
Review of Western U.S. Environmental Water Leasing Programs



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Review of Western U.S. Environmental Water Leasing Programs

The following sections review various water leasing programs throughout the western United States to provide a comparison with the 2001 Dungeness water-leasing program. The review is limited to formalized water leasing programs operated by federal, state, and nonprofit organizations. The review provides an overview of individual programs, identifies key characteristics, and summarizes participation and lease rates for multiple years with a particular focus on 2001 and 2002.

Throughout the western United States, water acquisitions for non-consumptive uses such as environmental mitigation and flow augmentation are increasing. Commonly used acquisition methods include permanent purchases, leases, and donation. With the exception of Wyoming, environmental water sales have occurred in every western state. This market sector has increased steadily since 1990 when less than \$500,000 was spent on water purchases.¹ In comparison, more than \$11 million dollars were expended from 1990 to 1997 on purchases of water to improve habitat conditions for fish and wildlife.² Expenditures for environmental water acquisitions throughout the western United States are currently estimated at \$20 million per year.³

The Pacific Northwest has one of the most active markets within the western United States.⁴ This is largely due to federal efforts to increase stream flows for federally protected species. From 1990 to 1997, approximately 94 percent of all environmental water acquisitions occurred in the Pacific Northwest. Market activity within the region is continuing to increase. In addition, from 1998 to 2001, a total of \$11.9 million was spent to acquire approximately 1.09 million acre-feet of water for flow enhancement.⁵

¹ Colby, Bonnie G. 1990. "Enhancing Instream Flow Benefits in an Era of Water Marketing." *Water Resources Research*. 26(6), 1113-1120.

² Landry, Clay. 1998. "Market Transfers of Water for Environmental Protection in the Western United States. *Water Policy*. P 457-469.

³ Landry, Clay. 2001. "Buy that Fish a Drink." *Water Law* 12 (4): 240.

⁴ For this analysis, the Pacific Northwest Region includes California Idaho, Montana, Oregon, and Washington

⁵ WestWater Research. 2002. "Summary of Environmental Water Marketing in the Pacific Northwest." Internal working document, May 29.



Within the Pacific Northwest, active water leasing programs have been developing in the Yakima and Salmon Creek basins of Washington, the Walla Walla, Klamath, and Deschutes basins in Oregon, the Snake and Lemhi basins in Idaho, the Bay-Delta region of California, and the throughout various basins in Montana. The following section provides a review of these water-leasing programs.

Washington Leasing Programs

Yakima River Basin 2001 Drought Bank

Managed by: Washington Department of Ecology, U.S. Bureau of Reclamation
Location: Kittitas and Yakima Counties, Washington
River Basin: Yakima Basin
Program Structure: Annual Leasing
Year Established: 2001

Program Description:

In response to drought conditions in the Yakima River Basin in 2001, the Washington Department of Ecology and U.S. Bureau of Reclamation instituted an emergency leasing program in order to facilitate short-term water transfers and alleviate the impacts of the drought. The program “fast-tracked” the transfer process and allowed a number of leases to be processed in a timely manner. The 2001 water transfers in the Yakima Basin included point of diversion changes as well as land fallowing. This discussion focuses on the transfers that involved land fallowing.

Water buyers during the 2001 season primarily included the Roza Irrigation District, Washington Department of Ecology, USBR, Kittitas Reclamation District, and the City of Roslyn. Sellers mainly included several irrigation districts and ditch companies. Prices paid for water ranged from \$0 to \$495 per acre-foot during 2001.

Roza Irrigation District (RID) was the largest buyer during the 2001 season. RID, a junior water rights holder, includes approximately 60,000 acres of irrigated land largely consisting of high-valued, permanent crops. Because the district holds proratable water rights and was facing a severe supply shortage, it decided to supplement Bureau supplies with water leases. RID initially offered \$150 per acre for other irrigators to fallow cropland and lease their water to the district but had to increase the price to \$250 per acre (approximately \$125/AF) in order to generate enough interested sellers. RID paid between \$70 and \$125 per acre-foot for water leased during the 2001 season.



Trading Activity

The Yakima Basin drought year water transfer process was only instituted in 2001. Nearly 61,000 acre-feet of water were transferred between May and October of 2001 through water leases and changes in points of diversion. In total, 9,942 acres were fallowed in the basin to provide water supplies for higher-valued uses. The average price paid during the drought conditions was \$116 per acre-foot and \$199 per acre.

Table 7 summarizes the water leases involving fallowed land in the Yakima Basin during 2001.

