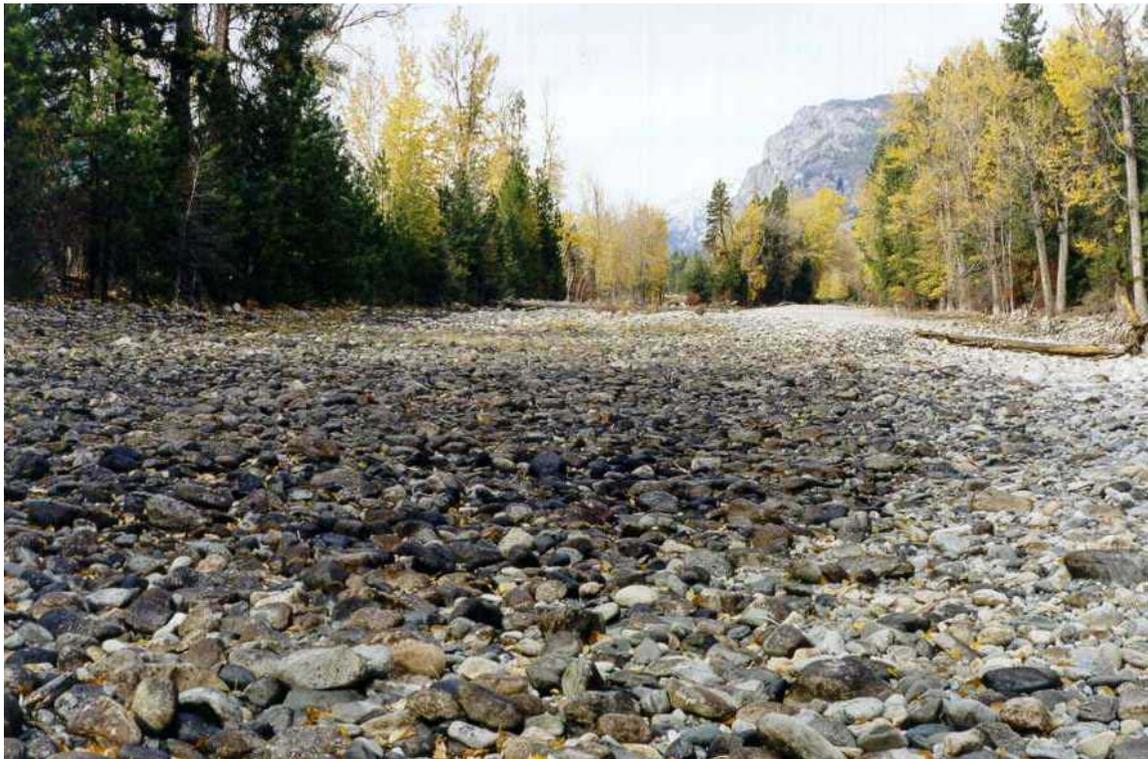


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# 2001 Drought Response



## Report to the Legislature



December 2001  
Ecology Publication No. 01-11-017

**Cover photo:**

**Dry bed of the Methow River, downstream of Mazama in Okanogan County. Although some reaches go dry every year, this reach dries up only once about every 10 years.**

*Ecology photo taken on Oct. 24, 2001.*

# 2001 DROUGHT RESPONSE

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## Report to the Legislature

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**Water Resources Program**



*In partnership with the:*

**Washington State Department of Agriculture**  
**Washington Department of Fish and Wildlife**  
**Washington Department of Health**  
**Washington Conservation Commission**



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# SETTING THE STAGE

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This legislative report outlines how the state agencies responsible for managing Washington's emergency drought activities responded to the 2001 water shortage. Those agencies are:

- **Washington Department of Agriculture (WSDA)**
- **Washington Department of Ecology (Ecology)**
- **Washington Fish and Wildlife (WDFW)**
- **Washington Department of Health (DOH)**
- **Washington Conservation Commission (WCC)**

## **Winter drier than predicted**

As Washington began water year 2001 (Oct. 1, 2000, through Sept. 30, 2001), there was little reason to expect anything out of the ordinary. Climatologists had even predicted cooler, wetter-than-normal weather for the Pacific Northwest.

While November and December 2000 were unusually dry, most experts assumed the typical heavy snow and rainfall levels would begin again in January 2001. Unfortunately, Washington's dry weather pattern continued through January and February, not returning to normal until March. The outlook for summer water supplies was turning bleak.

By mid-March, nearly every corner of Washington was suffering a water supply deficit. The state depends heavily on abundant water to power its hydroelectric dams. Federal, state and local officials worried low river flows would disrupt state energy production. Dwindling water supplies put various threatened and endangered fish species at risk. The state also braced for severe economic strain on its agricultural, municipal and industrial sectors due to the drought.

On March 14, 2001, Gov. Gary Locke authorized the Department of Ecology (Ecology) to declare a statewide drought emergency. Washington was the first Northwest state to make a drought declaration, which remains in effect until Dec. 31, 2001.

## **Nearly every corner met drought criteria**

Unlike most states, Washington has a statutory definition of drought, consisting of two parts:

- An area has to be experiencing or projected to experience a water supply that is below 75 percent of normal.
- Water users within those areas will likely incur undue hardships as a result of the shortage.

Washington has a specific plan for responding to drought conditions. The general process involves activating specific committees that:

- Monitor water supply conditions.
- Make assessments about the likely impacts of a drought episode.
- Develop programs for addressing the various, identified drought effects.

This report will highlight the myriad of state drought-response activities, examine lessons learned and describe current water supply conditions.

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# BACKGROUND

## Droughts natural part of climate cycle

Even in the Evergreen State, droughts are a natural part of the climate cycle. In the last century, there have been a number of drought episodes, including several that have lasted for more than a single season, such as the dry periods between 1928-32 and 1992-94.

The last severe drought episode occurred in 1977, when many of the current records for low precipitation, snowpack, and stream flow totals were set. Overall, the 2001 drought turned out to be the second-worst drought year in state-recorded history.

