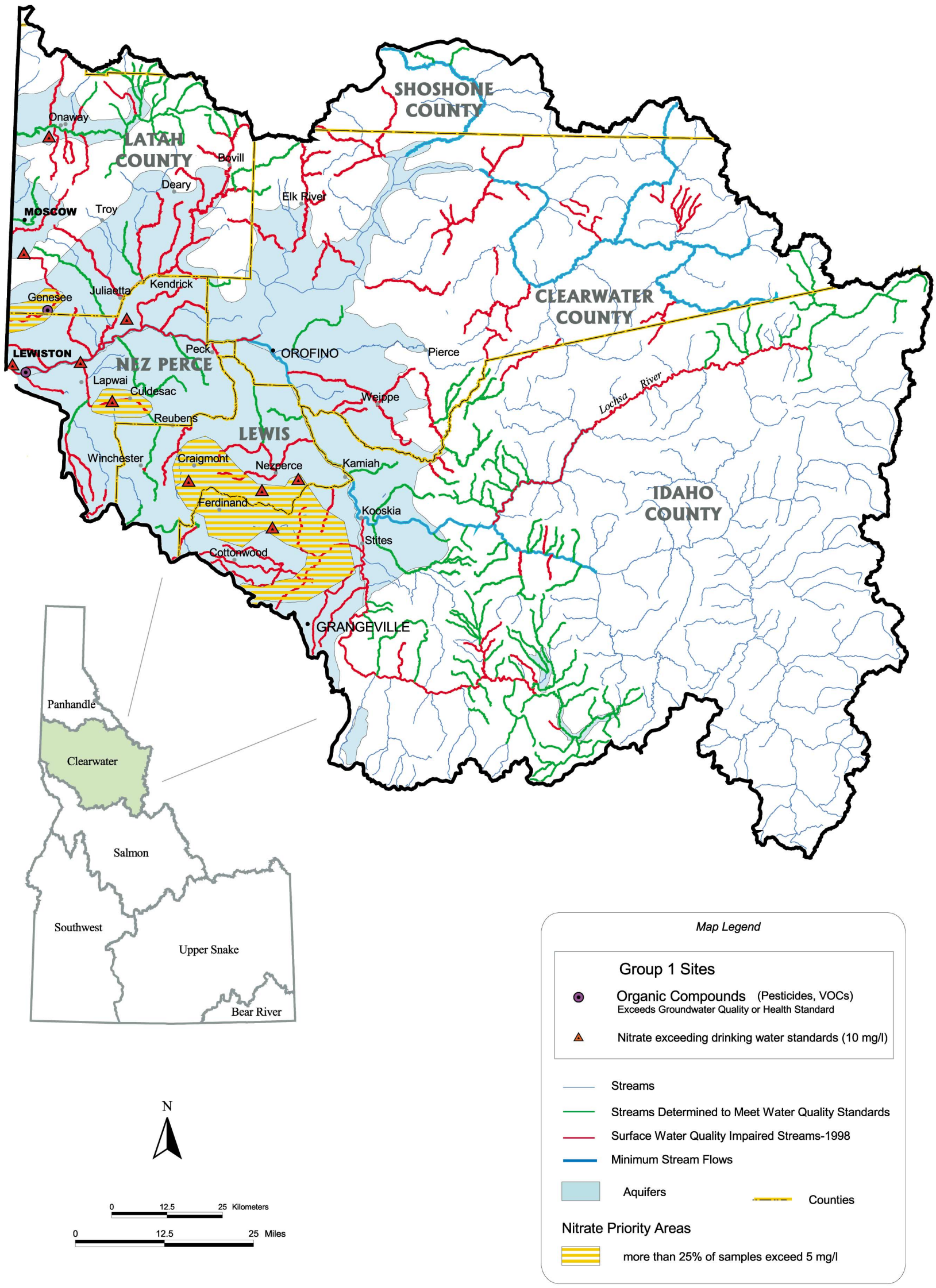
- ✦ Sediments
- ✦ Nutrients
- ✦ Temperature
- ✦ Metals





Measured in three locations north of Coeur d'Alene River, average value for each year, the upper bound of one standard deviation and the lower bound of one standard deviation.

Clearwater Basin

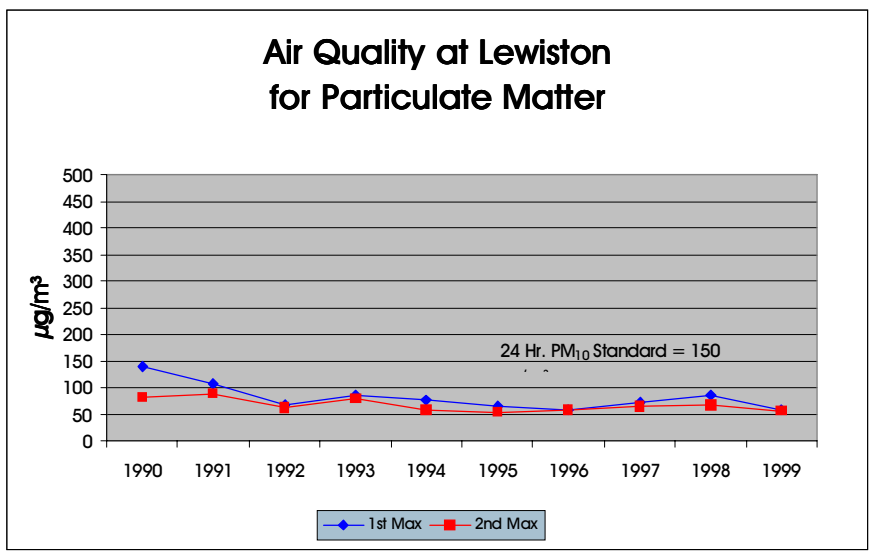


Clearwater

The topography of the Clearwater Basin is characterized by rugged mountainous terrain, coniferous woodland, and the rolling, fertile hills of the Palouse prairie, which is utilized for non-irrigated crop production and rangeland. The majority of the land is public and managed by the U.S. Forest Service. The remaining lands — which are either private, State, or tribal owned — are in the western portion of the basin. The basin is bound by the St. Joe River to the north, the Salmon River to the south, and the Bitteroot Mountain range to the east. The region enjoys consistent precipitation and weather that supports extensive farming of winter wheat and other crops.

Air Quality

The Clearwater Air Quality Control Region has sources of industrially generated particulate matter, odors, and toxic air pollutants; and carbon monoxide from transportation. The area also has large expanses of forest and agricultural production that generate levels of particulate matter from prescribed fires and wild fires. The air quality graph below shows the highest and second highest maximum daily readings of particulate matter from annual monitoring.



