NRCS
Natural
Resources
Conservation
Service

United States Department of Agriculture

Washington
Water Supply Outlook Report
January 1, 2011

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684

or

Ron Nichols
Public Affairs Specialist
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2912

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

January 2011

General Outlook

The water year started off great with near to above average precipitation for both October and November. Healthy snow came early which helped most local ski areas open by or before the holidays. Activities slowed down a bit in early December when we witnessed a warming period followed by a deep freeze, neither of which provided much fresh snow. That cycle was broken in mid December allowing for new accumulation and a great end to 2010. So far 2011 has been on the dry side but long range forecasts indicate an increase in storm activity that should bring excellent snow to the mountains. Temperatures are forecasted to be below average which could result in additional low elevation snow. The next few weeks may set the stage for the rest of the season.

Snowpack

The January 1 statewide SNOTEL readings were 101% but vary greatly across the state. The Baker River snow survey data reported the lowest readings at 68% of average. Readings from the Olympic Peninsula reported the highest at 176% of average. Westside averages from SNOTEL, and January 1 snow surveys, included the North Puget Sound river basins with 82% of average, the Central Puget river basins with 83%, and the Lewis-Cowlitz basins with 119% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 99% and the Wenatchee area with 92%. Snowpack in the Spokane River Basin was at 91% and the Walla Walla River Basin had 121% of average. Maximum snow cover in Washington was at Paradise SNOTEL, with water content of 29 inches. The 30-year average for Paradise on January 1 is 32.8 inches leaving the site at only 88% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	165	91
Newman Lake	144	113
Pend Oreille	139	102
Okanogan	139	92
Methow	123	89
Conconully Lake	138	104
Wenatchee	109	82
Chelan	93	74
Upper Yakima	132	90
Lower Yakima	126	108
Ahtanum Creek	128	105
Walla Walla	135	121
Lower Snake	131	94
Cowlitz	130	108
Lewis	140	130
White	121	104
Green	117	80
Puyallup	116	105
Cedar	150	115
Snoqualmie	111	77
Skykomish	88	68
Skagit	114	87
Baker	97	68
Nooksack	98	89
Olympic Peninsula	143	176

Precipitation

During the month of December, the National Weather Service and Natural Resources Conservation Service climate stations reported near to above average precipitation totals throughout Washington river basins. The highest percent of average in the state was at Dungeness SNOTEL in the Olympic Mountains which reported 267% of average for a total of 15.5 inches. The average for Dungeness is 5.8 inches for December. The wettest spot in the state was reported at Buckinghorse SNOTEL, also within the Olympic Mountains with a December accumulation of 33.7 inches. Buckinghorse is too new to have an average however last year it only received 10.7 inches. Adequate precipitation for both October and November helped build soil moisture profiles to near holding capacity which should help increase runoff later in the year. Water-year 2010 ended with well above average precipitation statewide which also helped buffer soil moisture and reservoir levels.

RIVER BASIN	DECEMBER PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	112	109
Pend Oreille	98	107
Upper Columbia	111	109
Central Columbia	108	96
Upper Yakima	88	89
Lower Yakima	111	112
Walla Walla	111	100
Lower Snake	126	113
Lower Columbia	108	105
South Puget Sound	91	101
Central Puget Sound	96	94
North Puget Sound	112	94
Olympic Peninsula	192	139

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 455,000-acre feet, 114% of average for the Upper Reaches and 141,000-acre feet or 127% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 123% of average for January 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 134,000 acre feet, 122% of average and 56% of capacity; Chelan Lake, 323,000-acre feet, 81% of average and 48 of capacity; and the Skagit River reservoirs at 100% of average and 82% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	56	122
Pend Oreille	56	128
Upper Columbia	85	123
Central Columbia	48	81
Upper Yakima	55	114
Lower Yakima	61	127
Lower Snake	67	94
North Puget Sound	82	100

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

Streamflow

Forecasts vary from 84% of average for the Icicle Creek near Leavenworth to 120% of average for Dungeness River. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 99%; White River, 102%; and Skagit River, 96%. Some Eastern Washington streams include the Yakima River near Parker, 92%: Wenatchee River at Plain, 89%; and Spokane River near Post Falls, 99%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. Caution should be used when using early season forecasts for critical water resource management decisions.

Statewide December streamflows varied widely and appeared to be precipitation driven. Heavy precipitation caused localized flooding in some streams around the state. The Dungeness River had the highest reported flows with 136% of average. The Yakima at Cle Elum with 81% of average was the lowest in the state however that could be due to reservoir control. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 107%; the Spokane at Spokane, 141%; the Columbia below Rock Island Dam, 105%; and the Cle Elum near Roslyn, 99%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	86-99
Pend Oreille	100-103
Upper Columbia	86-93
Central Columbia	84-92
Upper Yakima	88-95
Lower Yakima	116-91
Walla Walla	104-118
Lower Snake	103-110
Lower Columbia	101-116
South Puget Sound	101-102
Central Puget Sound	95-101
North Puget Sound	96-99
Olympic Peninsula	105-120

STREAM	PERCENT OF AVERAGE DECEMBER STREAMFLOWS
Pend Oreille Below Box Canyon	116
Kettle at Laurier	100
Columbia at Birchbank	94
Spokane at Long Lake	124
Similkameen at Nighthawk	83
Okanogan at Tonasket	77
Methow at Pateros	109
Chelan at Chelan	106
Wenatchee at Pashastin	98
Yakima at Cle Elum	81
Yakima at Parker	82
Naches at Naches	87
Grande Ronde at Troy	82
Snake below Lower Granite Dam	83
SF Walla Walla near Milton Freewater	130
Columbia River at The Dalles	98
Cowlitz below Mayfield Dam	102
Skagit at Concrete	108
Dungeness near Sequim	136

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B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

JANUARY 2011

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ALPINE MEADOWS SNTL	3500	1/01/11	42	13.9	15.9	20.1
ASHLEY DIVIDE	4820	1/02/11	29	5.2	.8	3.4
BADGER PASS SNOTEL	6900	1/01/11	46	12.3	15.8	15.2
BARKER LAKES SNOTEL	8250	1/01/11	31	6.3	9.5	6.7
BARNES CREEK CAN.	5320	12/31/10	28	6.7	9.3	10.9
BASIN CREEK SNOTEL	7180	1/01/11	20	3.9	3.6	3.7
BEAVER CREEK TRAIL	2200	12/28/10	39	11.0	--	--
BEAVER PASS	3680	12/30/10	50	16.5	--	--
BEAVER PASS SNOTEL	3630	1/01/11	64	18.4	14.9	18.8
BLACK PINE SNOTEL	7100	1/01/11	26	5.6	3.4	5.2
BLEWETT PASS#2SNOTEL	4240	1/01/11	29	8.1	5.5	8.2
BROWN TOP AM	6000	12/28/10	92	24.5	--	--
BUCKINGHORSE SNOTEL	4870	1/01/11	109	36.8	31.6	--
BUMPING LAKE (NEW)	3400	1/04/11	37	10.0	6.0	7.2
BUMPING RIDGE SNOTEL	4610	1/01/11	51	13.2	11.3	12.1
BUNCHGRASS MDWSNOTEL	5000	1/01/11	44	10.3	11.9	12.6
BURNT MOUNTAIN PIL	4170	1/01/11	25	6.4	4.2	5.7
CALAMITY SNOTEL	2500	1/01/11	11	3.4	1.3	--
CAYUSE PASS SNOTEL	5240	1/01/11	94	28.5	21.4	--
CHESSMAN RESERVOIR	6200	1/04/11	---	1.5E	1.5	1.5
COMBINATION SNOTEL	5600	1/01/11	14	2.5	1.7	2.2
COPPER BOTTOM SNOTEL	5200	1/01/11	30	5.6	3.2	5.3
CORRAL PASS SNOTEL	5800	1/01/11	55	14.8	12.1	15.8
COUGAR MTN. SNOTEL	3200	1/01/11	28	7.8	2.9	8.5
COYOTE HILL	4200	12/30/10	24	4.6	2.1	4.3
DALY CREEK SNOTEL	5780	1/01/11	24	5.1	3.6	4.9
DEVILS PARK	5900	12/30/10	62	19.9	--	--
DISCOVERY BASIN	7050	12/30/10	24	4.7	2.2	4.2
DIX HILL	6400	1/01/11	26	6.1	2.9	4.5
DOCK BUTTE AM	3800	12/30/10	70	22.4	18.8	28.5
DOMMERIE FLATS	2200	1/04/11	21	6.2	1.0	3.9
DUNGENESS SNOTEL	4010	1/01/11	34	9.3	4.1	3.5
EASY PASS AM	5200	12/30/10	72	21.6	19.2	31.9
ELBOW LAKE SNOTEL	3200	1/01/11	45	14.7	14.7	15.4
EMERY CREEK SNOTEL	4350	1/01/11	30	7.7	6.1	7.0
FARRON CAN.	4000	12/31/10	28	5.6	--	6.1
FISH CREEK	8000	1/05/11	23	5.1	4.8	4.4
FISH LAKE	3370	1/04/11	42	12.6	10.4	14.5
FISH LAKE SNOTEL	3430	1/01/11	40	10.9	10.4	15.0
FLATTOP MTN SNOTEL	6300	1/01/11	68	19.0	21.0	21.4
FOURTH OF JULY SUM	3200	12/28/10	18	3.9	.2	3.7
FREEZEOUT CK. TRAIL	3500	12/29/10	22	6.6	--	--
FROHNER MDWS SNOTEL	6480	1/01/11	22	3.9	3.0	3.4
GRAVE CRK SNOTEL	4300	1/01/11	25	7.2	6.7	7.7
GRAYSTOKE LAKE CAN.	5500	12/30/10	19	5.5	--	--
GREEN LAKE SNOTEL	5920	1/01/11	43	10.6	9.2	10.7
GROUSE CAMP SNOTEL	5390	1/01/11	38	9.1	6.9	9.6
HAND CREEK SNOTEL	5030	1/01/11	31	6.4	4.0	5.9
HARTS PASS SNOTEL	6490	1/01/11	60	22.0	15.1	21.7
HARTS PASS	6500	12/27/10	72	20.8	--	--
HELL ROARING DIVIDE	5770	12/28/10	47	13.9	11.2	13.4
HIGH RIDGE SNOTEL	4920	1/01/11	65	16.8	10.3	10.4
HOLBROOK	4530	1/01/11	21	3.0	1.4	4.2
HOODOO BASIN SNOTEL	6050	1/01/11	74	17.5	10.8	19.3
HUCKLEBERRY SNOTEL	2250	1/01/11	6	1.2	1.2	1.0
HUMBOLDT GLCH SNOTEL	4250	1/01/11	---	5.5	3.7	6.0
INDIAN ROCK SNOTEL	5360	1/01/11	65	21.8	15.4	--
ISINTOK LAKE CAN.	5100	12/29/10	13	2.4	2.3	3.4
JASPER PASS AM	5400	12/30/10	65	19.5	16.8	40.9
JUNE LAKE SNOTEL	3440	1/01/11	75	23.5	15.3	17.1
KELLOGG PEAK	5560	12/28/10	43	15.7	7.8	11.7
KLESILKWA CAN.	3450	12/30/10	17	4.4	3.3	4.6
KRAFT CREEK SNOTEL	4750	1/01/11	33	7.1	4.4	6.9
LOLO PASS SNOTEL	5240	1/01/11	54	11.6	8.1	13.0
LONE PINE SNOTEL	3930	1/01/11	72	22.7	17.8	16.2
LOOKOUT SNOTEL	5140	1/01/11	55	13.6	8.0	13.7
LOST HORSE SNOTEL	5120	1/01/11	35	9.3	6.3	8.3
LOST LAKE SNOTEL	6110	1/01/11	80	20.4	14.0	27.1
LUBRECHT FOREST NO 3	5450	12/30/10	21	3.8	1.0	2.7
LUBRECHT FOREST NO 4	4650	12/30/10	15	2.7	.8	1.4
LUBRECHT SNOTEL	4680	1/01/11	18	3.5	1.9	2.6
LYMAN LAKE SNOTEL	5980	1/01/11	81	22.6	23.3	29.7
LYNN LAKE SNOTEL	3900	1/01/11	29	7.7	4.8	--
MARIAS PASS	5250	12/31/10	34	7.7	4.3	7.3
MARTEN LAKE AM	3600	12/30/10	80	25.6	30.4	32.4
MARTEN RIDGE SNOTEL	3520	1/01/11	64	22.8	26.4	--
MEADOWS CABIN	1900	12/30/10	5	1.2	--	--
MEADOWS PASS SNOTEL	3230	1/01/11	43	12.7	9.6	9.6
M F NOOKSACK SNOTEL	4970	1/01/11	56	20.7	20.7	26.1
MICA CREEK SNOTEL	4510	1/01/11	41	8.7	7.3	11.7
MONASHEE PASS CAN.	4500	12/31/10	19	4.3	--	6.6
MORSE LAKE SNOTEL	5410	1/01/11	91	25.9	23.7	23.4
MOSES MTN SNOTEL	5010	1/01/11	25	6.3	4.1	7.1
MOSQUITO RDG SNOTEL	5200	1/01/11	---	15.6	11.1	15.5
MOULTON RESERVOIR	6850	1/05/11	22	4.4	2.0	3.5
MOUNT BLUM AM	5800	12/30/10	60	18.0	21.0	28.1
MOUNT CRAG SNOTEL	3960	1/01/11	78	21.1	13.5	11.6
MT. KOBAU CAN.	5500	12/31/10	22	4.9	--	5.4
MOWICH SNOTEL	3160	1/01/11	4	.4	.8	.4
MOUNT GARDNER SNOTEL	2920	1/01/11	34	9.7	4.1	7.4
N.F. ELK CR SNOTEL	6250	1/01/11	27	6.3	3.2	5.1
NEVADA RIDGE SNOTEL	7020	1/01/11	36	7.6	5.9	6.8
NEW HOZOMEEN LAKE	2800	12/28/10	16	4.2	--	--
NEZ PERCE CMP SNOTEL	5650	1/01/11	28	6.0	4.0	6.1
NOISY BASIN SNOTEL	6040	1/01/11	88	28.1	17.0	19.8
OLALLIE MDWS SNOTEL	4030	1/01/11	56	19.4	19.3	22.2
OPHIR PARK	7150	1/01/11	33	7.6	6.0	6.6
PARADISE SNOTEL	5130	1/01/11	90	29.0	28.8	32.8
PARK CK RIDGE SNOTEL	4600	1/01/11	62	16.7	19.6	22.5
PEPPER CREEK SNOTEL	2140	1/01/11	17	5.1	2.5	--
PETERSON MDW SNOTEL	7200	1/01/11	23	4.2	4.2	4.4
PIGTAIL PEAK SNOTEL	5800	1/01/11	78	22.9	19.3	23.1
PIKE CREEK SNOTEL	5930	1/01/11	33	8.7	7.1	12.0
PIPESTONE PASS	7200	12/28/10	13	2.1	1.5	2.2
POPE RIDGE SNOTEL	3590	1/01/11	36	7.5	6.7	9.8
POTATO HILL SNOTEL	4510	1/01/11	60	15.7	12.2	12.4
QUARTZ PEAK SNOTEL	4700	1/01/11	46	11.5	8.0	10.2
RAGGED MOUNTAIN	4200	1/01/11	49	10.6	6.4	9.9
RAGGED MTN SNOTEL	4210	1/01/11	49	11.7	5.7	--
RAINY PASS SNOTEL	4890	1/01/11	51	14.3	14.8	19.9
RAINY PASS	4780	12/27/10	53	12.7	--	--
REX RIVER SNOTEL	3810	1/01/11	41	13.2	8.7	13.0
ROCKER PEAK SNOTEL	8000	1/01/11	30	6.9	6.1	6.4
ROCKY CREEK AM	2100	12/30/10	24	8.2	15.6	12.9
SF THUNDER CK AM	2200	12/30/10	0	.0	2.4	5.0
SADDLE MTN SNOTEL	7900	1/01/11	52	12.7	7.0	11.7
SALMON MDWS SNOTEL	4460	1/01/11	24	5.5	4.0	5.3
SASSE RIDGE SNOTEL	4340	1/01/11	44	12.0	9.4	14.7
SAVAGE PASS SNOTEL	6170	1/01/11	51	11.8	7.4	11.7
SAWMILL RIDGE SNOTEL	4640	1/01/11	59	17.4	20.2	--
SCHREIBERS MDW AM	3400	12/30/10	68	21.8	19.2	23.2
SENTINEL BT SNOTEL	4680	1/01/11	26	4.9	4.2	4.0
SHEEP CANYON SNOTEL	3990	1/01/11	71	24.0	12.5	15.4
SHERWIN SNOTEL	3200	1/01/11	---	5.2	2.6	5.1
SKALKAHO SNOTEL	7260	1/01/11	41	9.9	6.0	10.3
SKOOKUM CREEK SNOTEL	3310	1/01/11	25	7.9	4.4	10.8
SOURDOUGH GUL SNOTEL	4000	1/01/11	6	1.3	.6	--
SPENCER MDW SNOTEL	3400	1/01/11	51	16.9	13.5	12.5
SPIRIT LAKE SNOTEL	3520	1/01/11	15	3.5	1.9	3.6
SPOTTED BEAR MTN.	7000	1/03/11	29	6.8	4.9	6.9
SPRUCE SPGS SNOTEL	5700	1/01/11	28	5.1	5.7	7.4
STAHL PEAK SNOTEL	6030	1/01/11	64	19.8	15.6	17.1
STAMPEDE PASS SNOTEL	3850	1/01/11	49	14.4	10.7	19.4
STEVENS PASS SNOTEL	3950	1/01/11	50	12.9	14.7	19.1
STORM LAKE	7780	12/30/10	28	5.0	4.4	5.5
SUMMERLAND RES CAN.	4200	12/29/10	19	4.2	3.2	4.5
SUNSET SNOTEL	5540	1/01/11	---	8.9	5.1	13.6
SURPRISE LKS SNOTEL	4290	1/01/11	81	24.6	16.9	20.3
SWAMP CREEK SNOTEL	3930	1/01/11	27	6.6	7.0	9.6
SWIFT CREEK SNOTEL	4440	1/01/11	99	32.4	29.6	24.0
TEN MILE LOWER	6600	1/04/11	---	3.1E	3.2	3.0
TEN MILE MIDDLE	6800	1/04/11	---	4.7E	4.9	4.6
THUNDER BASIN SNOTEL	4320	1/01/11	44	12.7	13.7	15.7
TINKHAM CREEK SNOTEL	2990	1/01/11	47	13.2	10.2	12.3
TOUCHET SNOTEL	5530	1/01/11	60	13.5	12.1	14.7
TRINKUS LAKE	6100	1/01/11	---	19.2E	16.0	19.4
TROUGH #2 SNOTEL	5480	1/01/11	25	6.6	4.9	5.3
TRUMAN CREEK	4060	1/02/11	22	4.1	.5	2.0
TUNNEL AVENUE	2450	1/05/11	35	11.3	5.4	8.3
TV MOUNTAIN	6800	1/03/11	48	11.9	4.7	7.7
TWELVEMILE SNOTEL	5600	1/01/11	30	6.1	4.7	7.5
TWIN LAKES SNOTEL	6400	1/01/11	58	15.0	10.0	17.5
TWIN SPIRIT DIVIDE	3480	1/01/11	25	3.6	1.8	6.6
UPPER HOLLAND LAKE	6200	1/03/11	54	15.1	8.0	15.2
UPPER WHEELER SNOTEL	4330	1/01/11	27	6.0	4.1	5.9
WARM SPRINGS SNOTEL	7800	1/01/11	40	9.7	8.6	9.4
WATSON LAKES AM	4500	12/30/10	65	19.5	14.4	25.1
WATERHOLE SNOTEL	5010	1/01/11	61	20.8	18.3	14.0
WELLS CREEK SNOTEL	4030	1/01/11	46	14.0	15.1	14.2
WHITE PASS ES SNOTEL	4440	1/01/11	44	11.2	7.9	10.7

Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

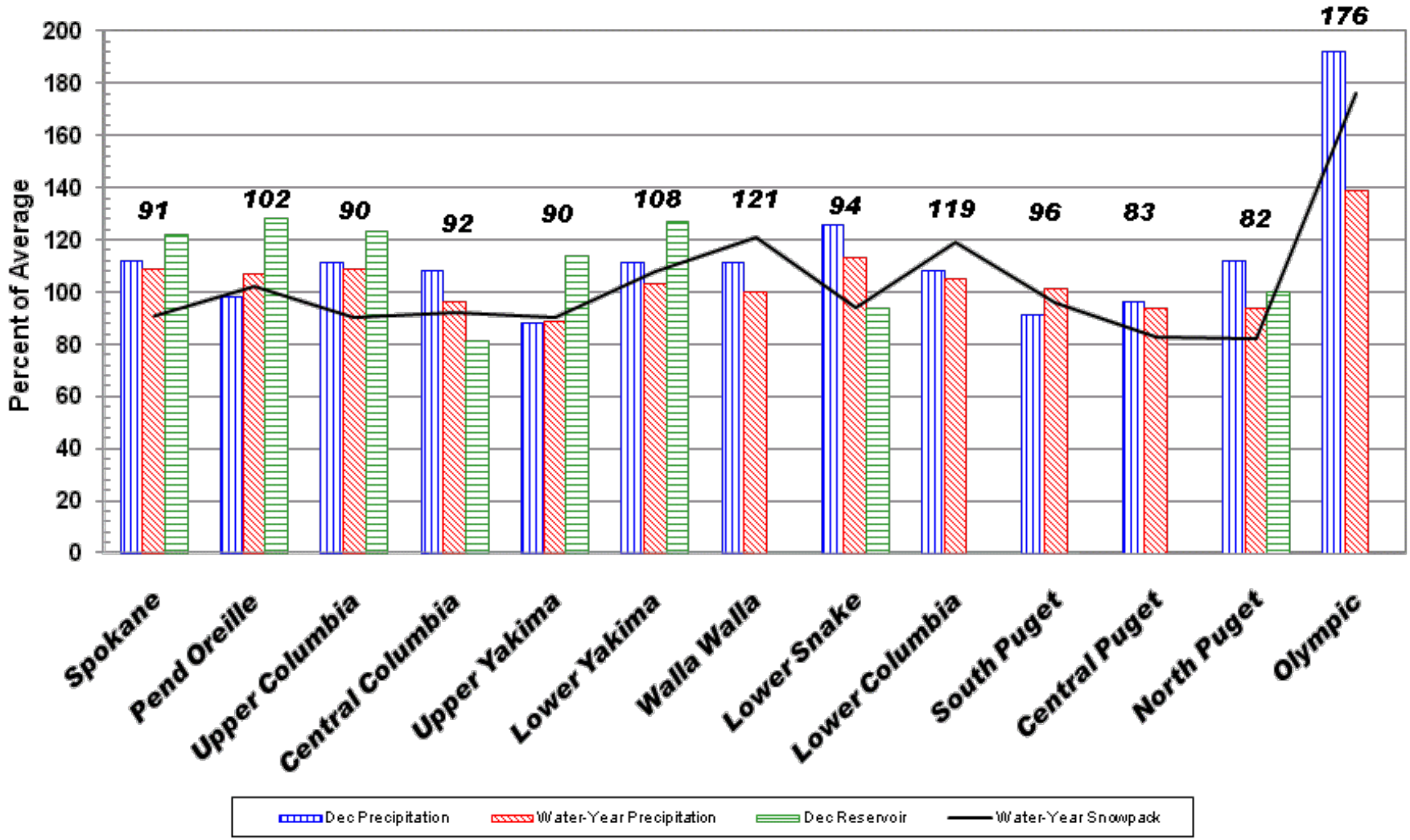
Washington:
http://www.wa.nrcs.usda.gov

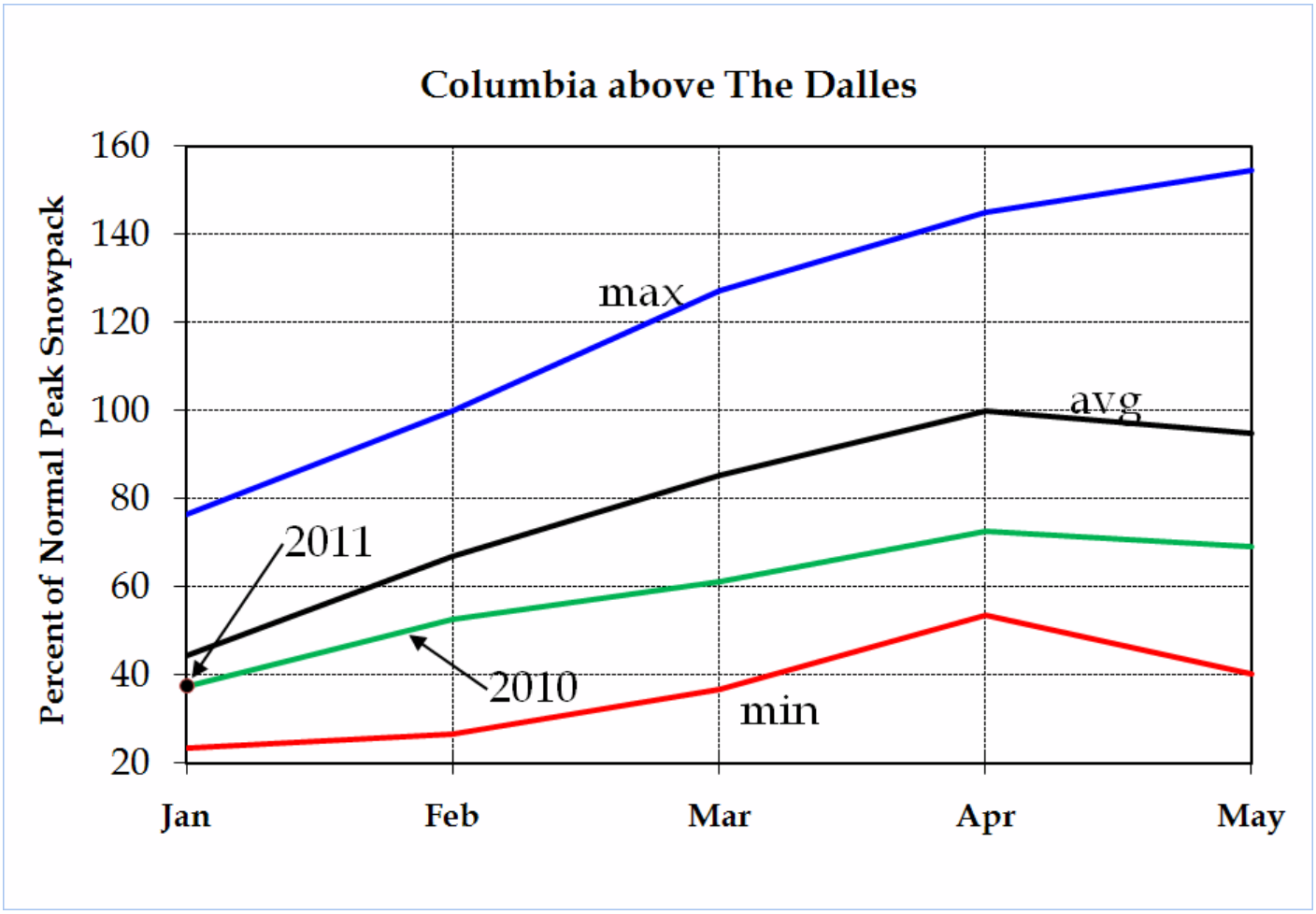
NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

January 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)





January 1, 2011

The Columbia Basin snowpack charts are produced, using only automated data. These data are telemetered via remote collection sites in Canada and the United States. The data are provisional, until they are officially released by the responsible data collection agency.

The combined Columbia Basin snowpack above The Dalles is currently at 88 percent of average, compared to 85 percent of average last year. It's early in the season, but the snowpack in Canada has a lot of catching up to do. Fortunately, the low Canadian snowpack is offset by above average snowpacks in the Snake, Boise, Salmon, and Pend Oreille basins; and all of Oregon. Heavy, early season snowfall was recorded over western Montana, the Idaho panhandle, and everywhere south of the Oregon/Washington border, extended eastward.

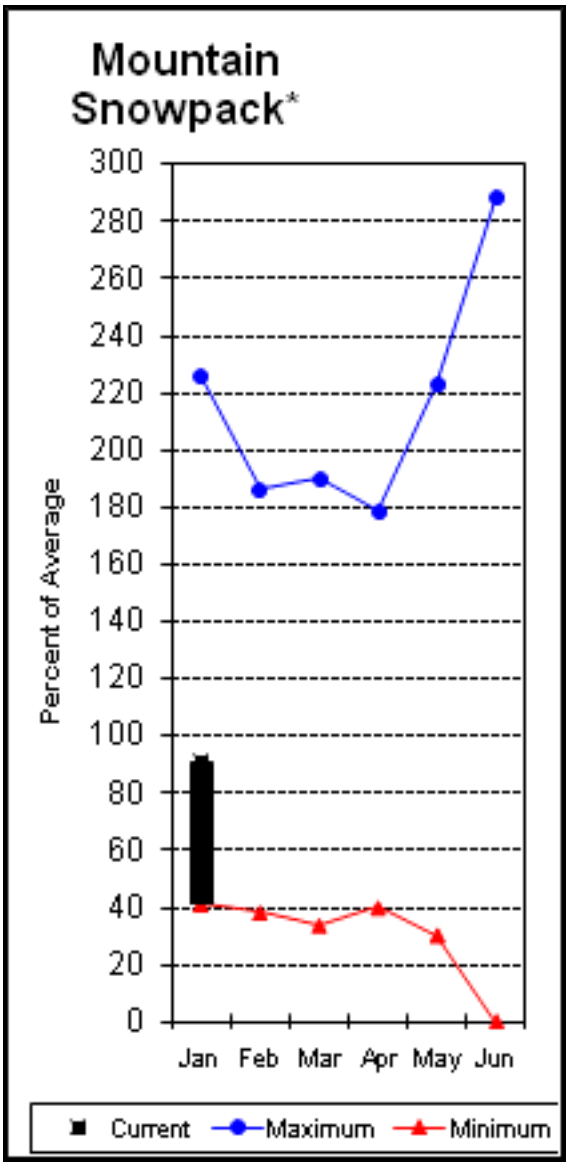
The best Columbia Basin snowpack is the John Day at 136%, followed closely by the Snake headwaters at 130%. Other above average snowpacks include the Deschutes at 127%, the Boise at 125%, and eastern Oregon at 121%. The worst snowpack by far is the upper Canadian snowpack at just 62%, followed by the Kettle at 73%, the Kootenay at 81%, the North Cascades at 82%, and the Spokane at 87%. The Pend Oreille, Yakima, Salmon, and Clearwater snowpacks are all near average.

