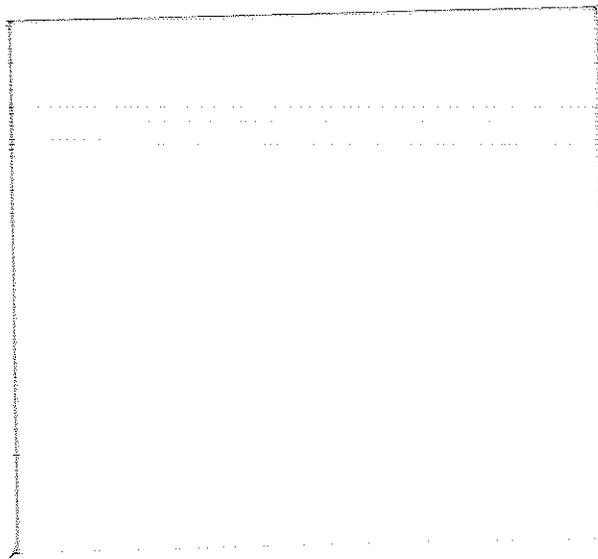


State of  
Washington  
Department  
of Ecology





WATER RESOURCES OF WASHINGTON

a biennial report to the

L E G I S L A T U R E

January 1975





## Letter of Transmittal

Governor Daniel J. Evans and  
Members of the 44th Legislature:

This report is the third to the Legislature on the progress of the State Water Program submitted in accordance with Section 7 of the Water Resources Act of 1971 (RCW 90.54).

A careful reading of it will lead you, the legislator, to an inescapable conclusion: The State of Washington has no surplus water available for exportation to the southwestern states.

You may also conclude--as we at the Department have--that rights to water cannot continue to be given away, and that water law must be revised to assure that the resource is used for the best public benefit.

A handwritten signature in black ink, appearing to read "John A. Biggs".

John A. Biggs, Director

DEPARTMENT OF ECOLOGY



## CONTENTS

<u>Chapter</u>	<u>Page</u>
Summary	1
The Resource and Its Use	5
The State Water Management Program	15
Legal Issues	25
Financial Issues	31

## FIGURES, TABLES, AND MAPS

<u>Title</u>	<u>Page</u>
1970 Water Use Summary	5
Hydraulic Capacity - Columbia and Snake River Projects	6
Partial Water Right Filings - Columbia and Snake Rivers	8
1970 Electric Energy Use by Class	10
Water Management Policy Process Summary	16
State Water Management Areas	17
Basin Management Policy Development Summary	19
History of Water Right Filings - 1912-1974	29
Water Resource Development of Washington - State Map	35

## SUMMARY

The Water Resources Act of 1971 (RCW chapter 90.54) directed the Department of Ecology to develop and implement a comprehensive state water resources program to insure that the waters of the state are utilized for the best interest of the people. With this legislative charge the Department has developed a management process for implementing consolidated basin water resource management programs and statewide water resources policies and regulations.

The state was divided into 23 major water resource basins (in addition to the main stem of the Columbia River) for planning and management purposes. Separate policy and management programs are being developed for each of these basins. Statewide policies are being developed for critical problems and issues where an overall policy is desirable for consistent management of the resource throughout the state.

A water resources information system (archive) was established as directed by the Legislature to provide a data base for developing basin and statewide management programs. The Water Resources Information System (WRIS) provides for cataloging, storing and retrieving water data and studies for use by the Department, other state agencies and by the general public.

Water resource bibliographies derived from the WRIS have been compiled for all 23 basins and the Columbia River main stem. Special intensive water resource studies were completed in the Walla Walla, Palouse, Yakima, Big Bend (one in the Odessa area and three in the Columbia Basin), and the Okanogan-Methow basins. The purpose of these studies was to obtain additional needed hydrologic data. Additional special studies are in progress in the San Juan, middle Columbia, Palouse, Yakima, and Spokane basins. Test-observation wells drilled to obtain additional water resource data were completed in the Big Bend (four wells), Middle Columbia (two wells), Walla Walla, and Chehalis-Olympic basins. Drilling of additional test-observation wells are in progress in the Palouse and Big Bend basins. Comprehensive "Level B" studies have been initiated for the Big Bend, Okanogan-Methow, and Yakima basins in cooperation with the Pacific Northwest River Basins Commission under the Federal Water Resource Planning Act of 1965.

Citizens committees were established to obtain public involvement in water resource planning in the Ceder-Green, Cowlitz-Columbia Estuary, Lewis, Walla Walla, Yakima, Big Bend, Okanogan-Methow, and Spokane basins.

Preliminary analysis of water resource data was made for all basins except the Nooksack, Puyallup, San Juan, North Olympic, Willapa, and Northeast basins. Detailed, final analysis of water resource data was made for the Ceder-Green, Chehalis-Olympic, Lower Snake, Big Bend, and Okanogan-Methow basins; and policy and management programs have been drafted for these five basins.

As provided by RCW 90.54.050, the Department is proceeding with a program, in cooperation with other state and federal agencies, and local citizens to prioritize, reserve and set aside such waters as are required

for beneficial future municipal and industrial use as well as instream needs. Under the same statutory provisions, the Department promulgated a regulation for withdrawal of all unappropriated waters of the Little Spokane River until a management plan is developed (no later than June 30, 1976). The Department has also designated two ground water subareas (Odessa and Quincy parts of the Big Bend basin) and adopted regulations for management of the ground water in these subareas.

The Department, as directed by RCW 90.54.080, has represented the state's water resource interests through activities on regional and interstate commissions, through monitoring of federal activities and by cooperative federal-state planning. Additionally, water resource statutes have been reviewed and certain modifications to these statutes have been recommended to the Legislature as part of the Governor's legislative requests.

As provided by RCW 90.54.100, the Department has evaluated needs for water resource development projects. Specifically, the need and impact of further development of the Columbia Basin Project and construction of the Second Bacon Siphon were evaluated and alternative methods of state assistance with financing were studied. Accordingly, a budget request for \$12.5 million is included in the Governor's budget to be used in assisting the Construction of the Bacon Siphon. This represents a major commitment by the state clearly necessary to encourage local and federal financial participation in the phased development of the Columbia Basin.

## CONCLUSION AND RECOMMENDATIONS

Analyses of preliminary and final water resource data collected in the course of developing the state water resource program lead to the conclusion that with the exception of the Lower Snake River and Middle and Lower Columbia River, the existing water supply in the state is inadequate or only marginally adequate to provide both instream needs and diversion requirements. New authorization for use of diminishing public water resources should provide for public benefit and equitable allocation of the waters between all interests. Unfortunately, the existing state water code does not provide for flexibility in considering future benefits or reallocation of the resource once a water right is perfected.

Therefore, it is recommended that the state water code be changed and modified to:

1. Provide for term permits or licenses to major users of water rather than conveyance of public ownership to a private right. The term of said permits or licenses should be sufficient to allow for amortization of development costs (perhaps 25 years).
2. Require said licensees to provide measurable public benefits in return for the right to use the water. Such benefits could consist of the enhancement of public recreational opportunities, development of public wildlife or hunting preserves, soil and water conservation measures or other factors as may be determined by the Department.

3. Provide for imposition of a reasonable charge for major industrial and agricultural uses of water.

Review of the Columbia Basin Project indicates that great benefit to the state will result from development of the planned extension of project irrigation. Therefore, it is recommended that the state provide incentive to the federal government to complete the project by offering to share the construction of the Second Bacon Siphon and Tunnel. It is proposed that Washington Future Funds (Referendum 27) be used for this purpose. Also, there are pending applications for use of water from the Snake and Columbia Rivers for irrigation of thousands of acres of additional land. This land, if developed, will greatly strengthen the state's agricultural and economic base. Therefore, it is recommended that interim, temporary permits or licenses be issued under these applications for major water use, with provisions that public benefits be provided and that the permit holders abide by statutory changes that occur while the temporary permit is in force.

