

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF IDAHO

SUMMARY OF STATE WATER PLANNING

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Civil Works Directorate
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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

STATE OF IDAHO

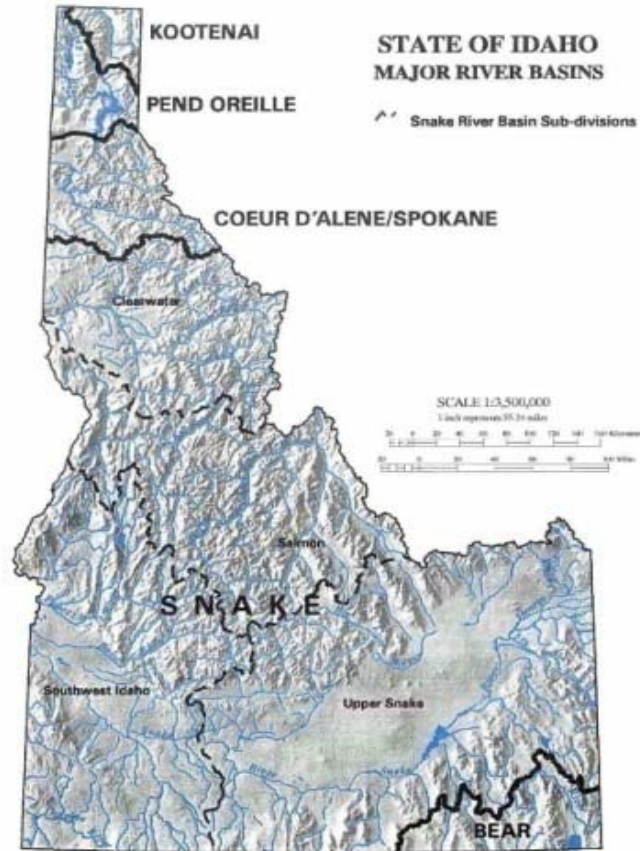


Figure 1. Idaho's 5 Major River Basins

1. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

The **Idaho Water Resource Board** (Board), <http://www.idwr.idaho.gov/waterboard/>, is responsible for Idaho's water resources planning. The main duties of the Board are to provide support in matters concerning "comprehensive basin planning", protected rivers designations, minimum stream flow program, water project financing, water supply banks and water rentals." The Board consists of eight members who are appointed by Idaho's governor and serve four year terms. The Board is a separate entity from the Idaho Department of Water Resources although they work together closely. The Director of the Department of Water Resources provides administrative support, including staff, to the Board to help carry out its powers and duties.

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A short summary of the roles and responsibilities of the Board and the relationship with Department of Water Resources is provided below:

Article XV, Section 7 of the Idaho Constitution called for the creation of a “Water Resource Agency” but did not establish the agency. In 1965, the 38th legislature established the Idaho Water Resource Board and defined its organization, powers and duties. The organization and duties of the Board are outlined in Idaho Code Title 42, Section 1732 through 1780. A key responsibility of the Board is, subject to legislative approval to “formulate and adopt a comprehensive state water plan for conservation, development, management and optimum use of all unappropriated water resources and waterways of the state in the public interest.”

The Board and the Department of Water Resources staff merged in 1974 and Idaho Code 42-1732 was modified to put the Board within the Idaho Department of Water Resources. To assist the Board, the legislature added to the Additional Duties of the Director, Idaho Code 42-1805(6) “to perform administrative duties and such other functions as the Board

may from time to time assign to the Director to enable the Board to carry out its powers and duties.” The Board and the Department are separate entities, with separate duties, responsibilities and authorities. The Board is responsible for planning, and associated programs; the Department is responsible for water management, administration and enforcement. The Water Planning Bureau is within the Department, but supports the Board programs and activities. The Board does not directly have any staff.

The Department of Water Resources has two main divisions.

(1) **Water Management Division** which consist of:

Resource Protection Bureau

Dam Safety Section

Ground Water Protection Section

Flood Plain Mgt. Unit

Stream Channel Protection

Water Allocation Bureau

Water Rights Permits Section

Water Distribution Section

Adjudication Bureau

(2) **Planning and Technical Services Division** which consists of:

Water Planning Bureau

Water Planning

Minimum Stream Flows

Water Project Funding

Technical Services Bureau

Geospatial Technology Section

Hydrology Section

2. STATE/REGIONAL WATER PLANNING STATUS

The Idaho Water Resource Board is responsible for planning for the conservation, development, use, and management of water resources in the State of Idaho. Planning is accomplished through three primary programs:

- Idaho State Water Plan
- Comprehensive basin planning
- Comprehensive aquifer planning

The State Water Plan contains policies which are the guiding framework for water resources in Idaho. Comprehensive basin planning is a component of the State Water

Plan in which regional water resources in a specific river basin, waterway, aquifer, or geologic areas are inventoried, assessed, and values are protected. The comprehensive aquifer planning program is designed to plan for addressing future water needs and proactively avoiding conflicts over competing water needs in the future.

The State of Idaho published its first comprehensive water plan in 1976. The Plan was updated in 1982, 1986, 1992 and the current plan was published in 1996. The State of Idaho's major water planning document categories include:

- The 1996 State Water Plan; includes policies.
- Eleven individual River Basin Plans which cover specific geographic areas of the state.
- One comprehensive aquifer plan for the Eastern Snake Plain Aquifer, adopted in January 2009. There are two basins in progress, with anticipated completion by December 2012.

In October 2007, the Idaho Water Resource Board began reviewing the 1996 State Water Plan and they are currently updating the water policy component of the Plan. The goal is to have a revision by December 2009. Once a draft revision is completed, the Board will hold public meetings and hearings around the state to gather public comment on the proposed revisions. During this process, the Resource Inventory section of the plan will also be revised and updated by the Planning Bureau staff. The final plan adopted by the Board will be submitted to the Idaho Legislature for approval.