Clearwater Air Quality Control Region
Clearwater Airshed
Pollutants of Concern

- Particulate Matter
- Carbon Monoxide
- Hazardous Air Pollutants/Toxic Air Pollutants
- Odors

Ground Water

While the Clearwater Basin doesn't have any significant areas of contamination, three Nitrate Priority Areas and ten Group 1 Sites of concern have been identified. (See the "Clearwater Basin" map for locations. See "Definition of Impacted Ground Water Areas and Sites" on page 4 for explanation of these sites.) These sites consist of sampling points that show values greater than the maximum contaminant level (mcl) for nitrates and organic compounds.

Ground Water Pollutants of Concern
Clearwater Basin

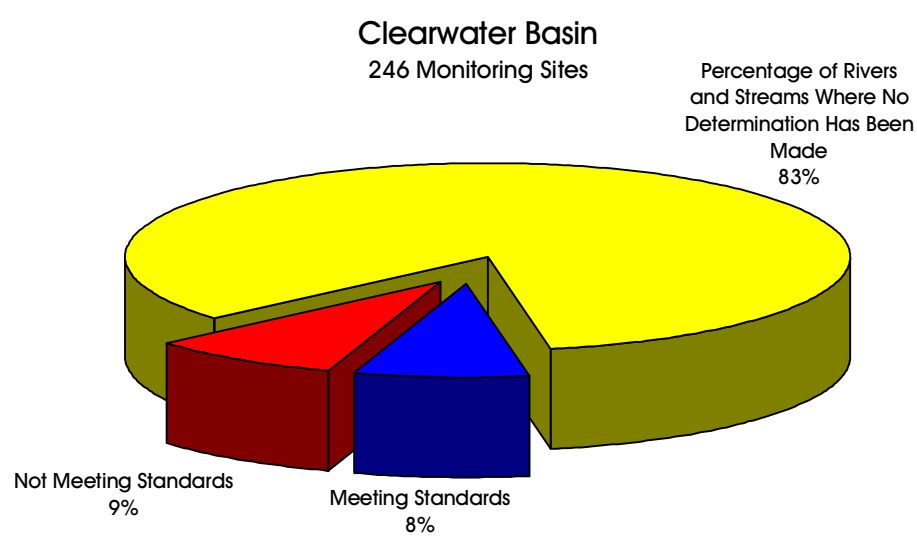
- Nitrates
- Volatile Organic Compounds
  - Gasoline
- Semi-volatile Organic Compounds
  - Diesel
- Organics
  - Pesticides

Surface Water

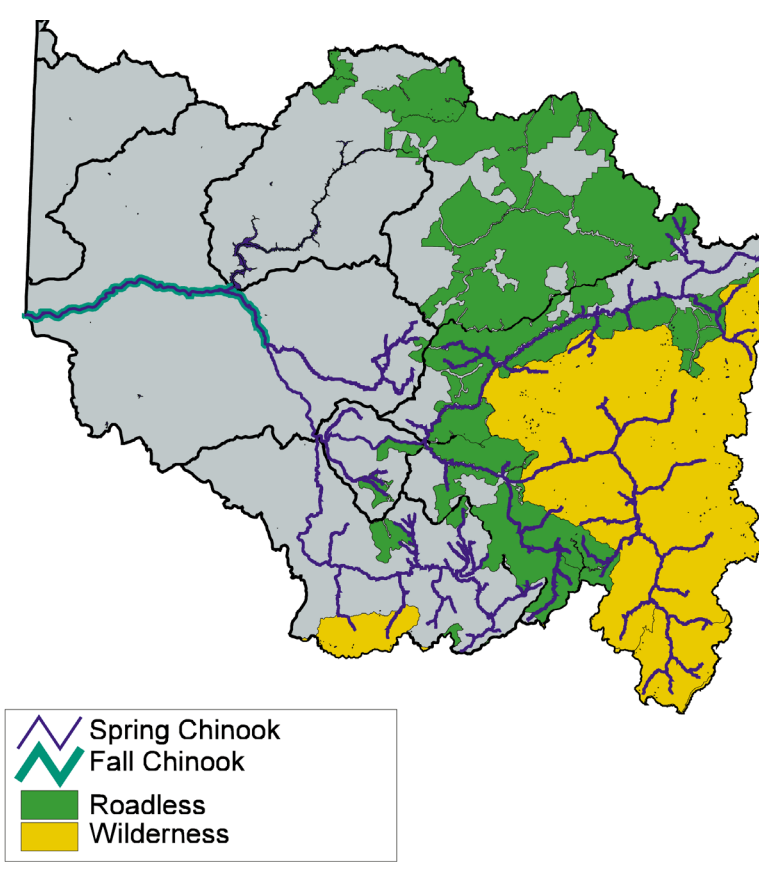
Water quality priorities in this basin include support of anadromous fish runs (steelhead trout, Chinook salmon, and sockeye salmon); bull trout populations, and surface water supplied drinking water systems. There are 12,674 miles of rivers and streams in the basin. 2,064 miles of surface waters have been assessed for water quality. Of those, the basin currently has 1,078 miles of water quality limited water bodies. Water quality impairments are typically caused by excessive nutrients such as phosphorous and nitrogen, elevated water temperatures, and sediment. The pie chart below shows the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made.