Additional review of the applicable state water codes indicates that some "housekeeping" changes are required. Adjudication of existing water rights throughout the state is a high priority for effective management of the state's water resources. However, adjudications under the present procedure is excessively time consuming and costly. It is recommended that the statutory adjudication procedures be streamlined and simplified. Also under the present law, withdrawal of ground water in amounts of 5000 gallons per day or less are exempt from the appropriation permit requirement and the state has no record of such water use. It is recommended that uses of minimal amounts of ground water be provided a right by a simplified declaration and recording procedure that will have little impact on the public or Department staff but will provide a record of such water use.



## THE RESOURCE AND ITS USE

The water supply available to the State of Washington is determined by topography and climate. This leads to overall shortages of water in Eastern Washington and summer shortages and winter floods in Western Washington.

More than half of the fresh surface water available within Washington originates outside the state, flowing across our borders from British Columbia, Idaho, and Oregon.

The relative magnitude of flows coming into Washington are:

Common Border Area	Approximate net mean annual incoming flow (in cubic feet per second)	% of total flow available in State
British Columbia	74,230	24
Idaho	69,707	23
Oregon	<u>27,275</u>	<u>9</u>
TOTAL	171,212	56

The table below summarizes 1970 water use.

		SURFACE WATER		GROUND WATER		SALINE WATER		TOTAL	
		Billions of Gallons	Change from 1965						
Irrigation		1,920	+13%	129	+29%			2,049	+14%
Municipal		75	-3%	86	+26%			161	+11%
Industrial	Municipally-Supplied	149	+10%	21	-16%			170	+6%
	Self-Supplied	149	+32%	55	-48%	14	—	218	+42%
<b>TOTAL</b>		<b>2,293</b>	<b>+17%</b>	<b>291</b>	<b>-2%</b>	<b>14</b>	<b>—</b>	<b>2,598</b>	<b>+15%</b>

In addition to the water use shown in the above table, reservoir evaporation losses account for an annual "withdrawal" of approximately 450 billion gallons.

Instream uses of water such as navigation, hydroelectric power production, fish and wildlife maintenance, and recreation and aesthetic enjoyment are much more difficult to quantify. Without question, however, these uses far exceed those of domestic, municipal, industrial, and irrigation.

One indicator of use for power production is the hydraulic capacity of hydroelectric projects. This is the maximum flow which can be utilized for power production by a generating facility. The following table presents the hydraulic capacity for each of the projects on the Columbia and Snake rivers in Washington.

Project	Owner	Hydraulic Capacity (cfs)
Grand Coulee	U.S. Bureau of Reclamation	92,000*
Chief Joseph Wells	U.S. Corps of Engineers	107,000*
Rocky Reach	Douglas County	220,000
Rock Island	Chelan County	210,000
Wanapum	Chelan County	80,000*
Priest Rapids	Grant County	181,000
	Grant County	184,000
Lower Granite	U.S. Corps of Engineers	-- *
Little Goose	"	70,000*
Lower Monumental	"	70,000*
Ice Harbor	"	47,000*
McNary	"	232,000
John Day	"	351,000*
The Dalles	"	227,000
Bonneville	"	136,000*

\*Additions under construction or authorized.

It is significant that the completed John Day Dam on the Columbia River could make use of more water than is available to the entire State of Washington on an average annual basis.

A further illustration of the demand on water occurs on the Snake, where all of that river's water would be utilized by currently planned development 98 percent of the time.

By 1985, municipal and industrial use is projected to increase to 800 to 950 billion gallons per year from the 1970 level of approximately 550 billion gallons.

Future use for irrigation, the greatest single use of water in the state, is much more difficult to project. The best available projections indicate that annual irrigation water use could increase from the current level of approximately 2,100 billion gallons to approximately 2,700 billion gallons by 1985.

Rural domestic, municipal and industrial supply; irrigation; navigation; electric power production; fish and wildlife; and recreation and aesthetics now will be examined in more detail.

## RURAL DOMESTIC, MUNICIPAL AND INDUSTRIAL SUPPLY

### Existing Use

Public water systems in Washington serve 3.1 million people out of a total population of 3.4 million. Each individual uses an average of about 130 gallons of water per day. Public systems also supply

approximately 45 percent of the total industrial water requirements. The remainder of industrial water requirements are self-supplied.

Total municipal and industrial use accounts for approximately 20 percent of total water withdrawals in the state.

Well Water. Fifty-two percent of the people in the state are supplied by public water systems using well water as a source. Chlorination is important to insure good quality water, but 95 percent of the systems using well water (serving 490,000 people) are not chlorinated.

Surface Water. Surface water supplies 46 percent of the state's population through public water systems. Thirty percent (970,000) of all people using a public water supply are delivered unfiltered water. However, many of these systems have rigid quality control and have prepared plans to improve their supply with filtration.

Spring Water. Spring water systems serve about 354,000 individuals in the state, with potential health problems in 17 of the 130 systems that are not chlorinated.

Annual domestic water use is projected to increase from the current level of approximately 180 billion gallons to 175-200 billion gallons in 1985. During the same period, annual industrial use is projected to increase from approximately 390 billion gallons to 620-750 billion gallons.

While increased municipal and industrial needs will not strain the abundant surface and ground water resources of the state, localized difficulties exist and continued planning is necessary to minimize additional stresses.

## IRRIGATION

An irrigation policy for the State of Washington is necessary to assure an orderly program of funding, economic development, environmental protection, and rural community stabilization. Such a policy does not exist at this time.

### Current Use

More water is withdrawn for irrigation in Washington than for all other uses combined. Irrigation accounts for approximately 65 percent of the total withdrawals from surface and ground water sources in the state and a similar proportion of total depletions. This compares with municipal, industrial, and rural domestic use which accounts for approximately 20 percent of the total withdrawals and approximately 7 percent of total depletions.

Before the turn of the century, irrigation in Washington was concentrated in the Yakima, Wenatchee, and Walla Walla areas. Following the passage of the federal Reclamation Act in 1902, which enabled the federal

government to assist irrigation development, dramatic increases occurred particularly in the Yakima Basin. By 1930, 400,000 acres were irrigated. Development slowed during the Depression and the 1940's. In the 1950's, the Columbia Basin Project provided another surge so that by 1960 more than one million acres in the state were irrigated. Growth in the 1960's was more moderate.

At the present time, approximately 1.5 million acres in the state are irrigated. They represent 15 percent of the state's total farmland. Total annual diversions from surface and ground water sources are approximately 6.3 million acre-feet.

Projected Demands

There are up to 10 million acres of potentially irrigable lands in Washington. These lands have favorable soil, topography, and drainage characteristics which make them suitable for irrigation. The irrigable lands in the state are classified as to their suitability for irrigation: 1 million acres are Class I lands, 3 million acres are Class 2 lands, and 6 million acres are Class 3 lands. The suitability of lands for irrigation decreases from Class I to Class 3. However, much of these lands do not now have an economical source of water.

Substantial new development has been occurring recently. The majority of this development has involved direct pumping from the Columbia and Snake rivers and from ground water sources.

Excluding the Bureau of Reclamation rights or permits for the Columbia Basin Project, the total rights, permits, and pending applications for irrigation from the Columbia and Snake rivers in Washington are as follows:

	Water Quantity (cfs)	Land Area (acres)	(%)
Developed Rights	2,129	59,291	19
Permits for Development	3,310	147,512	48
Pending Permit Applications	<u>2,848</u>	<u>99,659</u>	<u>33</u>
	8,287	306,462	100

The rate of further development will be influenced largely by market prices and the availability of financing, energy, and water.

By the year 2000, the total irrigated acreage is projected to increase by approximately 50 percent from the current level; however, at the present rate of development these projections would be exceeded.