3. WATER MANAGEMENT VISION AND GOALS

The Idaho Water Resources Board was created with the authority to have power to formulate and implement a state water plan for optimum development of water resources in the public interest; to construct and operate water projects; to issue bonds, to be repaid from revenues of projects; to generate and wholesale hydroelectric power at the site of production; to appropriate public waters as trustee for the public; to acquire, transfer and encumber title to real property for water projects and to have control and administrative authority over state land required for water projects; all under such laws as may be prescribed by the Legislature. The Board has two accounts, water management and revolving development that it makes loans and grants for financial assistance for water development and conservation projects. The Board also adopts rules for well construction, well driller licensing, injection wells, geothermal resources, mine tailings impoundments, safety of dams and stream channel alterations, and has authority to designate natural and protected rivers. Finally, the Idaho Water Supply Bank is also the Board's responsibility, as well as implementing legislative mandates as was done in 1995 with managed recharge.

The Idaho Department of Water Resources Strategic Plan identifies the following Mission, Vision and Goals for the Department.

Mission

To serve the people of Idaho by ensuring that water and energy are conserved and available for the sustainability of Idaho's economy, ecosystems, and resulting quality of life.

Vision

To achieve excellence in water and energy management through innovation, efficiency, and effectiveness.

Goals

- Achieving results
- Providing excellent customer service
- Balancing competing values consistent with Idaho law
- Being forward-looking and innovative
- Encouraging professionalism
- Providing a challenging and respectful workplace
- Being fair and compassionate
- Valuing internal and external relationships

The Strategic Plan also identifies the following external factors that may affect goal attainment:

- Availability of funding
- Availability of staff/competition for qualified employees
- Federal and state regulatory actions and mandates
- Weather/drought/natural disasters
- Litigation and court decisions
- Complexity and volume of resource information and data

The Strategic Plan identifies the following Overarching Objectives:

Overarching Objective 1: Implement conjunctive administration of surface water and ground water in basins throughout Idaho.

Overarching Objective 2: Develop additional water storage capabilities, both surface and aquifer, in Idaho.

In addition to the overarching objectives each of the Department's program sections has developed specific objectives. In regard to the Planning and Technical Assistance section, the state is focusing on; aquifer planning and management, improvements to aquifer modeling, modernizing and improving the water right accounting program, and expanding and improving implementation of Geographic Information and Remote Sensing Technologies.

4. SCOPE OF WATER RESOURCE PLANNING

The authority for Idaho's State Water Plan was established with Article XV, Section 7 of the Idaho Constitution. Development of the Plan is guided by Idaho Code, Chapter 17, Title 42, Section 1734A. The statute provides detailed insight into the planning process, purposes, and components as summarized below:

42-1734A. COMPREHENSIVE STATE WATER PLAN. (1) The board shall, subject to legislative approval, progressively formulate, adopt and implement a comprehensive state water plan for conservation, development, management and optimum use of all unappropriated water resources and waterways of this state in the public interest. The comprehensive state water plan shall consist of:

Part A — statewide policies, goals and objectives; and Part B — component water plans for individual waterways, river basins, drainage areas, river reaches, ground water aquifers or other geographic designations. As part of Part B of the comprehensive state water plan, the board may designate selected waterways as protected rivers as provided in this chapter. The comprehensive state water plan shall be based upon studies and public hearings in affected areas at which all interested parties shall be given the opportunity to appear, or to present written testimony in response to published proposals for such policy programs and proposed designations. A minimum of sixty (60) days shall be allowed between publication of a proposal and the date on which no further testimony on the proposal will be accepted. All comments in writing shall be preserved as a part of the record of the board. In adopting a comprehensive state water plan the board shall be guided by these criteria:

- (a) Existing rights, established duties, and the relative priorities of water established in article XV, section 3, of the constitution of the state of Idaho, shall be protected and preserved;*
- (b) Optimum economic development in the interest of and for the benefit of the state as a whole shall be achieved by integration and coordination of the use of water and the augmentation of existing supplies and by protection of designated waterways for all beneficial purposes;*
- (c) Adequate and safe water supplies for human consumption and maximum supplies for other beneficial uses shall be preserved and protected;*
- (d) Subject to prior existing water rights for the beneficial uses now or hereafter prescribed by law, minimum stream flow for aquatic life, recreation and aesthetics and the minimization of pollution and the protection and preservation of waterways in the manner hereafter provided shall be fostered and encouraged and consideration shall be given to the development and protection of water recreation facilities;*
- (e) Watershed conservation practices consistent with sound engineering and economic principles shall be encouraged.*

(2) The board may develop a comprehensive state water plan in stages based upon waterways, river basins, drainage areas, river reaches, groundwater aquifers, or other geographic considerations. The component of the comprehensive state water plan

prepared for particular water resources and waterways shall contain, among other things, the following:

- (a) A description of the water resources and waterway or waterways that are the subject of the plan, including pertinent maps detailing the geographic area of the plan;*
 - (b) A description of the significant resources of the water resources and waterway or waterways;*
 - (c) A description of the various existing and planned uses for these resources including currently undeveloped areas of the waterway and future plans for those areas, with a discussion of the advantages and disadvantages associated with each planned use; and*
 - (d) A discussion of goals, objectives, and recommendations for improving, developing, or conserving the water resources and waterway or waterways in relation to these resources, including an examination of how different uses will promote the overall public interest, a statement as to the goals the plan expects to achieve, and an analysis of how any specific recommendations further those goals. A description of the methodology used in developing the plan shall be included.*
- (3) The description of the resources and uses in subsections (2)(b) and (2)(c) of this section shall contain, among other things:*

- (a) navigation;*
- (b) power development;*
- (c) energy conservation;*
- (d) fish and wildlife;*
- (e) recreational opportunities;*
- (f) irrigation;*
- (g) flood control;*
- (h) water supply;*
- (i) timber;*
- (j) mining;*
- (k) livestock watering;*
- (l) scenic values;*
- (m) natural or cultural features;*
- (n) domestic, municipal, commercial and industrial uses; and*
- (o) other aspects of environmental quality and economic development.*

(4) The comprehensive state water plan may designate protected rivers. Designations shall be based upon a determination by the board that the value of preserving a waterway for particular uses outweighs that of developing the waterway for other beneficial uses and shall specify whether a protected river is designated as a natural or recreational river. The plan may also describe those water resources and waterways which are not designated as protected rivers.