Surface Water Pollutants of Concern
Clearwater Basin

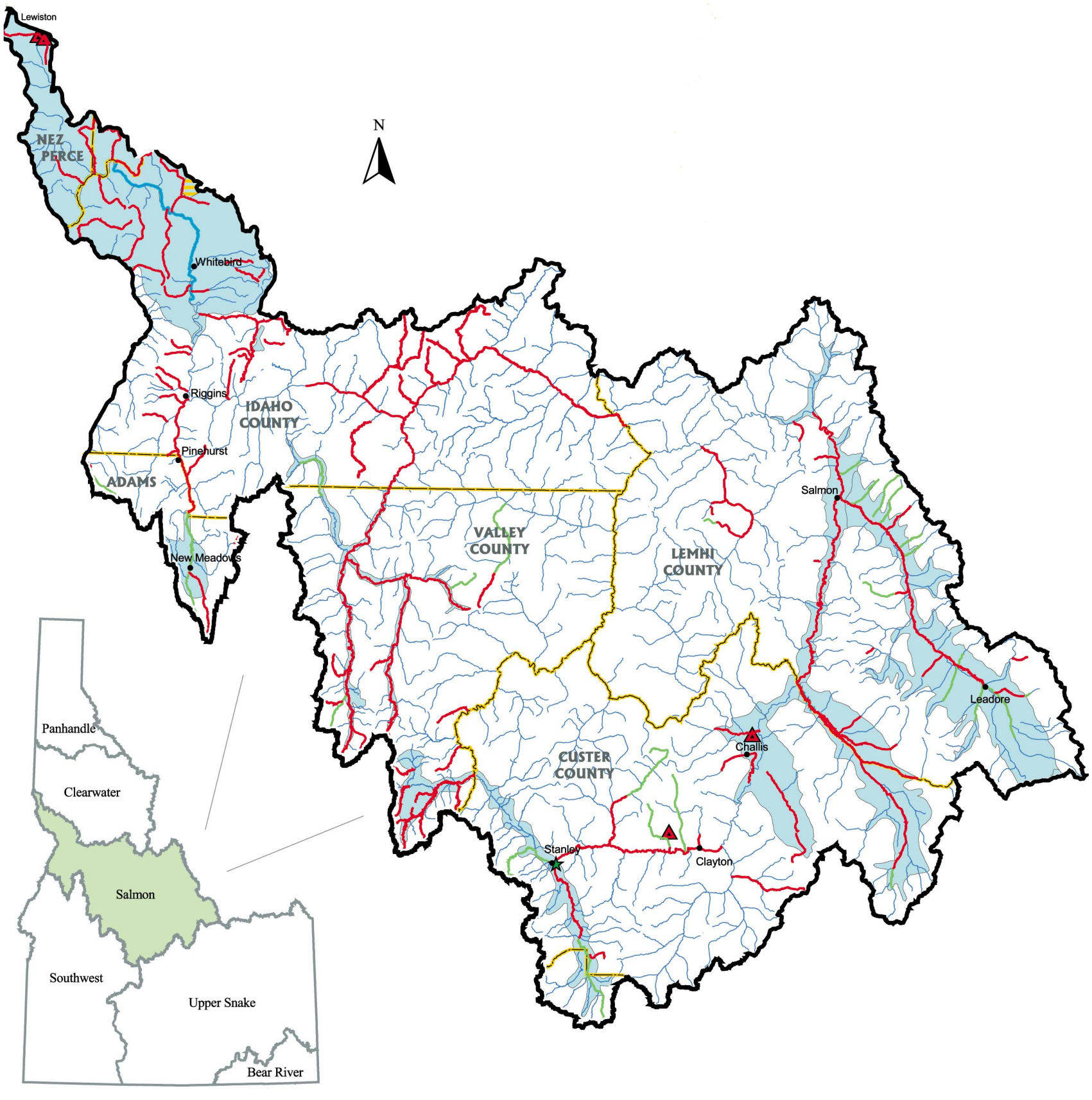
- Sediments
- Nutrients
- Temperature



Salmon Habitat and Land Designation in the Clearwater Basin



Salmon Basin



Map Legend

Group 1 Sites

- Inorganic Compounds (Arsenic, Fluroide)
  Exceeds Groundwater Quality or Health Standard
- Nitrate exceeding drinking water standard (10 mg/l)

- Streams
- Streams Determined to Meet Water Quality Standards
- Surface Water Quality Impaired Streams-1998
- Minimum Stream Flows

Nitrate Priority Areas

- more than 25 % of samples exceed 5 mg/l

- Aquifers
- Counties

0 25 50 Kilometers

0 25 50 Miles

Salmon

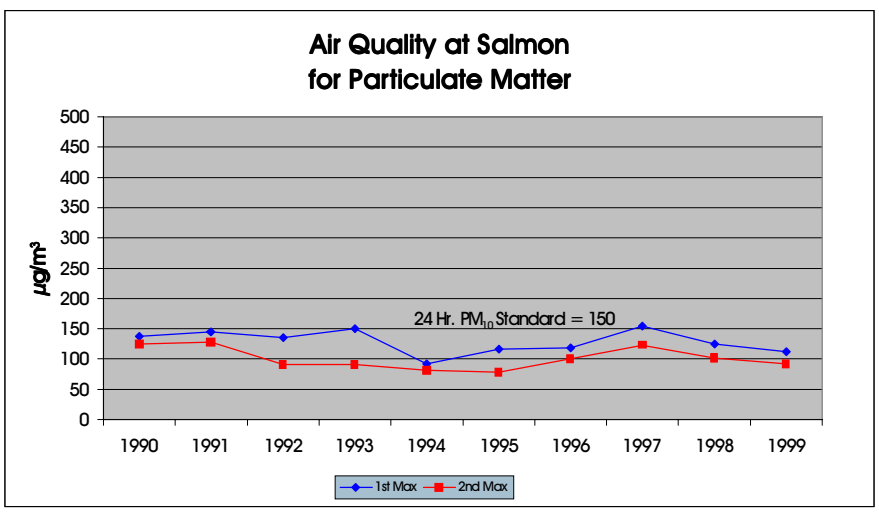
The Salmon Basin is named for the wild fish and wild river that dominate the area. The headwaters of the Salmon River drain the eastern portion of the Sawtooth Mountain Range. Most of the basin is delineated by forks of the main Salmon River. The Frank Church River of No Return Wilderness and other large tracts of roadless wilderness areas comprise much of this region. The rugged mountainous terrain and the rivers and tributaries provide spawning habitat for anadromous salmon. Of all the Idaho regions, the Salmon region incurred the most damage from the wild fires during the summer of 2000.

Air Quality

The Salmon Air Quality Control Region includes Idaho's largest wilderness area. The majority of the land in this region is managed by the U.S. Forest Service and the Bureau of Land Management. Particulate matter from wild fires and prescribed burning dominate air quality concerns. The particulate matter health-based standards were exceeded at several monitoring sites in the city of Salmon during the summer wildfires of 2000. Previous particulate matter monitoring in the airshed has indicated some air quality degradation due to woodstove and fireplace usage. The air quality graph below shows the highest and second highest maximum daily readings of particulate matter from annual monitoring.

Salmon Air Quality Control Region
Pollutants of Concern

- Particulate Matter
- Hazardous Air Pollutants/Toxic Air Pollutants



Ground Water

The Salmon Basin contains a small portion of a Nitrate Priority Area in the northwest part of the basin. Also, identified are four Nitrate Group 1 Sites and one organic compound site. (See the "Salmon Basin" map for locations. See "Definition of Impacted Ground Water Areas and Sites" on page 4 for explanation of these sites.)