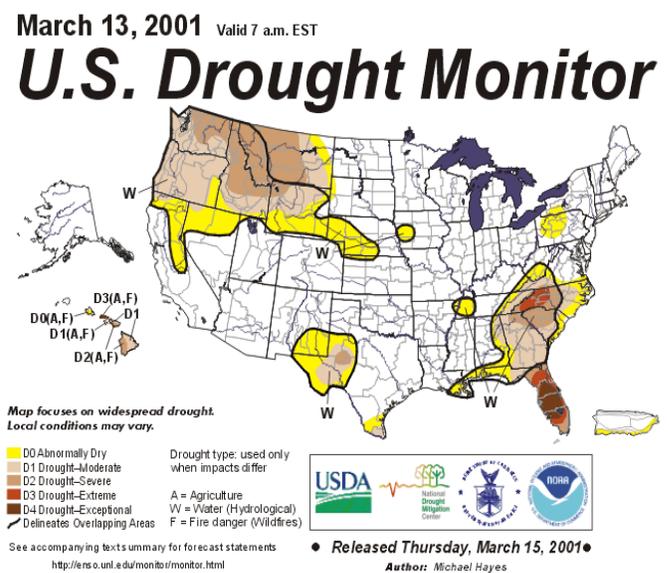
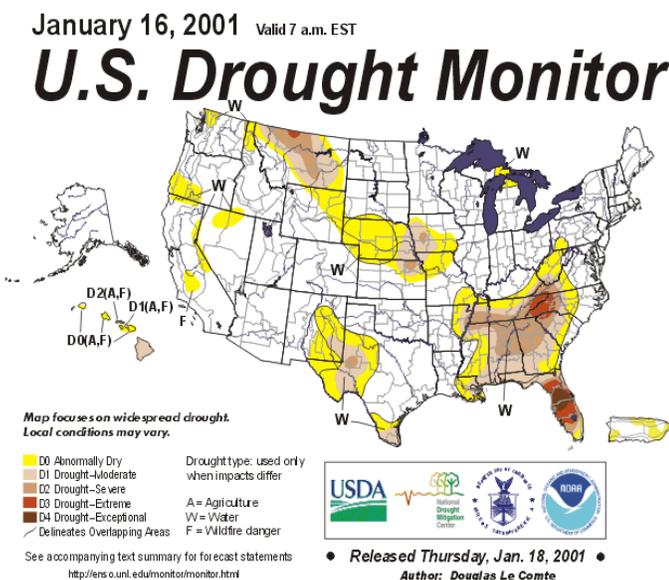
## 2001 conditions emerged quickly

Unlike other natural disasters, droughts normally occur slowly but last a long time. By most standards, however, the 2001 drought came on fairly rapidly. Between November 2000 and March 2001, most of the state's rainfall and snowpack totals were only about 60 percent of normal.

Droughts are often categorized on their likely impacts. The National Drought Mitigation Center maps shown below identify three categories:

- **Agricultural** — Crops that rely on natural precipitation are threatened.
- **Water supply** — Supplies for irrigated agriculture and municipalities are threatened.
- **Fire hazard** — Threat of wildfires from dry conditions is increased.

The maps show how quickly the state plunged into drought. As late as mid-January, most of the state was largely unaffected; by March, moderate to severe drought conditions gripped the entire state.



## READYING THE RESPONSE

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### Existing framework in place

Washington state has developed a Comprehensive Emergency Management Plan to respond to various types of emergencies. The Department of Ecology is the lead response agency for drought and has developed a comprehensive Drought Contingency Program to respond to water shortages.

The governor's office, Ecology and the state departments of Agriculture, Fish and Wildlife, Health, Military and Natural Resources, Utilities and Transportation Commission, offices of Trade and Economic Development and Community Development, State Patrol and Washington Conservation Commission identified several primary areas on which to focus Washington's 2001 drought-response efforts:

- **Maintaining critical energy supplies**
- **Aiding state agriculture**
- **Protecting public water supplies**
- **Safeguarding fish and stream flows**
- **Firefighting preparation**

The governor's office created a specific action plan to respond to the water shortage. The plan created several committees to help oversee the response, outlined below:

### Water Supply Availability Committee (WSAC)

Chaired by Ecology, this committee consists primarily of representatives from federal agencies involved in monitoring, forecasting or managing state water supplies. The committee conducts ongoing water supply monitoring and forecasting to identify possible drought conditions as early as possible. If an area was experiencing or projected to experience a water supply below 75 percent of normal, the committee advised the Executive Water Emergency Committee (EWEC) that one of the two statutory tests for drought conditions had been satisfied. The WSAC continued to monitor water supply conditions throughout the summer and into fall 2001.

- **WSAC membership** — Representatives from the Washington Department of Ecology (chair), U.S. Geological Survey, National Weather Service, Natural Resources Conservation Service, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers and Bonneville Power Administration.

### Executive Water Emergency Committee (EWEC)

Chaired by the governor's office, this committee assessed the information provided by the Water Supply Availability Committee. The EWEC then recommended Gov. Locke approve Ecology's declaration of a statewide drought emergency. EWEC met regularly to oversee state agency response to the drought and ensure the state's response was timely and appropriate.

## READYING THE RESPONSE

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- **EWEC membership** — Representatives from the governor’s office (chair) and state departments of Agriculture, Ecology, Fish and Wildlife, Health, Military (Emergency Management Division) and Natural Resources, Washington Conservation Commission and state offices of Trade and Economic Development, and Community Development.

### **Drought Operations Center**

Ecology Director Tom Fitzsimmons created a special Drought Operations Center to provide a quick, integrated response to the drought. The center melded drought response expertise and funding from the state departments of Agriculture, Ecology, Fish and Wildlife, and Health and Washington Conservation Commission to address problems and formulate consistent policies.

### **Governor Work Groups**

Gov. Locke appointed a senior-level staff group to integrate and coordinate the state’s response to the drought, the impending energy crisis and efforts to protect threatened and endangered fish species. The governor also created a cabinet-level “People and Communities Work Group” to evaluate the cumulative effects of the drought and energy crisis on rural communities and the agricultural economy. The work group is developing a long-term strategy to address issues facing the state’s rural and agricultural economies.

# MAINTAINING CRITICAL ENERGY SUPPLIES

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## **Drought lowers hydropower capabilities**

Washington was particularly hard hit by the drought because the state depends highly on hydropower. The 2001 drought decreased river flows resulting in less electrical generation and tighter power supplies. The primary energy-related aim of state and federal authorities was to maximize the refill of reservoirs and reduce the amount of power that need to be purchased on the open market. For Washington, the lead state agencies were the Utilities and Transportation Commission and Office of Trade and Economic Development.