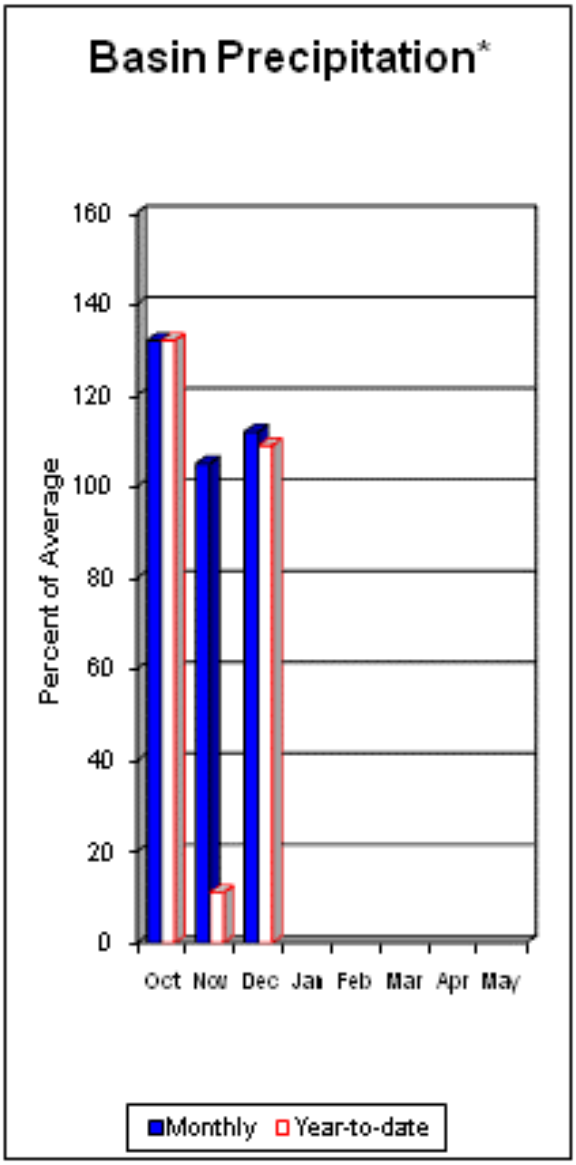
The overall snowpack above The Dalles is at 39 percent of the average peak accumulation. This compares to 38 percent last year.

The snowpack in the Columbia Basin above Castlegar is at 70 percent of average. This compares to 102 percent last year. For the basin above Grand Coulee, the snowpack is at 79 percent of average, compared to 93 percent last year. The Snake River snowpack above Ice Harbor is at 110 percent of average, compared to 65 percent last year.

The next 10 days promises to be wet in the Columbia Basin. It is anticipated that we will see improvement in the Spokane and Canadian snowpacks.

Spokane River Basin





*Based on selected stations

The January 1 forecasts for summer runoff within the Spokane River Basin are 99% of average near Post Falls and 98% at Long Lake. The Chamokane River near Long Lake forecasted to have 86% of average flows for the May-August period. The forecast is based on a basin snowpack that is 91% of average and precipitation that is 109% of average for the water year. Precipitation for December was above normal at 112% of average. Streamflow on the Spokane River at Long Lake was 124% of average for December. January 1 storage in Coeur d'Alene Lake was 134,000acre feet, 122% of average and 56% of capacity. Snowpack at Quartz Peak SNOTEL site was 113% of average with 11.5 inches of water content. Average temperatures in the Spokane basin were near normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	APR-JUL	1610	2140	2510	98	2880	3410	2550
	APR-SEP	1690	2240	2610	99	2980	3530	2650
Spokane R at Long Lake (2)	APR-JUL	1770	2380	2790	98	3200	3810	2850
	APR-SEP	1940	2570	3000	98	3430	4060	3070
Chamokane Ck nr Long Lake	MAY-AUG	5.4	7.4	8.8	86	10.2	12.2	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	134.2	41.3	110.1

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - January 1, 2011

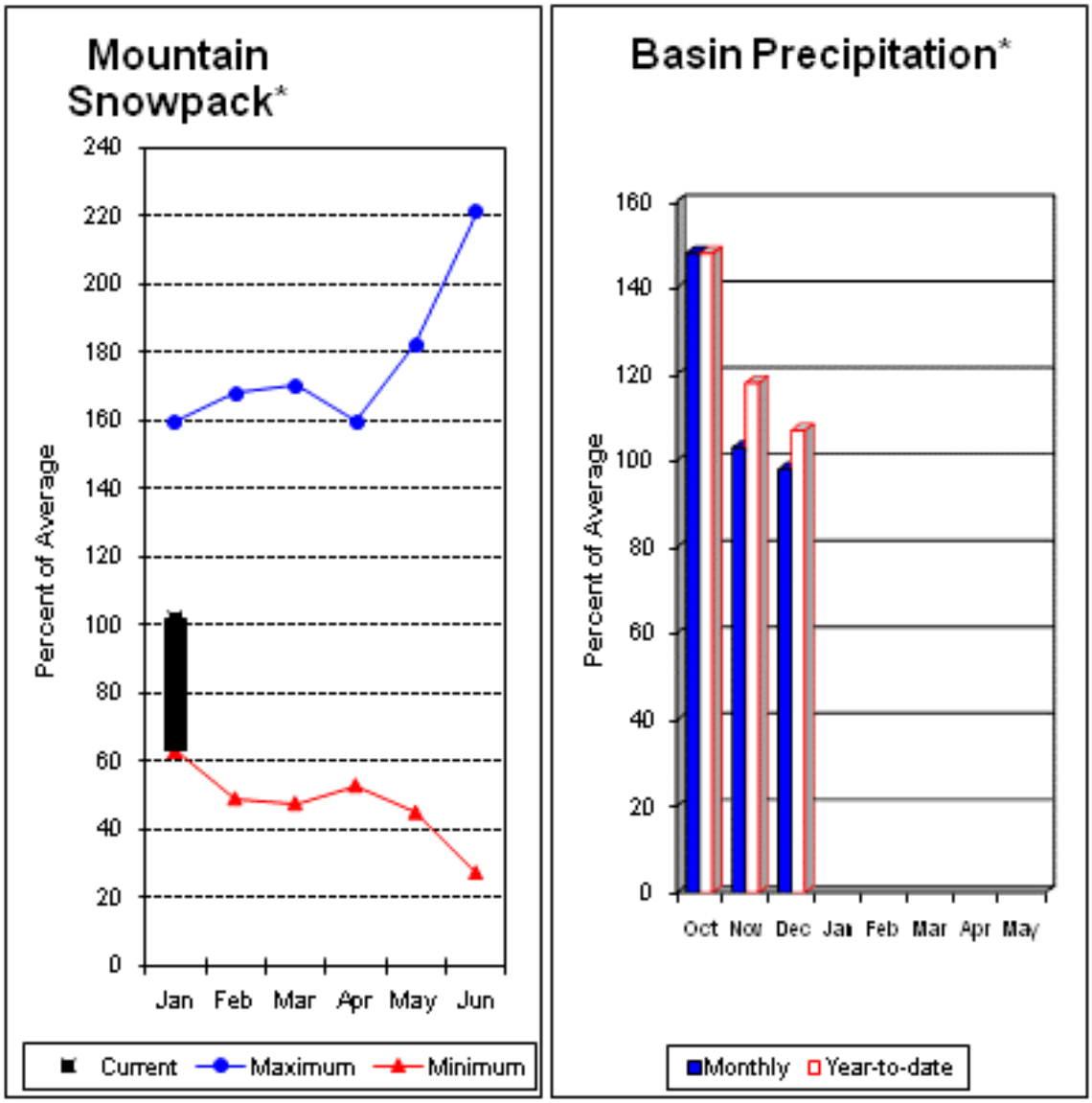
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
SPOKANE RIVER	12	165	91
NEWMAN LAKE	1	144	113

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 100% and the Pen Orielle below Box Canyon is 103%. December streamflow was 195% of average on the Pend Oreille River and 94% on the Columbia Birchbank. January 1 snow cover was 102% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 10.3 inches of snow water on the snow pillow. Normally Bunchgrass would have 12.6 inches on January 1. Precipitation during December was 98% of average, bringing the year-to-date precipitation to 107% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 128% of normal. Average temperatures were slightly above normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	APR-JUL	10200	11900	13000	102	14100	15800	12700
	APR-SEP	11200	13000	14200	102	15400	17200	13900
Priest R nr Priest River (1,2)	APR-JUL	510	720	815	100	910	1120	815
	APR-SEP	545	770	870	100	970	1190	870
Pend Oreille R bl Box Canyon (2)	APR-JUL	10400	12100	13300	103	14500	16200	12900
	APR-SEP	11500	13300	14500	103	15700	17500	14100

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PEND OREILLE	1561.3	880.5	545.6	673.4
PRIEST LAKE	119.3	53.6	55.5	55.7

PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	8	143	91
KETTLE RIVER	1	117	123

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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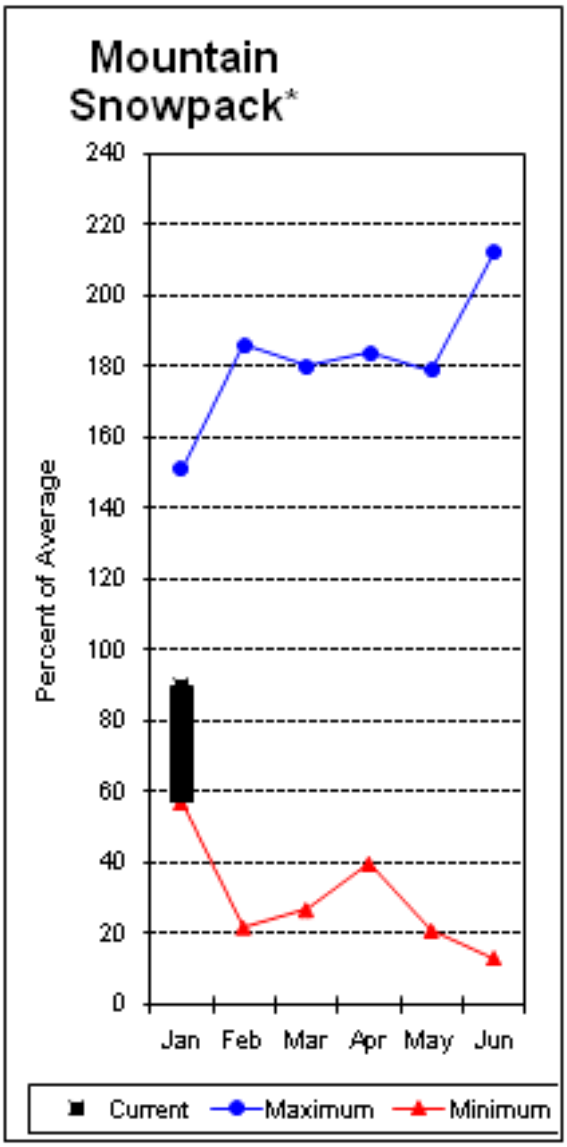
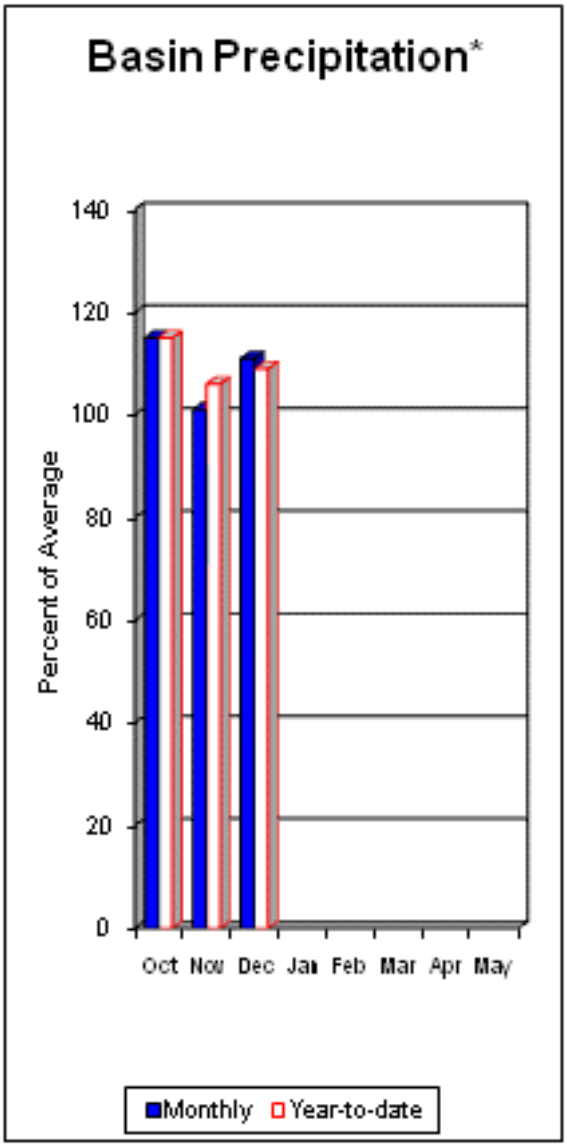
Upper Columbia River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 86%, Similkameen River is 90%, Kettle River 92% and Methow River is 93%. January 1 snow cover on the Okanogan was 92% of average, Omak Creek was 89% and the Methow was 89%. December precipitation in the Upper Columbia was 111% of average, with precipitation for the water year at 109% of average. December streamflow for the Methow River was 109% of average, 77% for the Okanogan River and 83% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 5.5 inches. Average for this site is 5.3 inches on January 1. Combined storage in the Conconully Reservoirs was 20,000-acre feet, which is 85% of capacity and 123% of the January 1 average. Temperatures were 2-3 degrees normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Colville R at Kettle Falls	APR-JUL	41	85	115	90	145	189	128
	APR-SEP	46	94	127	90	160	210	141
Kettle R nr Laurier	APR-JUL	1190	1510	1720	92	1930	2250	1870
	APR-SEP	1250	1580	1810	92	2040	2370	1970
Columbia R at Grand Coulee (2)	APR-JUL	35300	45700	50500	94	55300	65700	53800
	APR-SEP	41800	54300	60000	94	65700	78200	64000
Similkameen R nr Nighthawk (1)	APR-JUL	780	1090	1230	91	1370	1680	1350
	APR-SEP	835	1170	1320	91	1470	1800	1450
Okanogan R nr Tonasket (1)	APR-JUL	615	1130	1360	86	1590	2110	1580
	APR-SEP	670	1250	1520	86	1790	2370	1770
Okanogan R at Malott (1)	APR-JUL	620	1160	1400	86	1640	2180	1630
	APR-SEP	685	1290	1570	86	1850	2460	1830
Methow R nr Pateros	APR-SEP	620	795	915	93	1030	1210	985
	APR-JUL	565	730	845	93	960	1130	910

UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	8.6	5.6	8.5
CONCONULLY RESERVOIR	13.0	11.3	4.1	7.7

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	2	144	102
OMAK CREEK	1	154	89
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	0	0	0
CONCONULLY LAKE	1	138	104
METHOW RIVER	3	123	89

