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United States  
Department of  
Interior  
Bureau of  
Land Management  
Natural  
Resources  
Conservation  
Service

# Washington Basin Outlook Report March 1, 1998



# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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## *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# Washington Water Supply Outlook

March 1998

## General Outlook

Overall Washington maintained near normal snowpack and precipitation levels. Areas that were above average received greater than normal amounts of precipitation and snowpack last month while areas that were already deprived didn't receive the much-needed moisture. "the wet got wetter and the dry got dryer". Current spring and summer runoff forecasts also reflect basin-to-basin water-year-to-date precipitation and snowpack accumulation. Reservoir storage is currently above average in most areas.

## Snowpack

The March 1 statewide SNOTEL readings showed 112% of average snowpack; a slight increase from last month. Snowpack varied from 73% of average in the Pend Oreille River Basin to as high as 175% in the Sanpoil River Basin. Westside averages from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 93% of average, the Olympic Peninsula basins with 109%, and the Lewis-Cowlitz basins with 126% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 113% of average, and the Wenatchee area with 103%. Snowpack in the Spokane River Basin remained below average at 83%, and the Pend Oreille River Basin, including Canadian data, had 73% of average. Maximum snow cover in Washington was at Cayuse Pass, with estimated water content of 78.3 inches. This site would normally have 65.3 inches of water content on March 1. The highest average in the state was the Mount Tolman snow course in the Sanpoil River Basin with 429% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	51	83
Newman Lake	61	103
Colville	N/A	N/A
Pend Oreille	49	73
Okanogan	75	98
Similkameen	63	77
Methow	77	109
Chelan	80	109
Wenatchee	70	103
Stemilt Creek	92	118
Yakima	70	113
Ahtanum Creek	74	104
Walla Walla	46	79
Cowlitz	74	116
Lewis	88	135
White	81	126
Green	55	87
Cedar	50	103
Snoqualmie	68	103
Skykomish	64	99
Skagit	71	100
Baker	71	94
Nooksack	63	85
Olympic Peninsula	102	109

## Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations showed considerable variations in precipitation across Washington. The highest percent of average in the state was at Conconully, near Okanogan. Conconully climate station reported 274% of average for a total of 3.83 inches. The February average for this site is 1.4 inches. Averages for the water year varied from 145% of average in the Okanogan - Methow Basin to 57% in the Spokane River Basin. The highest individual site average for the water year was 169% of average at Trough SNOTEL site near Wenatchee.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane .....	57 .....	83
Colville-Pend Oreille .....	72 .....	92
Okanogan-Methow .....	145 .....	108
Wenatchee-Chelan .....	106 .....	110
Yakima .....	92 .....	108
Walla Walla .....	67 .....	85
Cowlitz-Lewis .....	110 .....	114
White-Green .....	76 .....	97
Central Puget Sound .....	70 .....	98
North Puget Sound .....	59 .....	96
Olympic Peninsula .....	124 .....	122

## Reservoir

Less water is being released from storage reservoirs as we near the end of normal snowpack accumulation. Most reservoir operations are maintaining reduced capacity levels in anticipation of spring runoff. Reservoir storage in the Yakima Basin was 787,200 acre feet, or 113% of average. Storage at other reservoirs included Roosevelt at 93% of average and 49% of capacity; Banks Lake at 113% of average and 96% of capacity; and the Okanogan reservoirs with 146% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 103,500 acre feet, or 69% of average and 43% of capacity; Chelan Lake, 335,700 acre feet, 200% of average and 50% of capacity; and the Skagit River reservoirs at 275% of average and 60% of capacity.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane .....	43 .....	69
Colville-Pend Oreille .....	55 .....	96
Okanogan-Methow .....	87 .....	146
Wenatchee-Chelan .....	50 .....	200
Yakima .....	74 .....	113
North Puget Sound .....	60 .....	275

*For more information contact your local Natural Resources Conservation Service office.*

## Streamflow

Streamflow forecasts stayed about the same as last month with only a slight downward trend. Forecasts vary from 115% of average for Salmon Creek near Conconully, to 70% of average for the Spokane River near Post Falls. March forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 90% of average; Green River, 83%; and the Dungeness River, 98%. Some Eastern Washington streams include the Yakima River near Parker, 95% of average; the Wenatchee River at Peshastin, 97%; and the Colville River at Kettle Falls, 88%. Volumetric forecasts are developed using current, historic, and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. A beneficial fact sheet, "Interpreting Streamflow Forecasts", is available on the World Wide Web at <http://www.wcc.nrcs.usda.gov/factpub/factpub.html>

Streamflows reported for February varied from well above to well below average. The Kettle River at Laurier, had the highest flows at 177% of average; and the Similkameen River at Nighthawk, with 51% of average, had the lowest flows in the state. Other streamflows were the following percentage of average: the Priest River, 117%; the Columbia at the International Boundary, 111%; the Spokane River at Spokane, 86%; the Columbia below Rock Island Dam, 99%; the Cle Elum River near Roslyn, 65%; and the Snake River below Ice Harbor Dam, 89%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane .....	70-73
Colville-Pend Oreille .....	71-110
Okanogan-Methow .....	83-115
Wenatchee-Chelan .....	87-104
Yakima .....	91-114
Walla Walla .....	85-95
Cowlitz-Lewis .....	95-114
Green River .....	83
Central Puget Sound .....	86-90
North Puget Sound .....	91-96
Olympic Peninsula .....	96-98

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
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Pend Oreille Below Box Canyon .....	80
Kettle at Laurier .....	177
Columbia at Birchbank .....	111
Spokane at Long Lake .....	84
Similkameen at Nighthawk .....	51
Okanogan at Tonasket .....	136
Methow at Pateros .....	114
Chelan at Chelan .....	139
Wenatchee at Pashastin .....	74
Yakima at Cle Elum .....	73
Yakima at Parker .....	92
Naches at Naches .....	71
Yakima at Kiona .....	111
Grande Ronde at Troy .....	76
Snake below Lower Granite Dam .....	88
SF Walla Walla near Milton Freewater .....	95
Columbia at The Dalles .....	94
Lewis at Ariel .....	103
Cowlitz below Mayfield Dam .....	69
Skagit at Concrete .....	65

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SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	
MOSES MTN	PILLOW	4800	3/01/98	---	15.2S	15.2	11.7	SILVER STAR MTN CAN.	5600	3/01/98	66	21.6	30.1	23.9
MOSES PEAK (2)		6650	02/25/98	53	15.5	6.8	10.3	SKALKAKHO PILLOW	7260	3/01/98	---	17.1	32.4	20.8
MOSQUITO RDG	PILLOW	5200	3/01/98	---	24.0	44.4	32.2	SKITWISH RIDGE	5110	3/02/98	76	26.2	47.9	27.5
MOULTON RESERVOIR		6850	2/25/98	25	4.3	13.4	5.8	SKOOKUM CREEK PILLOW	3920	3/01/98	---	22.9S	32.5	24.9
MT. BLUM	AM	5800				77.0	55.9	SLIDE ROCK MOUNTAIN	7100	2/28/98	34	9.5	18.4	13.3
MOUNT CRAG	PILLOW	4050	3/01/98	---	36.8S	26.2	26.5	SPENCER MDW	3400	3/01/98	---	38.9S	42.2	27.2
MT. KOBAY	CAN.	5500	2/28/98	43	12.8	14.2	10.4	SPIRIT LAKE	3100	3/01/98	---	6.6S	3.4	6.6
MOUNT TOLMAN		2000	02/23/98	4	15.0	6.1	3.5	SPOTTED BEAR MTN.	7000	3/02/98	24	7.5	19.4	13.3
MT. GARDNER		3300	02/23/98	32	10.3	39.0	14.2	STAHL PEAK PILLOW	6030	3/01/98	---	25.7	38.7	30.2
MT. GARDNER	PILLOW	2860	3/01/98	---	14.5S	24.9	14.2	STAMPEDE PASS PILLOW	3860	3/01/98	---	35.6S	56.0	38.2
MUTTON CREEK #1		5700	02/25/98	59	15.7	15.6	11.4	STEMILT SLIDE	5000	02/25/98	54	16.9	16.5	12.7
N.F. ELK CR PILLOW		6250	3/01/98	---	8.2	15.5	10.8	STEMPLE PASS	6600	3/02/98	22	5.0	12.3	8.5
NEVADA CREEK PILLOW		6480	3/01/98	---	8.8	18.1	11.2	STEVENS PASS PILLOW	4070	3/01/98	---	33.3S	56.0	34.7
NEW HOZOMEEN LAKE		2800	2/26/98	24	10.7	17.3	10.9	STEVENS PASS SAND SD	3700	2/27/98	77	25.5	50.9	31.1
NEZ PERCE CMP PILLOW		5650	3/01/98	---	10.4	19.1	13.0	STICKNEY RIDGE	3640				49.7	59.8
NEZ PERCE PASS		6570	2/28/98	42	12.2	21.5	14.6	STORM LAKE	7780	2/24/98	38	9.1	15.9	10.8
NOISY BASIN		6040				---	37.6	STRANGER MOUNTAIN	4230				---	10.8
NOISY BASIN PILLOW		6040	3/01/98	---	26.6	57.6	33.7	STRYKER BASIN	6180	2/26/98	70	22.0	38.8	28.5
NORTH FORK JOCKO		6330	2/25/98	85	29.1	55.4	38.2	STUART MOUNTAIN	7400	2/25/98	64	19.8	43.5	27.4
OLALLIE MDWS	PILLOW	3960	3/01/98	---	47.8S	73.9	44.6	SUMMERLAND RES CAN.	5050	2/23/98	22	6.1	11.0	8.4
OLALLIE MEADOWS		3630	3/01/98	---	41.5E	64.1	38.7	SUMMIT G.S.	4600	02/25/98	31	7.7	10.9	7.1
OLNEY PASS		3250				28.1	21.5	SUNDAY SUMMIT CAN.	4000				---	5.4
OPHIR PARK		7150	3/01/98	35	9.3	19.4	14.7	SUNSET PILLOW	5540	3/01/98	---	13.3	41.2	32.0
OYAMA LAKE	CAN.	4100	2/26/98	22	5.9	9.5	5.9	SURPRISE LKS PILLOW	4250	3/01/98	---	52.6S	59.4	37.5
PALISADE CREEK		8250				---	---	TEN MILE LOWER	6600	2/24/98	18	3.6	9.1	6.3
PARADISE PARK PILLOW		5500	3/01/98	---	58.3S	86.8	47.9	TEN MILE MIDDLE	6800	2/24/98	25	6.0	12.9	9.5
PARK CK RIDGE PILLOW		4600	3/01/98	---	40.8S	60.6	40.6	THUNDER BASIN	4200	2/27/98	52	15.8	32.0	18.5
PETERSON MDW PILLOW		7200	2/23/98	---	7.1	12.5	8.5	TINKHAM CREEK PILLOW	3000	3/01/98	---	25.6S	44.0	17.2
PIGTAIL PEAK PILLOW		5900	3/01/98	---	42.9S	78.7	41.0	TOGO	3370				---	9.3
PIKE CREEK		5930				---	---	TOUCHET #2 PILLOW	5530	3/01/98	---	22.3	49.4	27.8
PIKE CREEK PILLOW		5930	3/01/98	---	14.2	33.1	22.8	TRAPPING CK LOW CAN.	2850	3/01/98	14	3.9	7.0	5.0
PIPESTONE PASS		7200	2/26/98	18	4.1	7.0	4.1	TRAPPING CK UP CAN.	4100	3/01/98	23	7.2	9.9	7.9
POPE RIDGE	PILLOW	3540	3/01/98	---	18.6S	27.0	16.7	TRINKUS LAKE	6100	3/02/98	71	25.8	55.7	36.7
POSTILL LAKE	CAN.	4200	2/27/98	24	6.5	10.7	7.0	TROUGH #2 PILLOW	5310	3/01/98	---	13.5S	12.1	9.0
POTATO HILL	PILLOW	4500	3/01/98	---	27.0S	33.5	21.9	TROUT CREEK CAN.	5650	2/23/98	21	5.5	8.2	6.5
QUARTZ PEAK PILLOW		4700	3/01/98	---	18.7	30.4	18.6	TRUMAN CREEK	4060	2/24/98	9	2.8	9.0	5.0
RAGGED MOUNTAIN		4200	3/02/98	58	20.5	32.9	16.4	TUNNEL AVENUE	2450	02/27/98	50	18.6	30.7	19.2
RAGGED RIDGE		3330	2/27/98	25	8.2	13.5	7.4	TV MOUNTAIN	6800	2/25/98	35	8.2	24.8	15.6
RAINY PASS	PILLOW	4780	3/01/98	---	28.9S	46.6	32.7	TWELVEMILE PILLOW	5600	3/01/98	---	13.3	24.9	16.4
REX RIVER	PILLOW	1900	3/01/98	---	26.6S	36.0	20.1	TWIN CAMP	4100	03/05/98	53	16.2	33.5	21.8
ROCKER PEAK PILLOW		8000	3/01/98	---	10.5	15.4	12.6	TWIN CREEKS	3580	3/02/98	18	5.5	18.5	10.7
ROCKY CREEK	AM	2100	3/01/98	---	23.1E	37.0	25.2	TWIN LAKES	2700	02/24/98	26	8.7	10.6	8.7
ROLAND SUMMIT		5120	3/01/98	77	27.0	49.7	28.6	TWIN LAKES PILLOW	6400	3/01/98	---	28.2	53.6	34.3
RUSTY CREEK		4000	02/25/98	30	8.0	9.3	6.2	TWIN SPIRIT DIVIDE	3480	3/02/98	39	13.1	24.2	13.8
SF THUNDER CK	AM	2200				14.0	7.9	UPPER HOLLAND LAKE	6200	3/02/98	66	23.6	45.1	30.4
SADDLE MTN PILLOW		7900	3/01/98	---	17.8	33.0	21.9	UPPER WHEELER PILLOW	4400	3/01/98	---	12.4S	15.3	12.1
SAGE CREEK SADDLE		4080	2/26/98	49	15.4	28.5	15.9	VASEUX CREEK CAN.	4250	2/27/98	19	4.9	6.9	5.5
SALMON MDWS	PILLOW	4500	3/01/98	---	12.9S	15.8	8.3	WARM SPRINGS PILLOW	7800	3/01/98	---	16.2	25.7	18.2
SASSE RIDGE	PILLOW	4200	3/01/98	---	32.3S	49.7	27.4	WATSON LAKES	4500				65.0	53.3
SAVAGE PASS	PILLOW	6170	3/01/98	---	17.7	32.1	22.9	WEASEL DIVIDE	5450	2/24/98	65	22.2	35.8	29.5
SAWMILL RIDGE		4700	03/05/98	87	29.4	52.7	29.7	WELLS CREEK PILLOW	4200	3/01/98	---	25.3S	36.9	33.2
SCHREIBERS MDW	AM	3400	3/01/98	---	45.5E	53.0	47.9	WHITE PASS ES PILLOW	4500	3/01/98	---	20.0S	45.9	20.7
SHEEP CANYON	PILLOW	4050	3/01/98	---	36.6S	30.0	30.1	WHITE ROCKS MTN CAN.	7200	2/27/98	54	17.9	22.9	19.3

(d) Denotes discontinued site.