Table 7
Summary of Yakima Basin Leasing Program, 2001

Buyer	Purpose	Acres	Approx. Period of Use (days)	Acre-Foot	\$/Acre	\$/AF
City of Roslyn	Irrigation	47.40	60	66	\$379	\$272
Roslyn/WDOE	Irrigation/Instream Flow	20.00	75	24	\$0	\$0
Kittitas Reclamation District	Irrigation	42.71	116	85.42	\$0	\$0
Roza Irrigation District	Irrigation	8768.5 2	120-150	14047	\$190	\$119
USBR	Instream Flow	93.00	75	178	\$119	\$62
WDOE	Instream Flow	220.00	105	638	\$374	\$129

Source: Stan Isley, US Bureau of Reclamation

Salmon Creek Water Leasing Bank

Managed by: Washington Water Trust and Okanogan Irrigation District
 Location: Okanogan County, Washington
 River Basin: Salmon Creek, Tributary to the Okanogan River
 Program Structure: Annual Leasing
 Year Established: 2000

Program Description

The Washington Water Trust, with funding provided by BPA, has leased over 4,550 acre-feet of water from irrigators in the Okanogan Irrigation District to enhance streamflow in Salmon Creek in an effort to restore populations of summer steelhead and



spring Chinook. The Washington Water Trust is a private non-profit organization established in 1998 that is dedicated to streamflow restoration and water quality improvement in rivers and streams in the state of Washington. The Salmon Creek water-leasing program was established in 2000.

Prices paid by the Washington Water Trust have been negotiated with the Okanogan Irrigation (OID) District Board and have been set at a fixed price for all participating acres in the district. The term of lease contracts are for the full irrigation season typically running from April 15 to October 15. However, storage in the basin has allowed the leased water to be used outside of the irrigation season as well as carried over from one year to the next. Prices on an acre basis have increased from \$135 in 2000 to \$175 in 2002. During that period, OID irrigation assessment fees have averaged approximately \$120 per acre. Participants are all members of the irrigation district and are required to pay the district assessment fee on acres enrolled in the water-leasing program. Participating acres have primarily involved idle land previously used to produce orchard crops. Other participating acres were primarily used to grow pasture and hay crops.

Trading Activity

Table 8 presents summary information on the Salmon Creek Water Leasing Program. Program participation nearly doubled between 2000 and 2002. During the bank's first year of operations, 42 irrigators enrolled 322 acres in the program. In 2002, 60 irrigators enrolled 624 acres, leaving approximately 1,900 acre-feet of water in lower Salmon Creek during the irrigation season. In 2003, OID elected to not participate in the water-leasing program due to poor water supply conditions in upstream storage facilities and concern about meeting the district's water needs for permanent crops.

Table 8
Salmon Creek Water Leasing Program, 2000-2003

Year	Acres	\$/Acre	AF	\$/AF
2000	322	\$135	966	\$45
2001	573	\$145	1719	\$48
2002	624.36	\$175	1873.08	\$58
2003	No Water Leasing Program			

Source: Washington Water Trust and Okanogan Irrigation District.

Table 9 provides detail on the participating acres in the program. More than 80 percent of the acreage consisted of recently pulled orchard crops (primarily low valued red and golden delicious apples) and acreage that had been idle for a number of years. The



remaining acreage participating in the program included small fields of pasture and alfalfa.

Table 9
Participating Acreage 2002

Crop	2002 Acres
Alfalfa	69
No Crop	135
Pasture	34
Pulled Orchard	373
Unknown	13
Total	624

Source: Okanogan Irrigation District and Okanogan County Assessor's Office.

Oregon Leasing Programs

Deschutes Water Exchange

Managed by: Deschutes Water Exchange – Deschutes Resources Conservancy
 Location: Deschutes County, Oregon
 River Basin: Deschutes River Basin
 Program Structure: Annual Leasing
 Year Established: 2001

Program Description

The Deschutes Water Exchange, a project of the Deschutes Resources Conservancy (DRC), leased over 7500 acre-feet of water in 2002 from irrigators to enhance streamflow in Central Oregon's Deschutes basin. The Deschutes Resources Conservancy is a private non-profit organization dedicated to streamflow restoration and water quality improvement in the basin. The program was officially established in 2001. However, donation leases were accepted by the DRC beginning in 1996.

Prices offered by the Exchange range from \$3.91 to \$19.57 per acre-foot annually. The average weighted price for the program is approximately \$8.23 per acre-foot. Table 10 provides a summary of the prices for the program. The term of lease contracts are for the full irrigation season typically running from April 15 to October 15. Prices on an acre basis vary depending on the duty associated with the lands enrolled in the program.