Ground Water Pollutants of Concern
Salmon Basin

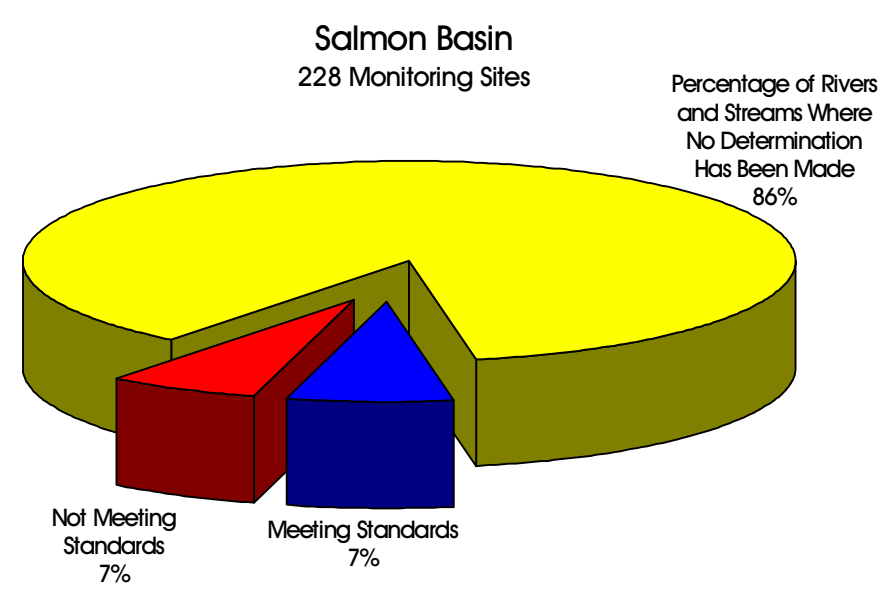
- Organics
  - Pesticides
- Nitrates

Surface Water

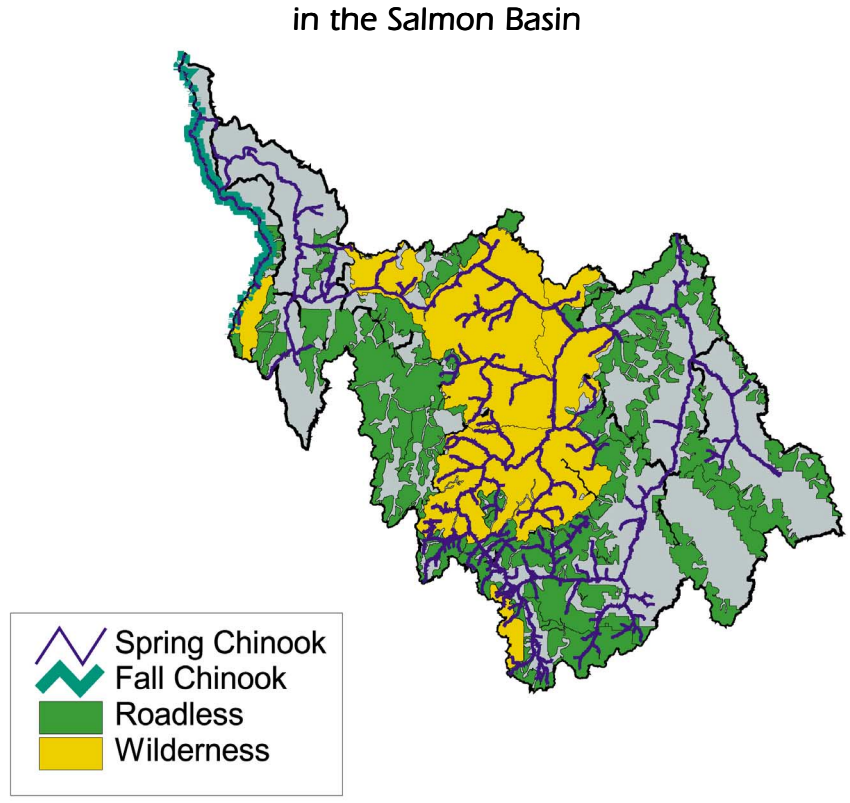
In the Salmon Basin, the primary surface water pollutant of concern is sediment. Drainages such as Yankee Fork, Panther Creek, and Blackbird Creek are impacted by metals contamination and streambank modification. The Lemhi River and its tributaries are impacted by sediment, nutrients, flow alteration, and temperature. There are 17,879 miles of rivers and streams in the basin. Approximately 2,400 miles of surface water have been assessed for water quality; 1,179 miles do not meet Idaho water quality standards. The pie chart below shows the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made. The Salmon Basin contains the largest amount of habitat for anadromous fish including the Chinook and Sockeye salmon. (See the "Salmon Habitat and Land Designation" map below.)