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### Helpful Internet Addresses

#### NRCS Snow Survey and Climate Services Homepages

Washington:

<http://wcp.wsu.edu/nrcs/CoopSnoSrvy.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snowsurveys/>

Idaho:

<http://id.nrcs.usda.gov/snow/snow.htm>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov/>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

#### USDA-NRCS Agency Homepages

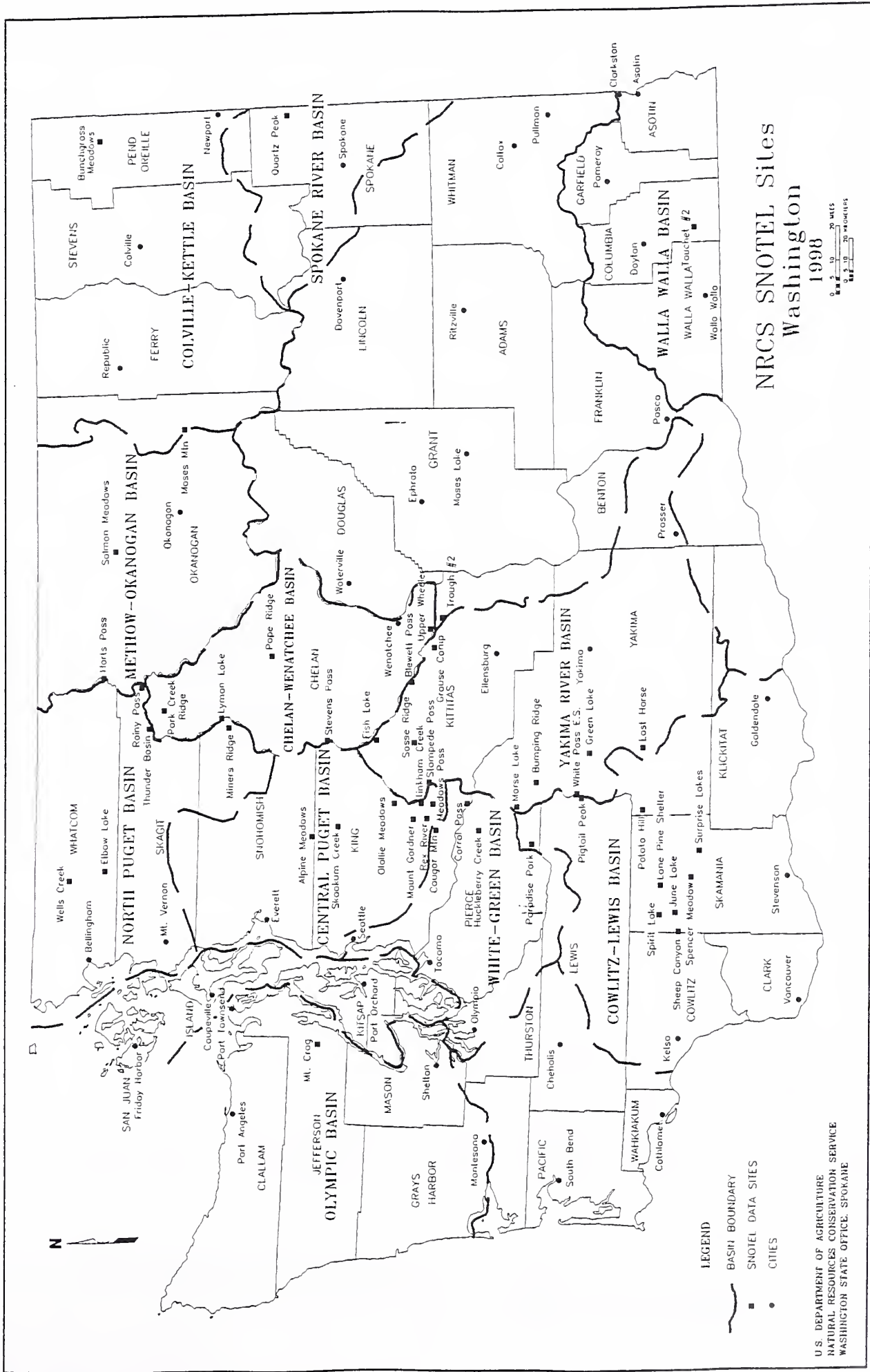
Washington:

<http://wcp.wsu.edu/nrcs/>

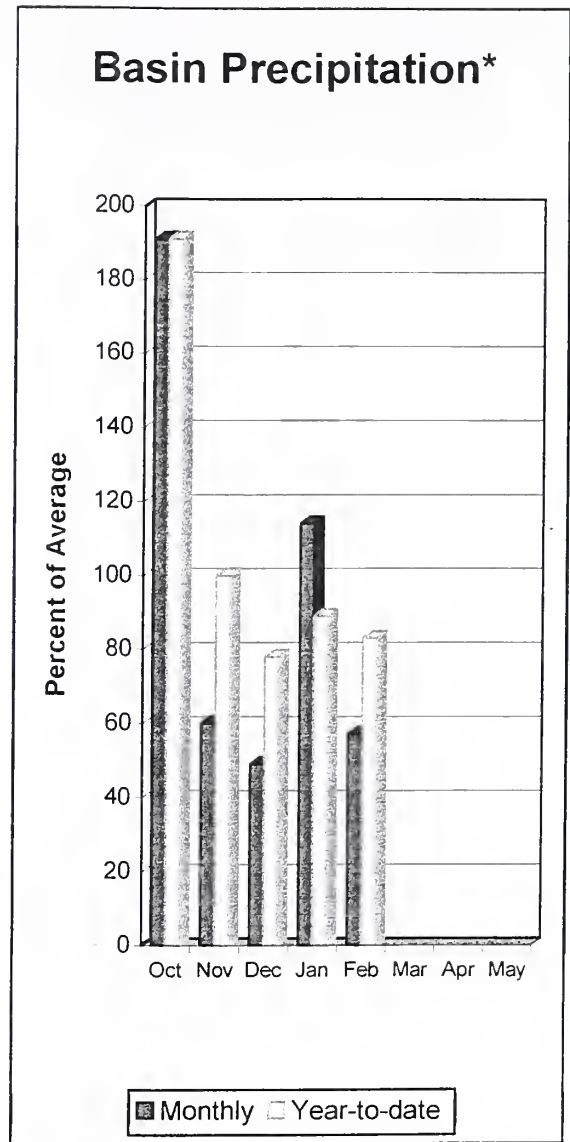
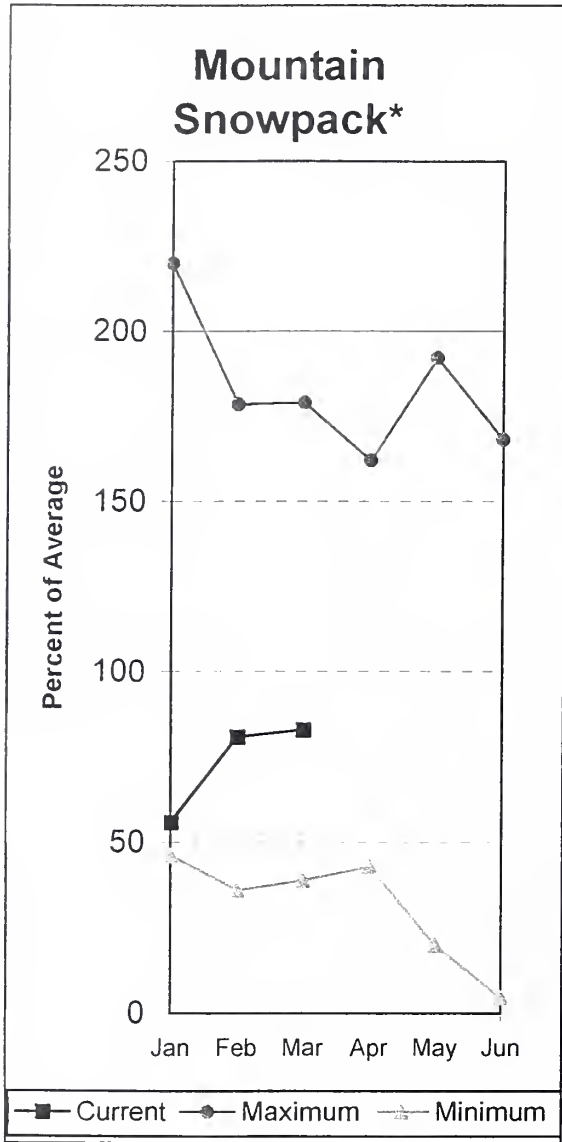
NRCS National:

<http://www.ftw.nrcs.usda.gov/>





# Spokane River Basin



\*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 70% of average near Post Falls and 73% of average at Long Lake. These forecasts dropped slightly from last month. The forecast is based on a basin snowpack that is 83% of average and precipitation that is 83% of average for the water year. Precipitation for February was much below normal at only 57% of average. Streamflow on the Spokane River at Long Lake, was 84% of average for February. March 1 storage in Coeur d'Alene Lake, was 103,500 acre feet, 69% of average, and 43% of capacity. Snowpack at Quartz Peak SNOTEL site contained 18.7 inches of water, compared to the average March 1 reading of 18.6 inches. Average temperatures in the Spokane Basin were 2 degrees above normal.

*For more information contact your local Natural Resources Conservation Service office.*

# Spokane River Basin

## Streamflow Forecasts - March 1, 1998

Location	Period	1461	1853	2120	78	2387	2779	2730
		1400	1787	2050	79	2313	2700	2633
SPOKANE near Post Falls (2)	APR-SEP							
	APR-JUL							
SPOKANE at Long Lake	APR-JUL	1635	2049	2330	79	2611	3025	2936
	APR-SEP	1796	2224	2515	80	2806	3234	3159

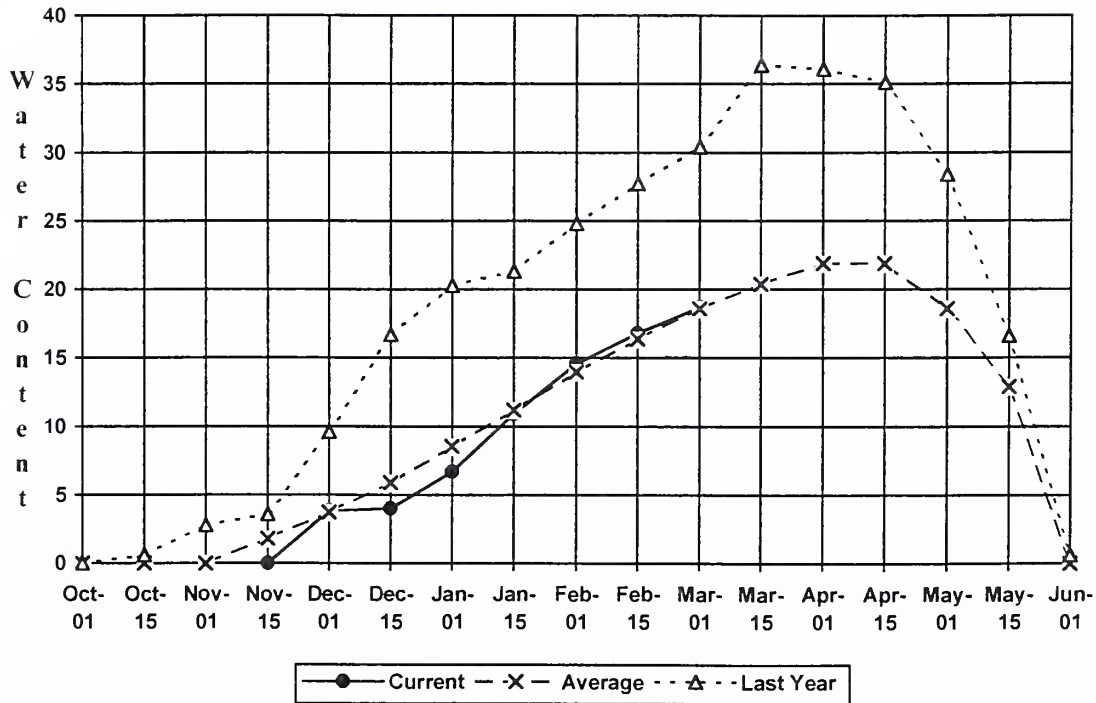
SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of February					SPOKANE RIVER BASIN Watershed Snowpack Analysis - March 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
COEUR D'ALENE	238.5	104.5	116.5	127.8	SPOKANE RIVER	11	50	81
					NEWMAN LAKE	2	62	110