(5) *In designating a natural river, the board shall prohibit the following activities:*

- (a) *construction or expansion of dams or impoundments;*
- (b) *construction of hydropower projects;*
- (c) *construction of water diversion works;*
- (d) *dredge or placer mining;*
- (e) *alterations of the stream bed; and*
- (f) *mineral or sand and gravel extraction within the stream bed.*

(6) *In designating a recreational river, the board shall determine which of the activities listed in subsection (5) of this section shall be prohibited and may specify the terms and conditions under which activities that are not prohibited may go forward.*

(7) *Any prohibition or terms and conditions imposed pursuant to subsections (5) and (6) of this section shall remain in effect until the legislature acts upon the recommendation of the board as provided in section 42-1734B, Idaho Code, or until the legislature revokes its earlier approval of a protected river by law.*

Idaho's statewide planning process involves five major steps:

1. A comprehensive public involvement program to determine public views and desires regarding resource problems, needs, and potentials;
2. An ongoing evaluation of the water and related resource base and an estimate of probable future conditions;
3. An evaluation of beneficial and adverse effects of protection and development programs and projects;
4. Adoption of the State Water Plan by the Idaho Water Resource Board as required by Article XV Section 7 of the Idaho Constitution;
5. Approval by the Idaho Legislature as provided by law.

The central theme of Idaho's 1996 Water Plan is that the majority of Idaho's streams and aquifers are highly developed and utilized. More efficient means of usage for these supplies need to be identified and supported via legislation. The major sources of water consumption are irrigation, power generation, aquaculture, and municipal and industrial supply. The objectives of Idaho's State Water Plan revolve around these uses and the water supplies they rely on. The following objectives are listed as the means to utilize water supplies more efficiently:

- **Water Management** - Encourage and promote the quantification of water use and all water rights within the state. Encourage and promote integrated, coordinated, and adaptable water resource management, and the prudent stewardship of water resources. Encourage state protection of waterways or water bodies with outstanding fish and wildlife, recreation, geologic or aesthetic values where protection should take precedence over development.
- **Public Interest** - Ensure that the needs and wishes of the public are appropriately considered in decisions involving water resources of the state.

- **Economic Development** - Encourage optimum economic development of the water resources, with due regard for prior water rights, that promotes the integration and coordination of the use of water.
- **Environmental Quality** - Maintain, and where possible enhance water quality and water-related habitats. Study and examine the quality of rivers, streams, lakes and ground water [Idaho Code 42- 1734(15)], and assure that due consideration is given to the needs of fish, wildlife, and recreation in managing the water resources of the state.
- **Public Safety** - Encourage and promote programs that will assure life and property within the state are not threatened by the management or use of their water resources.

Policies

State Water Plan policies are directed toward optimum management and utilization of the state's water resources. The policies provide a framework within which private enterprise and government entities can develop and propose water resource projects and water management scenarios. Specific water resource projects and programs are identified in the comprehensive river basin plans developed for defined geographic areas. The Water Resource Board has also adopted policies for:

- Water use
- Conservation
- Protection
- Management
- River Basin Specific

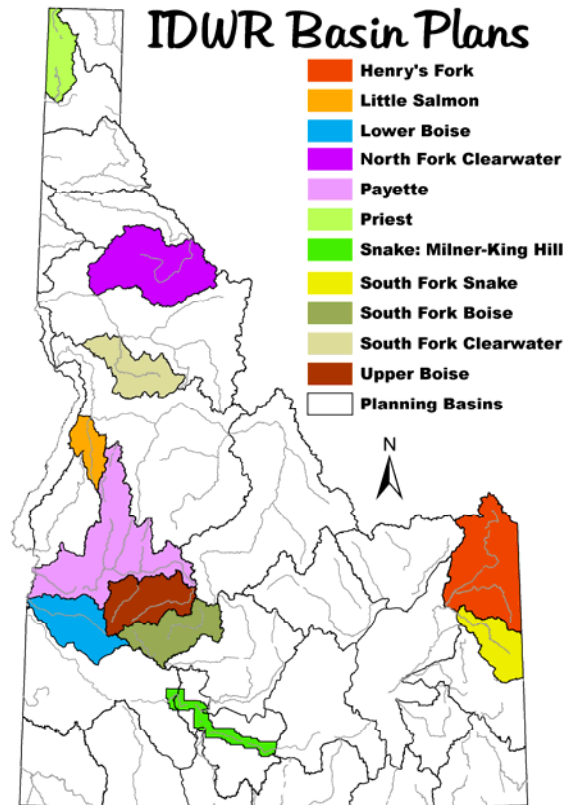
Please see the 1996 Idaho Water Plan for more detail on each of the policy groups.

River Basin Planning

Idaho's river basin planning process also involves five steps.

1. Developing and inventory of resource attributes.
2. Assessing current and potential water uses and constraints.
3. Identifying local issues, concerns, and goals specific to water use.
4. Formulating development, improvement, and/or conservation policy alternatives.
5. Guided by public interest, setting fourth actions and recommendations relative to improving, developing, and conserving the water resources of the basin.

Basin Plans have been completed for the basins shown below.



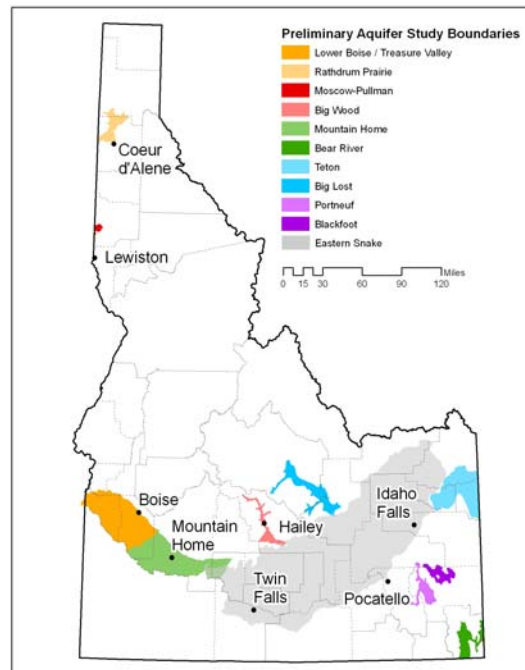
More information about each of Idaho's 11 river basin plans can be found at http://www.idwr.idaho.gov/waterboard/Planning/Comp_Basin_Plans.htm

Comprehensive Aquifer Management & Planning Program

In 2008, the Idaho Legislature passed Chapter 1779, Title 42, the Statewide Comprehensive Aquifer Planning and Management Effort. This program is the current focus of planning efforts over the next few years in Idaho. Aquifers have been identified as having potential conflicts over conjunctive management or insufficient water supplies for future water demands. Through the Comprehensive Aquifer Management Program (CAMP), the Idaho Water Resource Board will develop and adopt a ground water management plan. Each plan will be developed through the following steps:

1. Assess current and potential water supply and demand (including impacts of climate change on water supply).
2. Quantify deficit between current demand and future water demand (50 years out).
3. Identify strategies to meet the deficit.
4. Establishment of a local advisory committee to provide recommendations to the IWRB.
5. Develop long term management plan, guided by advisory recommendations and public interest, setting forth actions and recommendations relative meeting future water needs.