Surface Water Pollutants of Concern
Salmon Basin

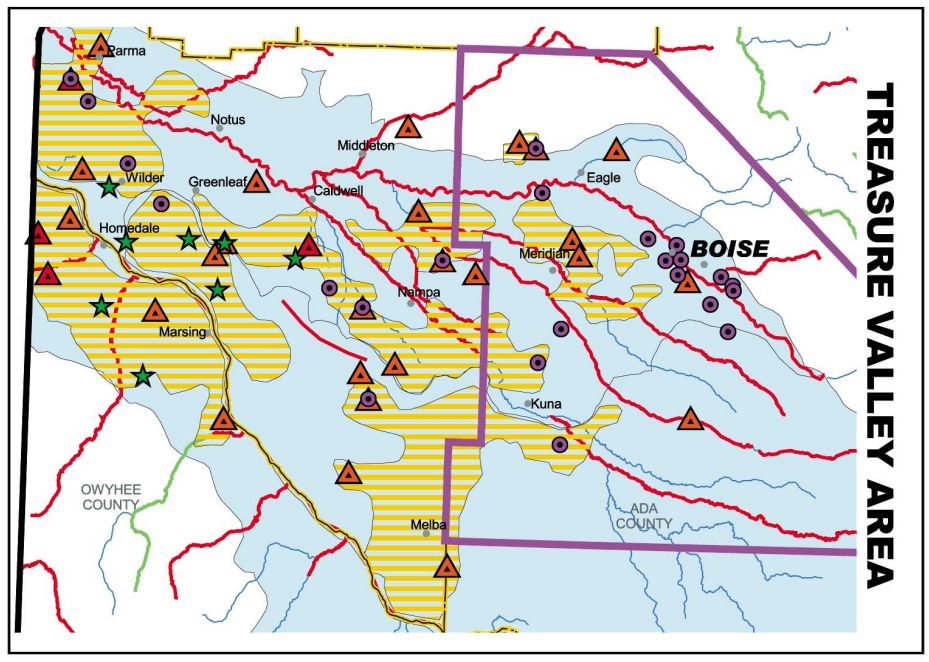
- Sediments
- Nutrients
- Temperature

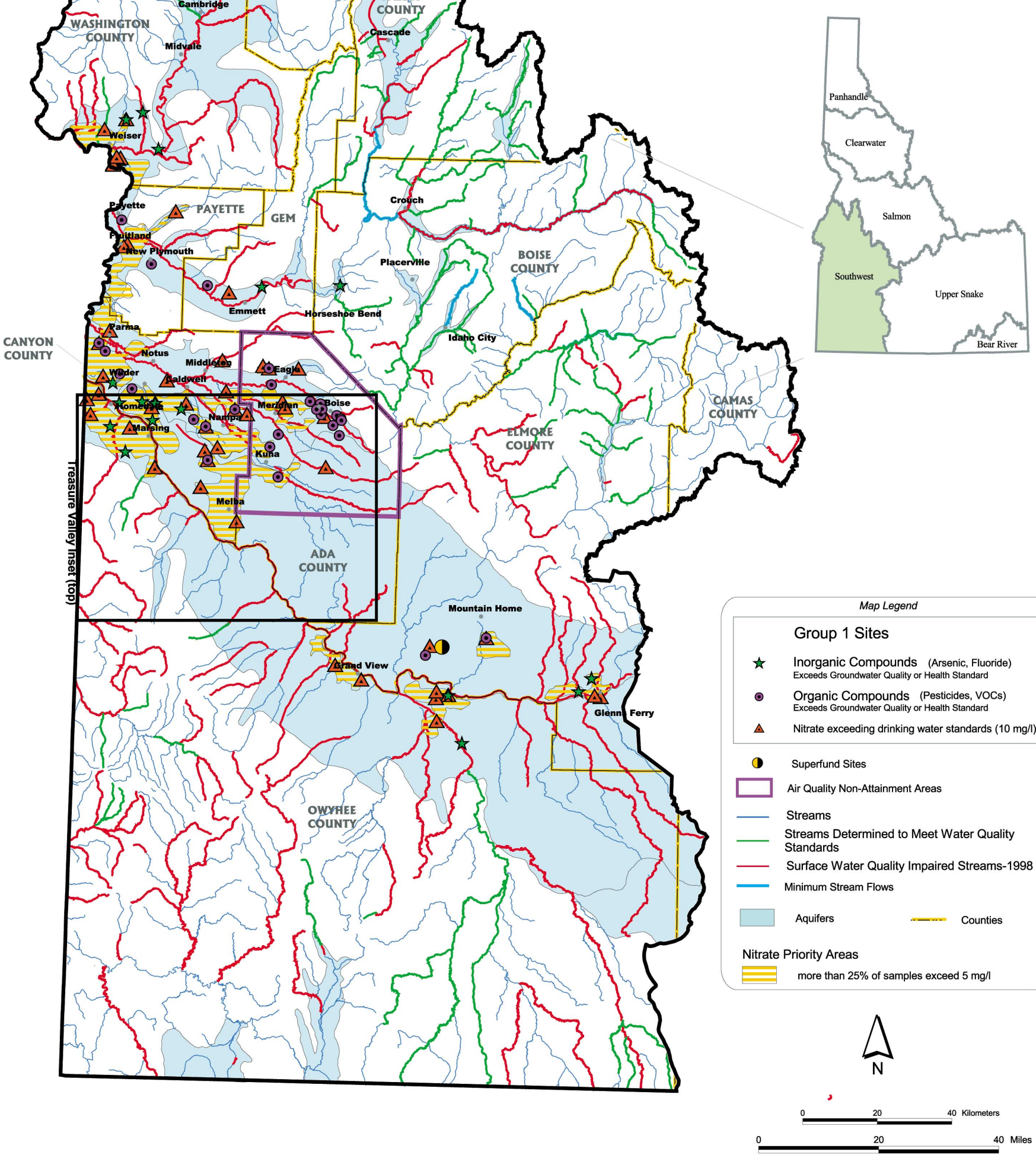


Salmon Habitat and Land Designation
in the Salmon Basin



Southwest Basin





Southwest

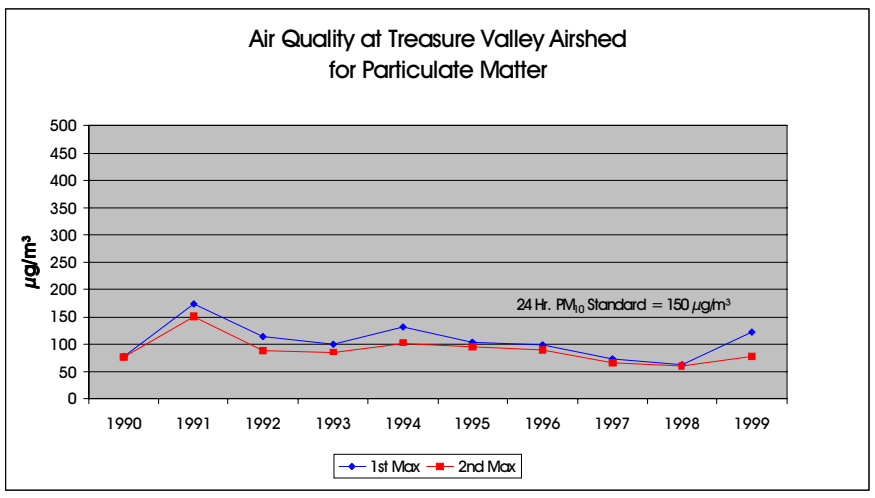
The Southwest Basin ranges from mountains to high plateaus with several major river valleys. This region includes forest land with active timber harvesting, past and current mines, and extensive desert range land. The mountainous areas north of the Snake River include the Boise and Payette Rivers and the recreational areas of McCall/Cascade. The urban Treasure Valley — with the cities of Boise, Meridian, Nampa, and Caldwell — is the population center of the State. The rural Treasure Valley produces over 70 cash crops, including sugar beets, onions, mint, corn, and fruit. The area south of the Snake River is high, semi-desert plateau. The Bruneau River system is composed of two rivers, the Bruneau and Jarbidge, which flow north from Nevada's Humbolt Mountains.