Current projections to the year 2020 range from 1.1 million to 1.4 million acres above the 1.5 million acres now irrigated. This would require nearly 5,500,000 acre-feet per year, or 3.2 percent of the entire Columbia River flow. It should be noted that this amount is equivalent to the annual flow of the Green, Puyallup and Stillaguamish rivers combined.

## Problems and Issues

Water Availability. The availability of water for irrigation is a limiting factor in the development of Yakima, Okanogan, Big Bend, and Walla Walla areas.

Inadequate Water Supplies. Approximately 190,000 acres of the 1,495,000 irrigated acres in the state are considered to have inadequate water supplies. The total water shortage is 206,700 acre-feet. Lands are considered to have an inadequate supply if the sum of the shortages in any ten-year period exceeds one-year's diversion requirement.

Most shortages result from heavy appropriation of summer stream flows although some lands supplied from ground water sources experience shortages as a result of a declining water table caused by overdevelopment.

Financing. The financing of large-scale irrigation projects has become a major issue with the decreasing role of the federal government. For a discussion on proposed state financing, see page 32.

High Grading. Because of difficulties related to financing, the best lands in an area are developed, while irrigable lands of lesser quality are bypassed. Only a large-scale development program can maximize the public benefits.

Urban Encroachment. In some areas, valuable agricultural lands are being lost to urbanization. The magnitude of this problem is not known.

Irrigation Return Flows. A serious water pollution problem stems from irrigation return flows which carry sediments, fertilizers, and other chemicals. An intensive study of return flows is being completed in the Sulphur drainage in the Yakima Valley. This study will begin to define the problem and lay the groundwork for managing return flows throughout the state.

Competition with Instream Uses. Increasing demands for out-of-stream use of water, such as irrigation and the desire to retain flows for hydropower production and the preservation of instream values such as fish, wildlife, recreation, and aesthetics, have conflicted in certain areas.

## NAVIGATION

### Existing Use

The Pacific Ocean, coastal estuaries, waterways of the Puget Sound area, and rivers, including the Columbia River and its major tributaries, constitute a network of waterways which serve the waterborne transportation needs of the state. On these waterways vast amounts of bulk commodities are shipped nationally as well as internationally from the innermost reaches of the state.

In addition, recreational boating use in the region is among the highest in the country, fostered by the abundance of navigable waterways.

## Problems and Issues

Dredging and the Disposal of Dredge Spoils. Dredging and the disposal of dredge spoils may result in serious water pollution in the form of increased turbidity and siltation as well as low dissolved oxygen levels and high toxicity, if the dredged material is high in organic content.

Problems of this type are present in Grays Harbor and Willapa Bay. In order to maintain the navigation channel in Grays Harbor for the Port of Aberdeen large quantities of sediment must be dredged. The disposal of these dredge spoils is becoming an increasingly greater problem as the availability of disposal areas diminishes.

The dredging of Willapa Bay and the Willapa River to maintain the navigation channel for the Port of Raymond has been very detrimental to the environmental values of the area and results in conflicts with the oyster industry.

## ELECTRIC POWER PRODUCTION

### Current Use

In 1970, electric energy use in the Pacific Northwest by class of customer was as follows:

Class of Customer	Energy Consumption (billions of KWH)	% of Energy Sales
Domestic	27.5	31.4
Commercial	12.1	13.8
Industrial	44.1	50.3
Irrigation	2.6	2.9
Other	1.4	1.6
TOTAL USE	87.1	100.0

Thus, industrial users are the largest single group of consumers with approximately 50 percent of all consumption. Within the industrial class, the largest single user is the aluminum reduction industry with nearly 50 percent of the industrial use; the next largest user is the pulp and paper industry with an estimated 15 percent of the industrial use.

Up to the present time, the power demands of the Pacific Northwest have been supplied largely by hydroelectric generation. In early 1974, hydroelectric facilities provided 86 percent of the generating capacity in the Pacific Northwest and thermal facilities provided only 14 percent. An indication of the water use for hydro generation is given in the table on page 6.

## Projected Demands

The Bonneville Power Administration projects electric energy demands in the Pacific Northwest to nearly triple in the next 20 years. The base load is projected to increase from 12,300 MW in 1971-72 to 33,000 MW in 1991-92, and the peak load is projected to increase from 20,200 MW to 57,300 MW during the same period. This represents an average annual increase of 5.8 percent, which is slightly less than that experienced recently.

It has appeared probable for some time that the region's hydro resources are inadequate to supply all energy needs. Thus, in 1966 a group of public and private utilities and the Bonneville Power Administration developed a long-range, cooperative program for the Pacific Northwest entitled "The Hydro-Thermal Power Program." This program is a blueprint for the orderly shift from the reliance on hydro generation to a system utilizing thermal generation to supply the base load and hydro generation to supply peak loads.

## Problems and Issues

Energy Conservation. Energy production in this region of the United States has been publicly viewed as a by-product of water resources development for irrigation, municipal and industrial supply, flood control or navigation purposes. It has therefore been held to be a cheap and plentiful resource in itself.

There is a need to give continuing emphasis to the philosophy of energy conservation in no less degree than has been given to the conservation and wise use of soil, water, food and fiber, or such nonrenewable resources as metals or fuels.

Price Structure Modification. The current pricing system has traditionally encouraged waste by reducing unit costs for greater usage. It has been suggested that the value of energy should be altered to reflect both production cost and the cost of opportunities foregone through commitment of land, air and water resources to energy production.

The Department of Ecology urges the Legislature and the State Transportation and Utilities Commission to analyze policy and statutory law governing public utility operation and regulation.

Reservoir Level Fluctuation. Peaking capability will increasingly be furnished from hydro installations. Because peaking occurs twice a day, substantial amounts of water are required for relatively short periods.

To accommodate this need the dams retain storage with the result that the reservoir level is drawn down during the period of peaking operation.

This fluctuation can produce problems for water-related recreational activity and for fish and wildlife.

Nitrogen Supersaturation. Nitrogen supersaturation results at a dam when excess river flows pass over the spillway and plunge into the backwaters of successive downstream reservoirs, entrapping a large mass of air (78% nitrogen). The air goes into solution at supersaturated concentrations. The return to equilibrium is exceedingly slow; consequently as water moves downstream supersaturation has a cumulative effect.

Both adult and juvenile fish exposed to supersaturation are subject to gas bubble disease or to the secondary effects of infections and disease due to gas bubble stress. Survival studies indicate that high nitrogen levels, particularly on the Snake and Columbia rivers, pose a serious threat to the future of salmon and steelhead populations of the region. Studies have shown that construction of spillway baffles can reduce supersaturation.

Thermal Pollution. Thermal power plants produce vast amounts of heated water which, when added to the receiving waters, may cause violation of water quality standards, affecting the biologic community or other subsequent beneficial users of that resource adversely.

For these reasons, evaporative cooling ponds or towers have been approved for thermal plants under construction or under consideration.

Evaporative cooling systems consume water and new water must be continuously added to replace the volume lost to the atmosphere.

Aesthetic Impacts. Weather and safety conditions in the Pacific Northwest generally require enclosure of equipment. Power plants therefore do not pose serious aesthetic problems.

Land use policy, based on public attitudes and acceptance of cost elements, will ultimately decide aesthetic issues.

Safety of Nuclear Facilities. Only one nuclear plant is currently operating in the state but at least six more are in the planning stage and one is under construction. Currently, siting requires state certification but the approval of structural and mechanical design, licensing and operational monitoring is carried out at the federal level. As more plants come on line, the Department has concern that adequate precaution be taken.

## FISH AND WILDLIFE

The Department of Ecology has no direct fish and wildlife management responsibilities. However, the Department's water and water-related land-management activities in many cases directly impact fish and wildlife.