In past drought years, shortfalls in state energy generation were typically offset by purchasing power generated outside the Northwest, particularly from California. However, this year state utilities and the Bonneville Power Administration (BPA) were only able to purchase out-of-state power at extremely high prices, causing a fiscal emergency for BPA and some public utilities.

The financial squeeze caused many utilities to raise their rates. Fortunately, an unprecedented load reduction effort by Washington utilities and industries helped BPA keep its average Oct. 1 rate hike to only about one-fifth of first estimates.

## **Energy alerts**

Gov. Locke declared, and then extended, several state energy alerts directing energy reductions in public buildings, allowed short-term siting of new small-scale diesel and gasoline generators and public appeals for power conservation and electricity curtailment. State-owned and managed facilities reduced their power consumption by 10 percent. By Sept. 30, all the governor's energy alerts had been lifted.

# AIDING STATE AGRICULTURE

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## **Drought adds to state agricultural woes**

The 2001 drought was the latest in a series of economic blows to Washington's agricultural economy. With stream flows well below half of normal and groundwater levels threatened, there was significantly less water available for irrigation. Roughly 70 percent of Washington crops are produced on irrigated land — about 27 percent of the state's harvested cropland.

The Washington State Department of Agriculture (WSDA) assembled a special Drought Response Action Team, consisting of more than 30 agricultural organizations. The team met regularly with irrigators, key agribusiness representatives, U.S. Department of Agriculture and other federal and state agency officials to provide information, make recommendations and take action to deal with short- and long-term drought-related problems. Primary duties included:

- Monitoring water supplies across the state.
- Securing additional federal funding for affected areas.
- Providing technical assistance and funding to conservation districts across the state.

WSDA worked with Washington's congressional delegation and received \$10.1 million in federal disaster payments to assist some growers. WSDA directed \$2 million to be used to address water storage needs to benefit fish and farms including a study examining future large-scale storage in the Yakima Basin.

## **Ecology receives emergency permit authority**

As the lead drought-response agency, Ecology received emergency powers to issue emergency drought permits, approve temporary changes and transfers between willing users and provide funding for agricultural and fisheries projects.

Under the emergency provisions, Ecology had to process all emergency diversion and withdrawal applications and temporary water-right changes within 15 days of receipt. Regular public notification and State Environmental Policy Act review requirements were suspended. All agency authorizations issued under the drought order are valid only until Dec. 31, 2001, when the declaration ends.

On May 10, Ecology adopted an emergency rule allowing the agency to:

- Issue temporary water permits to expand capacity on existing wells.
- Permit previously drilled emergency wells.
- Permit new wells or allow the use of alternative sources of water.

## **Nearly 175 temporary permits issued**

Ecology issued 172 temporary emergency water-right permits and changes of existing water rights for farmers and municipalities in **Benton, Chelan, Clallam, Douglas, Franklin, King, Kitsap, Kittitas, Klickitat, Okanogan, Stevens, Walla Walla** and **Yakima counties**.

# AIDING STATE AGRICULTURE

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Across the state, agency field staff responded to various complaints of illegal water diversions. They used these opportunities to provide valuable technical assistance to the public regarding the need for legal water rights. Ecology staff also obtained voluntary compliance when it determined a diversion was unlawful.

## **Assisting Columbia and Yakima basin farmers**

In April, Ecology issued an order temporarily reducing mandated minimum stream flows in the **Columbia River basin** between April and September. Without this action, about 300 farmers with junior water rights faced losing the ability to draw water out of the Columbia River during the growing season. The irrigators received 33,322-acre feet of water for their crops during the driest part of the summer, saving millions of dollars in crops.

As the largest watershed entirely within the boundaries of Washington state, the **Yakima River basin** is also one of the state's most productive agricultural areas. Most Yakima basin irrigators get their water through the U.S. Bureau of Reclamation's Yakima Project. The bureau maintains five storage reservoirs that provide water for several area irrigation districts once natural stream flows drop or snowpack levels melt.

In past droughts, Ecology has authorized Yakima basin irrigators to use deep wells for emergency supplies. However, hydro geologic understanding of the basin has increased, making it clear that deep wells eventually affect stream flows in the Yakima River. Ecology authorized some emergency wells and contributed \$1.2 million toward mitigation costs to offset long-term effects of pumping emergency wells would have on the Yakima River.

## **Roza and Kittitas districts get emergency water**

The two irrigation districts had expected to only receive less than 30 percent of their regular water allocation due to the drought. Ecology, WSDA and WDFW worked with the **Roza Irrigation** and **Kittitas Reclamation districts** in Central Washington to provide nearly 50,000 acre-feet of emergency lease water for both fish and agricultural uses in the Yakima River basin.

Ecology approved 11 water transfer decisions from the West Side Ditch Co., Cascade Irrigation District, Trendwest Resorts and the Lamb Estate to bring more than 42,000 acre-feet to the Kittitas Reclamation District.

The Roza Irrigation District was able to augment its supplies by approximately 7,100 acre-feet through transfers from the Sunnyside Division through a program that left some lands fallow and through a water recovery project with the Sunnyside Valley Irrigation District. The irrigation district also spent \$2 million to obtain additional water supplies.

# AIDING STATE AGRICULTURE

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## **State conservation commission assists local districts**

The Washington Conservation Commission received \$57,000 from Ecology to assist with the 2001 drought response. The Commission allocated \$23,227 to seven conservation districts around the state that volunteered to assist. The Commission also used \$18,846 for in-house staff activities related to the drought, such as participating in weekly Drought Operations Committee meetings, supporting district activities and answering questions from private landowners. Specific drought-related activities included:

### **Asotin County Conservation District**

- Discussed options with several landowners, including lease applications with two landowners.

### **Chelan County Conservation District**

- Met with Wenatchee Reclamation District, Washington State University, Natural Resources Conservation Service and Growers Clearinghouse to plan drought strategy.
- Coordinated workshops and published a water conservation newsletter.

### **Clallam Conservation District**

- Published newsletter articles and prepared maps.
- Enrolled 1,016 acres in the lease program.