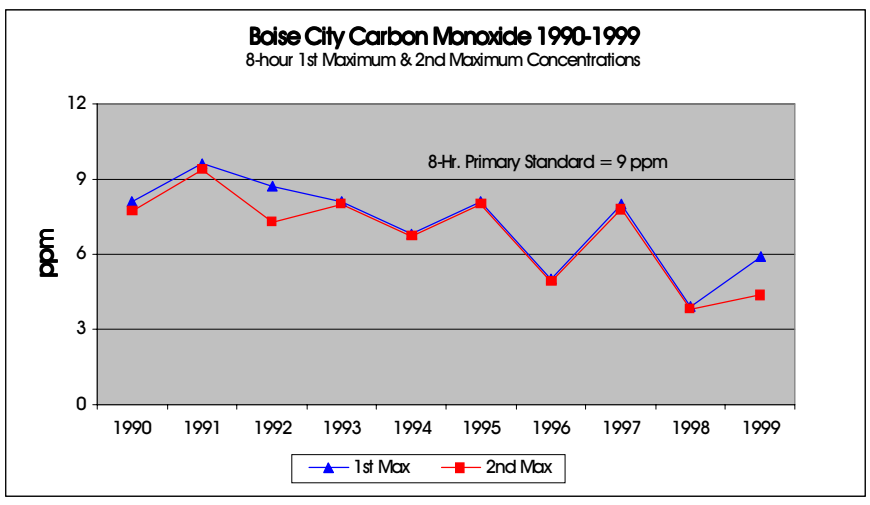
Air Quality

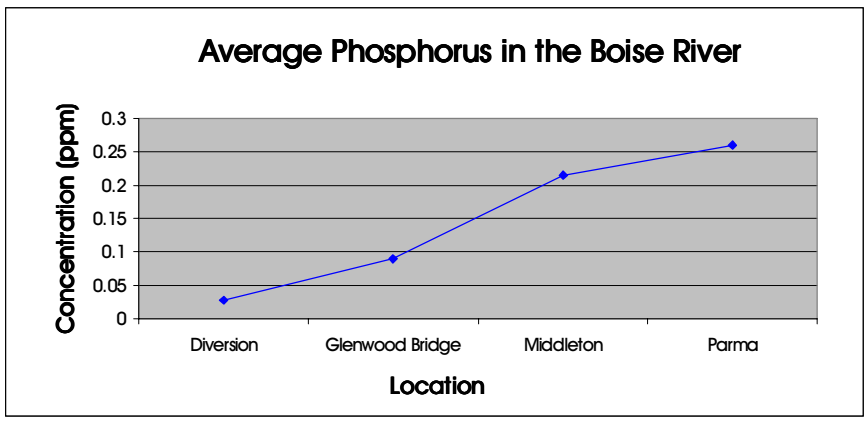
The Southwest Air Quality Control Region extends from the forested areas around McCall, south to the Nevada border, and east to include Mountain Home. This region's air quality concerns are dominated by the urban areas within the Treasure Valley Airshed. These thriving urban areas have a variety of industrial, transportation, and growth-related sources of air pollution. The primary pollutant of concern is particulate matter. Particulate matter monitoring sites in the Treasure Valley Airshed have recorded several exceedances of the State and federal health-based particulate matter standards over the past fifteen years. Exceedances of these standards have activated federal planning requirements in parts of the airshed. DEQ is addressing these federal requirements through its airshed management strategy for the entire Treasure Valley Airshed. Carbon monoxide, ozone, nitrogen oxides, and toxic air pollutants are also a concern for this airshed. The air quality graph below shows the highest and second highest maximum daily readings of particulate matter and carbon monoxide from annual monitoring.

Southwest Air Quality Control Region
Treasure Valley Airshed
Pollutants of Concern

- ✦ Particulate Matter
- ✦ Carbon Monoxide
- ✦ Ozone
- ✦ Hazardous Air Pollutants / Toxic Air Pollutants
- ✦ Nitrogen Oxides







Ground Water

The Southwest Basin contains fourteen Nitrate Priority Areas and dozens of Group 1 Sites. (See the "Southwest Basin" map for locations. See "Definition of Impacted Ground Water Areas and Sites" on page 4 for explanation of these sites.) Contaminants at the Group 1 Sites consist of nitrate, inorganic compounds, and organic compounds.

Ground Water Pollutants of Concern
Southwest Basin

- ✦ Volatile Organic Compounds
  - Perchloroethylene
  - Trichloroethylene
  - Gasoline
- ✦ Semi-volatile Organic Compounds
  - Diesel
- ✦ Nitrates
- ✦ Organics
  - Pesticides
- ✦ Inorganics
  - Arsenic
  - Fluoride

Ground Water Pollutants of Concern
Mountain Home Air Force Base

- ✦ Volatile Organic Compounds
  - Benzene
  - Trichloroethylene

Significant Areas of Contamination

In the Treasure Valley area, there are numerous soil and ground water sites impacted by contaminants such as perchloroethylene, trichloroethylene, and petroleum hydrocarbons. Pesticides are also a contaminant of concern throughout the Southwest Basin.

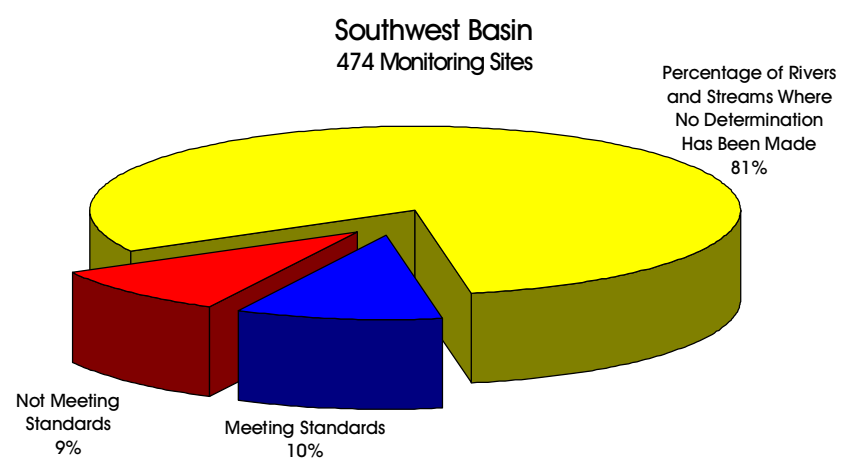
Under the Mountain Home Air Force Base, ground water is contaminated with trichloroethylene and a shallow aquifer with benzene. The benzene contamination area is approximately 250 feet by 500 feet and contains levels significantly above drinking water standards.

Surface Water

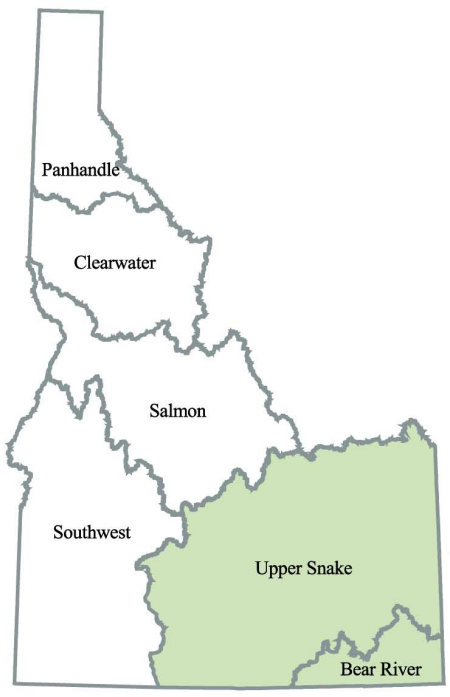
In the Southwest Basin, phosphorous and nitrogen are impacting water quality in Cascade Reservoir. High phosphorous contributions from the surrounding watershed are causing significant deterioration in the reservoir. In Big Payette Lake, phosphorous and nitrogen loading and decreased dissolved oxygen are of concern. The lower Boise River is affected by increased levels of phosphorous and nitrogen, and high temperatures. Pollutants from both the lower Boise River and the Payette River affect water quality in the lower Snake River. There are approximately 22,472 miles of rivers and streams in the Southwest Basin. 4,743 water bodies have been assessed for water quality, and 2,600 miles do not meet water quality standards. The pie chart below shows the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made.