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

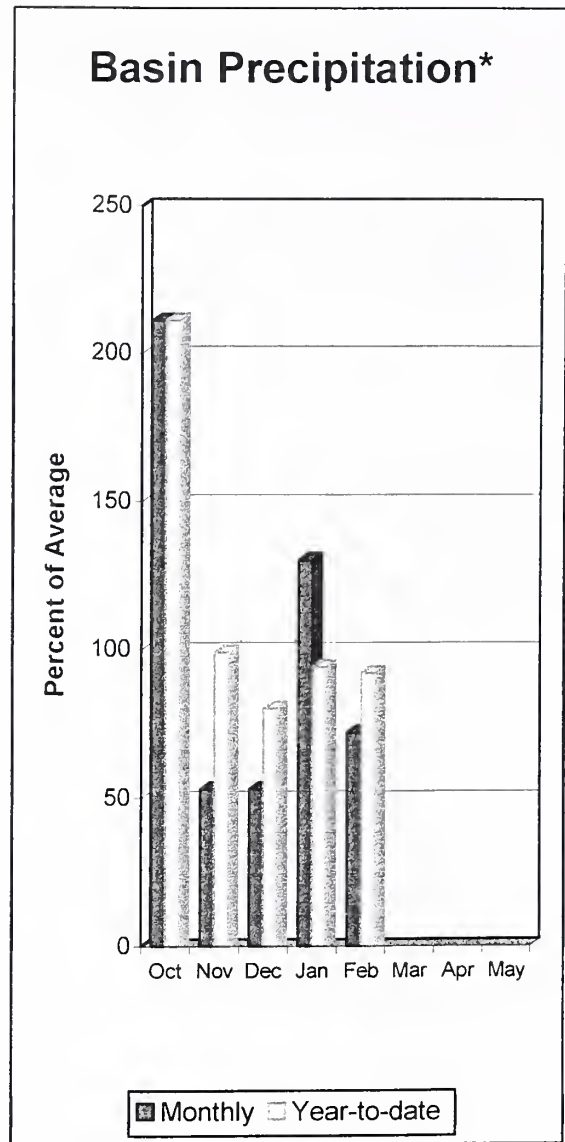
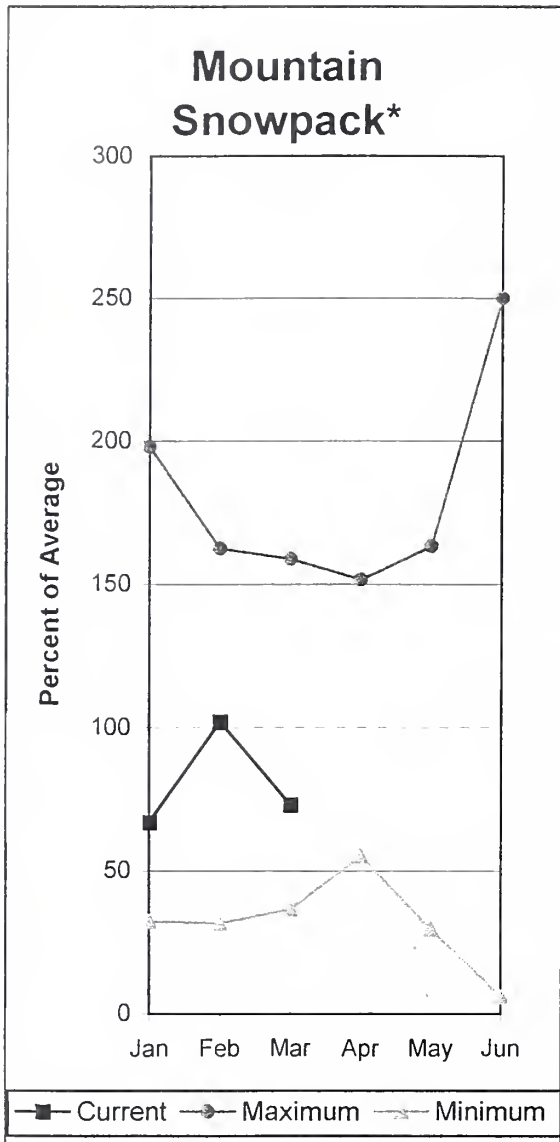
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Quartz Peak SNOTEL Elevation 4700 ft.



# Colville - Pend Oreille River Basins



\*Based on selected stations

The forecast for the Kettle River streamflow is 110% of average; the Pend Oreille below Box Canyon, 70%; and the Priest River near the town of Priest River, 77% of average for the summer runoff period. February streamflow was 80% of average on the Pend Oreille River; 111% on the Columbia at the International Boundary; and 177% on the Kettle River. March 1 snow cover was 73% of average in the Pend Oreille Basin and 92% of average in the Kettle River Basin. Precipitation during February was 72% of average, bringing the year-to-date precipitation to 92% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 96% of average and 55% of capacity on March 1. Average temperatures were 2-3 degrees above normal.

For more information contact your local Natural Resources Conservation Service office.

# Colville - Pend Oreille River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Future Conditions		Wetter		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	Chance Of Exceeding * (% AVG.)	30% (1000AF)	10% (1000AF)	
PEND OREILLE Lake Inflow (1,2)	APR-JUL	6578	9206	10400	79	11594	14222	13150
	APR-SEP	7120	9995	11300	79	12605	15480	14370
	APR-JUN	5392	7873	9000	79	10127	12608	11390
PRIEST nr Priest River (1,2)	APR-JUL	432	620	705	87	790	978	814
	APR-SEP	458	659	750	86	841	1042	868
PEND OREILLE bl Box Canyon (1,2)	APR-JUL	7025	9415	10500	79	11585	13975	13380
	APR-SEP	7707	10315	11500	79	12685	15293	14590
	APR-JUN	6150	8206	9140	79	10074	12130	11570
CHAMOKANE CREEK near Long Lake	MAY-AUG	2.32	5.08	6.95	82	8.82	11.58	8.52
COLVILLE at Kettle Falls	APR-SEP	66	90	107	82	124	148	131
	APR-JUL	59	82	98	82	114	137	120
	APR-JUN	55	77	92	83	107	129	111
KETTLE near Laurier	APR-SEP	1665	1882	2030	110	2178	2395	1854
	APR-JUL	1598	1795	1930	110	2065	2262	1761
	APR-JUN	1454	1624	1740	110	1856	2026	1585

COLVILLE - PEND OREILLE RIVER BASINS  
Reservoir Storage (1000 AF) - End of February

COLVILLE - PEND OREILLE RIVER BASINS  
Watershed Snowpack Analysis - March 1, 1998

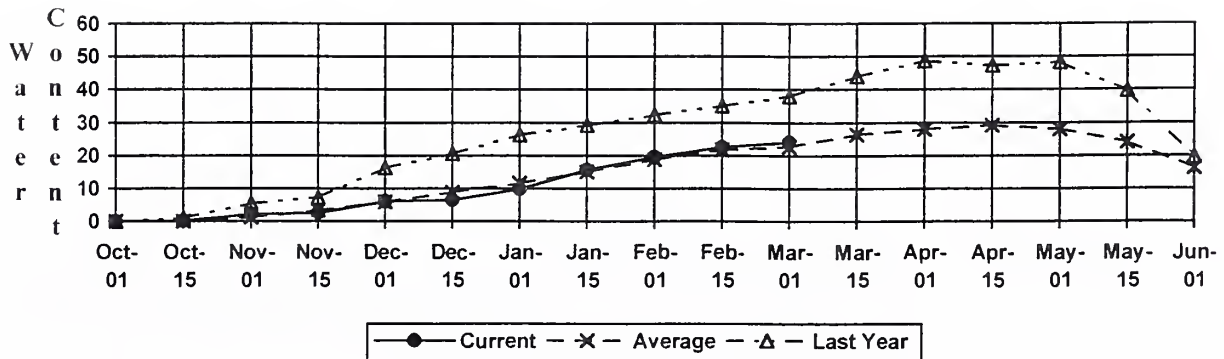
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROOSEVELT		NO REPORT			COLVILLE RIVER	1	75	101
BANKS		NO REPORT			PEND OREILLE RIVER	67	50	82
					KETTLE RIVER	3	68	103

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

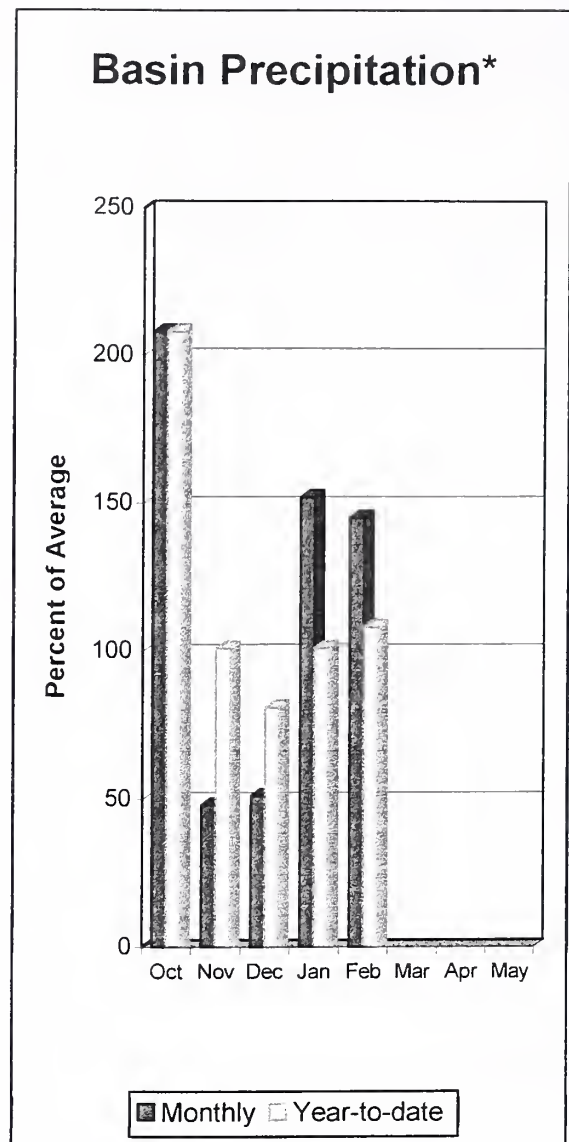
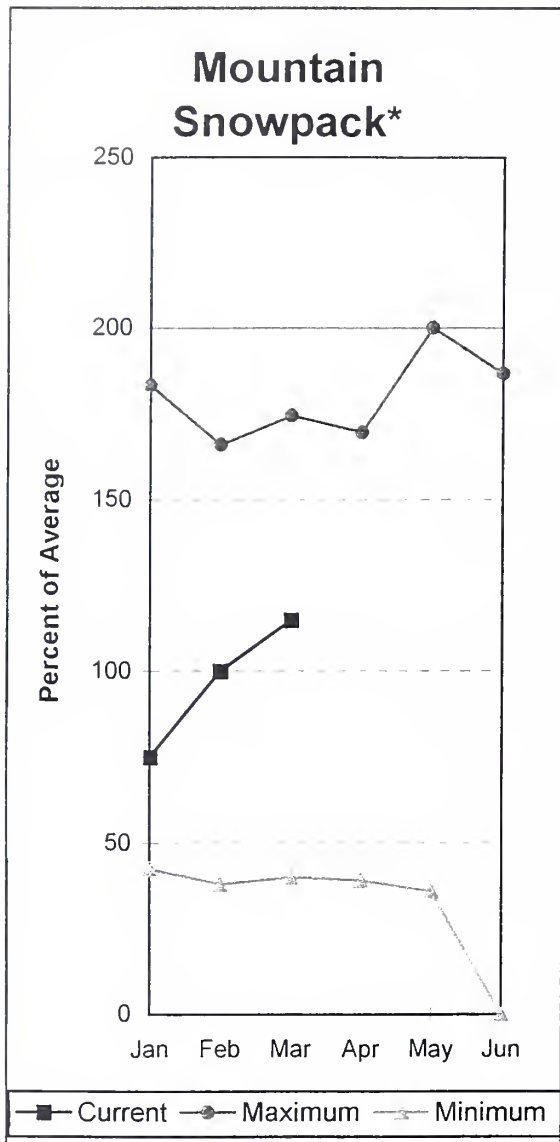
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Bunchgrass Meadow SNOTEL Elevation 5000 ft.--



# Okanogan - Methow River Basins



\*Based on selected stations

Summer runoff forecast for the Okanogan River is 83% of average; the Similkameen River, 83%; the Methow River, 102%; and Salmon Creek, 115% of average. March 1 snow cover on the Okanogan was 98% of average; the Methow, 109%; and the Similkameen River, 77%. Salmon Meadows SNOTEL site above Conconully Lake had a March 1 reading of 155% of average. February precipitation in the Okanogan-Methow was 145% of average, with precipitation for the water year at 108% of average. February streamflow for the Methow River was 114% of average; 136% for the Okanogan River; and 51% for the Similkameen. Snow-water-content at the Salmon Meadows SNOTEL, near Conconully, was 12.9 inches. Average for this site is 8.3 inches on March 1.. Combined storage in the Conconully Reservoirs was 20,500 acre feet, which is 87% of capacity and 147% of the March 1 average.