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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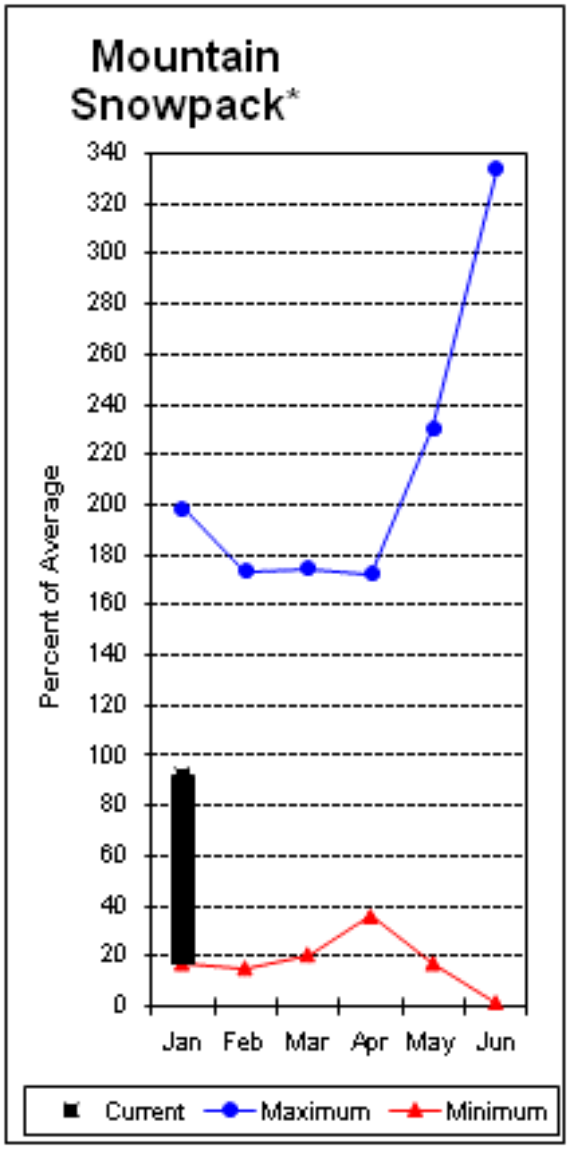
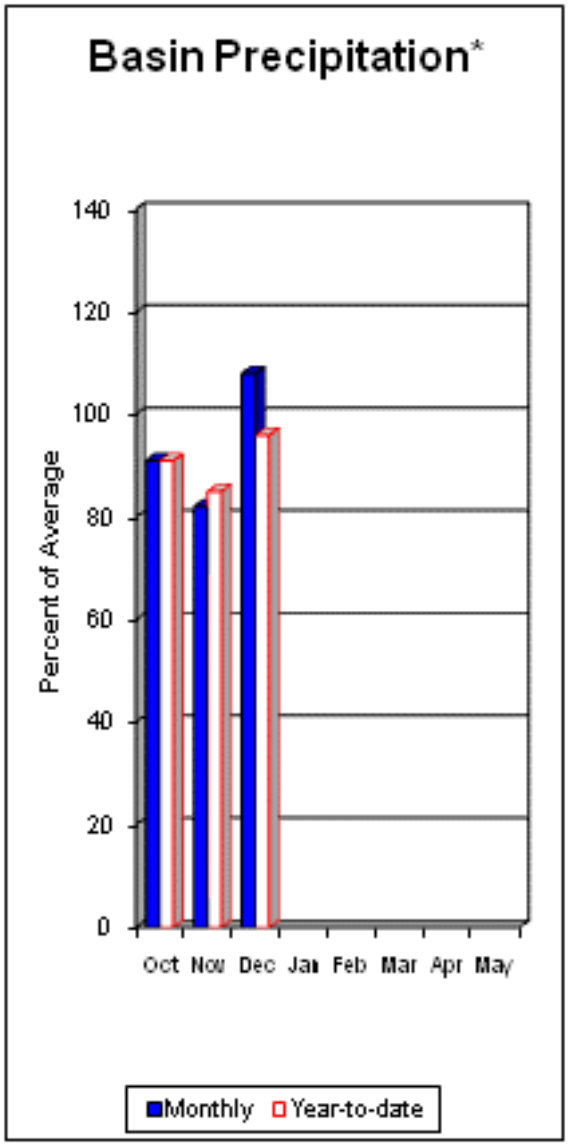
Central Columbia River Basins





*Based on selected stations

Precipitation during December was 108% of average in the basin and 96% for the year-to-date. Runoff for Entiat River is forecast to be 85% of average for the summer. The January-September average forecast for Chelan River is 89%, Wenatchee River at Plain is 89%, Stehekin River is 92% and Icicle Creek is 84%. December average streamflows on the Chelan River were 106% and on the Wenatchee River 98%. January 1 snowpack in the Wenatchee River Basin was 82% of average; the Chelan, 74%; the Entiat, 77%; Stemilt Creek, 102% and Colockum Creek, 125%. Reservoir storage in Lake Chelan was 323,000-acre feet, 81% of January 1 average and 48% of capacity. Lyman Lake SNOTEL had the most snow water with 22.6 inches of water. This site would normally have 29.7 inches on January 1. Temperatures were near normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	APR-JUL	490	580	645	92	710	800	700
	APR-SEP	595	695	765	92	835	935	830
Chelan R at Chelan (2)	APR-JUL	735	855	935	89	1020	1140	1050
	APR-SEP	820	965	1060	89	1160	1300	1190
Entiat R nr Ardenvoir	APR-JUL	128	162	185	86	210	240	215
	APR-SEP	144	180	205	85	230	265	240
Wenatchee R at Plain	APR-JUL	700	850	950	89	1050	1200	1070
	APR-SEP	775	940	1050	89	1160	1320	1180
Icicle Ck nr Leavenworth	APR-JUL	193	235	260	84	285	325	310
	APR-SEP	215	255	285	84	315	355	340
Wenatchee R at Peshastin	APR-JUL	995	1190	1330	90	1470	1670	1480
	APR-SEP	1100	1320	1470	90	1620	1840	1630
Columbia R bl Rock Island Dam (2)	APR-JUL	42600	50500	55900	95	61300	69200	59000
	APR-SEP	50100	59400	65800	95	72200	81500	69500

CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	322.8	449.6	396.9

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
CHELAN LAKE BASIN	3	93	74
ENTIAT RIVER	1	112	77
WENATCHEE RIVER	7	109	82
STEMILT CREEK	1	146	102
COLOCKUM CREEK	1	135	125

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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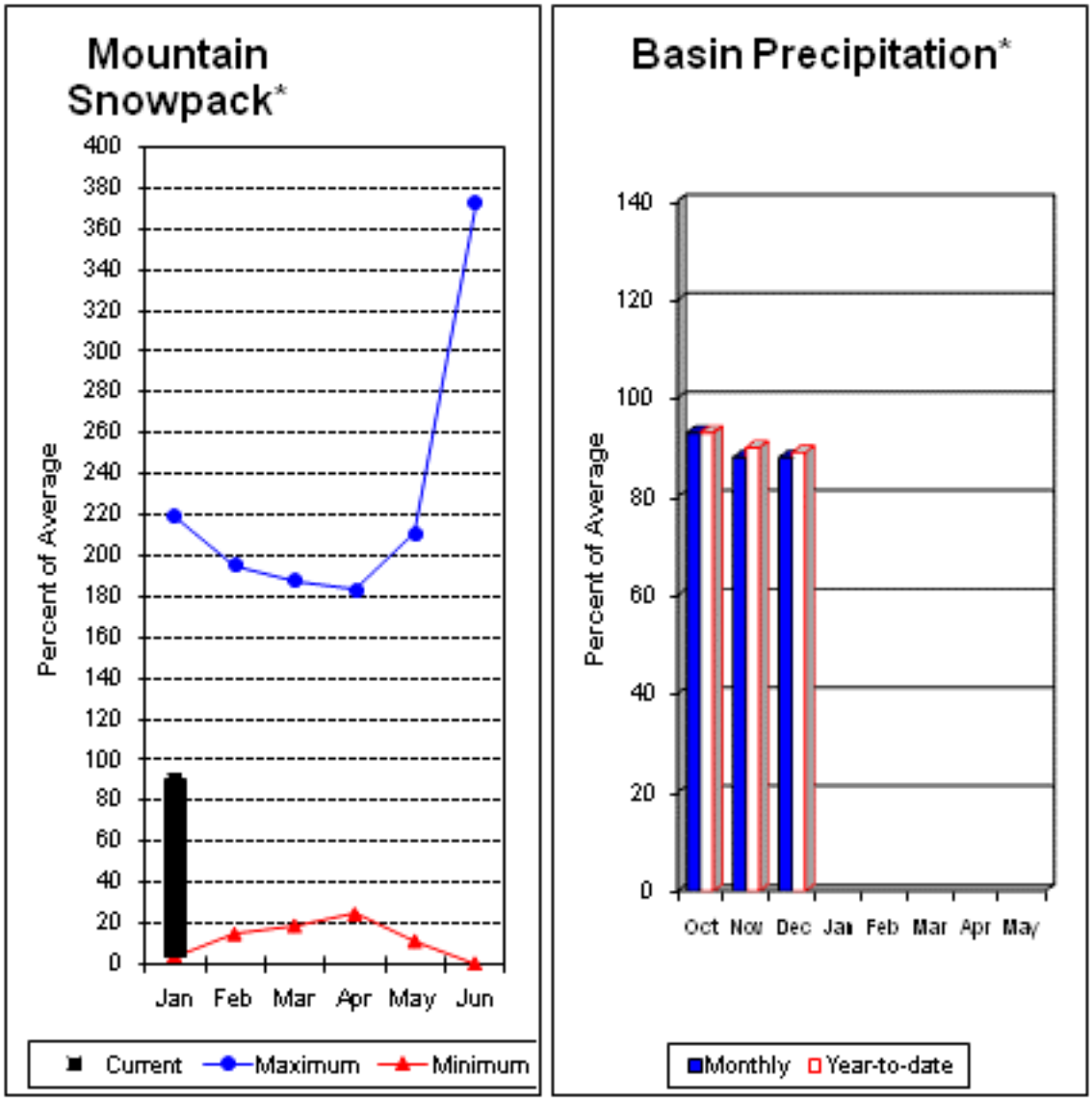
Upper Yakima River Basin



*Based on selected stations

January 1 reservoir storage for the Upper Yakima reservoirs was 455,000-acre feet, 114% of average. Forecasts for the Yakima River at Cle Elum are 92% of average and the Teanaway River near Cle Elum is at 88%. Lake inflows are all forecasted to be slightly below this summer. December streamflows within the basin were Yakima at Cle Elum at 81% and Cle Elum River near Roslyn at 99%. January 1 snowpack was 90% based upon 9 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 88% of average for December and 89% year-to-date for water. 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.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	APR-JUL	77	100	115	95	130	153	121
	APR-SEP	87	110	126	95	142	165	133
Kachess Reservoir Inflow (2)	APR-JUL	66	87	102	92	117	138	111
	APR-SEP	75	96	110	92	124	145	120
Cle Elum Lake Inflow (2)	APR-JUL	265	330	375	92	420	485	410
	APR-SEP	300	370	415	92	460	530	450
Yakima R at Cle Elum (2)	APR-JUL	520	660	755	92	850	990	820
	APR-SEP	580	730	830	92	930	1080	900
Teanaway R bl Forks nr Cle Elum	APR-JUL	69	103	126	88	149	183	143
	APR-SEP	71	105	128	88	151	185	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	83.3	69.7	78.0
KACHESS	239.0	150.9	129.8	125.5
CLE ELUM	436.9	220.3	145.0	194.7

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of: Last Yr	Average
UPPER YAKIMA RIVER	9	132	90

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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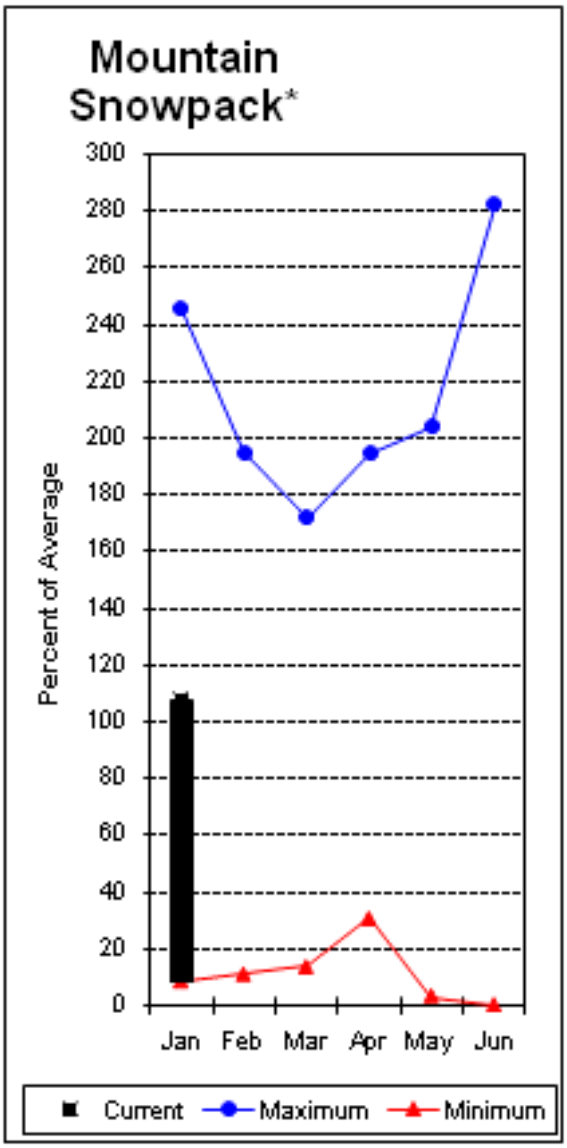
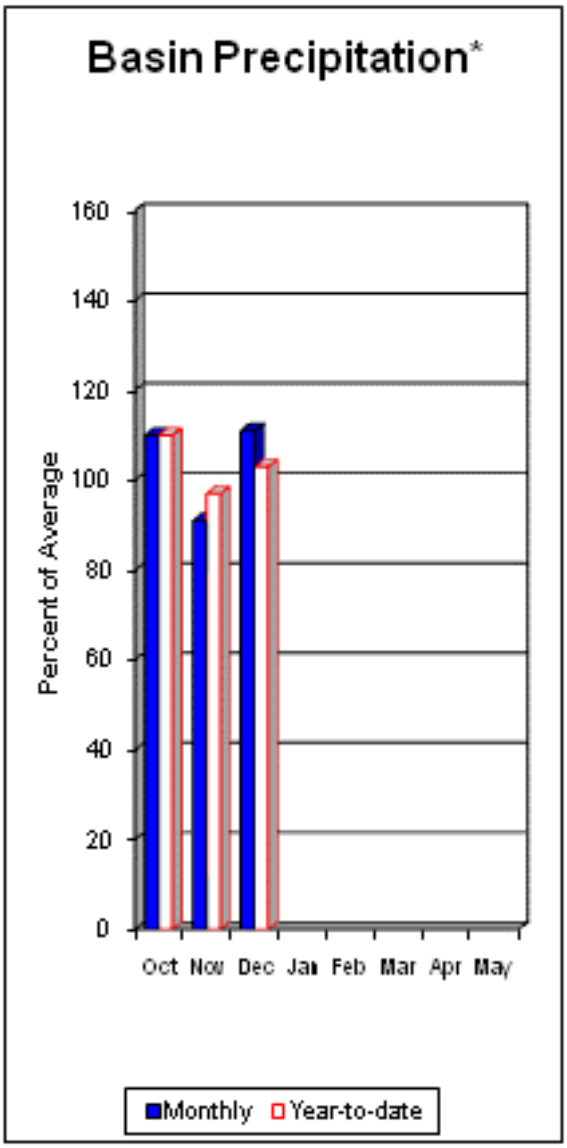
Lower Yakima River Basin





*Based on selected stations

December average streamflows within the basin were: Yakima River near Parker, 82%; Naches River near Naches, 87%; and Yakima River at Kiona, 71%. January 1 reservoir storage for Bumping and Rimrock reservoirs was 141,000-acre feet, 127% of average. Forecast averages for Yakima River near Parker are 92%; American River near Nile, 100%; Ahtanum Creek, 91%; and Klickitat River near Glenwood, 110%. January 1 snowpack was 108% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 105%of average. Precipitation was 111% of average for December and 103% year-to-date for water. Temperatures were near normal for December and for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they January differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	APR-JUL	89	108	120	98	132	151	122
	APR-SEP	97	117	130	99	143	163	132
American R nr Nile	APR-JUL	81	97	108	100	119	135	108
	APR-SEP	88	106	118	100	130	148	118
Rimrock Lake Inflow (2)	APR-JUL	156	182	200	98	220	245	205
	APR-SEP	185	215	235	98	255	285	240
Naches R nr Naches (2)	APR-JUL	535	650	730	101	810	925	720
	APR-SEP	575	705	790	101	875	1000	780
Ahtanum Ck at Union Gap	APR-JUL	11.8	21	27	90	33	42	30
	APR-SEP	13.4	23	29	91	35	45	32
Yakima R nr Parker (2)	APR-JUL	1150	1450	1660	92	1870	2170	1800
	APR-SEP	1270	1600	1820	92	2040	2370	1980
Klickitat R nr Glenwood	APR-JUL	103	124	139	110	154	175	126
	APR-SEP	140	163	179	110	195	220	163
Klickitat R nr Pitt	APR-JUL	420	485	530	115	575	640	460
	APR-SEP	505	585	635	116	685	765	550