### **Foster Creek Conservation District**

- Published newspaper and newsletter articles and launched a web site.
- Maintained a list of willing water right transferees.
- Assisted water rights holders with transfer applications.

### **Jefferson County Conservation District**

- Researched water rights to identify potential leasers and contacted landowners.

### **Kittitas County Conservation District**

- Published newspaper articles.
- Referred potential leasers to the Conservation Commission or local irrigation districts.
- Expanded demonstrations of soil moisture monitoring equipment.

### **Okanogan Conservation District**

- Contacted 15 individuals about water leases.
- Made information available at the district office.



# PROTECTING PUBLIC WATER SUPPLIES

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## State health agency manages drinking water problems

While state agencies worked feverishly to manage Washington water supplies for agricultural uses, the Department of Health (DOH) led state efforts to help public water systems manage and conserve drinking water to reduce the risk of shortages or outages. DOH coordinated numerous drought-related drinking water activities, including:



- Awarding a \$180,000 grant to the **city of Goldendale** to help bring a new water source on line after the drought reduced the city's primary water supply by about two-thirds.
- Filing a legal declaration citing potential adverse public health impacts if a Roza Irrigation District lawsuit resulted in

denying indoor water use to the Kittitas County **towns of Roslyn and South Cle Elum** as well as other area public water systems with junior water rights.

- Assisting the **Chatteroy Springs West** water system in Spokane County in its attempts to obtain additional water rights to avoid drought-related water shortages and the **Vel View** system in evaluating a possible change from using its own well to constructing an intertie with the city of Spokane.
- Advising and consulting with several small water systems in **Thurston County** on possible consolidation and/or interties with nearby larger systems to alleviate shallow-well problems serving individual systems.
- Evaluating emergency water right applications for the **city of Kent** and the **Sammamish Plateau Water and Sewer District** in east King County.
- Addressing **city of Anacortes'** low stream flow issues.

## Determining where help needed most

Early in the drought, DOH conducted a survey of all public water systems serving 1,000 or more customers to:

- Determine individual water system vulnerability.
- Understand measures being taken locally to address the drought.
- Assess the need for state assistance.

# PROTECTING PUBLIC WATER SUPPLIES

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Using the survey information DOH's Division of Drinking Water launched an extensive technical assistance effort designed to help small drinking water systems prepare for drought-related drinking water issues and respond to any emergencies. DOH also established special drought coordinator positions in the division's three regional offices.

## **Preparing guidance, identifying resources**

The agency prepared guidance on water conservation, emergency drought response and equipment, and water shortage planning. More than 200 utility representatives attended DOH-sponsored workshops to receive training on:

- Drought response activities
- Leak detection and repair
- Water use efficiency
- Water shortage planning
- Safe use of emergency sources
- Water level monitoring

To help utilities better anticipate and prepare for possible water shortages, DOH purchased and distributed water level probes and flow pressure gauges to local health agencies to assist small systems monitor well levels and maintain adequate pressures. In Eastern Washington, Health identified response equipment such as water trucks and other portable storage devices, emergency pumping equipment and generators, and established a list of well drilling and repair companies in case water supplies became critical.

# SAFEGUARDING FISH & STREAM FLOWS

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## Low stream levels threaten fish

Under the unified drought response, the Washington Department of Fish and Wildlife (WDFW) were heavily involved in addressing drought risks almost as soon as the drought emergency was declared. WDFW worked closely with other drought response agencies and the governor's office to identify:

- Water-critical stream reaches where such activities as emergency water rights and transfers could exacerbate stream conditions for fish.
- Reaches where conservation and water leasing or purchase would do the most good for fish.

## Finding potential trouble spots

Fish and Wildlife assigned a staff person to coordinate statewide drought activities and deployed three biologists to coordinate regional activities in Western Washington and the Columbia and Snake River main stem and tributaries. Anticipated drought effects on fish included:



WDFW crews assess portal between boulders in center and overflow channel to the left where water would be routed to by-pass cascades on the Gray Wolf River near Sequim. *Photo courtesy WDFW, August 2001.*

- Blockages to upstream adult salmon migration and spawning.
- Low flows and critical high temperatures.
- Possible mortality of adult returning salmon due to low water, high temperatures, crowding and low dissolved oxygen.
- Rearing and spawning habitat compressed or unavailable with low or non-existent flows, especially in Eastern Washington.
- Water quantity, quality and other problems at hatcheries and rearing ponds.

As part of the planning process, WDFW worked in partnership with the Central Puget Sound Water Suppliers' Forum to prepare a 2001 drought response plan. The document was designed to craft solutions to enable fish and people to have sufficient water this summer and fall and includes a variety of approaches to address these needs.

# SAFEGUARDING FISH & STREAM FLOWS

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As the drought progressed, reduced stream flows caused numerous fish-passage problems on the American River, Rattlesnake Creek and other Yakima River tributaries. Some fish stocks were lost due to the drought.

The WDFW drought team worked with agency and tribal biologists to identify and monitor potential trouble spots in streams across the state. Fish and Wildlife was allocated \$300,000 to retrofit hatcheries on the Elochoman, Green, Kalama, Puyallup and Toutle rivers and on Carr Inlet. Adult hatchery salmon were moved out of harm's way on the Elwha River and the agency assisted the Lower Elwha S'Kallam Tribe in safely relocating its hatchery steelhead.

## **Innovative agreement keeps water in Columbia River**

To help Columbia River fish populations, the state entered into an agreement with the Bonneville Power Administration (BPA), U.S. Bureau of Reclamation (USBR) and the Columbia-Snake River Irrigators Association to take advantage of BPA efforts to address potential power production shortfalls. Under the agreement, BPA paid growers in the Columbia Basin Project to remove 75,000 acres from agricultural production. The action kept extra water in the river during the most critical drought months.

Some of the Columbia Basin Project water was made available to downstream irrigators with interruptible water rights. Ecology reimbursed BPA \$1 million and the Reclamation bureau \$40,000 for lost revenue. The Columbia-Snake Irrigators Association donated \$10,000 to purchase water rights to keep water in several Columbia River tributaries where fish were struggling to survive.