*For more information contact your local Natural Resources Conservation Service office.*

# Okanogan - Methow River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Chance Of Exceeding *		Wetter		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SIMILKAMEEN near Nighthawk (1)	APR-JUL	810	1033	1135	87	1237	1460	1304
	APR-SEP	900	1120	1220	87	1320	1540	1399
	APR-JUN	647	859	955	86	1051	1263	1113
OKANOGAN near Tonasket (1)	APR-JUL	555	1040	1260	86	1480	1965	1466
	APR-SEP	630	1156	1395	86	1634	2160	1623
	APR-JUN	477	878	1060	86	1242	1643	1233
SALMON CREEK near Conconully	APR-JUL	7.6	14.9	19.9	104	25	32	19.1
	APR-SEP	8.3	15.7	21	104	26	33	20
METHOW RIVER near Pateros	APR-SEP	740	853	930	99	1007	1120	942
	APR-JUL	693	795	864	99	933	1035	873
	APR-JUN	588	678	739	99	800	890	746

### OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of February

### OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - March 1, 1998

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
SALMON LAKE	10.5	8.7	8.4	7.5	OKANOGAN RIVER	18	64	96
CONCONULLY RESERVOIR	13.0	10.8	9.0	6.3	OMAK CREEK	1	66	90
					SANPOIL RIVER	0	0	0
					SIMILKAMEEN RIVER	4	62	85
					CONCONULLY LAKE	3	51	101
					METHOW RIVER	5	59	102

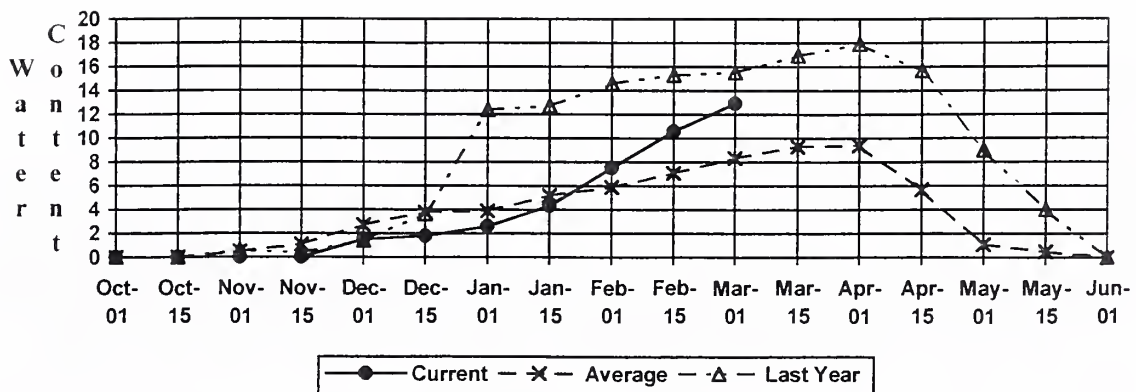
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

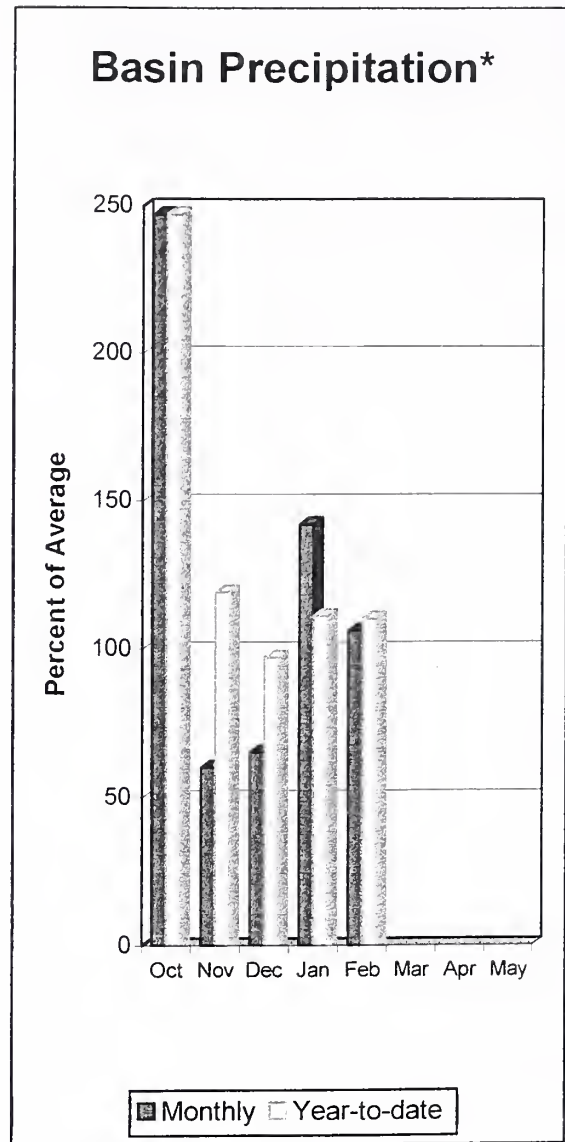
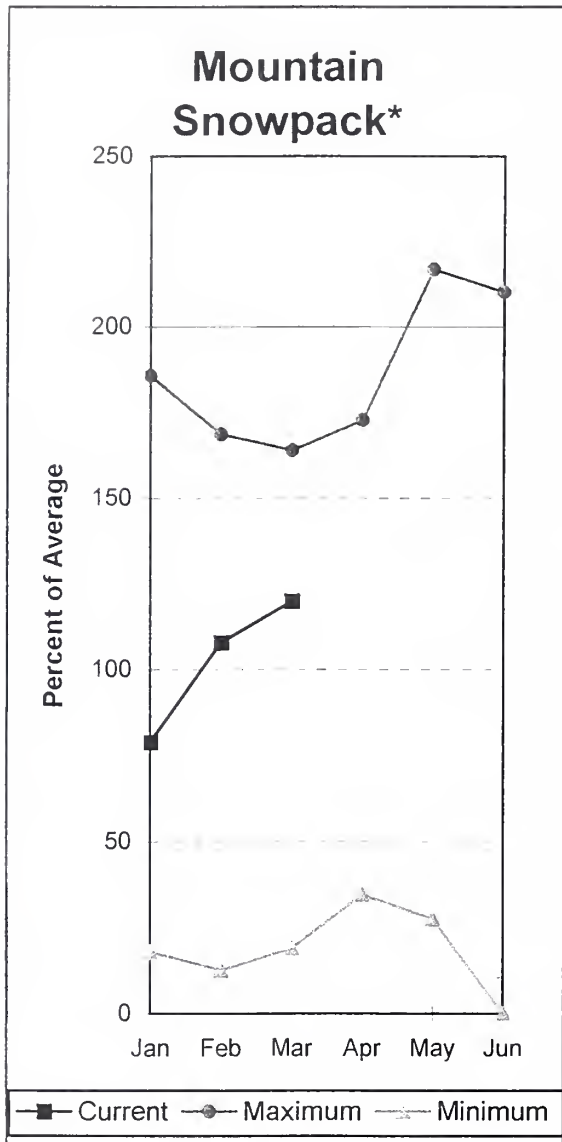
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

## Salmon Meadows SNOTEL Elevation 4500 ft.



# Wenatchee - Chelan River Basins



\*Based on selected stations

Precipitation during February was 106% of average in the basin and 110% for the year-to-date. Runoff for the Entiat River is forecast to be 104% of average for the summer. The April-September forecast for the Chelan River is for 98% of average; for the Wenatchee River at Peshastin it is 97%; and for the Stehekin it is 100% of average. Icicle, Stemilt and Squilchuck creeks are all expected to have near normal flows this summer. February streamflows on the Chelan River was 139% of average, and the Wenatchee River averaged 74% of normal flows. March 1 snowpack in the Wenatchee Basin was 103% of average. The Chelan Basin was 109% of average; Colockum Ridge was 150%; and Stemilt Creek was 118% of average. Snowpack in the Entiat River Basin was 109% of average. Reservoir storage in Lake Chelan was 335.700 acre feet, or 200% of March 1 average and 50% of capacity. Lyman Lake SNOTEL had the most snow water with 58 inches of water. This site would normally have 48.4 inches on March 1. Temperatures were slightly above normal for February.

*For more information contact your local Natural Resources Conservation Service office.*



# Wenatchee - Chelan River Basins

## Streamflow Forecasts - March 1, 1998

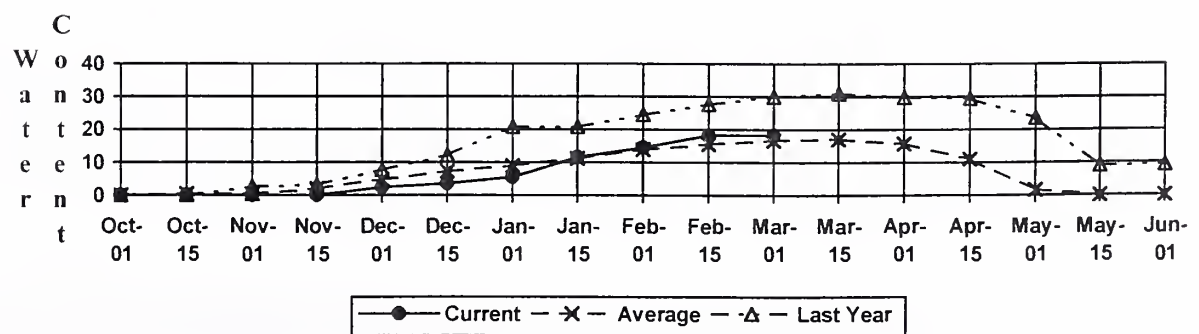
Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50% (Most Probable)			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
CHELAN RIVER near Chelan	APR-SEP	943	1049	1120	97	1191	1297	1160				
	APR-JUL	841	930	990	97	1050	1139	1024				
	APR-JUN	662	738	789	97	840	916	812				
STEHEKIN near STEHEKIN	APR-SEP	706	774	820	99	866	934	827				
	APR-JUL	550	603	640	91	677	730	701				
	APR-JUN	454	499	530	99	561	606	538				
ENTIAT RIVER near Ardenvoir	APR-SEP	168	193	210	93	227	252	227				
	APR-JUL	152	175	190	92	205	228	206				
	APR-JUN	122	142	155	92	168	188	169				
WENATCHEE at Plain	APR-SEP	942	1048	1120	94	1192	1298	1190				
	APR-JUL	880	958	1010	94	1062	1140	1072				
	APR-JUN	721	777	815	94	853	909	864				
WENATCHEE R. at Peshastin	APR-SEP	1014	1351	1580	97	1809	2146	1636				
	APR-JUL	919	1223	1430	96	1637	1941	1485				
	APR-JUN	745	989	1155	96	1321	1565	1204				
STEMILT nr Wenatchee (miners in)	MAY-SEP	77	105	124	90	143	171	138				
ICICLE CREEK near Leavenworth	APR-SEP	277	301	317	92	333	357	344				
	APR-JUL	256	278	293	92	308	330	318				
	APR-JUN	205	228	244	93	260	283	263				

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of February					WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - March 1, 1998				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of		
		This Year	Last Year	Avg			Last Yr	Average	
CHELAN LAKE	676.1	390.0	288.3	450.6	CHELAN LAKE BASIN	5	69	107	
					ENTIAT RIVER	2	60	110	
					WENATCHEE RIVER	13	68	110	
					SQUILCHUCK CREEK	0	0	0	
					STEMILT CREEK	2	71	98	
					COLOCKUM CREEK	1	102	195	