Payments on an acre basis have ranged from \$7 to \$39 per acre annually. Participants are primarily members of irrigation districts and most land enrolled in the program is used for forage crops such as hay, alfalfa, and pasture. Lease payments are primarily based on the assessment cost that the water user had to pay the irrigation district for water delivery.

Trading Activity

This is a new program so historical data on trading activity is limited. However, based on the past two years, participation has been relatively consistent. During the first year of operation, the program received a large number of donated leases. Approximately 4,800 acre-feet of water were donated to the leasing program during 2001. That number dropped to 1,031 during 2002. Overall participation has remained constant with enrollment at 8,793 and 7,840 respectively for 2001 and 2002.

Table 10
Annual Water Leasing Program 2001-2002

District	2001			2002		
	Acres	Quantity (aft)	Price (\$/aft)	Acres	Quantity (aft)	Price (\$/aft)
North Unit ID	864	1,428	\$19.57	50	81	\$7.00
Squaw Creek ID	-	-	-	326	722	\$7.00
Ochoco ID	111	442	\$6.51	114	343	\$9.34
Tumalo ID	562	1,836	*	501	1,346	\$6.76
Central Oregon ID	120	681	*	633	3,525	\$3.91
Swalley ID	323	1805	*	185	1,031	*
Arnold ID	7	39	*	47	256	\$5.02
Non-District	519	2,562	\$11.43	176	537	\$5.71
Totals	2,507	8,793		2,031	7,840	
Average Price			\$12.50			\$6.39

Source: Deschutes Water Exchange, 2003

* Denotes donated leases

USBR Klamath Basin Leasing Program

Managed by: U.S. Bureau of Reclamation
 Location: Oregon and California
 River Basin: Klamath River Basin
 Program Structure: Annual Leasing



Year Established: 2001

Program Description

The US Bureau of Reclamation initiated water-leasing efforts in 2001 to address low flow conditions in the Klamath River. The agency has developed several different programs that targeted groundwater and surface water sources, as well as specific regions within the basin. During 2001, the Bureau initiated two pilot programs – a groundwater purchase program and an irrigation demand reduction program. The programs were suspended in 2002. However, the Bureau entered into a contract agreement in 2002 with the Klamath Basin Rangeland Trust to lease water. For 2003, the Bureau has elected to reinstate the leasing programs, which are similar in structure to the 2001 programs.

Trading Activity

The following sections provide a summary of trading activity for each of the programs implemented and managed by the Bureau. Trading activity for each of the programs is reported separately due to changes in structure of programs implemented since 2001.

2001 Klamath Basin Groundwater Transactions

Due to extreme drought conditions in the Klamath Basin during 2001, the Bureau of Reclamation initiated the Groundwater Purchase Program. Through the program, bids were requested from local landowners to sell groundwater for fish and wildlife purposes. The Groundwater Purchase Program was announced midway through the irrigation season on August 17.

Offers were requested from willing sellers located above Keno Dam within the Klamath Project and the Upper Klamath Lake Watershed (excluding areas above Kirk Reef on the Williamson River). Offers were required to provide direct benefits to the Klamath Project water supplies. A total of 92 proposals representing 165,408 acre-feet were submitted and considered by the Bureau of Reclamation. The average bid price received was \$49 per acre-foot.



Table 11
2001 Ground Water Purchase Summary

District	ST	No. Contract	Aft Contracted	Contract Value	Aft Delivered	Total Delivered Cost	\$/aft
Klamath ID	OR	20	18,914	\$639,411	14,030	\$474,675	\$35.02
Langell Valley ID	OR	3	6,487	\$247,253	6,454	\$246,079	\$38.13
Tulelake ID	CA	10	36,153	\$1,161,605	28,360	\$913,316	\$34.30
VB Ditch Co.	CA	2	3,292	\$124,180	2,057	\$74,595	\$35.00
Program		35	64,846	\$2,172,449.00	50,901	\$1,708,665.00	\$35.61

Source: US Bureau of Reclamation

After reviewing the proposals, the Bureau of Reclamation issued 35 contracts for a total of 64,864 acre-feet of water. Table 11 provides a summary of the 2001 participation. The lease contracts entered into by the Bureau of Reclamation included a 12-month term for a specified quantity of water. The majority of the water was delivered during the late summer and early fall months. All leases were uniform in structure. Lease rates ranged from \$25 to \$52 per acre-foot.⁶ The average lease rate for the accepted contracts was \$35.61 per acre-foot and the median lease rate was \$35 per acre-foot. The average lease rate in Oregon was \$36.30 and the average lease rate in California was \$34.41.