## **Other water leases vital for fish**

The state also spent about \$311,000 on 21 separate water right leases to farmers to keep trust water in other fish-bearing streams located in:

- **Libbey Creek**, located in the Methow River basin.
- **Yakima and Teanaway rivers**, located in the upper Yakima River basin.
- **Touchet River**, located in the Walla Walla River basin
- **Dungeness River**, located in the Elwha-Dungeness river basin

*Note: For a complete list of water right leases, please see [Appendix A](#).*

In the **Dungeness watershed**, Ecology worked with the Dungeness Water Users Association, comprised of a mix of irrigation districts and companies, to commit more than 1,000 normally irrigated acres to the temporary water trust program. Between Aug. 1 and the end of the irrigation season, irrigators removed approximately 20 percent of their acreage from production. This action augmented stream flows to protect spawning salmon.

# SAFEGUARDING FISH & STREAM FLOWS

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## Fish passage barriers removed

Fish and Wildlife crews monitored and removed beaver dams and worked with the U.S. Forest Service and Washington Parks and Recreation Commission on an educational program to prevent people from constructing “recreational boulder dams” used to pond waters in streams for wading and swimming. Parks employees removed several of these obstructions on the Dosewallips River near the Jefferson County town of Brinnon and from the Green River near Auburn.

Using money from the state Drought Preparedness Account, WDFW also undertook a number of projects to assist troubled fish runs including:

- **Gray Wolf River** — This tributary to the Dungeness River near Sequim provides important spawning and rearing habitat for pink salmon. A WDFW biologist reported that low flows were causing a blockage in the river, keeping thousands of fish from entering their spawning grounds. Fish and Wildlife crews worked to construct a temporary channel around a small waterfall, allowing the salmon to enter their upstream spawning ground.
- **Box Canyon Creek** — Located in the Upper Yakima River basin, this creek is the primary spawning tributary for threatened bull trout in Lake Kachess. The trout population is very depressed and in danger of extinction. When stream flows dropped from 12-14 cubic feet per second (cfs) to less than 1 cfs due to the drought and recreational dams, WDFW installed a temporary flume using steel posts, straw bales, filter fabric and plastic sheeting. The stream level was raised enough to allow the bull trout passage from the lake to their spawning habitat.
- **Indian Creek** — This central Washington tributary of Rimrock Reservoir located on the Tieton River is one of the primary spawning streams for both kokanee and bull trout that inhabit the lake. However, low flows combined with several recreational dams constructed in the lower miles of the creek kept fish from passing from the reservoir into Indian Creek, which supports one of the healthiest runs of bull trout in the state. Fish and Wildlife excavated a bypass channel and a temporary berm to concentrate all surface flows into it. State biologists observed record numbers of bull trout adults and redds in the new channel as well as kokanee.
- **Rattlesnake Creek** — As one of the largest creeks entering the Naches River in central Washington, this creek provides spawning and rearing habitat for spring Chinook salmon and steelhead. During the drought, a fish passage barrier developed at the mouth of the creek. Salmon and steelhead could not pass. Crews from WDFW and Washington Conservation Corps constructed a rock weir to concentrate stream flows and provide sufficient water depth for passage of stream Chinook.
- **Tahuya River** — Agency crews also removed a beaver dam on the Tahuya River in Kitsap County that was blocking an entire wild Coho salmon run.

# FIREFIGHTING PREPARATION

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## State agencies prepare for wildfires

The state Department of Natural Resources (DNR), the Military Department's Emergency Management Division (EMD) and the fire marshal's office within the Washington State Patrol worked together to prepare for wildfires. DNR belongs to a consortium of firefighting agencies which includes the U.S. Forest Service and local fire departments.

The state worked with federal and regional fire control entities to put together skilled teams to provide a quick and sustainable attack on wildfires. DNR conducted numerous workshops across the state to assist residents and planners improve fire safety, especially where wild and urban areas converge.

## Dry weather sparks blazes

Although regular rainfall had returned to many areas of the state by June, moisture levels remained low, particularly in high elevations which were not covered with their usual winter snowpack. By mid-August, DNR-managed fire crews battled an array of major fires following a heat wave in early July and an epidemic of lightning storms in mid-August. The fires included:

- **Foster Lane:** July 4, four miles northwest of Spokane, 260 acres
- **Libby South:** July 9, four miles west of Twisp, 3,830 acres.
- **Dam Tower:** July 10, near Nespelem, 3,000 acres
- **Dog Creek:** July 12, 22 miles northwest of Naches, 500 acres
- **Porcupine Bay:** July 13, near Davenport, 441 acres.
- **Union Valley:** July 28, 4 miles north of Chelan, 4,800 acres.
- **Port Kelley:** July 28, Walla Walla County, 7,000 acres
- **Icicle Creek Complex:** Aug. 12, three miles southwest of Leavenworth, 7,600 acres
- **Virginia Lake Complex:** Aug. 12, southeast of Omak and Okanogan, 79,700 acres
- **Rex Creek Complex:** Aug. 12, 20 miles northwest of Chelan, 48,300 acres
- **Spruce Dome Complex:** Aug. 12-13, on the Yakama Indian Reservation, 2,600 acres.
- **Brewster Complex:** Aug. 13, 5 miles north of Brewster, 6,100 acres.
- **Tonasket Complex:** Aug. 13, near Tonasket in Okanogan County, 3,800 acres
- **Goodnoe Hill:** Aug. 20, 15 miles southeast of Goldendale, 10,400 acres

The fires, aggravated by dry weather conditions, cost the state around \$38 million and other local, regional and federal agencies more than \$100 million.

## Burn bans

Immediately following the deaths of four federal firefighters near Winthrop on July 10, DNR called for a ban on burning on all private and state-owned forest lands in nine Eastern Washington counties. The ban, which was lifted later this fall, included burning land-clearing debris, recreational bon fires and burn barrel fires.

## GETTING THE WORD OUT

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In order to deliver effective, timely information to the public and the media, the state created a special Drought Communications Group comprised of public information, outreach and technical staff. The five primary state departments and agencies involved in responding to the drought — Agriculture, Ecology, Fish and Wildlife, Health and Washington Conservation Commission — led the efforts surrounding agricultural assistance, safe drinking water for communities and maintaining adequate water in state rivers and streams for fish and other uses.