The Department recognizes that fish and wildlife are integral elements of the state's economy and quality of life; that fish and wildlife are viable but vulnerable resources; that benefits derived from fish and wildlife resources are not all measured in tangible, monetary terms, and that full consideration must be given to fish and wildlife needs in any project or program designed for the conservation, development, and optimum use of the state's water resources.

## RECREATION AND AESTHETICS

The State of Washington is well suited for water-oriented recreation with 8,000 lakes, 50,000 miles of streams, and nearly 3,000 miles of saltwater shoreline. These resources are used extensively, both by residents and out-of-state visitors. As an example, Puget Sound is one of the leading boating areas of the United States, with participation by residents nearly double the national average.

The population of the state is projected to increase as much as 50 percent by the year 2000 and total recreation demand is increasing more rapidly than population. Water-related demands represent nearly 38 percent of total recreation demand.

### Problems and Issues

Preservation of Scenic Rivers. There are rivers of national significance in the state that, subject to development of appropriate management procedures with state and local officials for non-federal lands, should be added to the federal system.

The Department supports designation of the Skagit, subject to the development of management agreements with state and local officials for areas outside the national forest.

The Department supports elevation of the following rivers to study status to resolve the questions surrounding each.

1. Columbia--Priest Rapids to McNary Pool
2. Grand Ronde--Oregon border to Snake River
3. Wenatchee--entire river and tributaries

A state rivers system has not been established, although several bills have been introduced in the Legislature to do so.

The issue is whether something above and beyond the Shoreline Management Program and other existing management programs is needed to manage our rivers.

The statewide shoreline master program should identify those rivers with outstanding scenic and recreational attributes. The Department will work with local officials to protect those values through local shoreline planning and permit programs.

Instream Flow Requirements for Recreation and Aesthetics. Historically low flows have been established administratively and this will be followed up by the development of a base flow program through a regulation. Base flows will provide for the preservation of instream values.



## THE STATE WATER MANAGEMENT PROGRAM

In the late 1960's, an intensive review of the state's water management program was conducted, culminating in the Legislature's passage of the Water Resources Act of 1971. This act was a landmark piece of legislation designed to insure that the state's waters are protected and fully utilized for the greatest benefit of the people of the state.

Under the provisions of the 1971 act, the Department of Ecology was directed to develop and implement "a comprehensive state water resources program."

The Department's strategy on the continuing development and implementation of the state water management program involves the development of three specific kinds of products:

- (1) Consolidated basin water resource management programs
- (2) Statewide water resource management policy
- (3) Project/program position statements

The primary objective of this strategy is to provide clear policy guidance to activities internal to the D.O.E. respecting water resource management. Such activities include the disposition of additional appropriation or storage permits or action on changes under existing water rights.

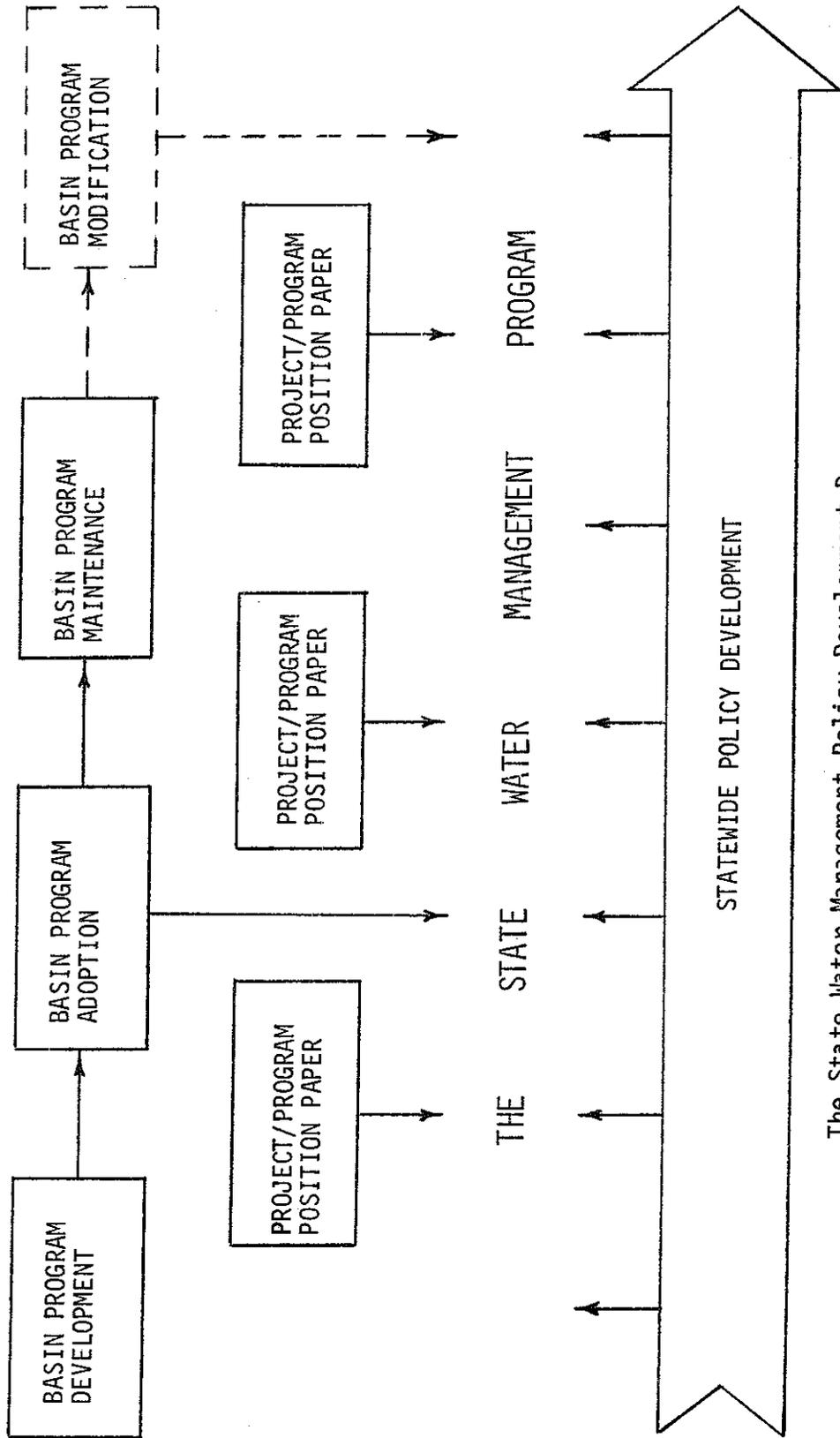
Another objective is to provide guidance to activities external to the D.O.E. respecting the water resources of the State. External activities include the vigorous interpretation and representation of the state's interests in its water resources before agencies of the federal government and other entities.

A schematic of the policy development process and the relationship of the major products is shown as Figure 1.

### Water Resources Information System

An important tool for developing basin management programs, statewide policy and project/program position statements is the Water Resources Information System (WRIS). WRIS was established to fulfill the purposes of an "archive" required by the Water Resources Act of 1971.

WRIS indexes, stores and retrieves information relative to the state's water resources. It publishes and maintains bibliographies referencing existing water resources data and information by basin. It publishes and maintains a listing of potential federal water resources projects for Washington. And it operates a reference service for handling inquiries from federal, state and local agencies, and the public.