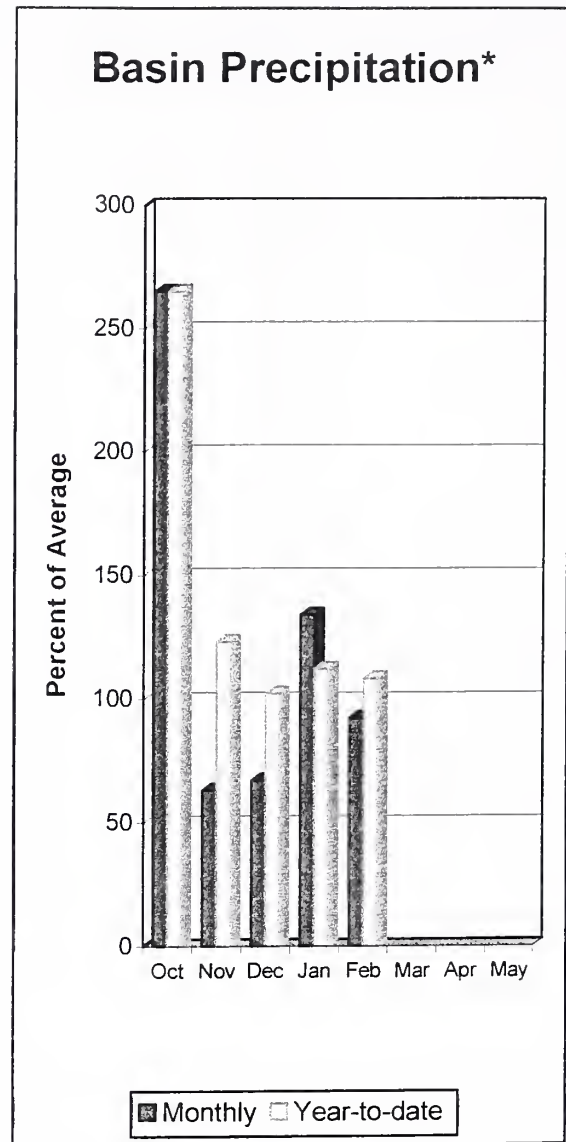
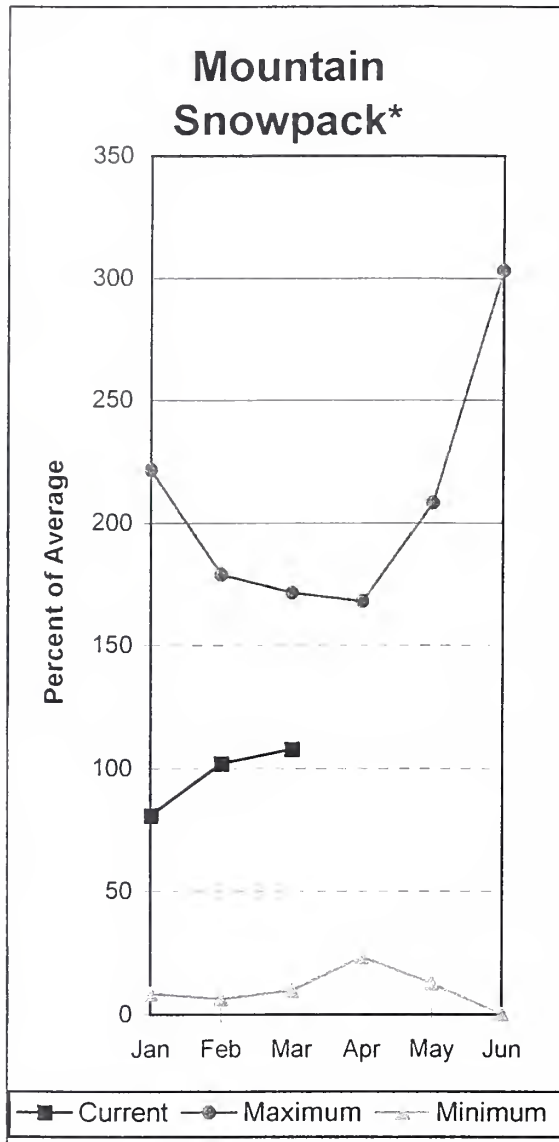
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.  
 The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

### Pope Ridge SNOTEL Elevation 3540 ft.



# Yakima River Basin



\*Based on selected stations

March 1 reservoir storage for the five major reservoirs was 787,200 acre feet, or 113% of average. March 1 summer streamflow forecasts are for near normal in the Yakima Basin. Forecasts for the Yakima River at Cle Elum, are for 91% of average; Naches River, 100%; the Yakima River near Parker, 95%; Ahtanum Creek, 98%; and the Tieton River, 103%. The Klickitat River near Glenwood is forecast at 114% of average flows this summer. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow. February streamflows within the basin were: the Yakima River near Kiona, 111% of average; the Yakima near Cle Elum, 73%; and the Naches River at 71%. March 1 snowpack was 113% based upon 20 snow courses and SNOTEL readings within the Yakima Basin. Precipitation was 92% of average for February and 108% for the water year-to-date.

*For more information contact your local Natural Resources Conservation Service office.*

# Yakima River Basin

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ==== Wetter =====>>										
		90%		70%		50% (Most Probable)		30%		10%		30-Yr Avg. (1000AF)
		(1000AF)		(1000AF)		(1000AF) (% AVG.)		(1000AF)		(1000AF)		
KEECHELUS LAKE INFLOW	APR-JUL	92	106	116	94	126	140	124			124	
	APR-SEP	101	116	127	94	138	153	135			135	
	APR-JUN	84	95	103	95	111	122	109			109	
KACHESS LAKE INFLOW	APR-JUL	83	95	103	93	111	123	111			111	
	APR-SEP	88	101	110	93	119	132	118			118	
	APR-JUN	76	86	92	93	98	108	99			99	
CLE ELUM LAKE INFLOW	APR-JUL	332	367	390	95	413	448	409			409	
	APR-SEP	361	402	430	96	458	499	448			448	
	APR-JUN	280	308	328	95	348	376	345			345	
YAKIMA at Cle Elum	APR-JUN	564	627	670	93	713	776	721			721	
	APR-JUL	651	725	775	93	825	899	832			832	
	APR-SEP	715	795	850	93	905	985	915			915	
BUMPING LAKE INFLOW	APR-SEP	107	122	133	98	144	159	136			136	
	APR-JUL	101	115	124	100	133	147	124			124	
	APR-JUN	82	95	104	100	113	126	104			104	
AMERICAN RIVER near Nile	APR-SEP	121	134	142	120	150	163	118			118	
	APR-JUL	110	121	129	118	137	148	109			109	
	APR-JUN	81	91	99	107	106	116	92			92	
RIMROCK LAKE INFLOW	APR-SEP	188	213	230	97	247	272	238			238	
	APR-JUL	161	181	194	97	207	227	200			200	
	APR-JUN	131	146	157	97	168	183	162			162	
NACHES near Naches	APR-SEP	676	753	805	97	857	934	832			832	
	APR-JUL	618	685	730	97	775	842	755			755	
	APR-JUN	534	592	631	97	670	728	651			651	
AHTANUM CREEK nr Tampico (2)	APR-SEP	25	37	44	96	52	63	46			46	
	APR-JUL	24	34	41	98	48	58	42			42	
	APR-JUN	20	29	35	97	41	50	36			36	
YAKIMA near Parker	APR-SEP	1578	1770	1900	95	2030	2222	1994			1994	
	APR-JUL	1426	1598	1715	95	1832	2004	1805			1805	
	APR-JUN	1275	1421	1520	95	1619	1765	1597			1597	
KLICKITAT near Glenwood	APR-JUN	95	108	116	106	124	137	110			110	
	APR-SEP	117	135	147	105	159	177	140			140	

YAKIMA RIVER BASIN					YAKIMA RIVER BASIN			
Reservoir Storage (1000 AF) - End of February					Watershed Snowpack Analysis - March 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
KEECHELUS	157.8	129.5	107.3	96.0	YAKIMA RIVER	21	60	112
KACHESS	239.0	166.3	95.8	170.0	AHTANUM CREEK	3	59	92
CLE ELUM	436.9	325.7	218.3	251.0				
BUMPING LAKE	33.7	8.6	8.6	9.0				
RIMROCK	198.0	133.9	131.9	115.0				

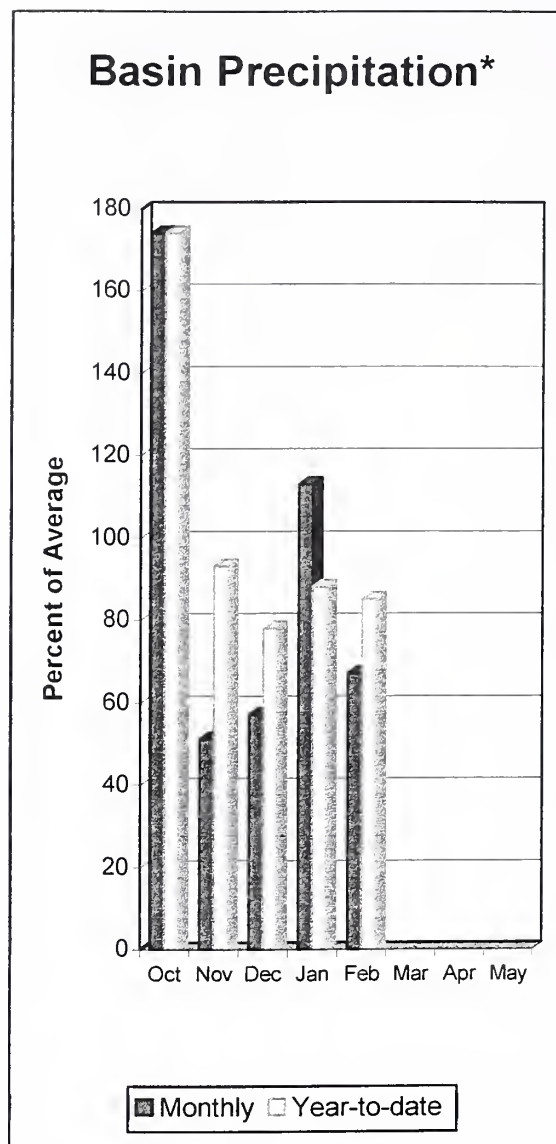
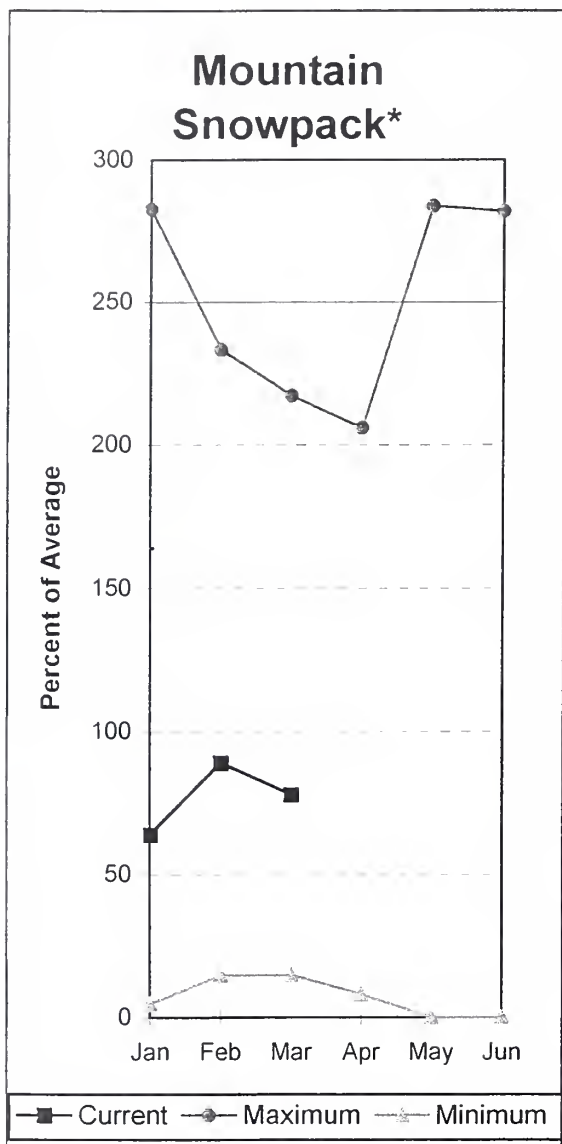
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# Walla Walla River Basin



\*Based on selected stations

February precipitation was 67% of average, bringing the year-to-date precipitation to 85% of average. March 1 snowpack dropped to 78% of average. The summer forecast is for 88% of average streamflow in the Snake River below Lower Granite Dam, 92% for the Grande Ronde at Troy, and 95% for Mill Creek. February streamflow was 95% of average for the Walla Walla River; 88% for the Snake River below Lower Granite Dam; and 76% for the Grande Ronde River near Troy. The Touchet SNOTEL site had 22.3 inches of snow-water-equivalent. The average March 1 reading for this site is 27.8 inches. Average temperatures were 1-2 degrees above normal for the area.

*For more information contact your local Natural Resources Conservation Service office.*

# Walla Walla River Basin

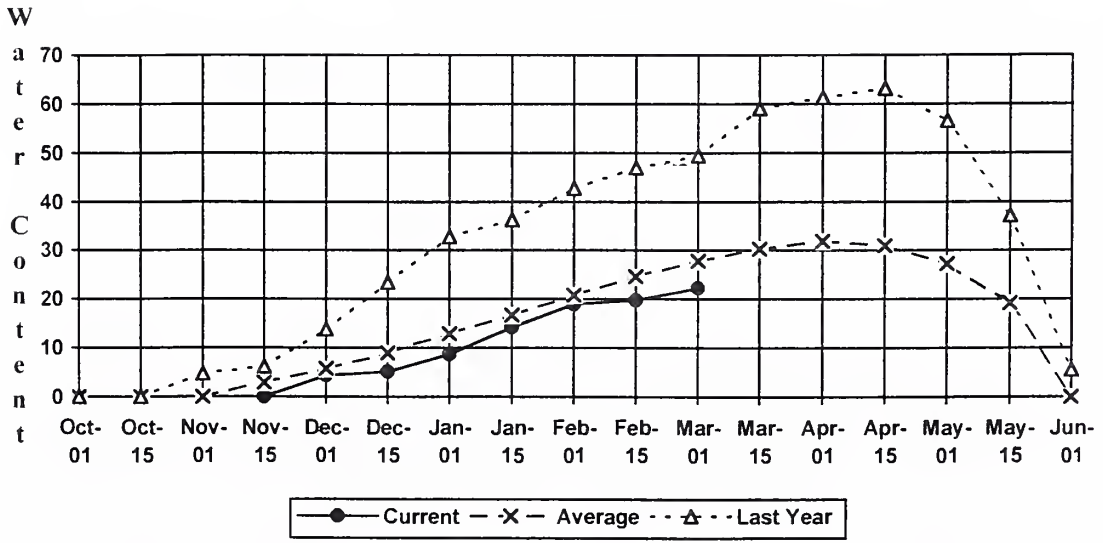
## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	Future Conditions <<==== Drier ==== Future Conditions ==== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
GRANDE RONDE at Troy (1)	MAR-JUL	852	1242	1420	97	1598	1988	1471
	APR-SEP	756	1109	1270	97	1431	1784	1312
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	10385	16791	19700	91	22609	29015	21650
	APR-SEP	11731	18930	22200	91	25470	32669	24360
MILL CREEK at Walla Walla	APR-SEP	9.5	14.3	17.6	103	21	26	17.1
	APR-JUL	9.3	14.1	17.4	103	21	26	16.9
	APR-JUN	9.2	14.0	17.2	103	20	25	16.7
SF WALLA WALLA near Milton-Freewater	APR-JUL	42	48	53	99	57	64	53
	APR-SEP	53	61	66	99	71	78	66