Ten basins were identified as needing plans developed to address potential conjunctive use issues or water supply conflicts. The following map shows those basins:



1996 State Water Plan Overview

Idaho's State Water Plan is organized into five sections.

The **background of the legislation and history of the plan** is detailed in the first section. It describes the roles and responsibilities of the administering agent of the Plan, the Idaho Water Resources Board. The section begins by describing the plan as “a dynamic document, subject to change to reflect citizens' desires and to be responsive to new opportunities and needs.”

The **function of the State Water Plan** is laid out in the second section. It lists the legislation which supports the needs of a variety of water users in Idaho. The breakdown of Idaho's three water basins is also discussed in this section. There are five groupings of legislation related to particular water uses. These groups are Water use, Protection, Conservation, Management and River Basins. Each use group has specific policies aimed at conservation and allocation of Idaho's water supply. For example, the Conservation Group describes legislation allocated for Species of Concern, Federally Listed Species, Lake and Reservoir Management, and Climate Variability. A comment section follows the policy, describing how the State can accomplish the function of the policy.

Idaho's climate, water supplies and water quality are detailed by basin in the third section. It depicts its water resources to "be either excessive or scarce depending on time, place, or human activities."

Trends in water supply and its role in local economies are described in the fourth section. Idaho's 5 million acre-feet of annual water consumption is allocated based on a variety of diverse uses.

The last section describes the **state's economy and demographics**. Upward and downward trends are discussed in relation to employment and income. Agriculture and non-agricultural employment are referred to as a means of state revenues as well as defining employment trends. Population growth is projected to 2000. The majority of the information regarding water demand and supply are presented based on 1996 usages.

The layout of the State Plan is shown below:

WATER PLANNING PROGRAM

- Constitutional Authority
- Legislative Authority
- State Water Plan Formulation
- Idaho Water Resource Board Programs and Duties

STATE WATER PLAN

- Objectives
- Policies
- Water Use Group
- Protection Group
- Conservation Group
- Management Group
- River Basins Group

IDAHO'S WATER RESOURCES

- Climate
- Surface Water
- Groundwater
- Floods and Drought
- Water Quality

WATER USE AND ALLOCATION

- Land Use and Ownership
- Water Allocations
- Agriculture Water Use
- Domestic, Commercial, Municipal, and Industrial Water Use
- Power Generation
- Geothermal Water Use
- Navigation
- Fish and Wildlife
- Recreation
- Protection Programs

IDAHO'S DEMOGRAPHICS AND ECONOMY

Population Growth

Employment and Income

According to the State Water Plan, Idaho's water resources have been developed extensively for irrigation, power generation, aquaculture, and municipal and industrial supply. The primary water commitment is to the production of agricultural crops. Although irrigation is by far the largest use of available water in the state, other offstream and instream uses are important to the economy.

Idaho industries depend on an ample supply of good quality water. Hydroelectric power generation, aquaculture, and the recreation/tourism industry are dependent on river flows, spring flows, reservoir levels and good quality water. Though small relative to other uses, domestic, commercial, and municipal water use are indispensable.

Ownership also affects land use and management. About 70 percent of Idaho is publicly owned. Federal agencies manage over 33 million acres; state and local governments oversee 2.7 million acres. The U.S. Forest Service and the U.S. Bureau of Land Management are the largest land managers in Idaho. Other federal agencies managing land in Idaho include the U.S. Bureau of Reclamation, U.S. Park Service, U.S. Fish and Wildlife Service, the U.S. Department of Defense and the U.S. Department of Energy. Private interests own and manage over 16 million acres in Idaho or about 31 percent of the total land area

The State Water Plan presents water use information by categories. A brief description of these categories is provided below.

Agriculture Water Use

- As of 1992, Idaho had over 13 million acres in farms (U.S. Census of Agriculture). About one third of farm acreage is cropland - 4.2 million acres, 6.6 million acres are in pasture or range, and over 3 million acres are woodland or other minor classifications. Precipitation in northern Idaho is generally adequate for agriculture without irrigation, but cooler growing season temperatures generally limit crop production to grains, pasture, and hay. In southern Idaho, precipitation during the growing season is generally inadequate for agriculture. Irrigation is required for all crops except dry-farmed wheat.

Domestic, Commercial, Municipal, and Industrial Water Use

- Domestic, commercial, municipal and industrial (DCMI) water use is relatively small, but essential to human life and economic development. Domestic and commercial water use includes drinking, food preparation, washing, and lawn and garden watering. Municipalities supply water not only to residences and commercial enterprises, but also to schools, fire departments, and municipal parks. Industrial water use incorporates manufacturing processes, cooling, and employee sanitation.
- Data sources and interpretation of the categories of use regarding withdrawals for domestic, commercial, municipal, and industrial water use in Idaho have varied over

time and the cause of this variability was not identified as part of this summary. The estimated total withdrawals ranged from 445,000 to 800,000 acre-feet per year. Ground water supplies about 87 percent of DCMI water demand in the state. In the Panhandle, however, surface water supplies about 89 percent of DCMI water demand (Personal Communication: Helen Harington, Idaho Water Resource Board).

Power Generation

- Electricity is vital to almost all sectors of Idaho's economy. Idaho's emerging "high-tech" industries are especially dependent on the resource. Idaho's irrigators depend on electricity to pump ground water and pressurize sprinkler systems. About fifty percent of all electricity consumed in Idaho is generated by the state's waters.
- Idaho has relied almost exclusively on hydroelectric facilities to supply electric power. The first electricity in Idaho was produced by hydropower during the 1880's in the Wood River Valley. With the exception of a small internal combustion generation facility near Hailey and some limited cogeneration applications, all electricity generation facilities within Idaho are hydroelectric.
- Hydropower facilities on Idaho rivers and canals have an installed capacity of 2,998 MW and utilize approximately 100 million acre-feet of flow annually to produce on average eight million megawatt hours (IDWR, 1996). Approximately 90 percent of Idaho's hydropower electricity generation is produced in the Snake River Basin.