The State Water Management Policy Development Process

FIGURE 1

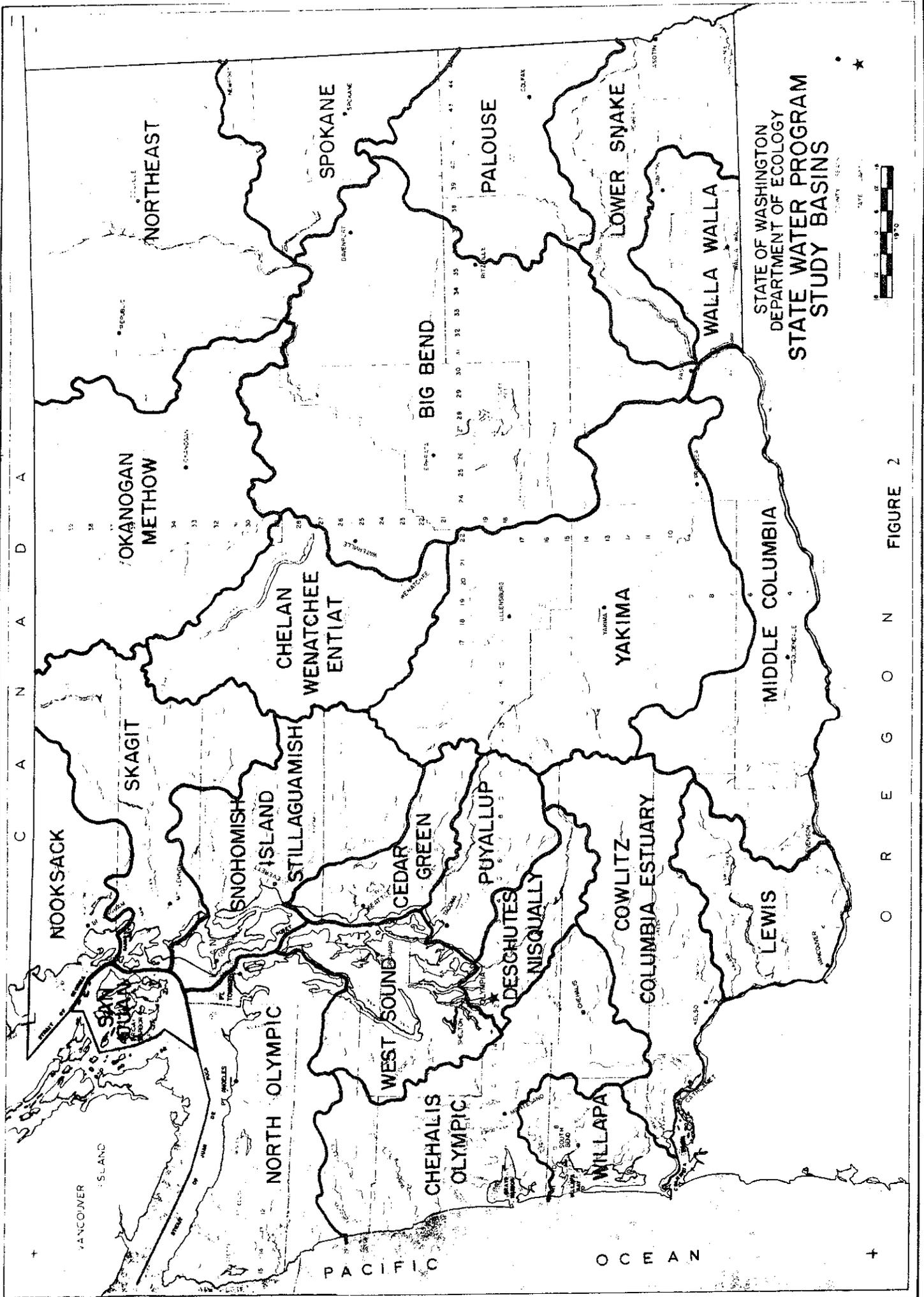


FIGURE 2

O R E G O N

## Basin Management Programs

For planning and management purposes, the state has been divided into 23 river basins as shown in Figure 2, plus the main stem of the Columbia River. Separate policy has been or is being developed for each of these basins.

A basin management program will take the form of an administrative policy document or a regulation.

BASIN MANAGEMENT PROGRAMS PROVIDE MAJOR POLICY ON FUTURE WATER ALLOCATION, INCLUDING PRIORITIES BETWEEN USES, QUANTITIES OF WATER TO BE RESERVED FOR SPECIFIED FUTURE USES, FLOWS TO BE MAINTAINED IN STREAMS AND RIVERS, AND STREAMS CLOSED TO FURTHER APPROPRIATION.

The development of the basin management programs has the effect of making the decision-making process more open to public review and comment than it has been in the past. It also provides a clearer and more consistent basis for decision-making which is beneficial to agency administrators as well as to the public.

The current status of basin management policy development is shown in Figure 3.

## Statewide Policy Development

STATEWIDE POLICIES ARE BEING DEVELOPED FOR CRITICAL PROBLEM AND ISSUE AREAS WHERE AN OVERALL POLICY IS DESIRABLE FOR THE CONSISTENT MANAGEMENT OF THE RESOURCE THROUGHOUT THE STATE. THUS, THE STATEWIDE POLICIES SUPPLEMENT THE INDIVIDUAL BASIN MANAGEMENT PROGRAMS.

PROJECT/PROGRAM POSITION STATEMENTS ARE ISSUED BY THE DOE AT THE APPROPRIATE TIMES. THESE POSITION STATEMENTS ARE DEVELOPED WITHIN THE CONTEXT OF THE BASIN MANAGEMENT PROGRAMS AND THE STATEWIDE POLICIES AND SUPPLEMENT THESE PROGRAMS AND POLICIES.

The Department is carrying out its responsibilities to represent the state's interest in its water resources and to maintain the integrity of its policies through representation on regional and interstate commissions, monitoring of federal activities, and cooperative federal-state planning.

Representation on Regional and Interstate Commissions. Washington is an active member of the Pacific Northwest River Basins Commission, a federal-state commission comprising representatives from the five Northwest states and nine federal departments, and a chairman appointed by the President. This commission was organized for the purpose of coordinating water and related resources planning in the Pacific Northwest.

FIGURE 3

STATUS OF BASIN MANAGEMENT POLICY DEVELOPMENT

BASIN	Basin Bibliography	Preliminary Analysis	Initiation of Public Involvement	Special Studies	Detailed Analysis	Draft policy or management regulation
Nooksack	X					
Skagit	X	X				
Snohomish-Island-Stillaguamish	X	X				
Cedar-Green	X	X	X		X	X
Puyallup	X					
Nisqually-Deschutes	X	X				
West Sound	X	X				
San Juan	X			X		
North Olympic	X					
Chehalis-Olympic	X	X	X		X	X
Willapa	X					
Cowlitz-Columbia Estuary	X	X	X			
Lewis	X	X	X			
Middle Columbia	X	X	X	X		
Walla Walla	X	X	X	X		
Palouse	X	X		X		
Lower Snake	X	X		X	X	X
Yakima	X	X	X	X		
Big Bend	X	X	X	X	X	X
Chelan-Entiat-Wenatchee	X	X				
Okanogan-Methow	X	X	X	X	X	X
Northeast	X					
Spokane	X	X	X	X		
Columbia River Main Stem	X	X		X		

The state is also a member of the Western States Water Council, an organization of the 11 western states.

Related to this activity is the Department's representation on the Pacific Northwest Regional Commission's Water Resources Task Force. The regional commission which was established in 1972 is a joint federal-state effort to assist the overall economic development of the region through planning, research, technical assistance, and grants. The commission consists of the Governors of the states of Washington, Oregon, and Idaho and a federal co-chairman appointed by the President.

Monitoring of Federal Water Resources Planning and Management. The Department is monitoring active federal water resources studies to insure the preservation of the integrity of the state's policies.

A related activity is the development of recommendations on Corps of Engineers projects eligible for deauthorization under the federal Water Resources Development Act of 1974. This Act directs the Secretary of the Army, acting through the Chief of Engineers, to submit to Congress a list of projects which he determines should no longer be authorized. This represents an attempt to reduce the increasing backlog of water resources development projects by removing those authorized projects which are no longer viable or justified. Prior to the above act, project deauthorization could occur only through specific congressional action.

Congress specified that only those projects which have been authorized for a period of at least eight years without any congressional appropriations be considered for recommended deauthorization. There are 32 projects in the State of Washington which meet these criteria.