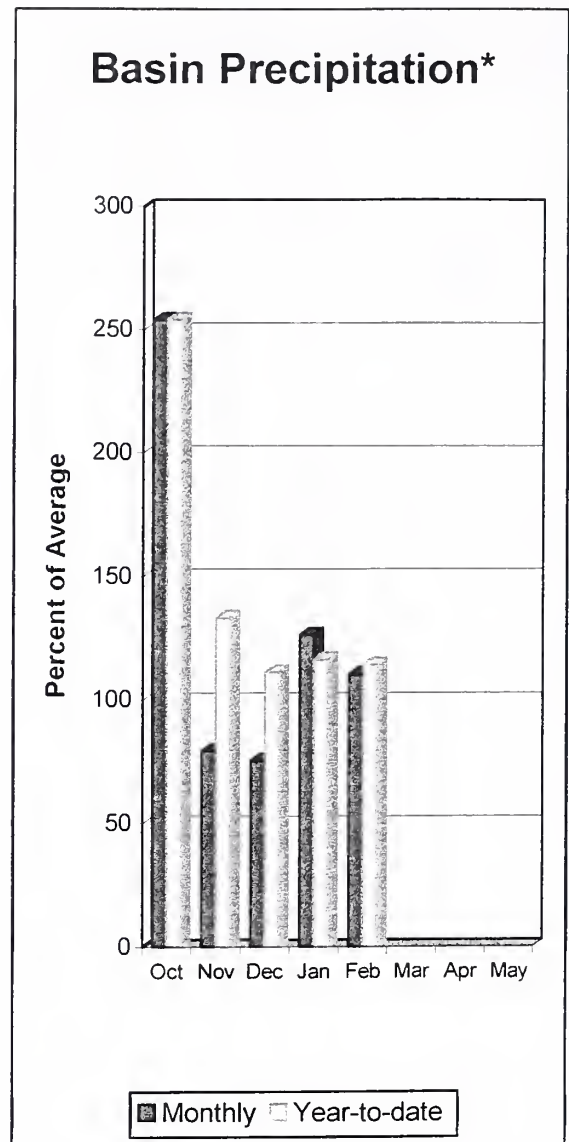
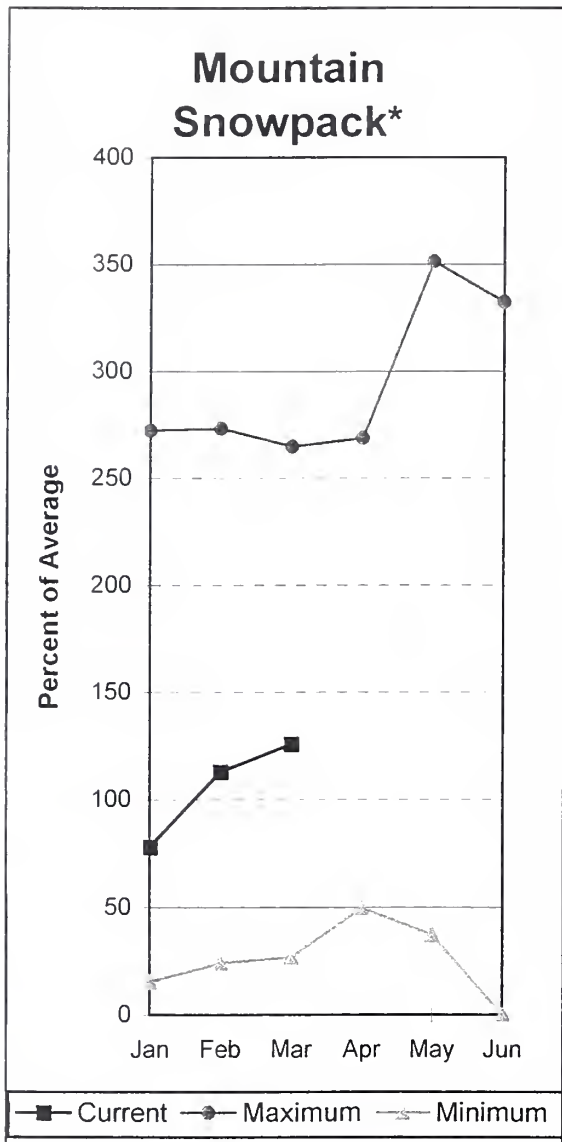
WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of February				WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - March 1, 1998				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	46	89

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.  
 The average is computed for the 1961-1990 base period.  
 (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

### Touchet #2 SNOTEL Elevation 5530 ft.



# Cowlitz - Lewis River Basins



\*Based on selected stations

The forecast for summer runoff in the Lewis River Basin is 95% of average. The Cowlitz River at Castle Rock, is forecast for 96% of average runoff. February streamflow for the Cowlitz River was 69% of average, and 103% for the Lewis River. February precipitation was 110% of average. It was 114% of average for the water-year. March 1 snow cover for the Cowlitz River was 116%, and the Lewis River was 135% of average. The Cayuse Pass snow course recorded the most water-content for the basin with 78.3 inches of water. Average March 1 water-content is 65.3 inches. Average temperatures were near normal during February.

*For more information contact your local Natural Resources Conservation Service office.*

# Cowlitz - Lewis River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ==== Wetter =====>>						30-Yr Avg. (1000AF)		
		90% (1000AF)		70% (1000AF)		Chance Of Exceeding * (1000AF) (% AVG.)			30% (1000AF)	10% (1000AF)
LEWIS at Ariel (2)	APR-JUL	717	891	1010	96	1129	1303	1053		
	APR-SEP	857	1038	1160	96	1282	1463	1206		
	APR-JUN	624	788	900	96	1012	1176	935		
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	1082	1575	1910	97	2245	2738	1970		
	APR-JUL	954	1386	1680	97	1974	2406	1731		
	APR-JUN	810	1179	1430	97	1681	2050	1477		
COWLITZ R. at Castle Rock (2)	APR-SEP	1600	2124	2480	93	2836	3360	2667		
	APR-JUL	1392	1849	2160	93	2471	2928	2325		
	APR-JUN	1195	1588	1855	93	2122	2515	1995		
KLICKITAT near Glenwood	APR-JUN	95	108	116	106	124	137	110		
	APR-SEP	117	135	147	105	159	177	140		

### COWLITZ - LEWIS RIVER BASINS Reservoir Storage (1000 AF) - End of February

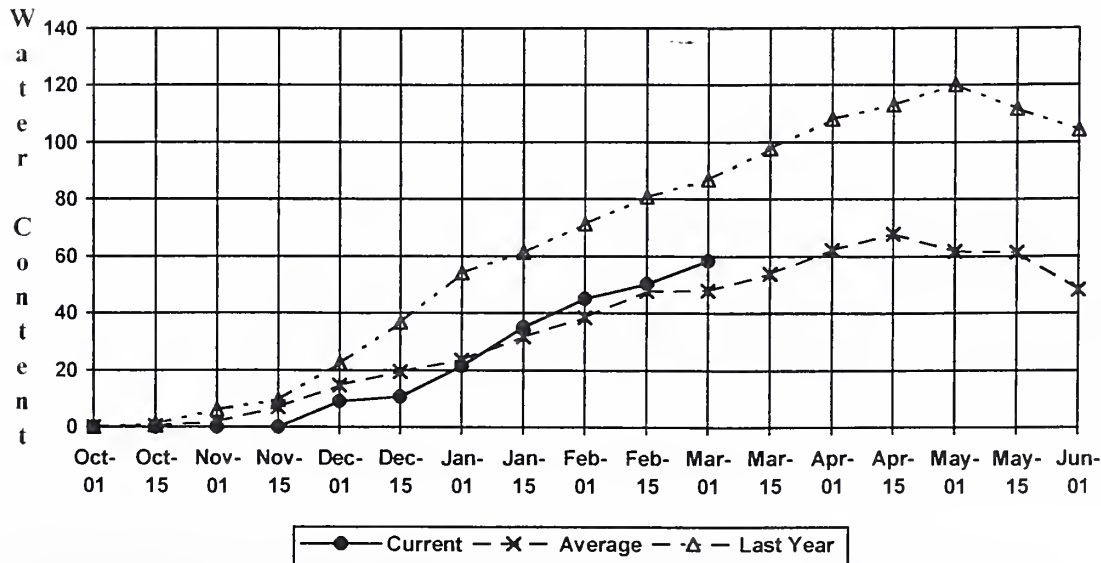
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	COWLITZ - LEWIS RIVER BASINS Watershed Snowpack Analysis - March 1, 1998		
		This Year	Last Year	Avg		Number of Data Sites	This Year as % of Last Yr	% of Average
					LEWIS RIVER	4	69	118
					COWLITZ RIVER	7	63	109

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

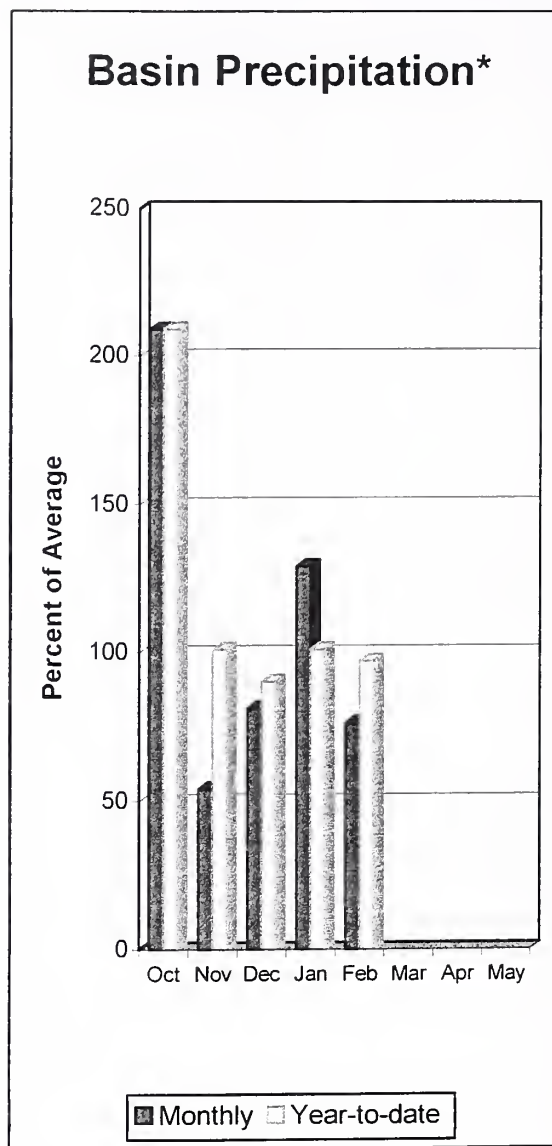
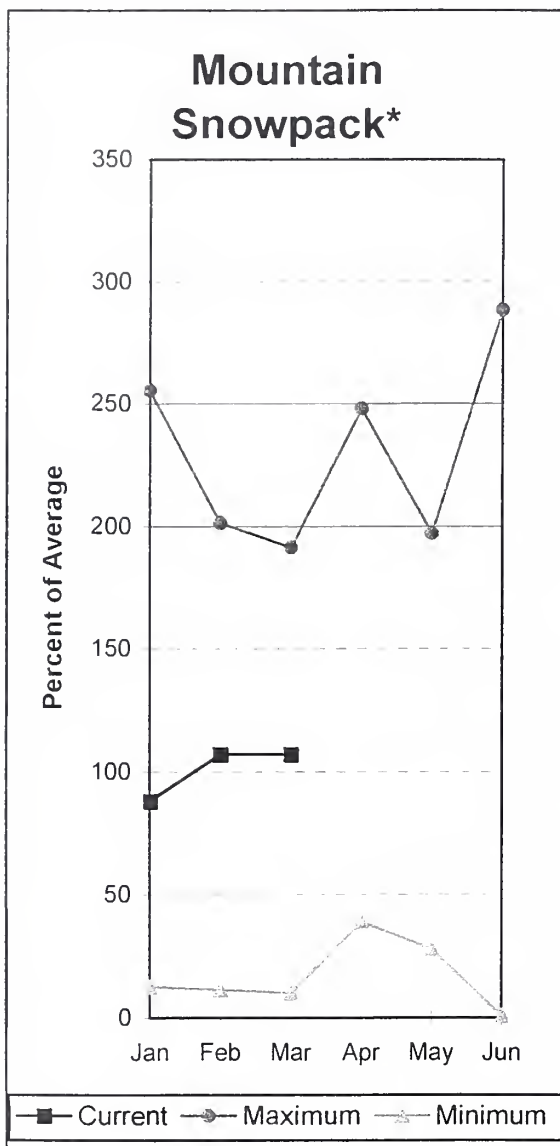
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Paridise SNOTEL Elevation 5120 ft.



# White - Green River Basins



\*Based on selected stations

Summer runoff is forecast to be 83% of average for the Green River. The White and Nisqually rivers should also experience near to slightly below normal flows this summer. March 1 snowpack was 126% of average in the White River Basin; and 87% in the Green River Basin. Water-content on March 1 at the Morse Lake SNOTEL, at an elevation of 5,400 feet, was 57.4 inches. This site has a March 1 average of 38.5 inches. February precipitation was 76% of average, bringing the water year-to-date to 97% of average for the basins. February temperatures averaged near normal.