Geothermal Water Use

- Geothermal energy has been used in Idaho since human occupation. Uses range from power generation to catfish farming. Geothermal energy has been used for space heating in Boise since 1893. Irrigation has been a long-standing use of thermal water in the state, although it must be cooled before being applied to crops. Greenhouse operations using geothermal energy are located at Boise, Weiser, Grand View, Bliss, the Hagerman Valley, the Raft River valley, and on the South Fork Payette River. Aquaculture operations tap geothermal waters to raise warm water fish and reptiles. Stock watering in winter is another beneficial use, and hot spring resorts are numerous in Idaho.

Navigation

- Idaho has two areas of significant commercial navigation: the lower St. Joe River and Coeur d'Alene Lake, and the Port of Lewiston. Sight-seeing boats cruise Coeur d'Alene Lake and the lower St. Joe, and logs are towed to mill on the lower river and across the lake. From the Port of Lewiston, barge navigation to and from Portland, Oregon and coastal points is possible. The Port of Lewiston handles about two million tons of goods annually.

Fish and Wildlife

- Idaho's fish and wildlife attributes are well known; hunters, fishermen, wildlife watchers and photographers come from all over the world to take advantage of the state's natural wealth. Rivers and streams and their associated riparian communities are the home, whether permanent or temporary, for the majority of Idaho's fish and wildlife.
- Many of Idaho's aquatic and riparian species' habitats have deteriorated from their original natural state. Deterioration and loss of habitat are often the result of development. Agricultural development has reduced the forage base for many species, eliminated wintering grounds for big game, displaced species like sage grouse, eliminated raptor habitats in the vicinity of the Snake River Birds of Prey Natural Area, and contributed to spring flow decline in Bruneau snail habitat. Urban development has displaced riparian habitat and winter ranges along the Boise River. Water withdrawal for domestic, commercial, municipal, and industrial use has impacted Boise Valley ground water levels which in turn may ultimately threaten instream flows for fish and wildlife in the Boise River.

Recreation

- The Idaho Department of Commerce estimates that recreation and tourism contribute \$2.9 billion to Idaho's economy, supporting over 68,000 jobs (Personal Communication: Helen Harington, Idaho Water Resource Board). An estimated 3.7 million nonresident motor vehicle parties visited Idaho for pleasure in 1993 and spent approximately \$13 billion (Hunt et al, 1994). Residents recreating in the state expended another \$972 million.
- Much of the recreation activity in the state is associated with water, occurring on or along waterways. People are attracted to streams, river, lakes and reservoirs when seeking recreation opportunities. Additionally, in a state covered with rugged mountainous terrain, river canyons are often the transportation corridor. Roads, rails, campgrounds, and picnic areas are usually located along watercourses.
- Idaho's water resources are an important resource base for the outfitting and guiding industry which earned more than \$22 million in gross revenues for 1993. The combined revenue for boating and fishing groups comprised almost \$29 million. Fishing comprised of almost \$3.7 million of the revenues (Personal Communication: Helen Harington, Idaho Water Resource Board).

Protection Programs

- **Minimum Stream Flow-** A minimum stream flow, also called an instream flow, is a minimum flow necessary to preserve stream or lake values. Water is not diverted and used, as is the case with most other water rights in Idaho. Instead, the water remains in a given reach of a river channel or in a lake to protect fish and wildlife habitat, aquatic life or the water quality of the stream, or for navigation, transportation, recreation, or aesthetic beauty. The Idaho Water Resource Board is the only body in Idaho authorized to hold a minimum stream flow or minimum lake level water right.
- **State Protected Rivers-** The 1988 legislation also authorized the Water Resource Board to preserve highly-valued waterways as state protected rivers. River segments with outstanding fish and wildlife, recreational, aesthetic or geologic value, as

identified in components of the Comprehensive State Water Plan, may be designated for state protection. Over 1,700 miles of Idaho's rivers are protected by the State.

Summary of Select Statewide Information/Issues

Demographics

Idaho's population surpassed one million in the 1990 census and continued to grow faster than the national rate through 1995. From 1990 to 1995 Idaho's total population increased 15 percent, from 1.01 million to 1.16 million. Idaho's population density was 19.3 persons per square mile, compared with 70.3 persons for the nation (Idaho Department of Commerce, 1994; U .S. Bureau of the Census, 1993).

Idaho is in the process of updating the State Water Plan - Resource Inventory. The following demographic trends indicate that from 2000 to 2007 Idaho's population expanded from 1,293,953 to the latest estimate of 1,499,402. This represents a population gain of roughly 15.9 percent. The national average was 6.7 percent during the same time period. During the 1990s Idaho's growth rate made it 5th among other states. Idaho's population density was 16 persons per square mile, compared with 80 persons per square mile for the nation (US Census Bureau 2008).

Climate Change

Idaho's State Water Plan identifies regional climate change as an area of scientific uncertainty; however, the state indicates that climate variability should be expected and planned for by the public and its agencies. Possible consequences of regional climate change are important to recognize. Winter snowpack in the mountains may be significantly affected, with consequent effects on water resources available for agriculture, power generation, forestry and fisheries. Idaho is actively pursuing studies and strategies to understand the impacts of climate change on the water supply and demand.

Flooding

Floods have been the most serious, devastating and costly natural hazard to affect Idaho. Most Idaho residents live near rivers which are subject to periodic flooding. Floods occasionally cause loss of lives and frequently damage roads, farmlands, and structures. Flood waters also erode sediments from hill slopes and transport the sediment in the river channel. The resulting siltation decreases the carrying capacity of the channel, decreases reservoir storage capacity, degrades fish habitat, and may change the course of a stream, or introduce chemicals to the stream.