2001 Irrigation Demand Reduction Program

The Irrigation Demand Reduction Program was initiated to reduce demand from surface water in the Upper Klamath River Basin. The US Bureau of Reclamation solicited proposals from water users who were willing to reduce irrigation water demand through land idling. Proposals were limited to lands above Keno Dam. The water provided through the program was used for flow augmentation in support of federally protected species. Table 12 provides a summary of the Pilot Irrigation Demand Reduction Program activities for 2001.

⁶ Lease rates are reported in 2001 dollars.



Table 12
2001 Irrigation Demand Reduction Program

Proposals Received	555
Total Acreage Proposed for Enrollment	51,000
Proposals Accepted By USBR	176
Proposals withdrawn	14
Total Proposals	162
Acreage Enrolled	15,563
CA Acreage	6,331
OR Acreage	9,332
Total Water Enrolled (AFT)	37,543
Total Cost	\$2,761,419
Average Unit Cost (\$/AFT)	\$74
Average Unit Cost (\$/acre)	\$177.43

Source: US Bureau of Reclamation

The US Bureau of Reclamation received 555 proposals totaling 51,000 acres of land, representing 10 percent of the land in the federal irrigation project. A total of 162 proposals were accepted. The total acreage included in the program was 15,563 with 60 percent located in Oregon and the remaining 40 percent located in California. A total of 37,543 acre-feet of water were enrolled in the program. However, only a portion of the water accepted in the program was actually available. Due to the extensive drought conditions, much of the leased water was not available and therefore could not be used to improve habitat condition for federally protected species.

Crop information for enrolled lands is confidential. However, the US Bureau of Reclamation has indicated that the predominant crop types enrolled were pasture, grass hay, and alfalfa.⁷ Enrollment acreage for mint, potatoes, and other higher valued crops was minimal.

The total cost of the program was \$2.76 million and the average price paid for water \$74 per acre-foot. Unit prices ranged from \$25 to \$119 per acre-foot. The average unit price is higher if calculated based on the actual quantity of water delivered through the program. Approximately 15 percent of the water was available for delivery and used for flow augmentation. The average price for the contract that provided water was \$60 per acre-foot, with contract prices ranging from \$25 to \$98 per acre-foot.

⁷ Gary Baker, US Bureau of Reclamation. Personal communication. October 26, 2002.



2002 USBR/Klamath Basin Rangeland Trust Contract

The groundwater replacement and irrigation demand reduction program was suspended in 2002. However the US Bureau of Reclamation entered into a water leasing agreement with the Rangeland Trust, which was formed by landowners in the Wood River Valley. The Rangeland Trust contract provided a mechanism for bundling multiple lease agreements. A total of 3,161 acres were enrolled in the program. Most of the enrolled land was irrigated pasture. As a part of the lease agreement, landowners agreed to reduce livestock numbers by 80 percent during the term of the lease. Habitat restoration and monitoring expenses were incorporated into the lease agreement. The estimated water provided through the leases is 12,800 acre-feet. The total cost of the program, including restoration and monitoring cost, was \$633,000, with a unit value of \$82.16 per acre-foot.

2003 Leasing Programs

The 2003 leasing program is composed of two parts: crop idling, and groundwater substitution. In 2003, the program leased over 35,000 acre-feet of water through crop idling and nearly 25,000 acre-feet of groundwater to enhance instream flow in the Klamath River Basin in both Oregon and California.

The average weighted price in 2003 was approximately \$76.73 per acre-foot the crop idling program, and \$75.00 per acre-foot of groundwater. The term of lease contracts are for the full year's irrigation season typically running from April 15 to October 15. Participants are primarily members of irrigation districts and water was used primarily for forage crops such as hay, alfalfa, and pasture.

This is a new program so historical data on trading activity is limited. In 2003, the average amount of water leased in each transaction through crop idling was 159 acre-feet, groundwater transactions averaged 261 acre-feet.



Table 13
USBR Klamath Leasing Program 2003

Crop Idling Program Summary			Groundwater Replacement Program Summary		
Proposals		Count	Proposals		Count
	Proposals Submitted	337		Proposals Submitted	188
	Contracts Offered	244		Contracts Accepted	95
	Contracts Accepted	223			
Acreage		Acres	Acreage		Acres
	Total Submitted	23,110		Total Submitted	24,709
	Acres Selected	14,477		Acres Selected	11,706
By State	CA	2,335	By State	CA	6,101
	OR	12,142		OR	5,604
Crop Type	Alfalfa	4,351			
	Annual Crops	4,403			
	Pasture/Hay	5,552			
	Mint	169			
Water Supply		Acre-feet	Water Supply		Acre-feet
	Total Submitted	49,239		Total Submitted	56,007
	Total Contracted	35,420		Total Contracted	24,786
	Avg Contract Qty	159		Avg Contract Qty	261
	Avg AFT/Acre	2		Avg AFT/Acre	2
Acquisition Expenditures			Acquisition Expenditures		
	Total Obligated	\$2,714,148.00		Total Obligated	\$1,858,981.00
	Avg Per Proposal	\$ 12,171.00		Avg Per Proposal	\$ 19,568.00
	Avg Per Acre-Foot	\$ 76.63		Avg Per Acre-Foot	\$ 75.00
	Avg Per Acre	\$ 187.48		Avg Per Acre	\$ 158.81