*For more information contact your local Natural Resources Conservation Service office.*



# White - Green River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						
		Chance Of Exceeding *			30-Yr Avg.			
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)	(1000AF)	
GREEN RIVER below Howard Hanson Dam	APR-JUL	154	189	213	83	237	272	257
	APR-SEP	178	214	238	84	262	298	285
	APR-JUN	139	172	195	83	218	251	234

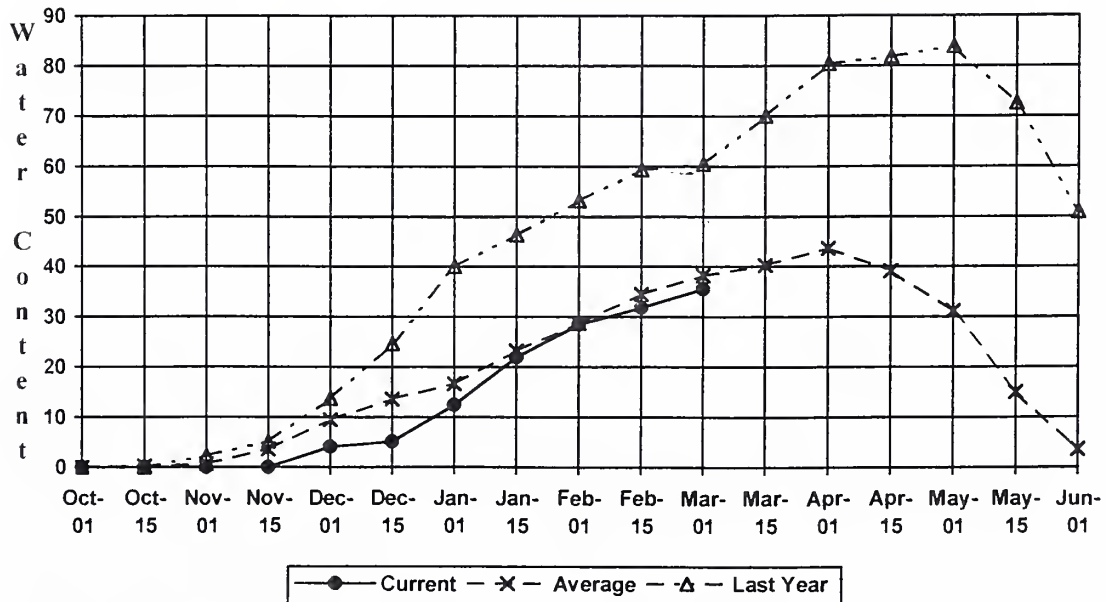
WHITE - GREEN RIVER BASINS Reservoir Storage (1000 AF) - End of February				WHITE - GREEN RIVER BASINS Watershed Snowpack Analysis - March 1, 1998				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WHITE RIVER	3	65	124
					GREEN RIVER	7	55	89

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

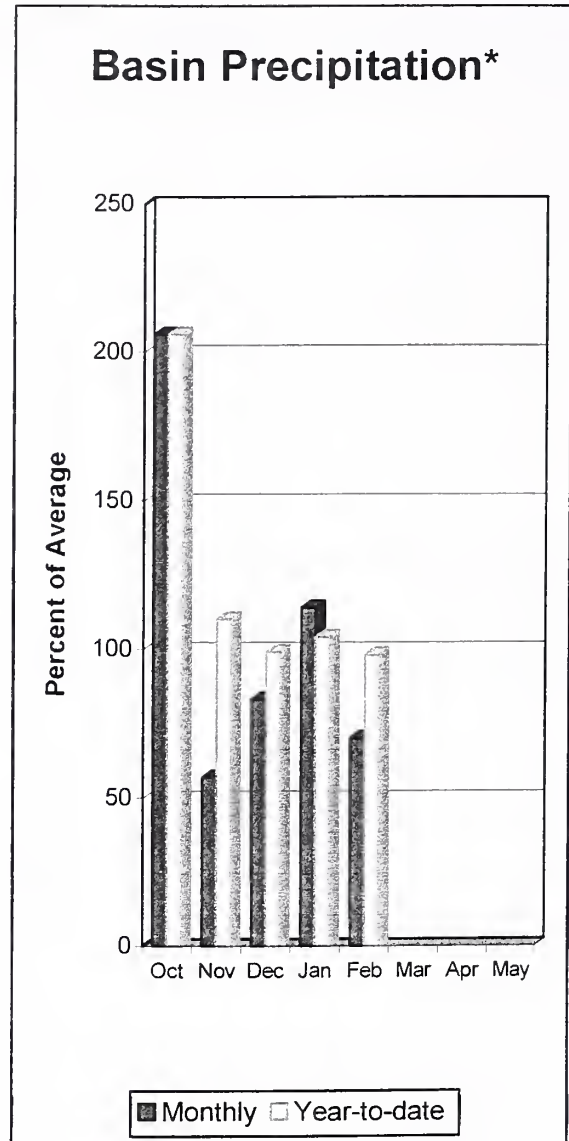
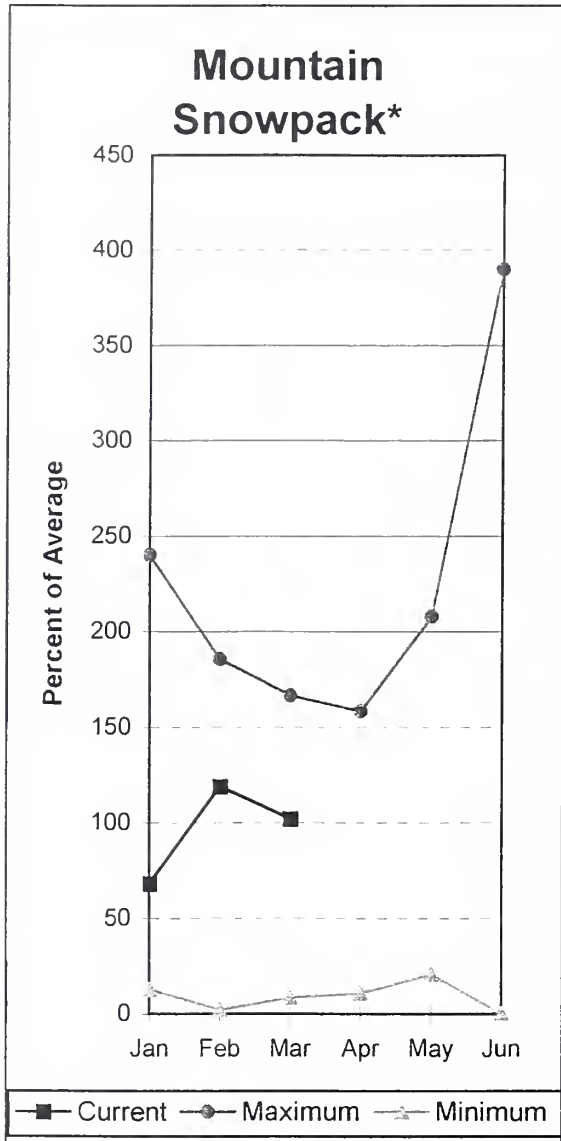
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

### Stampede Pass SNOTEL Elevation 3860 ft.



# Central Puget Sound River Basins



\*Based on selected stations

Forecast for spring and summer flows are: 90% for the Cedar River near Cedar Falls; 89% for the Rex River; 86% for the South Fork of the Tolt River; and 89% for the Cedar River at Cedar Falls. Basin-wide precipitation for February was 70% of average, bringing water-year-to-date to 98% of average. March 1 snow cover in the Cedar River Basin was 103%; the Tolt River Basin was 103%; the Snoqualmie River Basin was 103%; and the Skykomish River Basin was 99% of average. Stevens Pass SNOTEL, at 4,070 feet, had 33.3 inches of water content. Average March 1 water content is 34.7 inches. February temperatures were 1 degree above normal.

For more information contact your local Natural Resources Conservation Service office.

# Central Puget Sound River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Wetter		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	
CEDAR near Cedar Falls	APR-JUL	48	59	67	87	75	86	77
	APR-SEP	54	66	74	88	82	94	84
	APR-JUN	44	54	60	89	67	76	68
REX near Cedar Falls	APR-JUL	14.8	19.9	23	86	27	32	27
	APR-SEP	17.2	23	26	87	30	35	30
	APR-JUN	13.4	18.1	21	86	24	29	25
CEDAR RIVER at Cedar Falls	APR-JUL	37	54	66	81	78	95	82
	APR-SEP	38	55	67	80	78	95	83
	APR-JUN	38	54	64	80	74	90	80
SOUTH FORK TOLT near Index	APR-JUL	10.0	12.0	13.3	88	14.6	16.6	15.2
	APR-SEP	12.2	14.3	15.7	88	17.1	19.2	17.8
	APR-JUN	8.7	10.6	11.8	90	13.0	14.9	13.1

### CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February

### CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 1998

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					CEDAR RIVER	4	66	134
					TOLT RIVER	2	79	112
					SNOQUALMIE RIVER	5	63	106
					SKYKOMISH RIVER	3	65	125

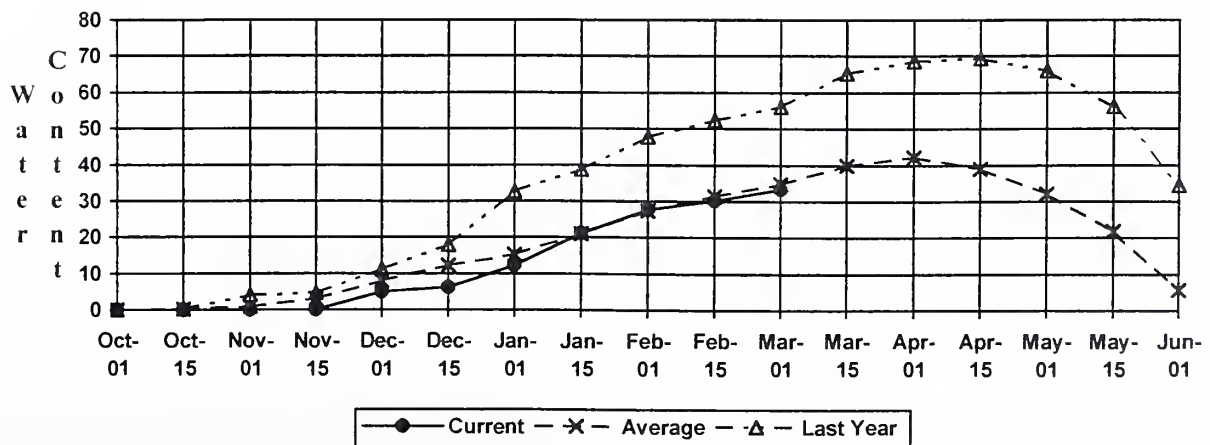
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

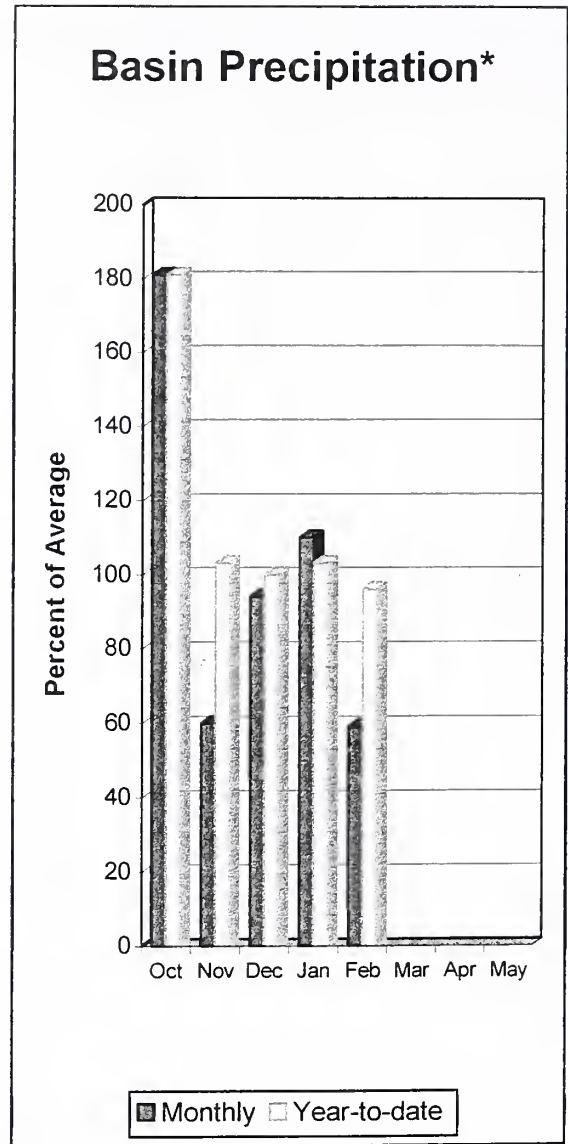
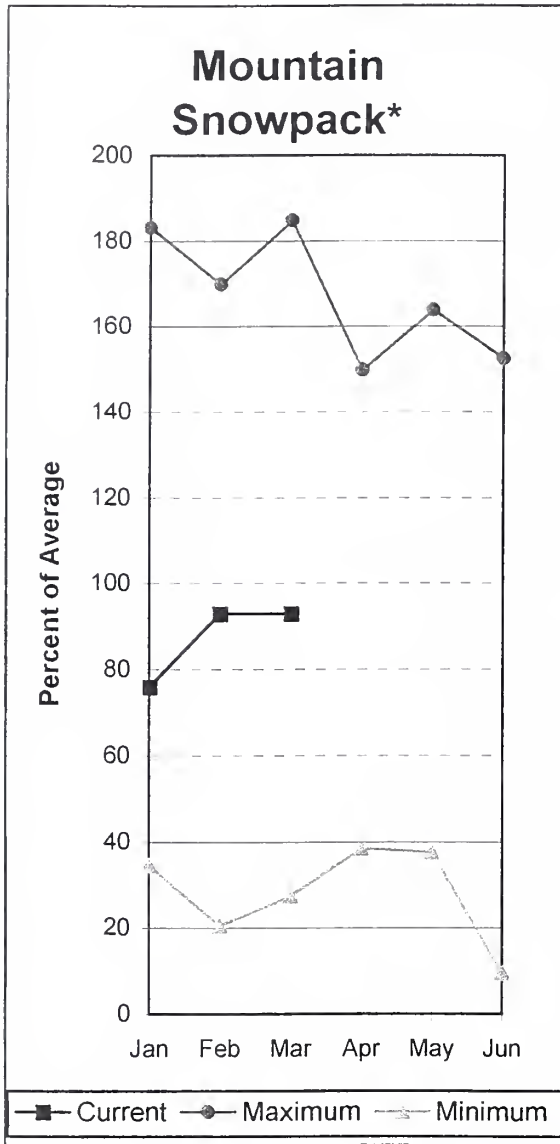
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