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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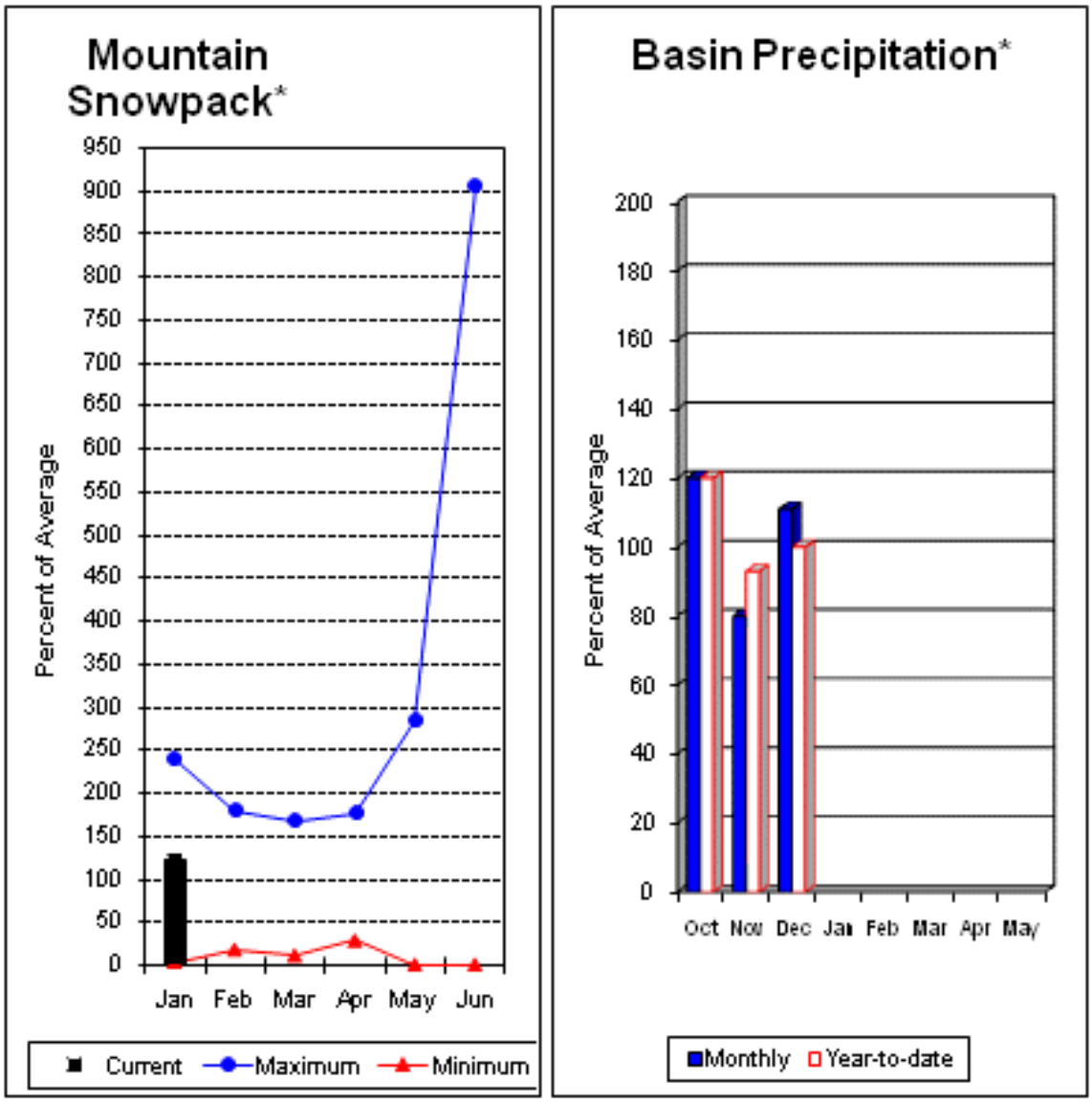
LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	19.2	12.8	10.3
RIMROCK	198.0	121.8	75.5	101.1

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER YAKIMA RIVER	7	126	108
AHTANUM CREEK	2	128	105

Walla Walla River Basin



*Based on selected stations

December precipitation was 111% of average, maintaining the year-to-date precipitation at 100% of average. Snowpack in the basin was 121% of average. Streamflow forecasts are 104% of average for Mill Creek and 118% for the SF Walla Walla near Milton-Freewater. December streamflow was 130% of average for the SF Walla Walla River. Average temperatures were slightly below normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	MAR-SEP	83	91	96	119	101	109	81
	APR-JUL	54	60	64	119	68	74	54
	APR-SEP	68	74	79	118	84	90	67
Mill Ck nr Walla Walla	APR-JUL	18.2	22	25	104	28	32	24
	APR-SEP	22	26	29	104	32	36	28

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

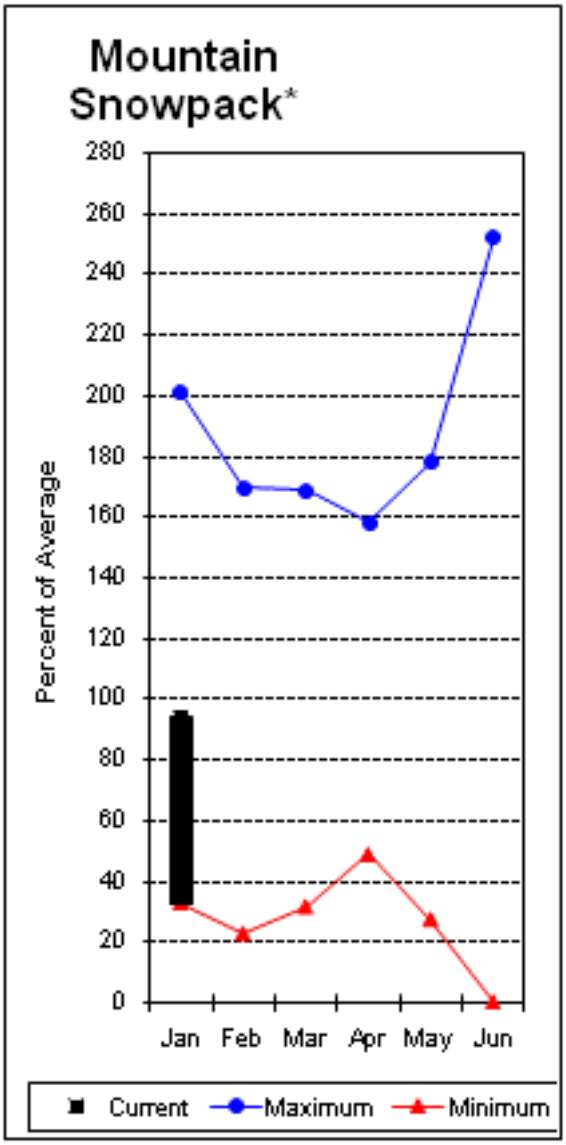
WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

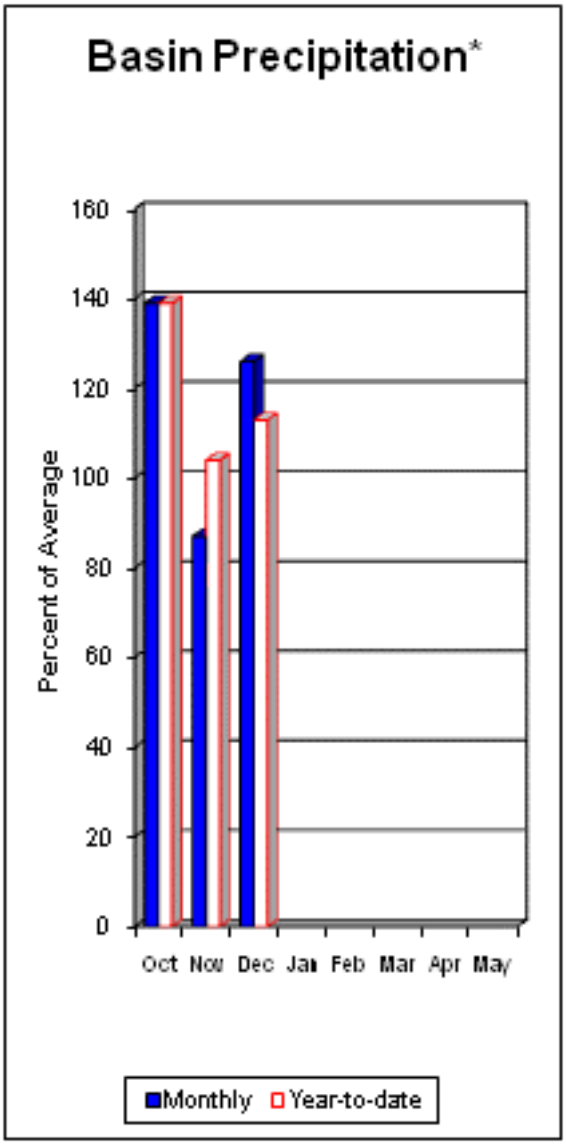
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of: Last Yr	Average
WALLA WALLA RIVER	2	135	121

Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 103% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 110% and 105% of normal respectively. A newly developed forecast point for Asotin Creek at Asotin predicts 103% of average flows for the April – July runoff period. December precipitation was 126% of average, bringing the year-to-date precipitation to 113% of average. January 1 snowpack readings averaged 94% of average. December streamflow was 83% of average for Snake River below Lower Granite Dam and 82% for Grande Ronde River near Troy. Dworshak Reservoir on the Clearwater River is at 94% of average. Average temperatures were near normal for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	MAR-JUL	1120	1490	1660	105	1830	2200	1580
	APR-SEP	925	1280	1440	105	1600	1950	1370
Asotin Ck at Asotin	APR-JUL	17.7	29	36	103	43	54	35
Clearwater R at Spalding (1,2)	APR-JUL	5210	6900	7660	103	8420	10100	7430
	APR-SEP	5500	7270	8080	103	8890	10700	7850
Snake R bl Lower Granite Dam (1,2)	APR-JUL	12800	20300	23700	110	27100	34600	21600
	APR-SEP	14300	22700	26500	110	30300	38700	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DWORSHAK	3468.0	2333.8	2149.0	2481.4

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - January 1, 2011

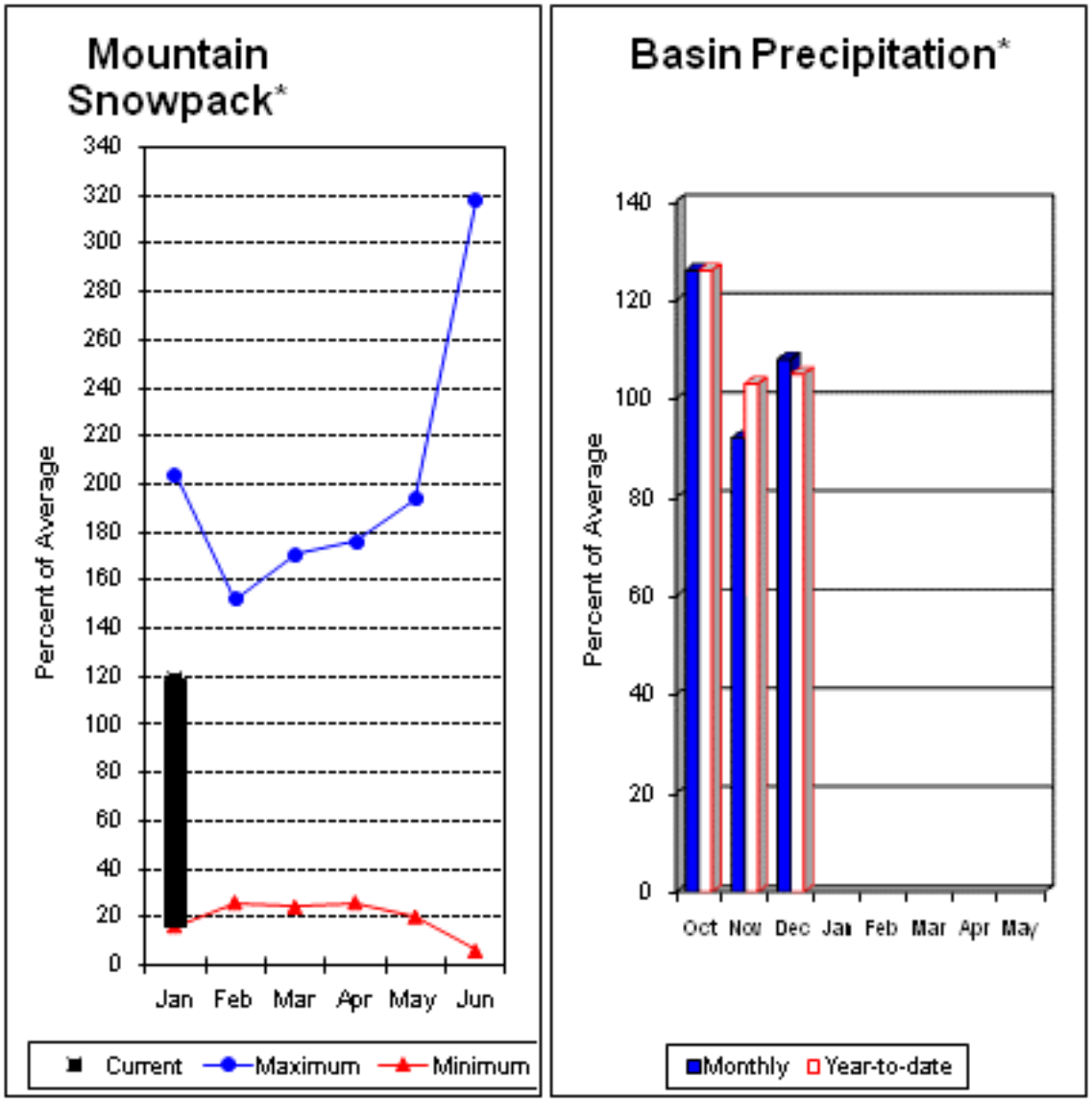
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER SNAKE, GRANDE RONDE	11	131	94

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 104% and Cowlitz River at Castle Rock, 101% of average. The Columbia at The Dalles is forecasted to have 97% of average flows this summer. December average streamflow for Cowlitz River was 102%. The Columbia River at The Dalles was 98% of average. December precipitation was 108% of average and the water-year average was 105%. January 1 snow cover for Cowlitz River was 108%, and Lewis River was 130% of average. Average temperatures were 1-3 degrees above normal during December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	APR-JUL	62400	74100	82000	97	89900	102000	84600
	APR-SEP	73100	86700	96000	97	105000	119000	98600
Klickitat R nr Glenwood	APR-JUL	103	124	139	110	154	175	126
	APR-SEP	140	163	179	110	195	220	163
Klickitat R nr Pitt	APR-JUL	420	485	530	115	575	640	460
	APR-SEP	505	585	635	116	685	765	550
Lewis R at Ariel (2)	APR-JUL	775	950	1070	104	1190	1360	1031
	APR-SEP	910	1100	1220	104	1340	1530	1176
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1220	1520	1730	102	1940	2240	1689
	APR-SEP	1320	1700	1960	102	2220	2600	1922
Cowlitz R at Castle Rock (2)	APR-JUL	1810	2110	2320	101	2530	2830	2295
	APR-SEP	2090	2440	2670	101	2900	3250	2639

LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MOSSYROCK	0.0	1263.9	1192.3	---
SWIFT	0.0	702.4	718.1	---
YALE	0.0	360.8	365.7	---
MERWIN	0.0	414.5	402.3	---

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	5	140	130
COWLITZ RIVER	6	130	108