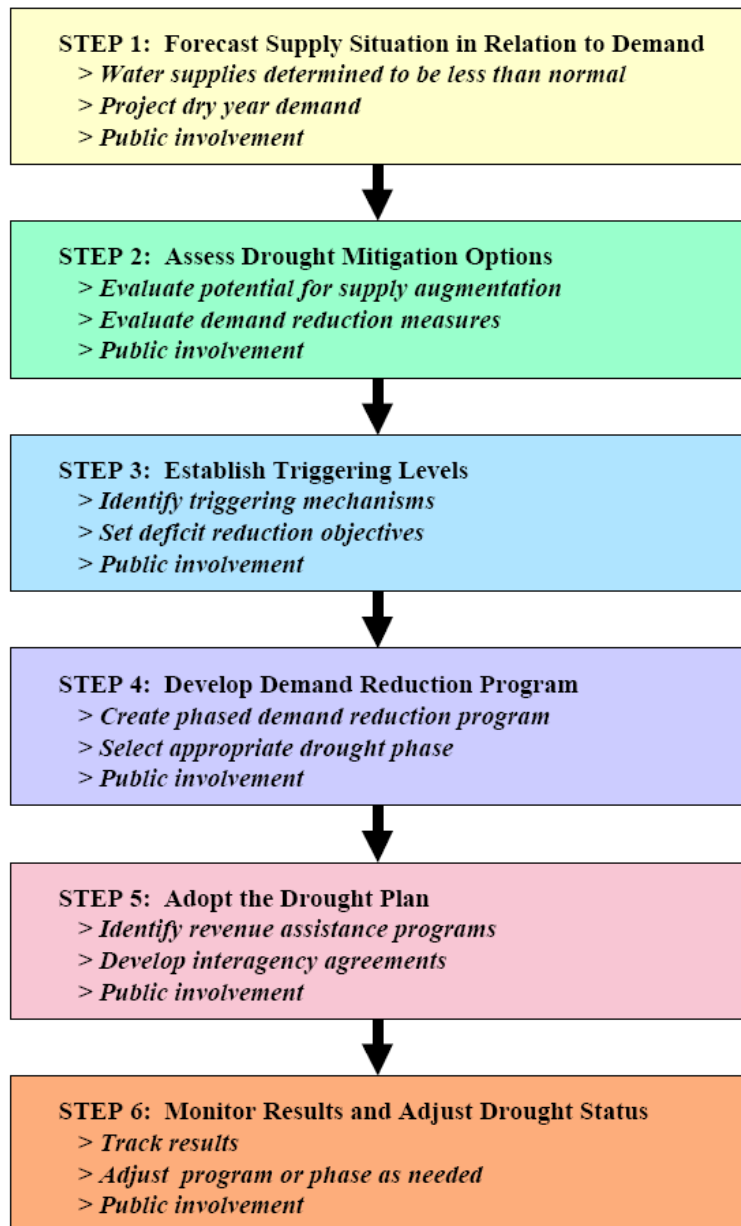
Major Floods in Idaho, 1894 to 1996		
Year	Area Affected	Recurrence Interval (Yrs)
1894	Statewide	Unknown
1927	Upper Snake basin	Unknown
1933	Spokane River Basin	40 to >100
1943	Boise and Payette basins	Unknown
1948	Northern and western Idaho	20 to 50
1955	Southwest Idaho	Unknown
1959	Boise River Basin	> 100
1962	Southern and eastern Idaho	20 to >100
1963	Portneuf and Clearwater basins	Unknown
1964	Statewide at low elevations	20 to >100
1974	(Jan) Northern and central Idaho	25 to >100
1974	(June) Statewide	40 to >100
1976	Eastern Idaho	Unknown
1984	Eastern and central Idaho	50 to >100
1986	Bear River Basin	50 to >100
1996	Northern Idaho	50 to >100

Drought

Although the effects of a drought are more subtle than those of a flood, they are of no less concern. Droughts decrease stream flow, the availability of water for storage in reservoirs, and ground water storage. Farmers who rely on natural precipitation or stream flow for irrigation experience crop losses. Another drought concern is water quality degradation. Low stream flow and a subsequent increase in water temperature may cause fish kills. Finally, because most electrical energy in Idaho is generated by hydropower, droughts that cause decreased river flows and storage in reservoirs can result in increased power costs.

Major Droughts in Idaho, 1894 to 1996		
Years	Area Affected	Recurrence Interval (Yrs)
1929-41	Statewide	>50
1944-1945	Northern and central Idaho	10 to >25
1959-61	Southern and central Idaho	10 to >25
1977	Statewide	10 to >25
1987-92	Statewide	25 to >50

In May 2001, Idaho published its Drought Plan. A flow chart of the states drought contingency planning process is provided below.



Drought contingency planning flow chart.

More information about the Drought Plan can be found at
http://www.idwr.idaho.gov/waterboard/Planning/Documents/Drought_Plan.pdf

Regional Information Summary

Idaho divides its resource management policies in reference to the state's three major basin networks: the Snake River Basin, the Bear River Basin in southeast Idaho, and the northern Panhandle River Basins [(Kootenai, Pend Oreille, and Coeur D'Alene/Spokane); (Note: as part of the State Water Plan update these basin networks will be revised to four basin - Snake, Bear, Salmon-Clearwater and Northern Idaho)]. The 11 basin planning boundaries fall within these larger regions (Note: these boundaries differ from the current planning effort associated with the Comprehensive Aquifer Management and Planning program).

Snake River Basin

The single most unifying geographical feature of Idaho is the Snake River. Headwaters of the 1,000 mile long river are in Wyoming on the western slope of the Continental Divide. Crossing Idaho's eastern border, it flows 1,514 miles across southern Idaho, along the southern edge of the Snake River Plain and through Hells Canyon. The Snake River leaves Idaho at Lewiston, turning westward to its junction with the Columbia River near Pasco, Washington.

Average outflow of the Snake River near Lewiston, is 36 million acre feet per year. Over one half of Snake River discharge at its mouth is picked up from the Salmon and Clearwater rivers below Hells Canyon. Other important tributaries are the Henrys Fork, Boise, and Payette rivers. Basins outside Idaho that contribute significantly to the river include the upper basin in Wyoming, the Owyhee, Malheur, Burnt, Powder rivers in Oregon, and the Grand Ronde River in Washington. Small portions of the Snake River basin also lie in Utah and Nevada.