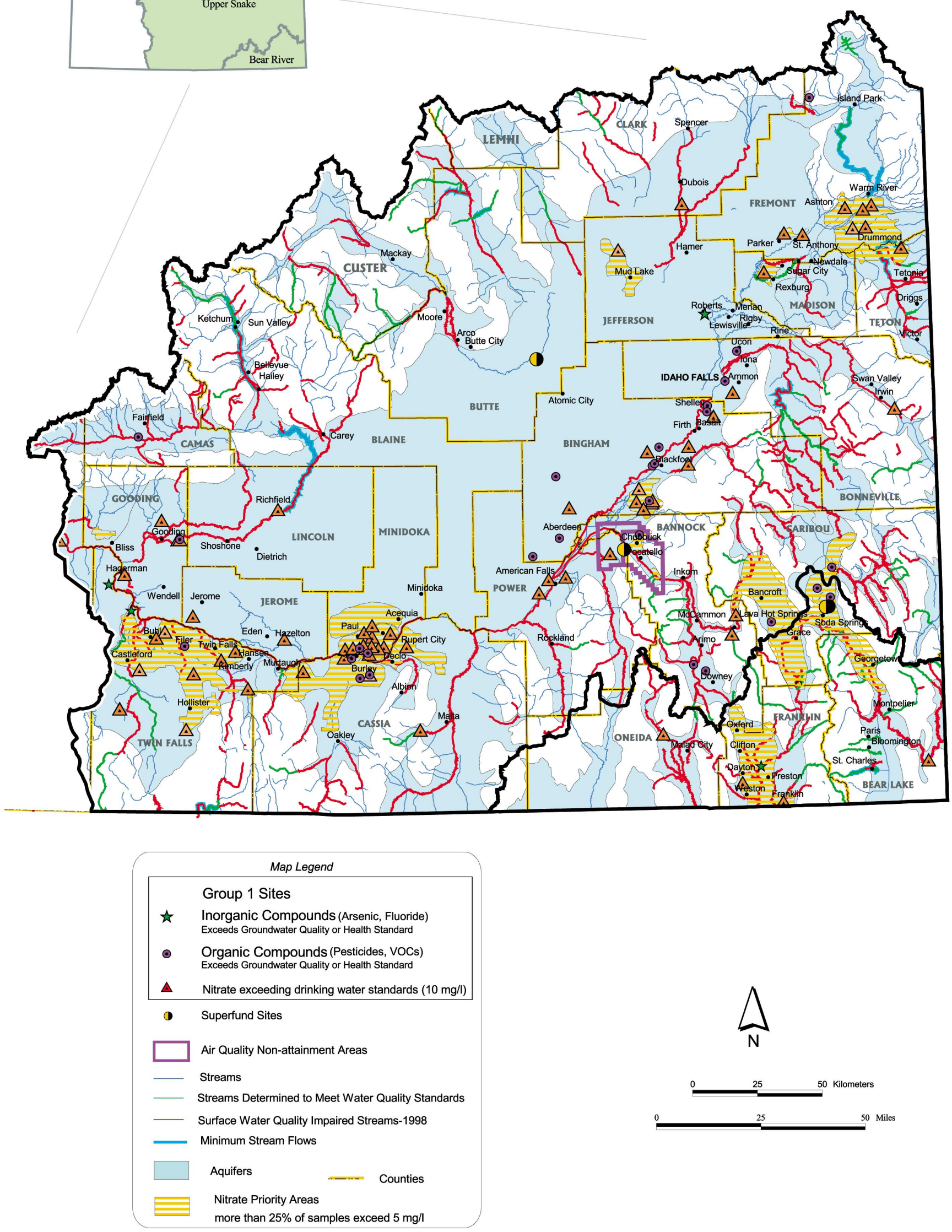
Surface Water Pollutants of Concern
Southwest Basin

- ✦ Sediments
- ✦ Nutrients
- ✦ Temperature
- ✦ Bacteria



Upper Snake / Bear River Basin





Upper Snake and Bear River

The Upper Snake Basin borders the great Continental Divide to the north and east. The upper basin is characterized by mountainous terrain and flat to gently sloping plains, changing to semi-desert in the plateau lands. The numerous mountain ranges drain to the Snake River and the Snake River Plain Aquifer, one of the largest aquifers in the United States. This is one of the most productive agricultural areas in the country, producing sugar beets, corn, potatoes, and dry beans. The Magic Valley has a large number of dairy farms and related cheese and whey processing facilities, and over 100 fish hatcheries, which produce 70 percent of the commercially produced hatchery trout in the U.S. The area also contains the Idaho National Engineering and Environmental Laboratory (INEEL), an 890-square mile federal research facility.

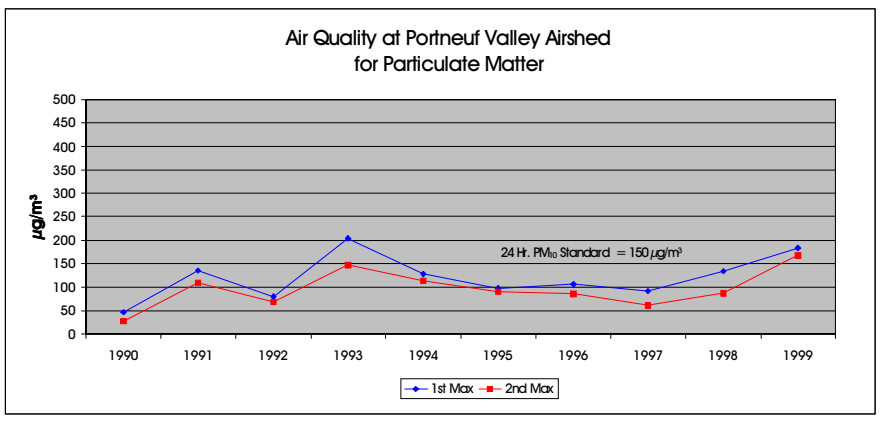
The southeast and eastern portions of the State are known for phosphate mining and processing, fishing at Bear Lake, Island Park, Henry's Fork, hot springs, and agriculture production. Three large water-supply reservoirs dominate the edge of the Snake River Plain: the American Falls Reservoir on the upper Snake River; the Palisades Reservoir on the Snake River at the Idaho/Wyoming border; and the Blackfoot Reservoir in the upper Blackfoot River. The Bear River system is unique in that it begins in Utah, travels through Wyoming and Idaho, and ends in Utah in the Great Salt Lake. Bear Lake is distinctive for its robin-egg blue color, derived from the calcium carbonate content (limestone) in the lake.