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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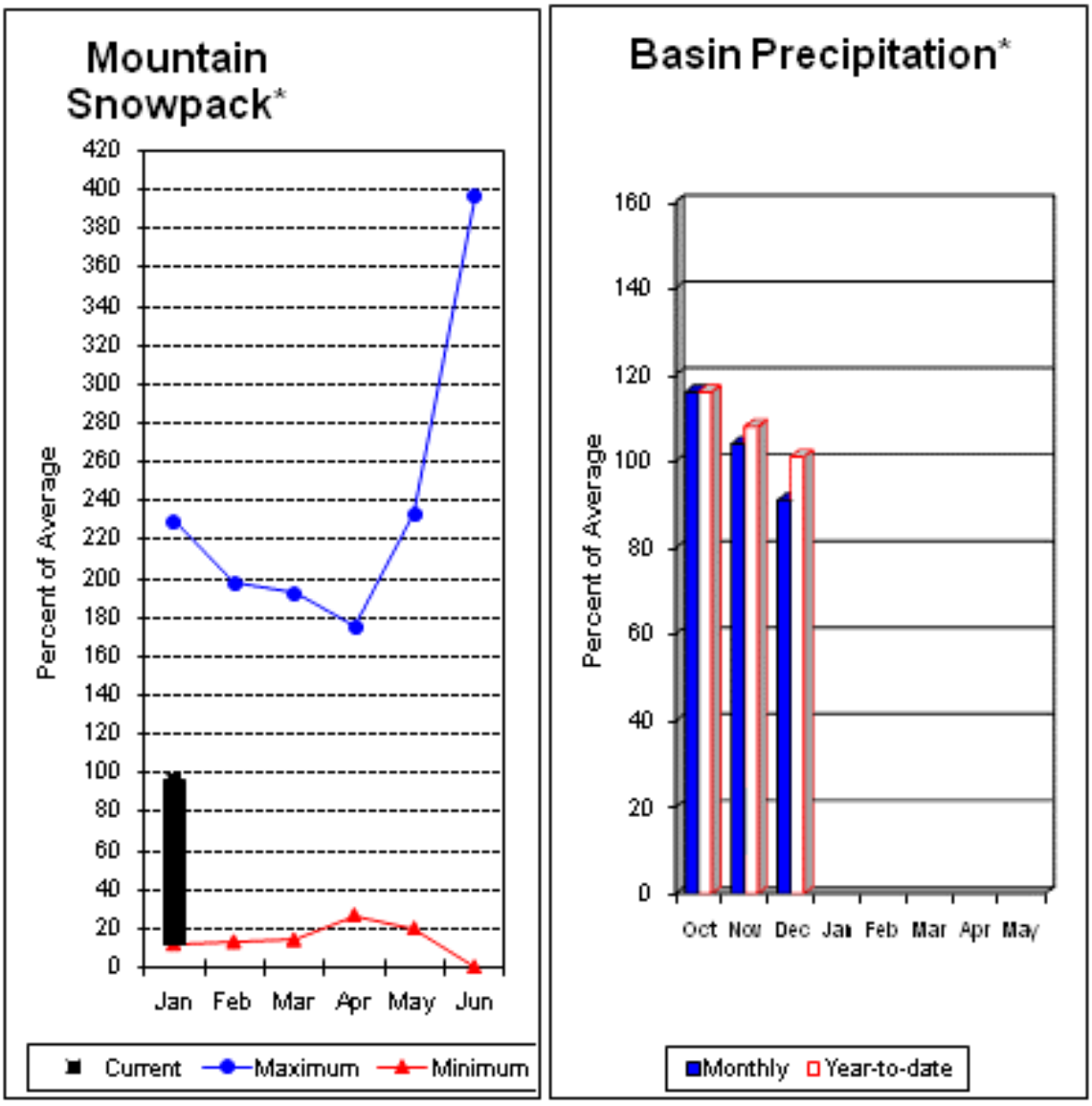
(2) - The value is natural volume - actual volume may be affected by upstream water management.

South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 101% of normal for the Green River below Howard Hanson Dam and 102% for the White River near Buckley. January 1 snowpack was 104% of average for the White River, 105 % for Puyallup River and 80% in the Green River Basin. Water content on January 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 14.8 inches. This site has a January 1 average of 15.8 inches. December precipitation was 91% of average, bringing the water year-to-date to 101% of average for the basins. Average temperatures in the area were 1-3 degrees above normal for December and for the water-year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	APR-JUL	340	420	455	103	490	570	440
	APR-SEP	415	505	545	102	585	675	534
Green R bl Howard Hanson Dam (1,2)	APR-JUL	158	220	245	100	270	330	245
	APR-SEP	183	245	270	101	295	355	268

SOUTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	121	104
GREEN RIVER	2	117	80
PUYALLUP RIVER	5	116	105

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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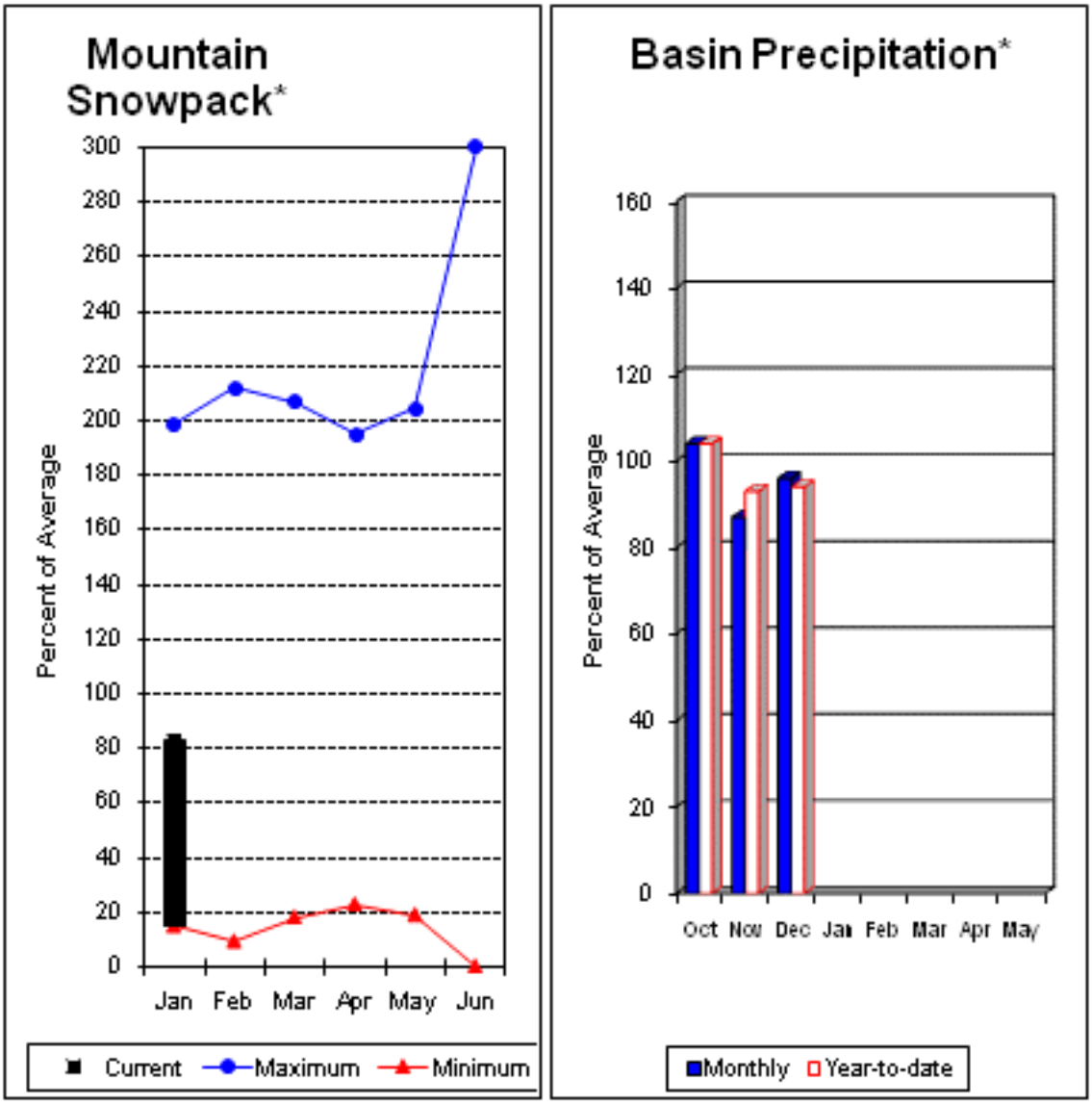
Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 101% for Cedar River near Cedar Falls; 100% for Rex River; 95% for South Fork of the Tolt River; 96% for Taylor Creek near Selleck, and 99% for Cedar River at Cedar Falls. Basin-wide precipitation for December was 96% of average, bringing water-year-to-date to 94% of average. January 1 average snow cover in Cedar River Basin was 115%, Tolt River Basin was 71%, Snoqualmie River Basin was 77%, and Skykomish River Basin was 68%. Olallie Meadows SNOTEL site, at 3960 feet, had 19.4 inches of water content. Average January 1 water content is 22.2 inches at Olallie Meadows. Temperatures were 1-3 degrees above normal for December and 1 degree above for the water-year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	APR-JUL	52	65	74	101	83	96	73
	APR-SEP	59	72	81	101	90	103	80
Rex R nr Cedar Falls	APR-JUL	13.4	20	25	100	30	37	25
	APR-SEP	16.1	23	28	100	33	40	28
Cedar R at Cedar Falls (2)	APR-JUL	44	61	73	99	85	102	74
	APR-SEP	39	59	72	99	85	105	73
Taylor Ck nr Selleck	APR-JUL	13.7	16.8	19.0	95	21	24	20
	APR-SEP	17.4	21	23	96	25	29	24
SF Tolt R nr Index	APR-JUL	9.4	12.1	14.0	95	15.9	18.6	14.7
	APR-SEP	11.2	14.1	16.0	95	17.9	21	16.9

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	150	115
TOLT RIVER	2	107	71
SNOQUALMIE RIVER	4	111	77
SKYKOMISH RIVER	2	88	68

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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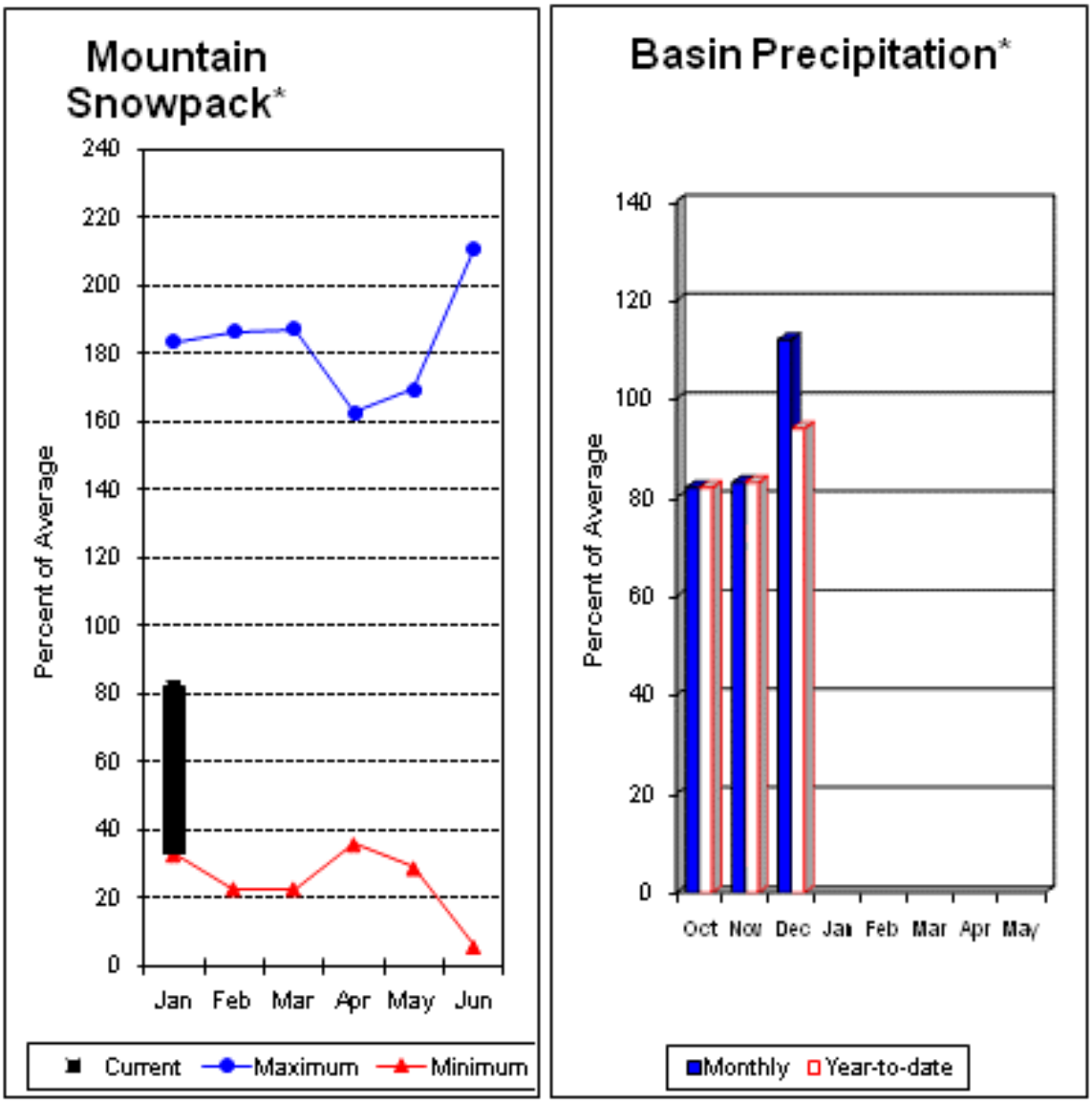
North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 96% of average for the spring and summer period. December streamflow in Skagit River was 108% of average. Other forecast points included Baker River at 96% and Thunder Creek at 99% of average. Basin-wide precipitation for December was 112% of average, bringing water-year-to-date to 94% of average. January 1 average snow cover in Skagit River Basin was 87%, Nooksack River Basin was 89% and Baker River Basin was 69% of average. Rainy Pass SNOTEL, at 4,780 feet, had 14.3 inches of water content. Average January 1 water content is 19.9 inches at Rainy Pass. January 1 Skagit River reservoir storage was 100% of average and 82% of capacity. Average temperatures for December were 1-2 degrees above normal for the basin and near average for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	APR-JUL	200	220	235	100	250	270	234
	APR-SEP	290	315	330	99	345	370	333
Skagit R at Newhalem (2)	APR-JUL	1430	1640	1790	96	1940	2150	1864
	APR-SEP	1740	1970	2130	96	2290	2520	2217
Baker R nr Concrete (2)	APR-JUL	620	725	795	96	865	970	828
	APR-SEP	775	915	1010	96	1100	1240	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	1138.8	1155.2	1142.1
DIABLO RESERVOIR	90.6	85.7	85.3	85.3

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	5	113	86
BAKER RIVER	9	97	69
NOOKSACK RIVER	3	98	89