Prior to submitting his recommendations to Congress, the Chief of Engineers is required to obtain the views of the Governor regarding those projects located in Washington.

It is the responsibility of the Department to develop recommendations for the Governor as to whether the state should encourage the deauthorization of any of the 32 eligible projects.

In carrying out this responsibility, the Department will review all eligible projects with local citizens in the areas affected by the projects prior to the development of recommendations.

Cooperative Federal-State Planning. A major responsibility of the Pacific Northwest River Basins Commission under the Federal Water Resources Planning Act of 1965 is the preparation of a comprehensive, coordinated joint plan for the Pacific Northwest. Pursuant to this responsibility, "Level B" studies have been initiated in the State of Washington for the Big Bend, Okanogan-Methow, and Yakima basins. A Level B study is a reconnaissance level study of complex problems with a 15-25 year time horizon. The state, through the Department of Ecology, is chairing a state study team composed of representatives of state and federal agencies with water and related resources management responsibilities.

This activity provides a dual benefit to the state: on the one hand, it provides a vehicle for the state to influence federal investment priorities

regarding water resources development, and on the other, it provides valuable basic information and data needed by the state in order to better manage its water and related resources.

Other information to be incorporated in the Comprehensive Joint Plan includes that from Type IV studies conducted by the U.S. Department of Agriculture in cooperation with the state. Type IV studies are of more limited scope than Level B studies. A Type IV study has been completed recently for Southwest Washington and one is being initiated for Eastern Washington.

Under Section 209 of the federal Water Pollution Control Act Amendments of 1972, the federal Water Resources Council is directed to prepare a Level B plan for all basins in the U.S. as soon as practicable, but not later than by January 1, 1980. Priority in the preparation of such plans shall be given to those basins and portions thereof which are within those areas designated as areawide waste treatment management planning areas under Section 208 of the act. In the State of Washington, additional Level B studies will be conducted for the Snohomish Basin and the designated 208 areas, as appropriate.

#### Program Accomplishments

Reservation for Future Use. The Department may set aside waters for beneficial use in the future. This assures protection of water supplies for foreseeable future uses. Thus, if it is found to be appropriate, specified quantities of water can be reserved for future irrigation and municipal and industrial development and for other identified future uses.

A regulation process to allow reservation of water for municipal supply has been developed by the Department in cooperation with DSHS, and will be promulgated later this year.

Base Flows. The Water Resources Act of 1971 provides that subject to existing rights base flows shall be retained in perennial streams and rivers in order to preserve fish, wildlife, aesthetic, and navigational values. In March 1974, the Department proposed a regulation providing for the establishment of procedures and criteria for the administrative establishment of base flows.

The proposed regulation is currently being revised, and a pilot application of the procedures is underway on the Chehalis River.

Withdrawal from Additional Appropriation. When sufficient data and information are not available to make sound management decisions in a given area, all or a portion of the unappropriated waters may be withdrawn from further appropriation until the necessary information is available. Thus, the adoption of a withdrawal regulation is not a permanent solution, but rather provides a specified period of time (three years, for example) for the Department to develop adequate information with which to make future decisions.

To date, one withdrawal regulation has been adopted. This provided for the withdrawal of all unappropriated waters of the Little Spokane River until a management plan is developed. This is to be no later than June 30, 1976.

Groundwater Management. The Ground Water Code provides that the Department may designate ground water areas and depth zones within such areas and regulate withdrawals therefrom for the purpose of maintaining a safe sustaining yield.

The Department has designated two ground water areas to date: the Odessa ground water subarea (WAC 173-128) and the Quincy ground water subarea (WAC 173-240). Ground water management regulations have been adopted for the Odessa subarea (WAC 173-130). These regulations establish depth zones within the Odessa subarea and a procedure for managing the ground water in the uppermost zone. Under these regulations, the Department shall seek a mutual agreement of all affected holders of water rights authorizing the use of a system of proportionate decreases in all withdrawals as an alternative to the reduction of the aggregate withdrawal on the basis of the priority of rights.

Ground water management regulations currently are being developed for the Quincy subarea.

Other areas proposed for similar designation include the Duck Lake and Aeneas Lake areas in Okanogan County.

Appropriation Permits. For fiscal year 1975, the Department received 5,317 appropriation permit applications and issued 2,601 permits and 1,510 certificates. These figures are for surface water and ground water sources combined.

Well Driller Licenses. The Water Well Construction Act (1971) provides for the licensing of well drillers. As of the end of Fiscal Year 1974, 469 licenses had been issued by the Department. These licenses are renewable on an annual basis.

The act also provides for the recording of a report on each well constructed in the state including location, water quantity, water quality, and sanitary seals. Approximately 7,500 such reports were filed in 1973.

Weather Modification Permits. The Weather Modification Act (1967) provides for the licensing of activities designed to artificially change or control the natural development of cloud or precipitation forms. These activities include fog dispersal at the Spokane and SeaTac airports and efforts to increase precipitation in mountainous regions to increase hydroelectric power production. Historically, four permits are issued each year.

Power License Fees. The Water Code provides for the payment of an annual fee to the state for the use of water for hydroelectric power generation. This fee is based upon the theoretical horsepower rating of a project.

All power license fees are placed in the Reclamation Revolving Account. For calendar year 1974, \$150,529.98 in fees were collected for 60 projects.

Special Studies. The Department in cooperation with the U.S. Geological Survey conducts ground water model studies in those areas experiencing ground water problems and in areas where problems can be anticipated. Studies have been completed for the Odessa-Lind, Quincy, and Walla Walla areas. Studies for the Spokane and Pullman-Moscow areas are scheduled for completion in mid-1975. Additional studies are planned for Clark, Klickitat, and Yakima counties.

A related activity is the monitoring of ground water levels. This includes the drilling of test-observation wells as required and the installation of water level monitoring equipment.



## LEGAL ISSUES

A multitude of laws and treaties govern rights to Washington's waters.

Since 1917, rights to use surface water have been subject to a state-administered permit and certificate system. This process has as its premise the "first in time is first in right" doctrine, and the date an application is received by the state establishes its priority.

Approval of an application results in the issuance of a permit to develop and put waters to beneficial use consistent with the provisions and limitations of the permit.

Once beneficial use has taken place, the final certificate of water right is issued and is recorded in state and county offices.

In 1945, this system was expanded to include ground waters. However, permits are not required for ground water withdrawals of less than 5,000 gallons per day.

There are some 20,000 legally recorded rights to water. But the extent to which people are using their rights is not known. Some people may use little or none of the water legally available to them. Recent checks in several areas have shown the percentage of actual use to that allowed under rights to be as low as 30 percent.

Nor do we know the extent of valid pre-1917 surface rights; however, approximately 180,000 claims were registered over a five-year period at a cost of \$600,000. Over two-thirds of the claims were received in the last six months, despite an extensive public notification campaign.

Also unknown is the extent of valid ground water rights issued prior to 1945, or any ground water rights for less than 5,000 gallons a day.

An historical review of applications for water rights is found in Figure 4, page 29.

### RELINQUISHMENT FOR NONUSE

During the 1965-67 period, the subject of exportation of Northwest waters to the Southwest was discussed regionally and nationally. There was a strong feeling among state water resource leaders that all claims to our waters should be documented as a safeguard against exportation.

At the same time, demands on the state's water resources were uncertain. Therefore, a Legislative Interim Committee on Water Resources developed legislation which contained two primary provisions:

1. That rights may be relinquished upon evidence of nonuse of water for five consecutive years.
2. That each person claiming a right under state law to divert or withdraw waters of the state must file a statement of his claim within a prescribed five-year period.

The relinquishment provision was passed into law in 1967 as RCW 90.14.130 et al. No program to process relinquishment of rights has been implemented.

The Registration Act was first passed into law as Chapter 233, Laws of 1967, with an expiration date of June 30, 1972. In the absence of appropriation of funds during the first biennium, the act was not implemented.