Air Quality

The Upper Snake River Air Quality Control Region covers an area east of Mountain Home all the way to Wyoming. This area has, in its eastern corner, Idaho's heaviest industrial area in the Portneuf Valley Airshed. This critical airshed has very significant issues with particulate matter, including secondary aerosols (sulfates and nitrates). State and federal health-based particulate matter standards have been exceeded at several monitoring sites in the Portneuf Valley Airshed during the past decade. Agricultural and wild lands dominate the rest of this large air quality control region. There are significant particulate matter sources from industrial facilities in Twin Falls, Pocatello, and at the INEEL. Odors from agricultural and food industries cause significant complaints along the mid-Snake River in the Twin Falls airshed. Across the rural areas of this air quality control region, wildfires and prescribed fires for agricultural and wildland management can and do cause significant particulate matter pollution. The air quality graph below shows the highest and second highest maximum daily readings of particulate matter from annual monitoring.

Upper Snake River Air Quality Control Region
Portneuf Valley Airshed — Pollutants of Concern

- ✦ Particulate Matter
- ✦ Ozone
- ✦ Sulfur Dioxide
- ✦ Hazardous Air Pollutants/ Toxic Air Pollutants



Surface Water

The water quality concerns of the upper and middle portions of the Snake River include high nutrient levels, temperature, and a lack of dissolved oxygen. (See the "Phosphorus Loadings" graph at right.) Both the Portneuf River and Bear River systems are adversely affected by sediment, phosphorous, or nitrogen problems. There are approximately 58,385 miles of streams and rivers in the Upper Snake and Bear River Basins. 3,457 stream miles have been assessed for water quality. Of those, the basin currently has 2,930 miles which do not meet water quality standards. The pie charts show the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made.

Surface Water Pollutants of Concern
Upper Snake/Bear River Basins

- ✦ Sediments
- ✦ Temperature
- ✦ Selenium
- ✦ Nutrients
- ✦ Bacteria

Ground Water

The Upper Snake and Bear River Basins contain sixteen Nitrate Priority Areas and dozens of Group 1 Sites (see "Definition of Impacted Ground Water Areas and Sites" on page 4). The Group 1 Sites consist of nitrate, inorganic compounds, and organic compounds. The INEEL contains Group 1 Sites consisting of radionuclides, organic and inorganic compounds. (See "Upper Snake and Bear River" map for locations.)

Significant Areas of Contamination

The INEEL consists of several large facilities which contribute contaminants to, and take water from the Snake River Aquifer. Ground water contamination from past activities persists; however, in the last ten years, contamination to the aquifer under the INEEL has been reduced. Contaminants found in ground water from the INEEL include hexavalent chromium, iodine-29, strontium-90, tritium, carbon tetrachloride, and trichloroethylene. Contaminants found in the soil include heavy metals such as lead and mercury, volatile organic compounds, and radioactive materials.

Ground water beneath industrial phosphate processing sites near Soda Springs is contaminated with cadmium, selenium, vanadium, fluoride, molybdenum, tributyl phosphate, and manganese. Studies have shown that the public drinking water supplies in the area are currently not affected by the contaminated ground water.

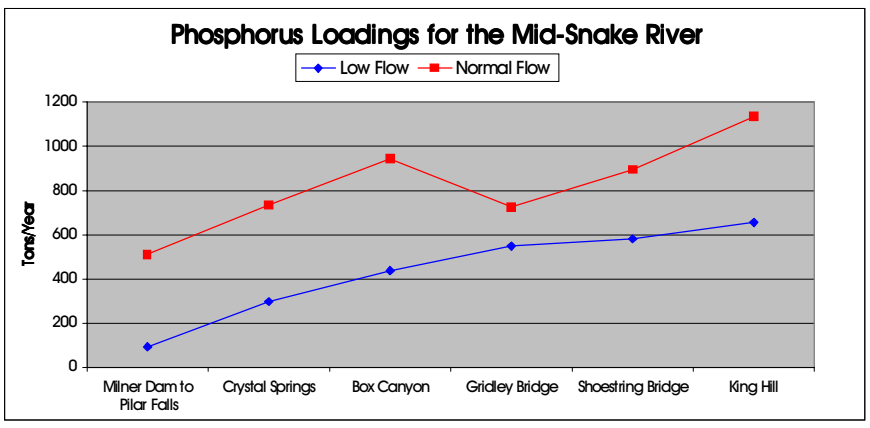
Ground water studies conducted down-gradient of the phosphorous plants northwest of Pocatello have shown that levels of arsenic, lead, and cadmium in the ground water exceed the federal Drinking Water Standards. Off-site soil contaminants include radium-226, zinc, cadmium, fluoride, and total phosphorous. On-site soil contamination includes cadmium, chromium, copper, vanadium, radium-226, lead, and nickel.

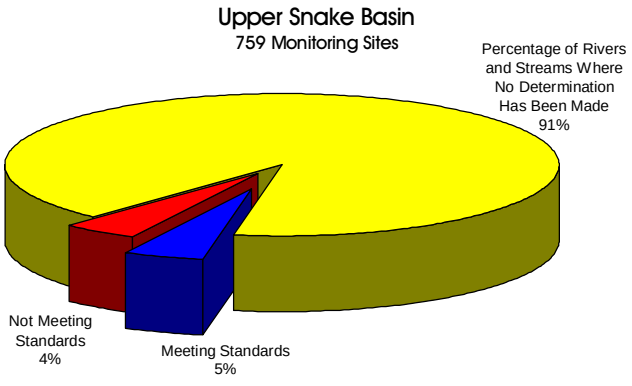
Ground Water Pollutants of Concern
Upper Snake/Bear River Basins

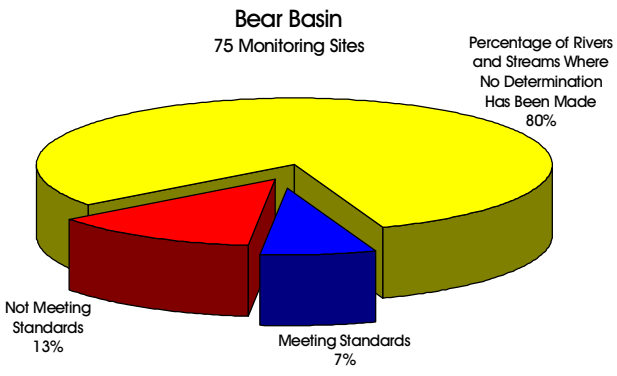
- ✦ Volatile Organic Compounds
  - Perchloroethylene
  - Trichloroethylene
  - Gasoline
- ✦ Organics
  - Pesticides
- ✦ Inorganics
  - Fluoride
  - Selenium
- ✦ Nitrates

INEEL Pollutants of Concern

- ✦ Volatile Organic Compounds
  - Trichloroethylene
  - Carbon Tetrachloride
- ✦ Radionuclides
- ✦ Nitrates
- ✦ Inorganics
  - Mercury
  - Lead
  - Cadmium
  - Arsenic
  - Chloride
  - Selenium
  - Chromium
  - Vanadium
  - Manganese
  - Molybdenum
  - Tributyl Phosphate
  - Fluoride







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