Bear River Basin

The Bear River Basin is situated in the southeast corner of Idaho. It comprises 7,474 square miles and includes portions of three states: Utah (3,255 miles), Idaho (2704 square miles), and Wyoming (1,515 square miles). Flowing over 500 miles, the Bear River has the distinction of being the largest river in the western hemisphere that does not flow into an ocean. Deep Creek, in Oneida County's Curlew Valley, is not a Bear River tributary, but like the Bear River flows into Utah and the Great Salt Lake Basin.

Elevations in the Bear River Basin range from 4,400 feet in the valleys to over 9,000 feet. About one half of the area is mountainous and lies above 6,000 feet. The major valley and mountain ranges trend north-south. Bear River stream flow is primarily the result of snow melt in higher portions of the watershed.

Panhandle Basins

The Panhandle has, relative to other areas of Idaho, abundant water resources. Precipitation and runoff are generally greater than anywhere else in the state.

The state's largest lakes, Pend Oreille (148 square miles of surface area), Coeur D'Alene (50 square miles), and Priest (37 square miles), gouged out by great ice sheets as much as a mile thick, are located in the northern panhandle. A detailed survey of Pend Oreille Lake made by the U. S. Coast and Geodetic Survey reported the maximum depth at 1,200 feet. Mean depth at Lake Coeur d'Alene is 70 feet, and at Priest Lake 128 feet, with the deepest depths in both lakes lying 200 to 300 feet below the surface.

Statewide Trends

Idaho's population is expected to continue to increase. In-migration will continue to be a large contributor to population growth because:

- (1) Idaho has a favorable overall quality of life,
- (2) Costs of living are lower than in major population areas, and
- (3) Unemployment rates are relatively low.

In the remaining years of the 1990's, Idaho's population is expected to grow between 1.9 to 2.3 percent per year. Idaho changed from a state where most of its citizens lived in a rural setting, to a state of primarily urban or town dwellers. The 1990 census identified only 44,869 people living on farms and ranches in Idaho. Forty eight cities in the state have populations of more than 2,000 residents. Smaller cities and towns enjoyed widespread population gains in the early 1990s. Rural growth is depending primarily on commuters, retirees, vacationers, and manufacturers.

Urban and Rural Population in Idaho				
	Urban	Percent	Rural	Percent
1950	252,549	42.9	336,088	57.1
1960	317,097	47.5	350,094	52.5
1970	385,434	54.1	327,133	45.9
1980	509,805	54	434,233	46
1990	578,376	57.4	428,373	42.6
2000	807,044	62	486,909	38
2007	980,271	65	519,131	35

Technology

Power generation facilities not owned by the federal government are regulated by the Federal Energy Regulatory Commission. Within the next ten years many hydroelectric projects in Idaho will be undergoing the FERC re-licensing process. The re-licensing process allows for public and agency comment and has the potential to change the way that many of the facilities are operated.

A large growth of new hydropower capacity development will come from capacity upgrades at existing facilities. A capacity upgrades results from improved turbine and/or generator efficiencies that make better use of the flowing water than the old components.

Another energy trend that will affect future hydropower development is the production of electricity by natural gas fired combined-cycle turbines. Because of the “economies of scale”, the natural gas turbines can produce electricity at a cost that currently rivals hydropower. Natural gas turbine generation is subject to the variability in the price of natural gas, which will likely affect production costs in the future.

Economic

Farm employment declined 22 percent in Idaho over the period 1997 to 2002, posting a loss of 14,000 jobs. Productivity gains by more efficient machinery are leading to increased unemployment. Labor costs and an overall shortage of labor encourage agricultural producers to automate as much as possible.

While farm employment declined, jobs in the agricultural services, forestry and fisheries sector increased 9.86 percent, posting a gain of 1,953 jobs in Idaho.

Throughout the 1990’s and into the first portion of the 21st century, Idaho was one of the nation’s fastest growing states in terms population, employment, and income. The growth rate of Idaho’s non agricultural employment from 2000 to 2005 was 15.2 percent. In comparison, the national rate over the same time period was only 2.0 percent (US Census Bureau 2008). Current non-farm employment as of 2005 stood at 519,319 jobs. Median household income was \$40,509 in 2004 with the national average being \$44,334 (US Census Bureau 2008). Per capita income according to Idaho Department of Labor as of 2006 was \$29,948 (Idaho Department of Labor 2008).

Idaho mining employment is predicted to peak in 1996 then decline as the U.S. economy slows. Since the discovery of gold along the Clearwater in 1860, Idaho has been a leading national producer of metallic minerals.

A predicted combination of less-than-favorable demand and supply factors is projected to check employment in Idaho's lumber and wood products sector. In the transportation, communication, and public utility industries, trucking was the area of greatest change. Several warehouse facilities have been built in Idaho resulting in more truck traffic and employment. The growth in this area has balanced the losses due to downsizing in the railroad, communication, and public utility sectors.

Fishing license sales have increase about 8 percent over the past five years, but the ratio of resident to nonresident license has remained fairly constant. Sport fishing contributed \$400 million to Idaho’s economy in 1995.

Environmental

Many of Idaho's aquatic and riparian species' habitats have deteriorated from their original natural state. Agricultural development has reduced the forage base for many species, eliminated wintering grounds for big game, displaced species like sage grouse, eliminated raptor habitats in the vicinity of the Snake River Birds of Prey Natural Area, and contributed to spring flow decline in Bruneau snail habitat. Urban development has displaced riparian habitat and winter ranges along the Boise River. Future trends for Idaho's wildlife will depend on the solutions to declining populations and habitat loss.

Instream flows protect many non-consumptive uses such as fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, transportation, navigation, hydropower and water quality. Many of these uses have direct effects on the economy while others represent intangible values, and the public interest. The Idaho Water Resource Board supports efforts to obtain storage and natural flow rights to improve and maintain instream flows when in the public interest.

The state and federal government have identified species of concern and species that are listed or are candidates for listing as Threatened or Endangered. In most cases, action at the state level can identify management strategies that will insure sustainable populations of these species.

Analytical Tools and Data

Groundwater

The Statewide Ambient Ground-Water Quality Monitoring Program (Statewide Program) began in 1990 with a limited prototype network of 97 monitoring sites (IDWR, 1991). Every year, about 400 monitoring sites are sampled. Most sites have been sampled once every four years. Beginning in 2001, IDWR plans to add more sites to the network which will cause the sampling frequency to be modified to once every five years.