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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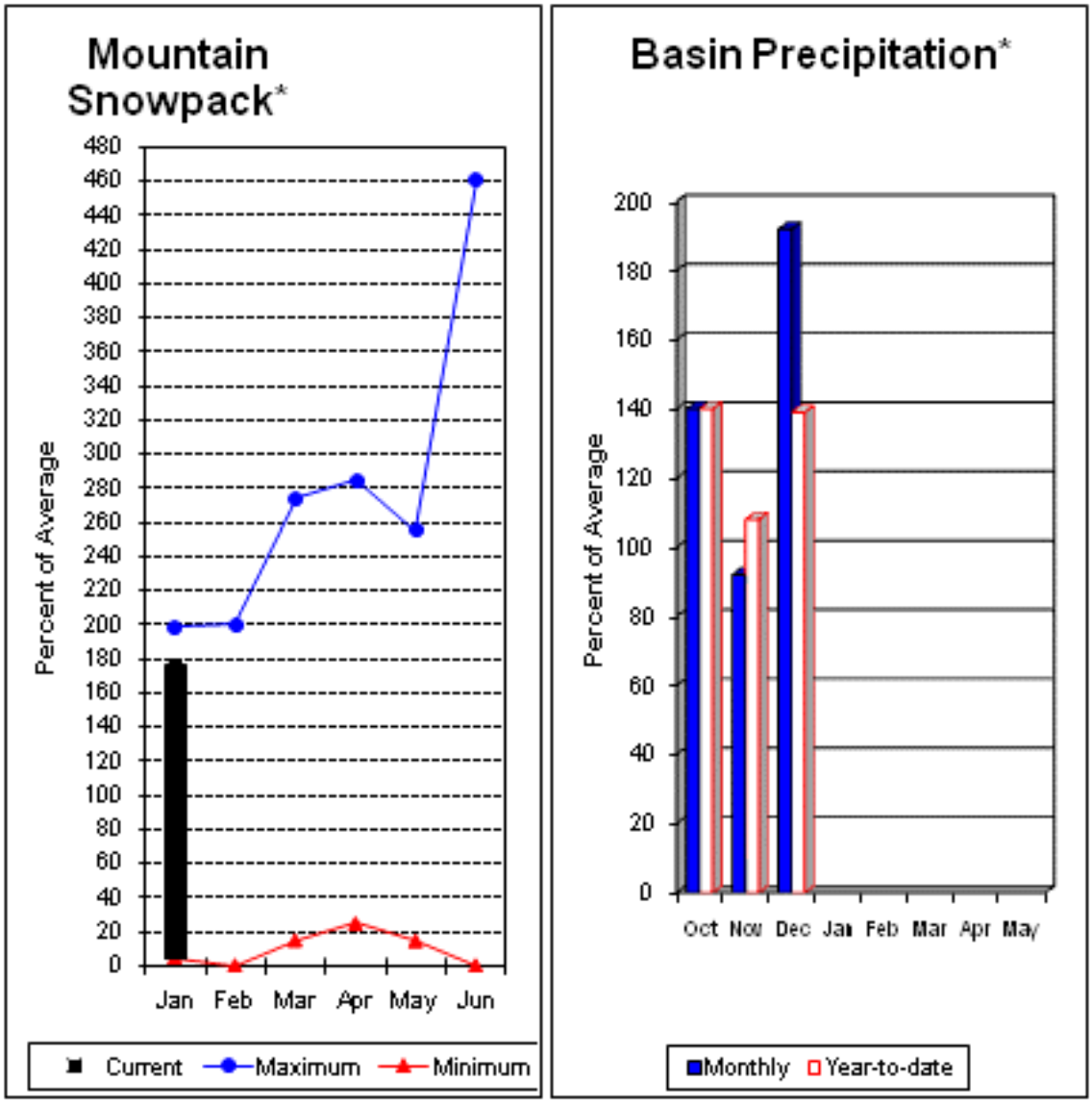
Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 93% and Elwha River is 90%. December runoff in the Dungeness River was 87% of normal. Big Quilcene and Wynoochee rivers should expect near average runoff this summer also. December precipitation was 56% of average. Precipitation has accumulated at 143% of average for the water year. December precipitation at Quillayute was 6.91 inches. The thirty-year average for December is 14.5 inches. Olympic Peninsula snowpack averaged 123% of normal on January 1. Temperatures were near average for December and for the water year.

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

Streamflow Forecasts - January 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	APR-JUL	88	124	149	120	174	210	124
	APR-SEP	95	147	182	120	215	270	152
Elwha R at Mcdonald Bridge	APR-JUL	330	395	440	105	485	550	419
	APR-SEP	410	480	530	105	580	650	503

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - January 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	3	143	176

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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Issued by

Dave White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

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

Canada	Ministry of Sustainable Resources
	Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	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
	Recourse Conservation & Development Councils
Local	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
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	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.**

Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873

Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Washington
Water Supply Outlook Report
February 1, 2011

Photo by Keith Kingslien

Slate Peak Fire Lookout, 1/31/2011

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684

or

Ron Nichols
Public Affairs Specialist
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2912

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

February 2011

General Outlook

The month of January was a pretty disappointing period for snowpack collection in all but a few areas of the state. For the most part above average temperatures and above average rainfall combined to reduce snowpack averages by as much as 35%. Actual water content was increased at higher elevations due to loading of the snow with rain but low to mid elevation packs suffered, melted and subsequently added to the above normal streamflows which swelled rivers to flood stage for days on end. Forecasters are predicting a return to cooler and wetter than normal conditions by mid month. Without a respite from current conditions we could be facing potential water shortages in some areas this summer. On average we have received about 50% of our normal peak snow accumulation. By this time we normally should have received 65%.

Snowpack

The February 1 statewide SNOTEL readings were 80% of average, down 21% from last month. The Green River snow survey data reported the lowest readings at 45% of average. Readings from the Eastern Olympic Peninsula reported the highest at 135% of average. Westside averages from SNOTEL, and February 1 snow surveys, included the North Puget Sound river basins with 88% of average, the Central Puget river basins with 59%, and the Lewis-Cowlitz basins with 86% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 74% and the Wenatchee area with 74%. Snowpack in the Spokane River Basin was at 90% and the Walla Walla River Basin had 81% of average. Maximum confirmed snow cover in Washington was at Paradise SNOTEL, with water content of 41.5 inches. The 30-year average for Paradise on February 1 is 48.1 inches leaving the site at only 86% of average, down slightly from last month.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	161	90
Newman Lake	205	96
Pend Oreille	151	109
Okanogan	108	94
Methow	98	89
Conconully Lake	75	83
Wenatchee	88	69
Chelan	93	75
Upper Yakima	93	65
Lower Yakima	104	83
Ahtanum Creek	79	73
Walla Walla	110	81
Lower Snake	121	87
Cowlitz	118	87
Lewis	113	86
White	111	85
Green	95	45
Puyallup	103	80
Cedar	137	65
Snoqualmie	116	56
Skykomish	108	62
Skagit	111	87
Baker	137	90
Nooksack	121	88
Olympic Peninsula	103	109

Precipitation

During the month of January, the National Weather Service and Natural Resources Conservation Service climate stations reported near to well above average precipitation in all river basins excluding the Walla Walla where they only received 67% of average. Heavy precipitation and warm temperatures throughout the month caused flooding around the state. These same storms loaded higher elevation snowpack densities while washing off most of the lower elevation snow. The highest percent of average in the state was at Newhalem in the Upper Skagit which reported 160% of average for a total of 18.64 inches. The average for Newhalem is 11.62 inches for January. The wettest spot in the state was reported at Olallie SNOTEL near Snoqualmie Pass with a January accumulation of 29.6 inches. Olallie would normally see 18-19 inches of precipitation in January.

RIVER BASIN	JANUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	140	118
Pend Oreille	107	109
Upper Columbia	91	104
Central Columbia	108	99
Upper Yakima	132	101
Lower Yakima	100	102
Walla Walla	67	91
Lower Snake	114	113
Lower Columbia	95	104
South Puget Sound	119	107
Central Puget Sound	144	107
North Puget Sound	133	103
Olympic Peninsula	92	128

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 633,000-acre feet, 142% of average for the Upper Reaches and 184,000-acre feet or 151% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 124% of average for February 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 211,000 acre feet, 182% of average and 88% of capacity; Chelan Lake, 290,000-acre feet, 92% of average and 43 of capacity; and the Skagit River reservoirs at 111% of average and 79% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	88	182
Pend Oreille	52	109
Upper Columbia	88	124
Central Columbia	43	92
Upper Yakima	76	142
Lower Yakima	79	151
Lower Snake	67	100
North Puget Sound	79	111

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

Streamflow

Forecasts vary from 77% of average for the Icicle Creek near Leavenworth to 108% of average for S.F. Walla Walla River. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 89%; White River, 97%; and Skagit River, 95%. Some Eastern Washington streams include the Yakima River near Parker, 84%: Wenatchee River at Plain, 85%; and Spokane River near Post Falls, 103%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. Caution should be used when using early season forecasts for critical water resource management decisions.

Statewide January streamflows were well above and appeared to be precipitation driven. Heavy precipitation caused localized flooding in some streams around the state. The Stehekin River had the highest reported natural flows with 261% of average. The Okanogan at Tonasket with 102% of average was the lowest in the state however that could be due to reservoir control or ice influence. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 151%; the Spokane at Spokane, 249%; the Columbia below Rock Island Dam, 150%; and the Cle Elum near Roslyn, 264%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	100-103
Pend Oreille	101-107
Upper Columbia	88-95
Central Columbia	77-89
Upper Yakima	81-84
Lower Yakima	100-84
Walla Walla	9 6-108
Lower Snake	86-104
Lower Columbia	91-99
South Puget Sound	82-97
Central Puget Sound	89-92
North Puget Sound	92-95
Olympic Peninsula	97-103

STREAM	PERCENT OF AVERAGE JANUARY STREAMFLOWS
Pend Oreille Below Box Canyon	164
Kettle at Laurier	116
Columbia at Birchbank	115
Spokane at Long Lake	208
Similkameen at Nighthawk	141
Okanogan at Tonasket	102
Methow at Pateros	161
Chelan at Chelan	206
Wenatchee at Pashastin	226
Yakima at Cle Elum	243
Yakima at Parker	228
Naches at Naches	241
Grande Ronde at Troy	128
Snake below Lower Granite Dam	126
SF Walla Walla near Milton Freewater	220
Columbia River at The Dalles	144
Cowlitz below Mayfield Dam	162
Skagit at Concrete	159
Dungeness near Sequim	117

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B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