## Stevens Pass SNOTEL Elevation 4070 ft.



# North Puget Sound River Basins



\*Based on selected stations

Forecast for the Skagit River streamflow is for 94% of average for the spring and summer period. February streamflow in the Skagit River was 65% of average. Other forecast points included the Baker River at 91%; and Thunder Creek at 96% of average. Basin-wide precipitation for February was only 59% of average, bringing water-year-to-date to 96% of average. March 1 snow cover in the Skagit River Basin was 100%; the Baker River Basin was 94%; and the Nooksack River Basin increased to 85% of average. Rainy Pass SNOTEL, at 4,780 feet, had 28.9 inches of water content. Average March 1 water content is 32.7 inches. March 1 Skagit River reservoir storage was 275% average and 60% of capacity. Average February temperatures were about 2 degrees above normal for the basin.

*For more information contact your local Natural Resources Conservation Service office.*

# North Puget Sound River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ==== Wetter =====>>								
		90% (1000AF)		70% (1000AF)		50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF) 10% (1000AF)		30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	197	212	222	97	232	247	230		
	APR-SEP	288	306	318	97	330	348	328		
	APR-JUN	115	133	145	97	157	175	149		
SKAGIT near Newhalem (2)	APR-JUL	1589	1726	1820	97	1914	2051	1879		
	APR-SEP	1881	2023	2119	97	2215	2357	2191		
	APR-JUN	1287	1392	1463	101	1534	1639	1455		
BAKER RIVER near Concrete	APR-JUL	712	786	837	100	888	962	836		
	APR-SEP	907	998	1060	100	1122	1213	1064		
	APR-JUN	505	569	612	100	655	719	611		

NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS	1404.1	981.0	1011.8	1033.9	SKAGIT RIVER	13	62	104
DIABLO RESERVOIR	90.6	86.5	86.3	84.2	BAKER RIVER	2	81	111
GORGE RESERVOIR	9.8	7.4	7.4	7.9	NOOKSACK RIVER	2	61	65

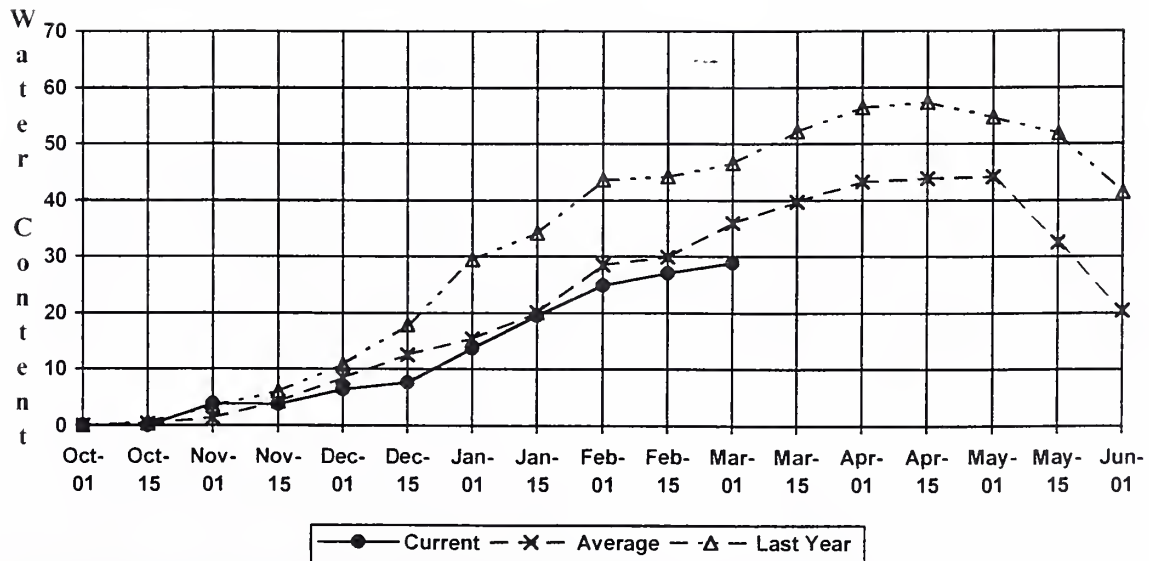
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

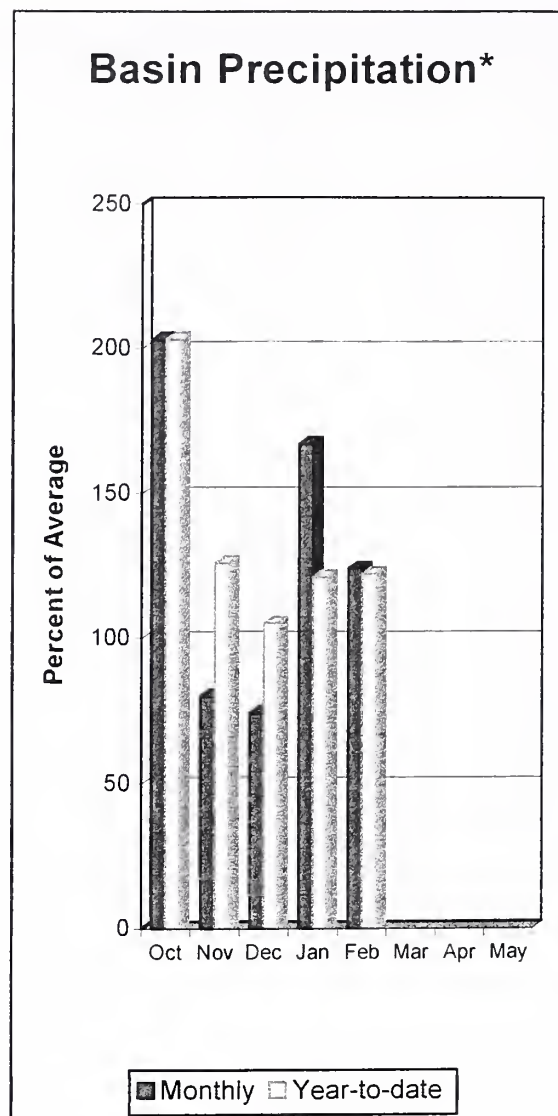
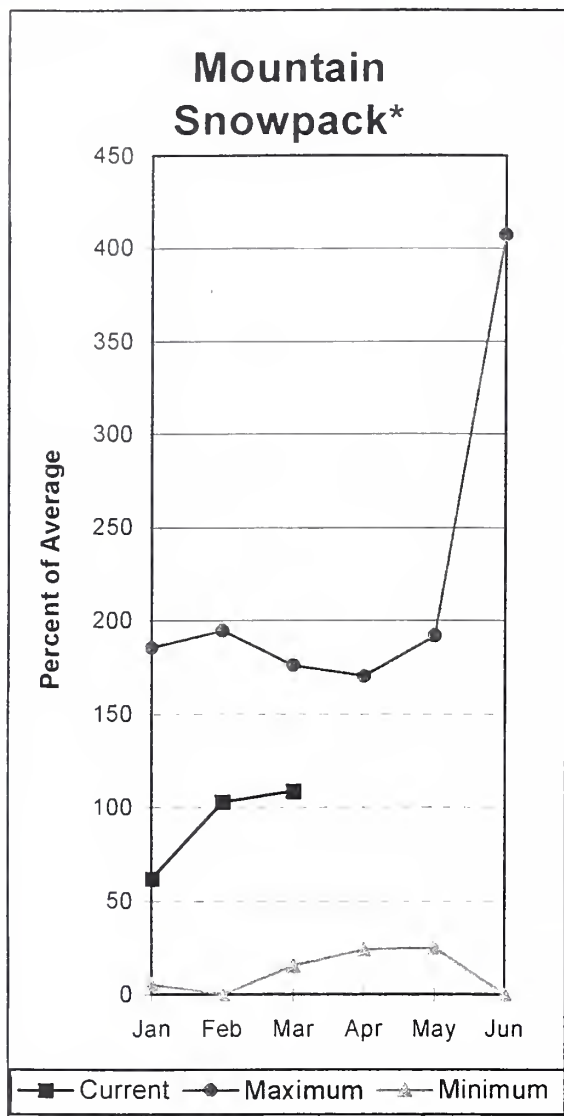
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

## Rainy Pass SNOTEL Elevation 4780 ft.



# Olympic Peninsula River Basins



\*Based on selected stations

March forecasts of runoff for streamflow in the Dungeness River Basin are 98% of average and 96% of average for the Elwha River. The Big Quilcene and Wynoochee rivers can expect near to above average runoff this summer. February precipitation was 124% of average. Precipitation accumulated at 122% of average for the water year. February precipitation at Quillayute was 9.7 inches. The thirty-year average for March 1 is 12 inches. Average March 1 snow cover in the Olympic Basin was at 109% of average. The Mount Crag SNOTEL near Quilcene had 36.8 inches of snow-water-equivalent on March 1. Average for this site is 26.5 inches. Temperatures were 1 degree above average for the month.

*For more information contact your local Natural Resources Conservation Service office.*

# Olympic Peninsula River Basins

## Streamflow Forecasts - March 1, 1998

Forecast Point	Forecast Period	Future Conditions <<----- Drier ----->> ----- Wetter ----->>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		50% (Most Probable) (1000AF) (% AVG.)			30% (1000AF)		10% (1000AF)	
DUNGENESS near Sequim	APR-SEP	131	141	148	97	155	165	153				
	APR-JUL	110	118	123	98	128	136	125				
	APR-JUN	78	87	92	98	98	107	94				
ELWHA near Port Angeles	APR-SEP	429	469	496	97	523	563	510				
	APR-JUL	360	391	412	97	433	464	424				

### OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of February

### OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - March 1, 1998

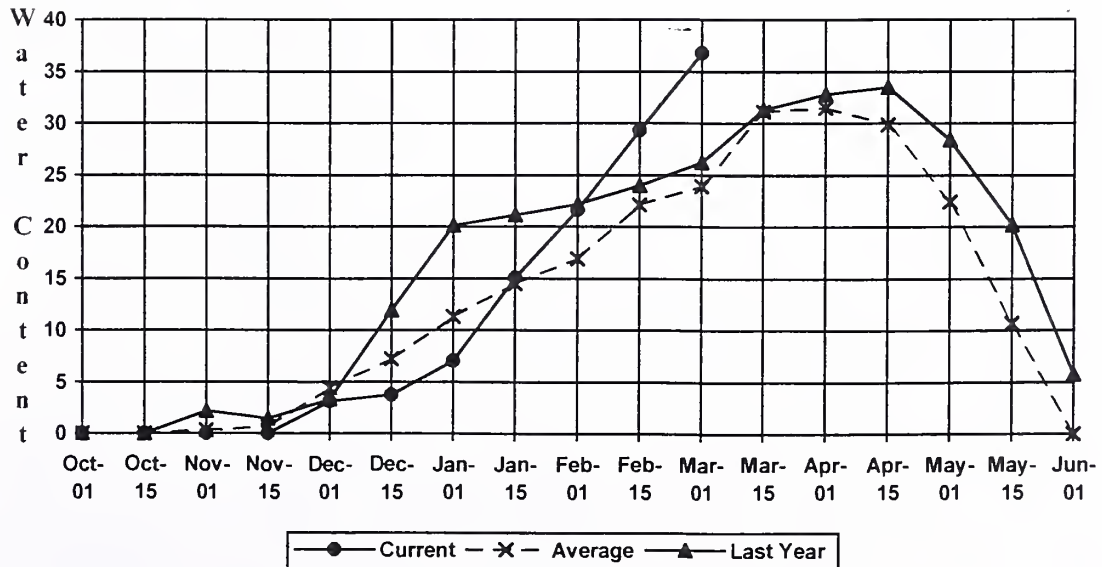
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					ELWHA RIVER	1	75	81
					MORSE CREEK	1	89	112
					DUNGENESS RIVER	1	90	90
					QUILCENE RIVER	1	98	128
					WYNOOCHEE RIVER	0	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Mount Crag SNOTEL Elevation 4050 ft.







*Issued by*

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## The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work\*:

<b>Canada</b>	Ministry of the Environment Investigations Branch, Victoria, British Columbia
<b>State</b>	Washington State Department of Ecology Washington State Department of Natural Resources
<b>Federal</b>	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
<b>Local</b>	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
<b>Private</b>	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

\*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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