Source: US Bureau of Reclamation



Walla Walla Lease Bank

Managed by: Oregon Water Trust
 Location: Umatilla County, Oregon
 River Basin: Walla Walla River Basin
 Program Structure: Annual Leasing
 Year Established: 2001

Program Description

The Walla Walla lease bank is operated by the Oregon Water Trust and was established in 2001. The project was developed in cooperation with the Walla Walla River Irrigation District and the Hudson Bay District Improvement Company. The lease bank developed in response to federal government flow targets to protect endangered species habitat. In 2000, the U.S Fish and Wildlife Service (USFWS) established a flow target of 18 cfs for the Walla Walla River. The USFWS increased the flow target in 2002 to 25 cfs. The lease bank was developed to assist the community in meeting present and future flow targets through voluntary transactions. To date, participants from the leasing program have been limited to members of the Walla Walla Irrigation District and non-district landowners. For 2003, the bank is structured on a fixed offer price of \$100 per acre for water rights that are determined to be senior and \$20 per acre for water rights determined to be junior. All leases are one-year agreements that last the duration of the irrigation season. As a practical matter, most leases ran from March through October. Seniority is based on a priority date of 1903. Approximately 90 to 95 percent of leases include senior water rights.

Trading Activity

Participation in the leasing program has been limited, but increasing. During 2001, six landowners from the Walla Walla Irrigation District participated in the program and enrolled 58.37 acres totaling 0.73 cfs of water. The number of participants increased to 11 in 2002 with enrolled acres increasing to 91.61, providing 1.145 cfs of water.

Table 14
Walla Walla Lease Bank 2001-2002

Year	Participants	Acres	cfs	Acre-feet	Total Expenditures	\$/aft
2001	6	58.37	0.730	238.5	\$3,618.64	\$15.00
2002	11	91.61	1.145	374.0	\$6,962.36	\$18.62

Source: Oregon Water Trust



Idaho Leasing Programs

USBR Snake River Leases

Managed by: U.S. Bureau of Reclamation
Location: Idaho
River Basin: Snake River Basin
Program Structure: Annual Leasing
Year Established: 2001

Program Description:

The Snake River Basin leasing program was officially established in 1995 by the Snake River Biological Opinion, which directed the U.S. Bureau of Reclamation to provide 427,000 acre-feet annually for flow augmentation. In an unprecedented move, the Biological Opinion stipulated that the water would be provided through willing seller water acquisition agreements. The Bureau has permanently purchased approximately 57,000 acre-feet of storage contracts and live-flow water rights. The balance of the flow required by the opinion is made up through annual leases from the local water banking pools that were originally established to facilitate the exchange of surplus water between irrigators. The primary banks participating in the Bureau leasing program include the Upper Snake, Payette, and Boise rental pools. Prices within the banks are prices are administratively set at between \$2.95 to \$12.00 per acre-foot depending on the area. With few exceptions, these prices have not changed since the mid 1980s. The term of lease contracts are for the full year's irrigation season typically running from April 15 to October 15.

Trading Activity

Since 1995, the Bureau has leased over 1.58 million acre-feet from the Upper Snake, Payette, and Boise rental pools. The Bureau was unable to lease water from the banks during 2001 due to the drought conditions and the absence of surplus water. Leasing activity resumed in 2002, but was limited. The Payette water pool was the only bank that leased water to the Bureau during 2002. The Bureau is currently expanding leasing efforts beyond the banks through power contract buy-back agreements. Additional water supplies were made available through power contract purchases from Snake River high-lift pumps in Idaho and Oregon.⁸

⁸ US Bureau of Reclamation, Annual Snake River Water Lease Summary Data. 2003



USBR Lemhi River Leases

Background

The Lemhi Water leasing program is a two-year conservation agreement between Lemhi agricultural water users and the managing agencies, the Bureau, and the Idaho Department of Water Resources. The program establishes voluntary minimum stream flow levels in the Lemhi River. A water bank has been established to facilitate water transactions. Under the program, irrigators lease water to the state through the water bank with funding from the leases provided by the Bureau. The Lemhi program is focused on a small region where low flows put intense pressure on federally protected fish species.