Each site has been sampled for a wide variety of parameters: bacteria, nutrients, common ions (calcium, magnesium, etc.), trace elements (iron, arsenic, lead, etc.), pesticides, volatile organic compounds, and radioactivity.

Ground water flow models have been developed for the Eastern Snake Plain Aquifer, the Treasure Valley, and the Spokane Valley-Rathdrum Prairie Aquifer. These models use the USGS MODFLOW packages. These models and the underlying data sets are available through the Internet. These models are for various technical and administrative purposes, including determining mitigation, evaluating management options, and for public information.

Surface Water

The MIKE Basin is an integrated water resource management and planning computer model that integrates a Geographic Information System (GIS) with water resource modeling (DHI 2003). This gives managers and stakeholders a framework within which they can address multi-sectoral allocation and environmental issues in a river basin. In general terms, MIKE Basin is a mathematical representation of the river basin, including the configuration of the main rivers and their tributaries, the hydrology of the basin in space and time, and existing as well as potential major water use schemes and their various demands for water.

Domestic, Commercial, Municipal, and Industrial Water Demands

United Water, Idaho (UWI) a large water provider in southwestern Idaho, provides records of use for all residential, commercial, and industrial customers in their service areas. UWI follows the Public Utility Commission's (PUC) definitions of use in separating residential and commercial customers by purpose. Most importantly, this leads to a separation of rental-residential housing from residential owner-occupied housing. Rental-residential housing is found in UWI's commercial database and owner-occupied housing in its residential database. Households in this study were separated by end-use and therefore owner-occupied and rental-residential units were treated the same way, distinguishing only between single-family and multi-family units. A significant reorganization of UWI's database was therefore required. Water use information was also collected from the other municipalities in the area.

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

The Department of Water Resources is partnered with Idaho's Department of Environmental Quality to ensure the implementation of water quantity and quality programs within the state.

Idaho used a variety of sources to compile the water supply and demand information it needed for its 1996 State Water Plan. In addition to a wide variety of scientific papers and studies, a large number of regional and national agencies were tapped as sources of information. These include:

- US Geological Survey
- FEMA
- National Climatic Data Center
- Pacific Northwest River Basins Commission
- US Army Corps of Engineers
- Bureau of Reclamation
- Idaho Department of Health and Welfare
- US Environmental Protection Agency
- Idaho Agricultural Statistics Service
- Idaho Department of Agriculture

- University of Idaho
- Idaho Department of Commerce
- Federal Energy Regulatory Commission
- Idaho Department of Fish and Game
- Idaho Soil Conservation Commission
- Idaho Department of Parks and Recreation
- Division of Financial Management
- Idaho Department of Employment
- Idaho Power Company
- U.S. Bureau of the Census

How is the general public included in state level planning?

Idaho's planning process identifies public involvement as an important part of the planning process, and is necessary in assessing viewpoints and conditions. Scoping meetings and formal hearings provided opportunity for public input and suggestions.

The State Water Plan revision process has been an open public process through meetings open to the public and distribution of minutes and revision versions following each meeting. Once a complete revision is approved by the Board, public meetings will be held through the state to obtain public comment. In addition to the public meetings, a 60-day public comment period is required by statute.

Comprehensive basin planning and aquifer planning have a public component through the appointment of a local advisory committee. The committee's role is to provide recommendations to the Board. The advisory committee is comprised of representatives of local interests and stakeholders.

6. OUTCOMES ASSESSMENT PROCESS

The Idaho Department of Water Resources and the Division of Environmental Quality are responsible for implementing programs related to water quantity and water quality within the state. Implementing the policies require the efforts of government agencies, the legislature, private concerns and the public. Consequently, the Water Plan delineates those areas where legislative action was required, identifies the programs to be pursued by the Board, and describes the areas where cooperation of public and private interests are necessary. When actions are recommended, they are referred to as state-wide, unless specific areas are mentioned.

Prior to 1999, comprehensive basin plans were required to be reviewed every five years. That requirement was eliminated from statute, so there is currently no requirement for a review of either the State Water Plan or basin plans. The Board, upon petition from the public, can open a plan for review and revision. Implementation of plans depends on the actions recommended in the plan. A primary component of comprehensive basin plans was the establishment of minimum stream flows and protected river reaches. These were implemented through the water right application process.

7. NEEDS, CHALLENGES AND CRITICAL PRIORITIES - INTERVIEW INSIGHTS

Idaho's water planning process has evolved to focus on the water resources issues which are most important to the state and its stakeholders. The following trends and challenges have influenced the states planning focus:

- Drought
- Increased urbanization
- Technical and administrative recognition of ground water on surface water
- Climate Change
- Endangered species issues

To help address some of these challenges and priorities the state has implemented the Comprehensive Aquifer and Management Program. The Program is intended to directly address conflicting water demands through the development of plans for meeting future water needs. The Program includes a high level of public involvement through advisory committees comprised of representatives from the interests and stakeholders within the area. This process will include the development of objectives designed to meet the issues and concerns of the area and strategies to meet future water needs. The recommendations from these advisory committees carry a high degree of importance to the Board. Conjunctive ground and surface water management and climate change are both issues which can impact both the water supplies and the water planning.

In addition to the Comprehensive Aquifer Management Program Idaho is addressing interstate issues primarily in Northern Idaho. The Spokane Valley-Rathdrum Prairie region shares a common ground and surface water resource. Population growth, land use changes, and environmental needs in the Spokane River are key components which need to be addressed to avoid conflicts. In the Palouse Basin in the area of Moscow, Idaho and Pullman, Washington, ground water supplies are being taxed.

To successful address the above challenges the state would benefit from: 1) assistance to further the existing water plan; 2) Water storage assessments which will result in infrastructure. The state needs help in planning that will result in real water, not in the water planning. The United State Army Corps of Engineers has expertise in infrastructure and the use of that expertise in evaluating infrastructure needs and follow through to meet those needs through actual water. In addition, delegation of authority to the district level would be beneficial. It appears that decisions are elevated to the federal level which could be effectively addressed at the district level and streamline the implementation of cooperative activities; and 3) Although there is a large amount of federal interest in Idaho, with over 60 percent of the land administered by federal agencies, there is little actual assistance with overcoming obstacles encountered with federal activities and programs to achieve our state management objectives. More support from these federal agencies in implementing the goals of the state would be helpful.

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