The legislation was reenacted with slight modifications two years later as Chapter 284, Laws of 1969. Funds for operation were provided, and the date of expiration was extended to June 30, 1974.

Data gathered in connection with the Registration Act will help give a gross idea of the claims against the state's water resources. A claim, as with a right, does not insure that waters on record as being used are, in fact, used.

State water law historically excluded from regulation those individuals with "grandfather" or vested rights. Regulation in the many cases involving vested rights was difficult to accomplish.

Now, in the absence of a recorded right or a registered claim, such vested rights may not be legally claimed. Regulation may take place more easily. Data on registered claims will also prove valuable in areas where the water supply becomes a subject of dispute.

#### ADJUDICATION OF RIGHTS

The 1917 State Water Code provided a process to make determinations of relative right to surface waters in a defined area (RCW 90.03). Later, ground waters were also included (RCW 90.44). The adjudication effort started rapidly; rights for over 80 percent of the streams to be adjudicated were determined before 1940.

Less than 10 percent of the area of the state has adjudicated water rights. Where an adjudication exists, regulation and the relationship between users tend to be straight-forward.

Therefore, legislation to streamline adjudication procedures and complete those adjudications necessary on a statewide basis will be presented to the 1975 legislature. The proposed bill has an estimated annual fiscal impact of \$625,000 for processing 90,000 claims over a 10-year period.

#### INDIAN RIGHTS

The United States Constitution provides that treaties made under authority of the U.S. "shall be the supreme law of the land and the judges in every state shall be bound thereby."

Between 1853 and 1864, the U.S. made nine treaties with Indian tribes by which these tribes ceded many square miles in the area which later became Washington State.

Under these treaties, reservations were established and provisions were made for the Indians to fish both on their reservations and "at all other usual and accustomed stations in common with citizens of the United States" (treaty with the Walla Wallas, 1855). It is possible that some use of the water or waterways at these off-reservation sites will be affected by the treaty provisions.

#### FEDERAL RESERVED RIGHTS

Generally, the reservation principle provides that water may be developed for any use consistent with the purpose of the reservation, on any federal reservation, without reliance upon state law in such matters.

Because of the large amounts of federal land in the State of Washington, implementation of the reservation principle creates serious uncertainties as to water allocation.

Should the federal government continue to be exempt from the state's administrative system, present water rights could be subordinated to future federal development activities on public reserved lands.

#### OUT-OF-STATE CONSIDERATIONS

Historically, Washington has not aggressively pursued water-related questions with Oregon, Idaho, and British Columbia. However, activities within the last two years, both in Washington and in neighboring states and the region, have stimulated a more aggressive approach by the state in pursuing its water-related interests.

Examples include Washington's proposal on the Snake River which is partially responsible for the increased interest in a Columbia River and Tributaries Compact, and the involvement of the International Joint Commission in the Okanogan-Similkameen Basin.

There is expected to be an increased interest in Pacific Northwest waters as the moratorium on studies of the diversions of Northwest waters to the Southwest nears termination. Northwest interstate agreements as to the disposition of Northwest waters should greatly enhance the regional perspective as to their use versus out-of-region interests.

#### WATER LAW REVISION

Since the 1917 Surface Water Code, the body of water law in this state has grown many fold.

Significant legislation includes the Flood Control Laws (1935, 1937), the Ground Water Code (1945), the Water Pollution Control Act (1945), the Minimum Water Flows and Levels Act (1969), the Water Right Claims Registration Act (1969), and the Water Resources Act of 1971.

Due to the number of statutes, and changes in the public's concerns, ambiguities and conflicts have crept into the law.

Recognizing this situation, the Legislature in the Water Resources Act of 1971 directed the Department to review the statutes relating to water for which it is responsible and to recommend modifications or additions where existing statutes appear to be "ambiguous, unclear, unworkable, unnecessary, or otherwise deficient."

In response to this directive, the Department is submitting to the January 1975 legislative session the following three amendments to state water law. These amendments are prompted by the expiration of the water right claims filing period on June 30, 1974.

#### Modification of Adjudication Procedure

The five-year registration period will culminate in the recording of approximately 180,000 claims to the right to use surface and ground waters of the state. Of these, it is estimated that about 80,000 involve claims to amounts of water which are significant to the orderly process of planning, management, and development. If such managerial responsibilities are to be effectively executed by state government, it is necessary that the extent and validity of these claimed rights be established. Additionally, and of equal importance, the confirmation of valid claims at an early date will be of major benefit to the individual right holders.

The present statutory adjudication procedures date to 1917. Determination of these claimed rights under this process would be extremely costly and time consuming. It is proposed that the statutory adjudication procedures be streamlined, with a majority of the work to be accomplished by the administering agency. The role of the court would then be to hear exceptions to actions of the agency, and to issue final confirmation of the water rights.

(RCW 90.03.110-.240)

#### Certification of Ground Water Claims of Less than 5,000 GPD

Of some 180,000 claims, it is estimated that about 100,000 will relate to withdrawals of ground water in amounts of 5,000 gallons a day or less (primarily domestic supplies). Although the number of claims is great, the individual and accumulative usage represents a negligible part of the total use of our water resources. Less than one percent of the claims will even become controversial.

Therefore, it is thought that these claims should not be subjected to the test of a general adjudication - the benefits would not justify the burden on the public. The proposed amendment will certify, by legislative declaration, all such claims that were filed on or before June 30, 1974 as valid water rights, to the extent of beneficial use. The burden of proof to substantiate the extent of the water right will still rest with the user in case of controversy and such rights will be subject to relinquishment for nonuse in the same manner as other rights.

(RCW 90.14)