Trading Activity

Prices in the Lemhi water bank are relatively high compared to other Idaho market areas. In 2001, the first year of the program, the Bureau paid \$218 per acre-foot annually. In 2002 lease rates increased to \$245 per acre-foot annually. In both years the Bureau leased 1,000 acre-feet from Lemhi irrigators. The water was leased primarily from irrigated pasture and hay ground. The duration of the leases was the entire irrigation season.

Table 15
Snake & Lemhi River Leasing Summary

Location	Price/aft/yr	Quantity Leased (acre-feet)			
		1999 Leases	2000 Leases	2001 Leases	2002 Leases
Upper Snake River Bank	\$2.95-\$10.95	148,397	162,325	0	0
Payette Bank	\$3.20-\$5.65	65,000	50,000	0	50,000
Boise River Bank	\$6.50-\$6.93	160,000	45,000	0	0
Tribe Rentals	\$2.95-\$10.95	38,000	38,000	36,724	0
Lemhi Water Bank	\$218-\$246	-	-	1,000	1,000
Snake River High-Lift Pumpers, ID	\$43.00	-	-	-	37,889
Snake River High-Lift Pumpers, OR	\$43.00	-	-	-	9,600

Source: US Bureau of Reclamation



Montana Leasing Programs

Managed by:	Montana Department of Fish, Wildlife and Parks (FWP)
Location:	Multiple counties
River Basin:	Yellowstone, Blackfoot, Jefferson, Bitterroot, and Clark Fork Rivers
Program Structure:	Annual Leasing
Year Established:	1989

Program Description:

The Montana instream-leasing program was initiated by State legislation in 1989 following 1988's severe drought which resulted in major fish kills. Under the law, Montana Fish Wildlife and Parks (FWP) was granted authority to pursue leasing opportunities with willing sellers, in streams where dewatering issues significantly limit priority fisheries. In 2002, FWP leased over 22,000 acre-feet of water for instream use.

Prices paid by FWP for instream water in 2002 ranged from donated leases to \$51.85 per acre-foot to lease water instream. The average weighted price for the program is approximately \$7.38 per acre-foot. The term of lease contracts varies from 5 to 8 months during the irrigation season. The earliest leases start at the beginning of April, the latest end in November. Prices are determined through negotiation between FWP and the water right holder. Prices on the upper end of the range have typically included leases that resulted from water conservation projects.

Trading Activity

Activity in the program has been relatively constant since the program was initiated. FWP focuses its efforts on smaller creeks instead of larger rivers to maximize the beneficial impact of the leased water on stream flows. Several leases were structured with a one-time, up front payment, rather than yearly payments for the life of the contract. Two lessors effectively supplied water for \$1.00 per year; and one lessor donated water.



Table 16
Montana FWP Instream Leases 2002

Stream	Term (years)	Diversion (cfs)	Period of Use (days)	Quantity (aft)	Total Cost	\$/AF
Mill Creek	10	41.40	3	246	\$12,750.00	\$51.85
Mill Creek	10	6.13	150	1821	\$ 7,500.00	\$4.12
Blanchard Creek	10	3.00	180	1069	\$ 2,000.00	\$1.87
Tin Cup Creek	5	4.37	210	1815	\$ 6,260.00	\$3.45
Cedar Creek	10	7.15	165	2337	\$1.00	\$0.00
Hell's Canyon Creek	20	1.12	210	466	\$45,000.00	\$4.83
Mill Creek	10	2.64	165	862	\$ 4,200.00	\$4.87
Chamberlain Creek	10	up to 25	210		\$1.00	
Pearson Creek	10	up to 8	210		\$1.00	
Cottonwood Creek	9	19.00	210	7900	\$ -	\$-
Mol Heron Creek	20	5 to 27	180		\$100,000.00	
Big Creek	20	1 to 16	180		\$228,640.00	
Big Creek	10	10.00	180	3564	\$ 8,000.00	\$2.24
Rock Creek	20	5 to 27.22	195		\$138,346.00	
Locke Creek	30	7.50	180	2673	\$45,000.00	\$0.56
Totals		102.31		22,753	\$597,699.00	
Average		10.23	175.2	2275	\$39,846.60	\$7.38

Source: Montana Department of Fish, Wildlife & Parks



California Water Leasing Program

Environmental Water Account

Managed by: CALFED Bay-Delta Program
Location: Sacramento River/San Francisco Bay
River Basin: Sacramento River Basin
Program Structure: Annual Leasing
Year Established: 2000

Program Description:

The Environmental Water Account (EWA), a project of the CALFED Bay-Delta Program, has leased an average of nearly 300,000 acre-feet of water in each of the last two years from irrigators to enhance stream flow to lower mortality rates between Bay and Delta fisheries. The program was officially established in 2000. The EWA obtains water for flow releases through storage of spring runoff and through voluntary market transactions.