Many other state agencies were also involved in this critical effort including representatives from the governor's office, Office of Financial Management, Department of Natural Resources, Military Department's Emergency Management Division, Office of Community Development, Office of Trade and Economic Development, Parks and Recreation Commission and Washington State Patrol.

The Drought Communications Group worked together to provide:

- Weekly media releases describing various drought-related activities around the state.
- Timely updates on energy and water supply conditions.
- Comparisons between the 2001 and 1977 droughts. The 1977 event was the worst in state-recorded history.

### **Media releases, hotlines and web sites**

Between March 14 and Oct. 1, the Department of Ecology (Ecology) distributed 33 drought-related press releases. Members of the communications group conducted interviews with newspaper, radio and television media from nearly every Washington community. Other agencies, such as the Washington Department of Fish and Wildlife (WDFW) also contributed guest opinion and editorial articles to state newspapers and undertook interviews with reporters

Ecology created a special 2001 drought web site that described conservation measures, provided energy, weather and water supply updates and outlined how water holders could apply for emergency drought permits, temporary water right transfers and financial assistance. (The address is <http://www.ecy.wa.gov/programs/wr/drought/droughthome.html>). All the state drought agencies, the governor's office and various other federal, state and local government-run web sites provided links to the drought web page. WDFW also posted their drought plans to protect fish and stream flows on their own web site.

Ecology also launched a special toll-free hotline at 1-800-468-0261 to answer public concerns and questions about the drought. Staff representing all the drought-response agencies answered hundreds of calls between April and October.

## GETTING THE WORD OUT

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In May, the state Department of Health (DOH) distributed a special drought-related issue of its newsletter, *Water Tap*, which was sent to more than 4,200 water systems across the state. The issue focused on drought response and water use efficiency. DOH also established its own drought web site for water systems and the public to obtain key drought-related information. Between July and September, the drought pages rated among the most visited on the Drinking Water web site.

### **Agricultural-related information helps farmers**

The state Department of Agriculture (WSDA) created its own communications team that included members of various agricultural commodity groups to provide information on drought-related agricultural issues. The team helped distribute information about the types of assistance available to the agricultural community.

Besides publishing fact sheet on issues such as the drought effects on the nursery industry, commodities such as wheat, peas and lentils and barge transportation on the Snake River, WSDA also produced “*The Impact of the 2001 Drought on Washington Agriculture*.” The report helped federal and state agencies, elected officials, key interest groups and the public understand the cumulative effects of the drought.

WSDA entered into an agreement with U.S. Department of Agriculture and Washington State University to provide specialty crop producers with educational programs that meet their unique risk-management needs. The programs provided producers with training and informational opportunities to help them make better use of financial management, crop insurance, marketing contracts and other risk-management tools. This yearlong program may be extended as needed.

The agriculture department also worked with the Washington State Outreach Council to help establish an Informational Resource Network/Crisis Hotline designed to help members of the state agricultural community locate agencies and organization for assistance.

Finally, WSDA is launching a web site that will provide an overview of drought impacts on agriculture. The site will feature data by industry, county and watershed and includes a summary of 2001 drought impacts and 2002 forecasts.

# BUDGET & EXPENDITURES

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## Past drought response money tapped

When the statewide drought emergency was declared March 14, Ecology quickly mobilized state drought response resources. The drought declaration opened about \$878,000 in the state Emergency Water Fund left over from previous drought events. The money was used by the departments of Agriculture, Ecology, Fish and Wildlife, Health and state Conservation Commission to hire new employees, especially in the most hard-hit drought areas, to help respond to the water emergency.

## Lining up more response funds

When the drought declaration was made in March, Ecology redirected the planned expenditures of about \$5.525 million from the state Drought Preparedness Account. The 2001 Legislature provided another \$6 million in emergency funding for the drought, bringing total state response funds to approximately \$11,525,000.

## Committed drought-related projects and activities

In order to respond to the drought, Ecology, which oversees drought-related expenditures, committed about:

- \$1,031,000 to the Okanogan, Sunnyside Valley, Icicle and Roza irrigation districts to purchase emergency lease water.
- \$1,000,000 to Bonneville Power Administration to offset losses in power generation revenues to provide water for junior-right water-holder irrigators on the Columbia River.
- \$691,300 to hire Ecology staff to process drought relief water applications.
- \$564,000 for stream-flow monitoring.
- \$445,000 to the state Department of Fish and Wildlife for salmon and trout protection.
- \$311,000 for 21 water right leases to keep water in critical fish bearing streams across the state. *(For a complete list, please see [Appendix A](#)).*
- \$231,200 to Goldendale, Pacific County and Roslyn municipal water utilities for emergency drought funding
- \$40,000 to the U.S. Bureau of Reclamation to reimburse administrative costs for creating trust water right on the Yakima River.

## Further drought-related commitments

The state is also in the process of committing drought-relief funds to provide:

- \$2,189,000 for future water purchases
- \$1,200,000 for Yakima emergency well pumping mitigation
- \$230,000 for drought assistance to the city of Kent

## Remaining balance

Total expenditures equaled \$7,932,500 — leaving a balance of \$3,592,500, which will be used for future drought activities.

# ACCOUNTABILITY & LESSONS LEARNED

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## Central Washington bore brunt of drought

By October, it was clear that the central part of the state, from the crest of the Cascade Mountains to the east banks of the Okanogan and Columbia rivers, suffered the most from the water shortage.

While Washington has procedures to respond to drought-related problems, it is clear the state cannot do everything. Dealing with drought requires cooperation, flexibility and imagination. Washington can protect its communities, businesses and agriculture while providing for fish and other natural resource needs when public and private sectors work together. The best example was the multi-party Columbia River agreement.

## Variety of lessons learned

The state drought-response agencies learned an array of lessons as a result of this year's water shortage. For example, management and staff at all five drought-response agencies concluded the existing drought-response plan needed to be revised to reflect new rules, procedures and, particularly, the need to protect threatened and endangered fish species.

The following is a quick glance at some of the other drought-related lessons learned as well as possible solutions:

### Rules/Funding

- Need more flexibility regarding matching funds.
- Update current role of mitigation where hardship exists. Possible solution: Review of hardship criteria and how it might relate to state relinquishment laws.
- Drought response rules do not necessarily reflect current state statutes. The state adopted a temporary, emergency rule during the 2001 drought. Possible solution: Update rule.
- Allotment of drought funds, including block funding and wildlife protection not necessarily found in rule. Possible solution: Update rule.