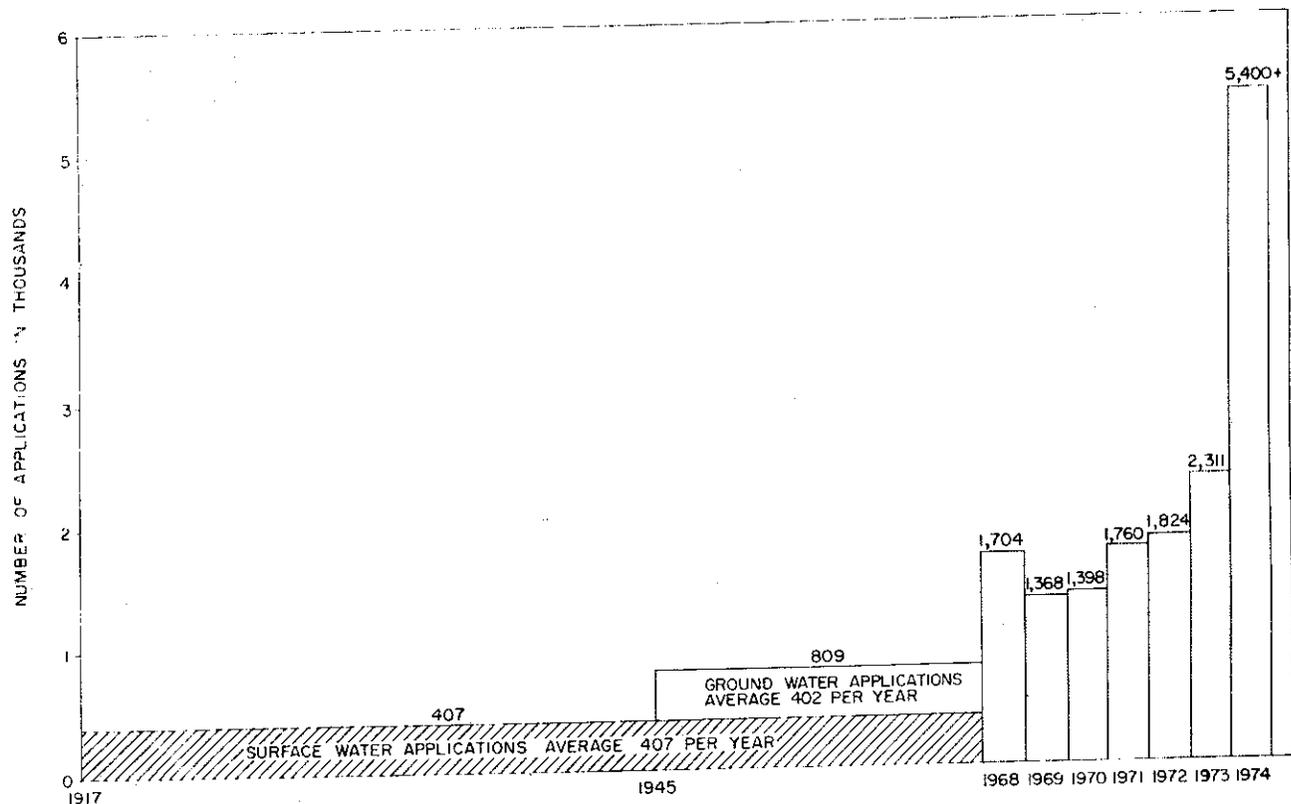
## Modification of 5,000 GPD Exemptions

Under the present law, withdrawals of ground water in an amount of 5,000 gallons per day (GPD) or less are exempt from the appropriation permit requirement, but a right is established to the extent of beneficial use. Under the Registration Act, all claims to such minimal-use rights are required to be filed on or before June 30, 1974.

Unless the statute is amended, more unrecorded water rights will begin to accumulate which would in part negate the intent of the Registration Act.

The proposed amendment will provide a very simplified declaration and recording procedure for small uses of ground water that will have a minimum impact on the public and agency staff.

(RCW 90.44.050)



WATER RIGHTS HISTORICAL FILINGS 1917 TO 1974  
SURFACE AND GROUNDWATER

FIGURE 4

## Terminable Permits for Water Use

Historically, water right permits in the State of Washington have constituted an agreement between the permittee and the state; if the permittee developed and placed the water to beneficial use within the terms and conditions of the permit, that person would be entitled to receive a certificate of water right which became an appurtenance to the property upon which the water was used.

The "water right as a property right" concept is recognized in most of the western states and was acceptable in our state when there were surpluses of water and little thought was given to the need for protecting our valuable fisheries and game resources and the environment, in total, for future generations.

With increasing demands for the use of our water resources, it is mandatory that the state's waters, unallocated at present or reverted to the public through non-use of existing water rights, are managed to assure the attainment of maximum net benefits to the people of the state.

To assure this attainment, the future use of public waters by private entities, or for private gain, with the exception of minimal uses, must be subjected to a recurring assessment as to whether continued use of water for the authorized purposes is the best and highest use of such waters, recognizing that the needs and interests of the people of the state will change with time.

Therefore, future allocations of the public waters of the state should not be authorized on a permanent basis nor should such rights to use water be attached to the land as a property right; rather, the property description will be utilized solely for identification and management purposes during the term of authorization.

Terminable permits will be issued with specified conditions relating to the re-assessment schedule, provisions for withdrawing or cancelling the permit, when appropriate, either as a result of the assessment or non-use of the waters in question; provided, that, the initial period of authorization shall be of sufficient duration to allow a reasonable time for repayment of construction costs, if appropriate. Provisions for withdrawing or cancelling a permit will be so clearly defined that the holder of such a permit may, with reasonable certainty assure himself, through careful water management, that a permit will not be withdrawn or cancelled before the stated expiration date.

## FINANCIAL ISSUES

A basic task of managing the water resource is providing for its most beneficial development.

The giant in the financial picture has been the federal government, through the U.S. Army Corps of Engineers, the Bureau of Reclamation and the Soil Conservation Service.

Recent years have seen federal support of water development diminish. State and local government and individual users are faced with playing a larger role.

In the Water Resources Act of 1971, the Legislature directed the Department of Ecology to "...evaluate the needs for water resource development projects and the alternative methods of financing..."

The state at this time offers local communities financial help in the areas of agricultural supply, municipal supply, wastewater treatment, and flood control.

### AGRICULTURAL SUPPLY

The Reclamation Revolving Account and Referendum 27 are two sources of funding for agricultural water supply.

#### Reclamation Revolving Account

The Reclamation Revolving Account was created in 1919 under the State Reclamation Act. It has been used as a source of long-term, low-cost financing for reclamation districts through fund advances and purchase of district bonds for both new lands and rehabilitation and betterment projects.

The amount of the fund fluctuates as the account is used, and as interest payments are returned to it. However, in recent years the amount available per year has been about \$1/2 million.

Presently, 30 reclamation districts, representing a combined total area in excess of 100,000 acres, are benefiting through the use of the account.

Through contract with the districts, the Department loans funds to finance construction or renovation of irrigation facilities. These loans are limited to a maximum amount of \$50,000 and must be repaid in 10 years. The interest rate on these loans is a maximum of eight percent, as set by statute.

The Department also may purchase bonds from a district whose project is found to be financially sound. Bond monies support preconstruction planning as well as actual construction.

No dollar limit exists for bond investment. The largest bond purchase has been in the amount of \$480,000 to the Naches-Selah Irrigation District. The maximum repayment period on bond investments is 40 years.

The Department develops realistic repayment schedules for loans or for retiring general obligation bonds on the basis of the districts' expected annual revenues and annual costs.

Since 1955, the interest earnings on that portion of the Reclamation Revolving Account not invested in advances or loans to districts has gone to the General Fund. Therefore, the account is almost in a state of equilibrium at present with interest earnings on advances and loans only slightly exceeding administrative costs.

In the last two biennia, the Legislature has line-appropriated funds from the account to support State Water Planning activities. In 71-73, \$200,000 was used; in 73-75, \$522,737 was appropriated.

Further direct appropriations from the account by the Legislature would be adverse to the continued maintenance of a viable fund.

#### Referendum 27

Twenty-five million dollars of Referendum 27 bond monies were designated for agricultural water supply facilities between 1972 and 1980.

The Legislature budgeted \$3.8 million for the 73-75 biennium. The Department has made one grant for \$55,677, with \$112,757 required in local and federal matching funds.

As the Fiscal Year closed, a number of grant applications were in process.

The short-range objective of Referendum 27 is to provide some financial assistance in the next year and a half for the upgrading and rehabilitation of three or four defined projects.

The long-range objective is to assist in the irrigation of new lands. Interest in developing new lands for irrigation is high. However, the problem of financing such projects is complex.

The Department is asking the Legislature to appropriate \$12.5 million of Referendum 27 funds this year to be matched for the construction of the Second Bacon Siphon and Tunnel.

Construction of the Bacon Siphon is the key to the continued and orderly development of lands in the Columbia Basin. The first phase of this development would be to supply water to currently by-passed and deferred lands within the East Low Canal system. Development of these lands alone will provide sufficient benefits in increased food production, employment and statewide economic stimulants to justify construction of the Bacon Siphon. Future phases of development would require construction of additional distribution facilities to ultimately bring 600,000 acres under irrigation. Full development of the Columbia Basin project is a very long term process; therefore a phased development must be anticipated.

## MUNICIPAL SUPPLY

Fifty million dollars of Referendum 27 bond monies were earmarked to improve existing municipal supply distribution systems and to construct new ones.

The referendum designated the Department of Ecology as the agency responsible for the disbursement of these funds. The Department of Social and Health Services, as the agency responsible for municipal and industrial water supply activities, administers the program.

To date, the Legislature has appropriated \$9.5 million for municipal supply purposes. Thirty-four loans have been made with local communities providing 60 percent of the total cost of each project.

Efforts are being made to help local governments develop an adequate reserve account for maintenance and improvement programs. If this effort is successful, additional state funds for municipal and industrial supply will not be necessary.