The EWA addresses year-to-year variation in monthly flows that may not conform to the long-term monthly average. Fisheries managers operate on a water budget. When fish are absent, or flow levels high, managers can decide to enroll water into a storage facility. When fish are present, and flow levels low, managers can curtail pumping from the State Water Project (SWP) and Central Valley Project (CVP), and instead, draw upon previously stored water.

Prices paid under the EWA range from \$75 to \$460 per acre-foot to lease water instream. During 2001, the average weighted price for the program was approximately \$207.06 per acre-foot. The average program price dropped to \$128.22 per acre-foot during the 2002. The price difference reflects water shortages that occurred in 2001 due to drought conditions. Prices are significantly higher for water leased south of the Delta than water leased upstream of the delta. Higher conveyance costs for north of the Delta water are the cause for this price discrepancy. Northern participants are primarily members of irrigation districts where the water is used in rice cultivation.



Trading Activity

This is a new program so historical data on trading activity is limited. However, the EWA is one of the largest instream leasing programs in existence. Table 17 provides a summary of trading activity for the EWA. Over 330,000 acre-feet of water were acquired under the leasing program during 2000/2001. That number dropped slightly under 240,000 acre-feet during 2001/2002. The average size of each lease transaction was over 22,000 acre-feet in the first year, and almost 60,000 acre-feet in the second.



Table 17
EWA Transactions 2001 to 2002

Irrigator	2001			2002		
	Acre Feet	Total Cost	Price (\$/aft)	AFT	Total Cost	Price (\$/aft)
Sacramento Ground Water Authority				7,143	\$ 535,695.00	\$75.00
Kern County Water Agency				36,776	\$6,672,630.00	\$181.44
Kern County Water Agency				60,624	\$11,000,000.00	\$181.45
Yuba County Water Agency	50,000	\$ 5,000,000.00	\$ 100.00	135,000	\$10,125,000.00	\$75.00
Placer County Water Agency	20,000	\$ 1,500,000.00	\$ 75.00			
Oroville Wyandotte	10,000	\$750,000.00	\$ 75.00			
Merced ID	25,000	\$ 1,875,000.00	\$ 75.00			
Cawelo WD	5,000	\$ 1,850,000.00	\$ 370.00			
Arvin Edison WD	10,000	\$ 1,380,000.00	\$ 138.00			
Semitropic/ Tulare ID	15,000	\$ 4,500,000.00	\$ 300.00			
Buena Vista, W. Kern, Rosedale WSD	23,718	\$ 6,641,040.00	\$ 280.00			
Rosedale-Rio Bravo	19,036	\$ 2,026,968.00	\$ 106.48			
KCWA/ ID4	10,000	\$ 4,600,000.00	\$ 460.00			
KCWA/ ID4	10,000	\$ 2,800,000.00	\$ 280.00			
Santa Clara Valley	30,000	\$ 8,700,000.00	\$ 290.00			
Westside MWC	15,000	\$ 2,070,000.00	\$ 138.00			
Westside MWC	21,000	\$ 5,880,000.00	\$ 280.00			
Central Valley Project	72,280	\$ 10,000,000.00	\$ 138.35			
Totals	336,034	\$ 59,573,008.00		239,543	\$28,333,325.00	
Average Price			\$207.06			128.22

Source: CALFED



Comparison of Leasing Programs

Table 18 summarizes instream-leasing programs in the northwestern U.S. during 2001 and 2002 allowing for a comparison between programs. Less water was leased during 2002 than in 2001. The prices per acre-foot for the smaller quantities of 2002 were generally higher than the prices paid during 2001. Approximately, half of the programs reviewed used a unit price based on the acreage enrolled in the program, which is consistent with the unit price used in the Dungeness leasing program. The table reports prices both on an acre-foot and acre basis. The term of the leases varied from 45 days to 12 months, with most leases extending through the irrigation season.