### Water Rights

- Essential to have more proactive communications between municipalities and state agencies regarding protecting fish.
- Need to better anticipate those areas in the state where mitigation and water banking may be needed most.
- Work with federal agencies such as U.S. Army Corps of Engineers and National Marine Fisheries Service to set up drought and habitat protection agreements.

### Water Buying/Leasing

- Establish priorities to get water in fish-critical basins as soon as possible. Many farmers were unable to participate because the program got a late launching start.

# ACCOUNTABILITY & LESSONS LEARNED

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## **Water Buying/Leasing (continued)**

- Prices to purchase and lease water evolved very quickly during the drought. Possible solutions: Develop a better rate scheme and secure dry-year leases that could be used to make water available during droughts.
- In some critical areas in Washington, agencies found it difficult to market the water buying and leasing program. The state also found its ability to barter for water limited. Possible solution: Build better, more defined roles for agricultural groups, local governments and other organizations.
- Work more closely with federal agencies, especially National Marine Fisheries and U.S. Fish and Wildlife services, to identify drought-related problems.
- Timing is critical. The drought was declared in mid-March and most crops had to be planted by April and May. It was a challenge to put the buying and leasing program in motion so quickly.

## **Outreach/Public Involvement**

- Critical to develop standing communication group; need detailed communications plan for future drought events.
- Public workshops in some key areas of the state, such as Walla Walla, were useful and well received. Possible solution: Conduct more drought-related workshops in areas experiencing water shortages.
- Role of and access to tribes sometimes uncertain. Possible solution: develop outreach approach plus policy direction within respective agencies.

## **Staffing/Expertise**

- Need to expand ability to match the type of expertise needed vs. what is available. Possible solution: Work together within Washington and other Northwest states regarding how to develop expertise lists.
- Resources were insufficient to track critical drought information and data. The current system is largely manual, which is inefficient in the time of a crisis.

## **Continued cooperation critical**

The pressures on Washington's vital water resources will continue with or without a drought. The cooperative spirit that successfully addressed the 2001 drought needs to be carried forward to deal with other water management issues. Failure to address these needs will simply set the stage for a new round of problems and conflicts the next time the state experiences a significant drought.

# 2002 OUTLOOK

## Latest trend: Looking wet

Although the drought emergency runs through Dec. 31, the new water year began Oct. 1, 2001, and ends Sept. 30, 2002. Although the wettest months — January through April — still lay ahead, the good news is if wetter-than-normal precipitation levels continue the possibility of a multi-year drought will be sharply reduced.

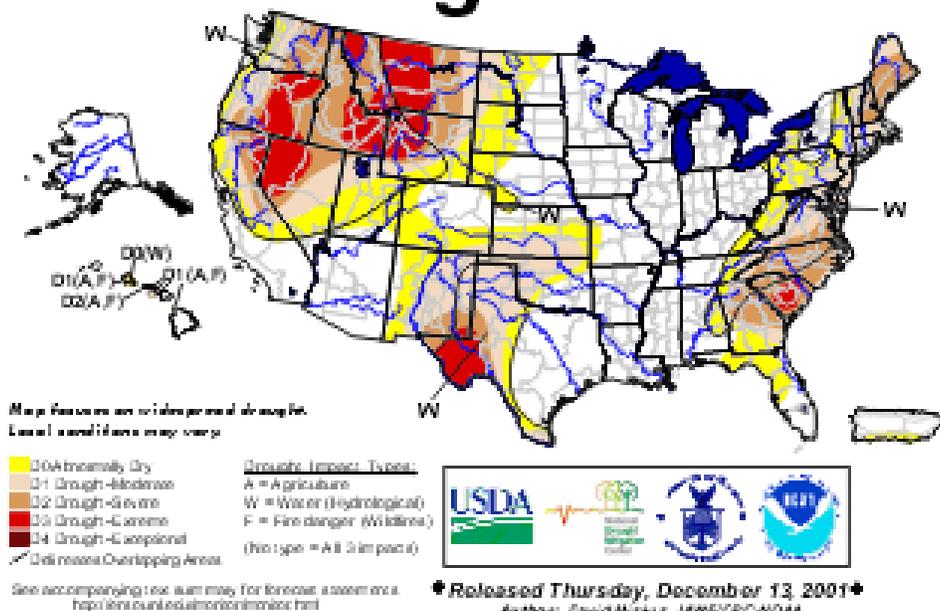
Currently, most mountain snowpack levels are well above 100 percent of normal. In Eastern Washington, the state is carefully watching reservoir levels in dams on the upper Yakima River because of low water. However, if good snowpack conditions persist, the reservoirs ought to fully refill.

## Could see temperatures warmer-than-normal

Although there are no strong climate signals regarding the upcoming winter weather, there are indications that a mild El Niño pattern may be building through late winter and into early spring. If that happens, the Pacific Northwest could see warmer-than-normal temperatures causing more precipitation to fall as rain rather than snow. Warmer temperatures could also speed the melting of mountain snowpacks.

### December 11, 2001 Valid 8 a.m. EST

# U.S. Drought Monitor



# AGENCY CONTACTS

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## Washington Department of Agriculture (WSDA)