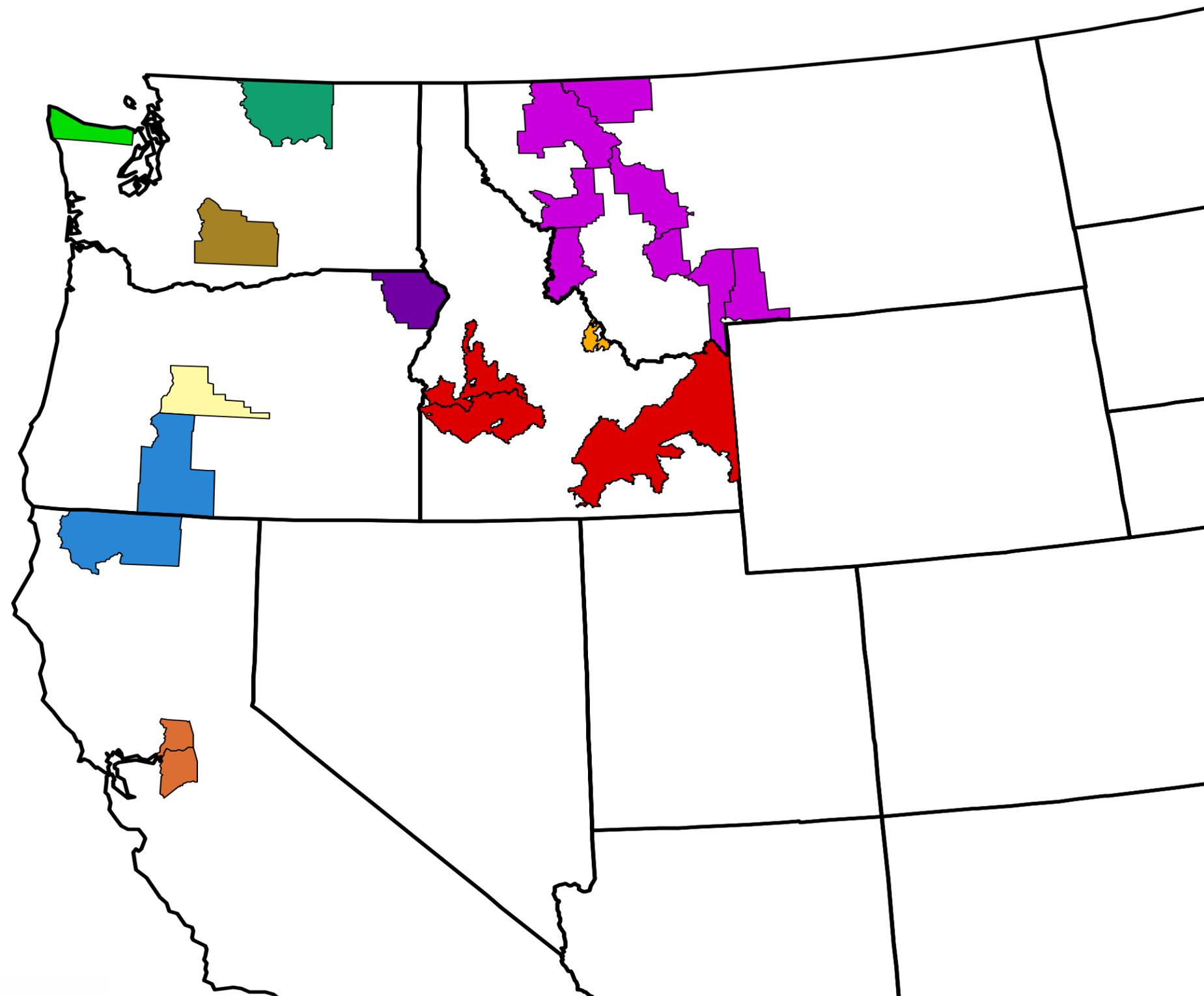


Table 18
Summary of instream leasing programs

Program	2001			2002		
	\$/aft	\$/acre	Quantity (aft)	\$/aft	\$/acre	Quantity
Dungeness Water Leasing	\$288.45	\$162.28	583.93			
Environmental Water Account	\$207.06	-	575,577	\$ 128.22	-	239,543
Klamath Crop Idling Program	\$ 74.00	\$177.43	37,543	\$ 100.00	\$187.48	6,322
Klamath Groundwater Replacement	\$ 35.61	\$165.00	50,902	\$75.00	\$158.81	
USBR Snake River Leases	\$2.95 - \$43.00	-	18,113	\$ 18.50	-	40,762
Lemhi River	\$ 218.00	-	1,000	\$ 245.49	-	1,000
Salmon Creek	\$ 48.00	\$145.00	1,719	\$ 58.00	\$175.00	1,873
Deschutes River	\$ 12.50	\$38.00	8,793	\$6.39	\$20.00	7,840
Yakima Basin	\$ 116.00	\$ 199.00	62,818	-	-	
Walla Walla Bank	\$ 16.69	\$62.00	217	\$ 20.47	\$76.00	340
Montana Programs	-	-	-	\$ 7.38	-	22,753



Pacific Northwest Water Leasing Programs



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