### Drought Response Action Team activities:

- Linda Crerar, (360) 902-1818

## Washington Department of Ecology (Ecology)

### Water Resources Program Manager/funding issues:

- Joe Stohr, (360) 407-6602

### Water supply outlook:

- Doug McChesney, (360) 407-6647

### Drought web page coordinator:

- Christine Corrigan, (360) 407-6607

### Drought-related media activities:

- Curt Hart, (360) 407-7139

## Washington Department of Fish and Wildlife (WDFW)

### Fish and stream flows:

- John Mankowski, (360) 902-3589

## Washington Department of Health (DOH)

### Public water supply issues:

- Jim Rioux, (360) 236-3154

## Washington Conservation Commission (WCC)

### Local conservation district activities:

- John Konovsky, (509) 933-7150



## **APPENDIX A: LIST OF WATER RIGHT LEASES**

<b>Name of water right holder</b>	<b>Stream name</b>	<b>Funds committed</b>	<b>Acre feet, flow percentage or cubic feet per second (cfs)</b>	<b>Period of time</b>
Robert & Shirley Stewart	Yakima River	\$30,000	232 acre feet	July 1 to Oct. 1, 2001
Mike Kelly Mouer Sr. & Jr.	Spring Creek/Yakima River	\$52,500	408 acre feet	July 1 to Oct. 1, 2001
Mark & Julie Himmelberger	Touchet River	\$10,560	88 acre feet	July 1 to Oct. 1, 2001
Nancy & Duncan Breithaupt	Touchet River	\$13,680	114 acre feet	July 1 to Oct. 1, 2001
Gene Warren	Touchet River	\$5,040	42 acre feet	July 1 to Oct. 1, 2001
Wilbur Fletcher	South Fork Touchet River	\$2,760	23 acre feet	July 1 to Oct. 1, 2001
Craig Larson	Libby Creek	\$19,200	160 acre feet	July 1 to Oct. 1, 2001
Gene Adolphsen	Dungeness River	\$21,000	50% flow*	Aug. 1 to Sept. 15, 2001
Fred Spring	Dungeness River	\$5,135	50% flow*	Aug. 1 to Sept. 15, 2001
William Stipe	Dungeness River	\$8,600	50% flow*	Aug. 1 to Sept. 15, 2001
Richard Brueckner	Dungeness River	\$3,200	50% flow*	Aug. 1 to Sept. 15, 2001
Jerry Schmidt	Dungeness River	\$21,451	50% flow*	Aug. 1 to Sept. 15, 2001
John Jarriss	Dungeness River	\$12,100	50% flow*	Aug. 1 to Sept. 15, 2001
Don Still	Dungeness River	\$10,500	50% flow*	Aug. 1 to Sept. 15, 2001
Dave Cameron	Dungeness River	\$23,250	50% flow*	Aug. 1 to Sept. 15, 2001
Harold Sofie	Dungeness River	\$18,750	50% flow*	Aug. 1 to Sept. 15, 2001

## **APPENDIX A: LIST OF WATER RIGHT LEASES**

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<b>Name of water right holder</b>	<b>Stream name</b>	<b>Funds committed</b>	<b>Acre feet, flow percentage or cubic feet per second (cfs)</b>	<b>Period of time</b>
Gary Smith	Dungeness River	\$6,400	50% flow*	Aug. 1 to Sept. 15, 2001
Gary Smith	Dungeness River	\$18,050	50% flow*	Aug. 1 to Sept. 15, 2001
Danny & Elida Smith	Dungeness River	\$2,800	50% flow*	Aug. 1 to Sept. 15, 2001
Jamar Hay & Cattle Co.	Dungeness River	\$17,200	50% flow*	Aug. 1 to Sept. 15, 2001
U.S. Bureau of Reclamation	Columbia Basin	\$40,000	250 cfs	Aug. 1 to Sept. 30, 2001
Roza Irrigation District/Shirley Cromarty	Teanaway River	\$8,657	2.02 acre feet & 78.07 cfs	July 1 to Oct. 31, 2001
Bonneville Power Administration	Columbia River	\$1,000,000	33,322 acre feet	April 1 to Sept. 30, 2001

*\* Collectively, all the leased water from the Dungeness River equaled about 460 acre feet.*

# APPENDIX B: STATE HATCHERY COSTS

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## Elwha (Elwha River)

- Installed ecology block wall in river to divert flow toward hatchery adult collection facility.
- Diverted city overflow bypass and racked effluent to increase attraction water to adult collection facility and keep adults out of bypass.
- Installed instream weir to divert adults into adult collection facility.
- Purchased truck and fish transport tank to haul adults to adult pond and pathogen-free well water.
- Installed reuse pump and pact column at adult collection facility to reuse pathogen-free well water.

**Approximate costs:** \$88,361

**Expected future expenditures:** \$25,000

## Hurd Creek (Dungeness River)

- Modification to existing dirt ponds to move Elwha tribal steelhead out of Elwha basin during 2001 drought.

**Approximate costs:** \$6,000

**Expected future expenditures:** \$0

## Hoodsport (Hood Canal)

- Test-pumped public utility district wells; currently working to acquire wells.
- Purchased materials for pact column installation and fabrication.

**Approximate costs:** \$7,500

**Expected future expenditures:** \$17,339

## Minter Creek (Carr Inlet)

- Aerators currently being purchased.

**Approximate costs:** \$1,900

**Expected future expenditures:** \$8,000

## Soos Creek (Green River)

- Reuse pump for adult pond has been installed with a pact column at the head end of pond.

**Approximate costs:** \$25,000

**Expected future expenditures:** \$9,000

## Fallert Creek (Kalama River)

- Aerators have been purchased, electrical service completed.

**Approximate costs:** \$3,000

**Expected future expenditures:** \$0

## **APPENDIX B: STATE HATCHERY COSTS**

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### **North Toutle (North Toutle River)**

- Aerators have been purchased, electrical service completed.
- Pact columns need installation on adult pond.

**Approximate costs:** \$15,000

**Expected future expenditures:** \$27,000

### **Kalama Falls (Kalama River)**

- Aerators have been purchased and electrical service completed.

**Approximate costs:** \$4,000

**Expected future expenditures:** \$0

### **Elochoman (Elochoman River)**

- Aerators have been purchased and electrical service completed.

**Approximate costs:** \$10,000

**Expected future expenditures:** \$0

### **Voights Creek (Puyallup River)**

- Aerators are ordered and rack materials purchased; horses have been built for mouth of Voights Creek; wiring and conduit for aerators needs completion.

**Approximate costs:** \$12,000

**Expected future expenditures:** \$10,000

### **Palmer Ponds (Green River)**

- Aerators ordered and electrical service needs completion.

**Approximate costs:** \$1,900

**Expected future expenditures:** \$9,000

### **Puyallup (Clark's Creek)**

- Reuse pump and pact column has been installed and electrical service stills needs completion.

**Approximate costs:** \$10,000

**Expected future expenditures:** \$10,000

**TOTAL APPROXIMATE COSTS:** \$184,661

**TOTAL EXPECTED FUTURE EXPENDITURES:** \$115,339