FEBRUARY 2011

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
AHTANUM R.S.	3100	1/28/11	10	4.5	6.1	7.1
ALPINE MEADOWS	3500	1/26/11	40	15.9	10.9	--
ALPINE MEADOWS SNTL	3500	2/01/11	39	18.5	16.1	29.2
ASHLEY DIVIDE	4820	1/27/11	27	7.4	2.7	5.1
BADGER PASS SNOTEL	6900	2/01/11	71	22.0	18.8	22.3
BAIRD #2	3220	1/27/11	28	6.6	4.8	--
BARKER LAKES SNOTEL	8250	2/01/11	34	8.4	11.4	9.2
BASIN CREEK SNOTEL	7180	2/01/11	22	5.1	4.4	4.9
BEAVER CREEK TRAIL	2200	2/01/11	36	12.0	6.6	10.3
BEAVER PASS	3680	2/01/11	51	18.1	18.2	19.3
BEAVER PASS SNOTEL	3630	2/01/11	65	24.3	21.5	26.2
BIG WHITE MTN CAN.	5510	1/31/11	44	10.9	--	13.3
BLACK PINE SNOTEL	7100	2/01/11	34	8.9	5.4	8.0
BLACKWALL PILL CAN.	6370	2/01/11	69	21.2	20.7	23.8
BLEWETT PASS#2SNOTEL	4240	2/01/11	18	7.1	10.8	12.4
BROWN TOP AM	6000	1/30/11	115	39.4	41.6	42.5
BROWNS PASS		1/27/11	14	2.5	3.5	--
BUCKINGHORSE SNOTEL	4870	2/01/11	101	43.3	44.1	--
BUMPING LAKE (NEW)	3400	1/31/11	33	12.2	9.9	13.3
BUMPING RIDGE SNOTEL	4610	2/01/11	45	16.5	16.1	19.4
BUNCHGRASS MDWSNOTEL	5000	2/01/11	60	16.3	17.1	18.6
BURNT MOUNTAIN PIL	4170	2/01/11	13	5.1	4.3	9.0
BUTTERMILK BUTTE	5250	1/27/11	29	9.1	11.0	--
CALAMITY SNOTEL	2500	2/01/11	1	.1	.0	--
CAYUSE PASS SNOTEL	5240	2/01/11	99	38.5	30.2	--
CHESSMAN RESERVOIR	6200	1/26/11	15	3.0	2.3	2.5
CHEWALAH #2	4930	1/31/11	40	11.2	11.0	--
CHICKEN CREEK	4060	1/27/11	47	13.2	8.7	11.5
CHIWAUKUM G.S.	2500	1/28/11	20	7.2	6.8	8.6
CITY CABIN	2390	1/26/11	0	.0	.0	--
COLD CREEK STRIP	6020	1/26/11	23	4.5	6.0	--
COLOCKUM PASS	5370	1/31/11	29	9.4	9.7	11.7
COMBINATION SNOTEL	5600	2/01/11	12	3.8	3.1	3.4
COPPER BOTTOM SNOTEL	5200	2/01/11	22	5.6	4.2	8.0
COPPER MOUNTAIN	7700	1/29/11	30	6.1	6.0	7.0
CORRAL PASS SNOTEL	5800	2/01/11	58	20.2	16.2	22.1
COUGAR MTN. SNOTEL	3200	2/01/11	14	5.0	1.5	13.7
COX VALLEY	4500	1/28/11	56	22.9	23.8	24.2
COYOTE HILL	4200	1/28/11	27	8.1	4.3	7.3
DALY CREEK SNOTEL	5780	2/01/11	30	7.5	5.2	7.4
DEER PARK	5200	1/31/11	25	11.0	13.7	12.2
DEVILS PARK	5900	1/31/11	84	27.3	21.0	30.7
DISAUTEL PASS		1/26/11	15	3.4	3.4	--
DISCOVERY BASIN	7050	1/31/11	31	6.5	5.2	6.6
DIX HILL	6400	1/29/11	29	7.9	5.1	7.6
DOCK BUTTE AM	3800	1/26/11	72	28.8	18.1	37.2
DOMMERIE FLATS	2200	2/01/11	9	3.3	4.9	6.4
DUNCAN RIDGE	5370	1/26/11	19	3.7	4.6	--
DUNGENESS SNOTEL	4010	2/01/11	23	9.3	4.5	5.9
EASY PASS AM	5200	1/26/11	112	43.7	41.3	46.2
ELBOW LAKE SNOTEL	3200	2/01/11	48	20.1	15.4	24.5
EMERY CREEK SNOTEL	4350	2/01/11	49	13.5	8.0	10.5
FISH CREEK	8000	1/28/11	26	6.6	6.2	5.8
FISH LAKE	3370	2/01/11	41	15.9	17.9	24.5
FISH LAKE SNOTEL	3430	2/01/11	39	15.2	16.7	24.7
FLATTOP MTN SNOTEL	6300	2/01/11	115	33.6	25.8	31.8
FOURTH OF JULY SUM	3200	1/27/11	14	4.5	.0	7.1
FREEZEOUT CK. TRAIL	3500	1/30/11	27	7.1	6.0	8.8
FROHNER MDWS SNOTEL	6480	2/01/11	23	5.4	4.5	5.0
FROST MEADOWS	4630	2/02/11	27	9.7	9.7	--
GOAT CREEK	3600	1/28/11	20	4.6	5.4	5.1
GOLD MTN LOOKOUT		1/28/11	29	6.4	9.8	--
GRASS MOUNTAIN #2	2900	1/27/11	6	2.8	--	7.5
GRAVE CRK SNOTEL	4300	2/01/11	44	12.6	9.2	11.7
GRAYSTOKE LAKE CAN.	5500	2/01/11	28	7.5	--	--
GREEN LAKE SNOTEL	5920	2/01/11	37	12.5	14.7	15.4
GROUSE CAMP SNOTEL	5390	2/01/11	35	11.1	12.1	14.0
HAMILTON HILL CAN.	4550	1/29/11	26	5.6	6.2	9.9
HAND CREEK SNOTEL	5030	2/01/11	35	9.0	5.9	8.6
HARTS PASS SNOTEL	6490	2/01/11	80	32.8	23.5	31.3
HARTS PASS	6500	1/31/11	86	30.2	29.1	29.5
HELL ROARING DIVIDE	5770	1/29/11	82	25.3	17.2	20.7
HERRIG JUNCTION	4850	1/27/11	62	18.8	13.7	18.1
HIGH RIDGE SNOTEL	4920	2/01/11	41	18.3	13.6	16.9
HOLBROOK	4530	2/02/11	24	6.6	4.3	7.2
HOODOO BASIN SNOTEL	6050	2/01/11	93	31.1	15.2	30.1
HUCKLEBERRY SNOTEL	2250	2/01/11	0	.0	.0	2.0
HUMBOLDT GLCH SNOTEL	4250	2/01/11	---	8.6	5.0	9.5
HURRICANE	4500	1/27/11	27	10.7	8.9	11.7
INDIAN ROCK SNOTEL	5360	2/01/11	48	22.1	22.0	--
INTERGAARD	6450	1/26/11	21	4.8	2.0	4.8
IRENE'S CAMP	5530	1/26/11	25	5.3	6.4	--
ISINTOK LAKE CAN.	5100	1/28/11	18	4.1	4.0	5.2
JASPER PASS AM	5400	1/26/11	130	58.5	36.1	56.5
JUNE LAKE SNOTEL	3440	2/01/11	57	25.0	17.1	28.4
KELLER RIDGE	3700	1/27/11	14	3.7	3.8	--
KELLOGG PEAK	5560	1/27/11	51	18.1	12.4	20.7
KLESILKWA CAN.	3450	2/01/11	18	4.7	3.3	7.6
KRAFT CREEK SNOTEL	4750	2/01/11	41	10.9	6.9	10.9
LAMB BUTTE		1/28/11	30	8.4	11.6	--
LOLO PASS SNOTEL	5240	2/01/11	72	21.3	11.6	20.9
LONE PINE SNOTEL	3930	2/01/11	57	24.2	20.8	24.1
LOOKOUT SNOTEL	5140	2/01/11	66	20.1	11.5	21.5
LOST HORSE MTN CAN.	6300	2/01/11	17	5.7	4.8	6.5
LOST HORSE SNOTEL	5120	2/01/11	24	8.9	12.0	13.1
LOST LAKE SNOTEL	6110	2/01/11	103	35.4	21.9	40.6
LOST LAKE	4070	1/25/11	21	4.9	5.2	--
LOUP LOUP CAMPGROUND		1/24/11	23	5.4	7.1	--
LUBRECHT FOREST NO 3	5450	1/31/11	24	5.8	2.2	4.6
LUBRECHT FOREST NO 4	4650	1/31/11	11	2.7	1.4	2.5
LUBRECHT FOREST NO 6	4040	1/31/11	20	5.4	1.9	2.8
LUBRECHT HYDROPLOT	4200	1/31/11	24	6.1	2.5	4.2
LUBRECHT SNOTEL	4680	2/01/11	19	5.0	3.1	4.2
LYMAN LAKE SNOTEL	5980	2/01/11	107	34.4	34.7	43.4
LYNN LAKE	4000	2/01/11	18	6.4E	--	14.5
LYNN LAKE SNOTEL	3900	2/01/11	18	6.4	5.0	--
MARIAS PASS	5250	1/27/11	40	11.7	6.7	11.7
MARTEN LAKE AM	3600	1/26/11	133	49.2	31.4	46.8
MARTEN RIDGE SNOTEL	3520	2/01/11	77	35.1	31.0	--
MAZAMA		1/24/11	21	6.0	5.7	--
MCCULLOCH CAN.	4200	1/31/11	22	5.4	3.9	4.9
MEADOWS CABIN	1900	1/30/11	7	2.0	.0	5.0
MEADOWS PASS SNOTEL	3230	2/01/11	30	13.4	9.8	19.1
METEOR		1/28/11	16	6.0	3.2	--
M F NOOKSACK SNOTEL	4970	2/01/11	79	34.8	28.4	39.4
MICA CREEK SNOTEL	4510	2/01/11	52	14.9	11.3	18.3
MISSEZULA MTN CAN.	5080	1/29/11	26	5.6	4.3	6.5
MISSION RIDGE	5000	1/28/11	28	8.3	10.7	11.9
MORSE LAKE SNOTEL	5410	2/01/11	85	31.7	34.9	36.9
MOSES MOUNTAIN (2)	4800	1/31/11	25	5.2	10.0	12.0
MOSES MTN SNOTEL	5010	2/01/11	28	8.2	8.1	10.4
MOSES PEAK	6650	1/31/11	47	15.6	16.3	9.6
MOSQUITO RDG SNOTEL	5200	2/01/11	---	25.9	18.0	24.6
MOULTON RESERVOIR	6850	1/28/11	26	5.8	4.1	5.2
MOUNT CRAG SNOTEL	3960	2/01/11	65	26.0	22.4	19.3
MT. KOBAU CAN.	5500	1/29/11	28	6.5	9.5	7.9
MOUNT TOLMAN	2000	1/26/11	19	2.1	.0	3.6
MOWICH SNOTEL	3160	2/01/11	0	.0	.0	1.2
MOUNT GARDNER	3300	1/26/11	18	8.0	3.2	--
MOUNT GARDNER SNOTEL	2920	2/01/11	21	7.9	3.6	12.0
MUTTON CREEK #1	5700	1/28/11	28	8.0	10.7	9.4
N.F. ELK CR SNOTEL	6250	2/01/11	42	10.3	5.2	8.0
NEVADA RIDGE SNOTEL	7020	2/01/11	45	12.1	7.9	10.1
NEW HOZOMEEN LAKE	2800	1/30/11	---	4.2E	.0	7.8
NEZ PERCE CMP SNOTEL	5650	2/01/11	34	10.0	6.0	9.9
NOISY BASIN SNOTEL	6040	2/01/11	127	44.5	24.3	27.0
OLALLIE MDWS SNOTEL	4030	2/01/11	57	24.6	29.1	39.2
OPHIR PARK	7150	1/29/11	39	11.6	8.6	10.6
OYAMA LAKE CAN.	4100	2/01/11	18	3.5	3.4	5.0
PARADISE SNOTEL	5130	2/01/11	95	41.5	37.2	48.1
PARK CK RIDGE SNOTEL	4600	2/01/11	61	24.1	31.1	35.0
PEPPER CREEK SNOTEL	2140	2/01/11	9	4.4	.0	--
PETERSON MDW SNOTEL	7200	2/01/11	25	5.7	5.7	6.1
PIGTAIL PEAK SNOTEL	5800	2/01/11	80	31.7	27.7	34.3
PIKE CREEK SNOTEL	5930	2/01/11	44	12.9	7.9	17.8
PIPESTONE PASS	7200	1/28/11	16	3.0	2.6	3.2
POPE RIDGE SNOTEL	3590	2/01/11	33	10.3	12.5	14.9
POSTILL LAKE CAN.	4200	1/31/11	22	5.2	3.9	5.8
POTATO HILL SNOTEL	4510	2/01/11	51	18.0	18.5	18.5
QUARTZ PEAK SNOTEL	4700	2/01/11	52	16.6	11.3	15.4
RAGGED MOUNTAIN	4200	1/27/11	44	16.4	11.1	14.1
RAGGED MTN SNOTEL	4210	2/01/11	46	16.6	10.6	--
RAGGED RIDGE	3330	1/26/11	14	4.8	.2	--
RAINY PASS SNOTEL	4890	2/01/11	62	22.5	22.4	30.2
RAINY PASS	4780	1/31/11	64	20.5	21.4	27.6
REX RIVER SNOTEL	3810	2/01/11	30	12.2	12.3	21.7
ROCKER PEAK SNOTEL	8000	2/01/11	39	10.3	8.3	9.1
ROCKY CREEK AM	2100	1/26/11	46	18.9	14.4	20.2
ROUND TOP MTN	4020	1/26/11	30	9.4	5.8	--
RUSTY CREEK	4000	1/28/11	14	3.6	5.2	4.9
SF THUNDER CK AM	2200	1/26/11	4	1.6	2.6	5.9
SADDLE MTN SNOTEL	7900	2/01/11	67	20.2	9.6	17.3
SALMON MDWS SNOTEL	4460	2/01/11	22	6.4	8.2	7.5
SASSE RIDGE SNOTEL	4340	2/01/11	46	17.6	16.6	23.8
SATUS PASS	4030	1/26/11	21	8.2	6.6	8.7
SAVAGE PASS SNOTEL	6170	2/01/11	64	19.4	10.4	17.6
SAWMILL RIDGE SNOTEL	4640	2/01/11	51	22.2	28.5	--
SCHREIBERS MDW AM	3400	1/26/11	60	27.0	21.8	32.4
SENTINEL BT SNOTEL	4680	2/01/11	27	6.5	6.5	6.1
SHEEP CANYON SNOTEL	3990	2/01/11	54	22.7	13.3	23.9

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SHERWIN SNOTEL	3200	2/01/11	---	7.7	4.2	8.4
SILVER STAR MTN CAN.	5600	1/30/11	63	20.7	18.3	20.0
SKALKAHO SNOTEL	7260	2/01/11	60	17.2	8.5	16.0
SKOOKUM CREEK SNOTEL	3310	2/01/11	16	8.1	.0	20.2
SKOOKUM LAKES	4230	1/27/11	37	9.8	5.9	--
SOURDOUGH GUL SNOTEL	4000	2/01/11	0	.0	.3	--
SOUTH BALDY	4920	1/27/11	50	14.8	12.6	--
SPENCER MDW SNOTEL	3400	2/01/11	30	15.0	14.2	21.9
SPIRIT LAKE SNOTEL	3520	2/01/11	0	.3	2.4	5.1
SPOTTED BEAR MTN.	7000	2/02/11	42	10.2	7.7	10.1
SPRUCE SPGS SNOTEL	5700	2/01/11	18	4.8	7.7	13.0
STARVATION MOUNTAIN	6750	1/27/11	40	12.2	10.9	13.0
STAHL PEAK SNOTEL	6030	2/01/11	96	30.3	21.0	24.1
STAMPEDE PASS SNOTEL	3850	2/01/11	40	15.6	14.9	31.0
STEVENS PASS SNOTEL	3950	2/01/11	54	18.2	21.5	30.2
STORM LAKE	7780	1/31/11	34	7.1	7.7	8.3
STRYKER BASIN	6180	1/27/11	76	24.9	19.5	21.3
STUART MOUNTAIN	7400	2/02/11	96	31.3	--	--
SUMMERLAND RES CAN.	4200	1/27/11	28	7.1	5.8	6.9
SUMMIT G.S. #2	4600	1/28/11	29	6.9	7.4	6.3
SUNSET SNOTEL	5540	2/01/11	---	16.5	7.7	20.9
SURPRISE LKS SNOTEL	4290	2/01/11	67	27.7	26.9	32.2
SWAMP CREEK SNOTEL	3930	2/01/11	37	11.6	9.9	13.9
SWIFT CREEK SNOTEL	4440	2/01/11	---	36.3	38.6	38.5
TEN MILE LOWER	6600	1/26/11	24	4.3	3.7	4.7
TEN MILE MIDDLE	6800	1/26/11	28	6.2	6.1	7.1
THUNDER BASIN SNOTEL	4320	2/01/11	45	18.2	20.1	24.3
THUNDER BASIN	4200	1/30/11	33	10.8	12.7	14.5
THOMPSON CREEK	2500	1/26/11	16	4.6	.0	--
THOMPSON RIDGE	4650	1/27/11	26	7.3	8.6	--
TINKHAM CREEK SNOTEL	2990	2/01/11	38	15.8	12.8	22.7
TOATS COULEE	2850	1/26/11	10	2.1	1.9	2.6
TOUCHET SNOTEL	5530	2/01/11	34	14.5	16.2	23.8
TRINKUS LAKE	6100	2/02/11	111	38.5	22.2	26.6
TROUGH #2 SNOTEL	5480	2/01/11	18	6.8	10.0	7.5
TROUT CREEK CAN.	5650	1/29/11	31	6.6	5.8	5.5
TRUMAN CREEK	4060	1/27/11	16	4.8	1.8	3.5
TUNNEL AVENUE	2450	2/01/11	28	11.5	9.1	14.8
TV MOUNTAIN	6800	2/02/11	55	17.4	7.1	11.8
TWELVEMILE SNOTEL	5600	2/01/11	36	10.6	7.0	12.8
TWIN LAKES SNOTEL	6400	2/01/11	85	28.5	15.0	27.5
TWIN SPIRIT DIVIDE	3480	1/27/11	16	5.2	5.8	10.5
UPPER HOLLAND LAKE	6200	2/02/11	80	24.8	14.7	23.7
UPPER WHEELER SNOTEL	4330	2/01/11	20	6.6	7.6	9.2
VULCAN MTN	4660	1/28/11	30	7.3	8.9	--
VULCAN ROAD	3840	1/28/11	23	5.8	5.4	--
WARM SPRINGS SNOTEL	7800	2/01/11	57	15.5	12.1	13.8
WATSON LAKES AM	4500	1/26/11	68	24.5	13.3	35.6
WATERHOLE SNOTEL	5010	2/01/11	58	25.5	29.3	23.2
WEASEL DIVIDE	5450	2/03/11	70	23.2	17.1	21.5
WELLS CREEK SNOTEL	4030	2/01/11	58	20.7	18.8	22.0
WHITE PASS ES SNOTEL	4440	2/01/11	35	13.3	11.6	17.1
WHITE ROCKS MTN CAN.	7200	1/29/11	47	14.1	--	15.7

Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

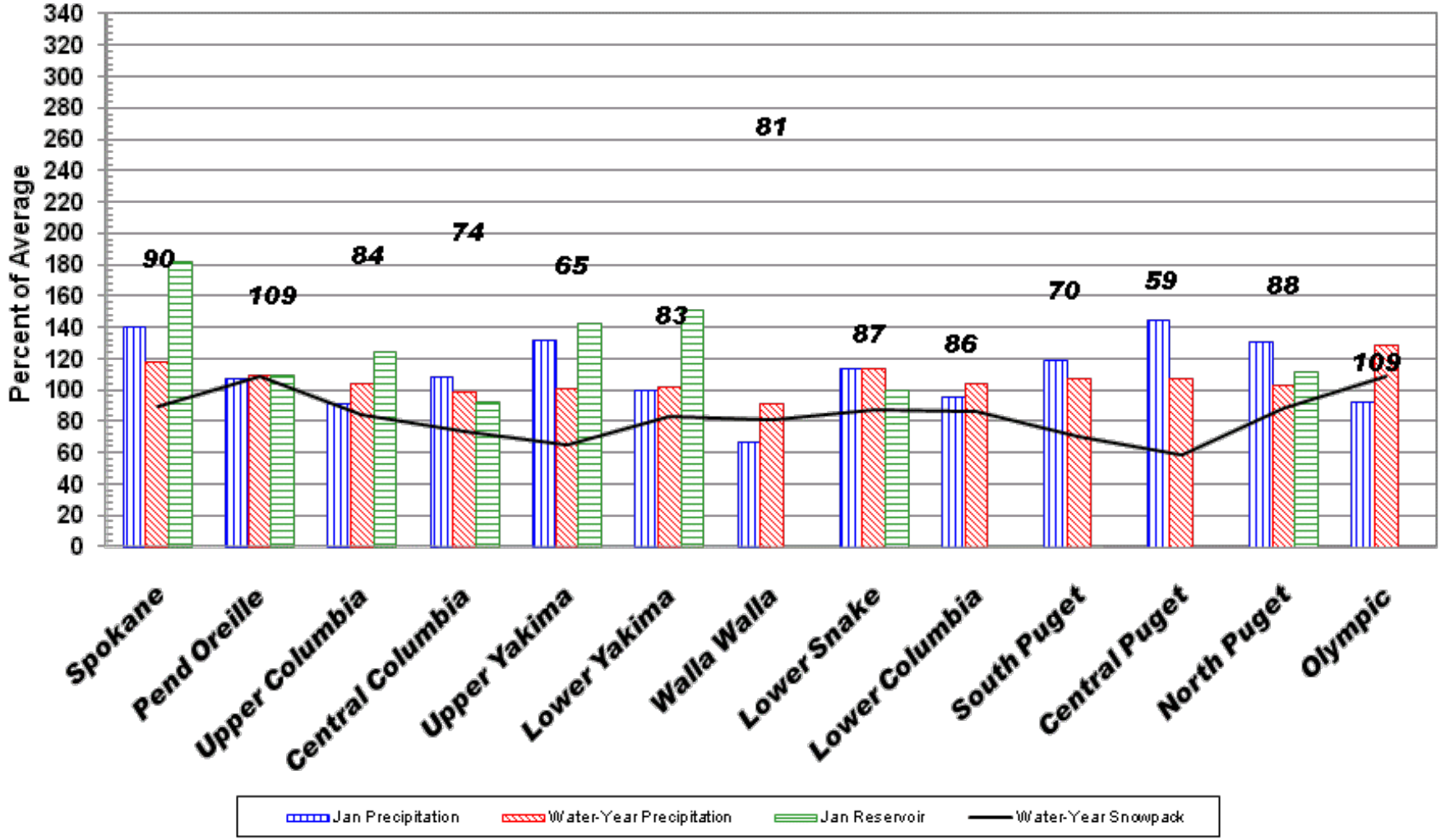
Washington:
http://www.wa.nrcs.usda.gov

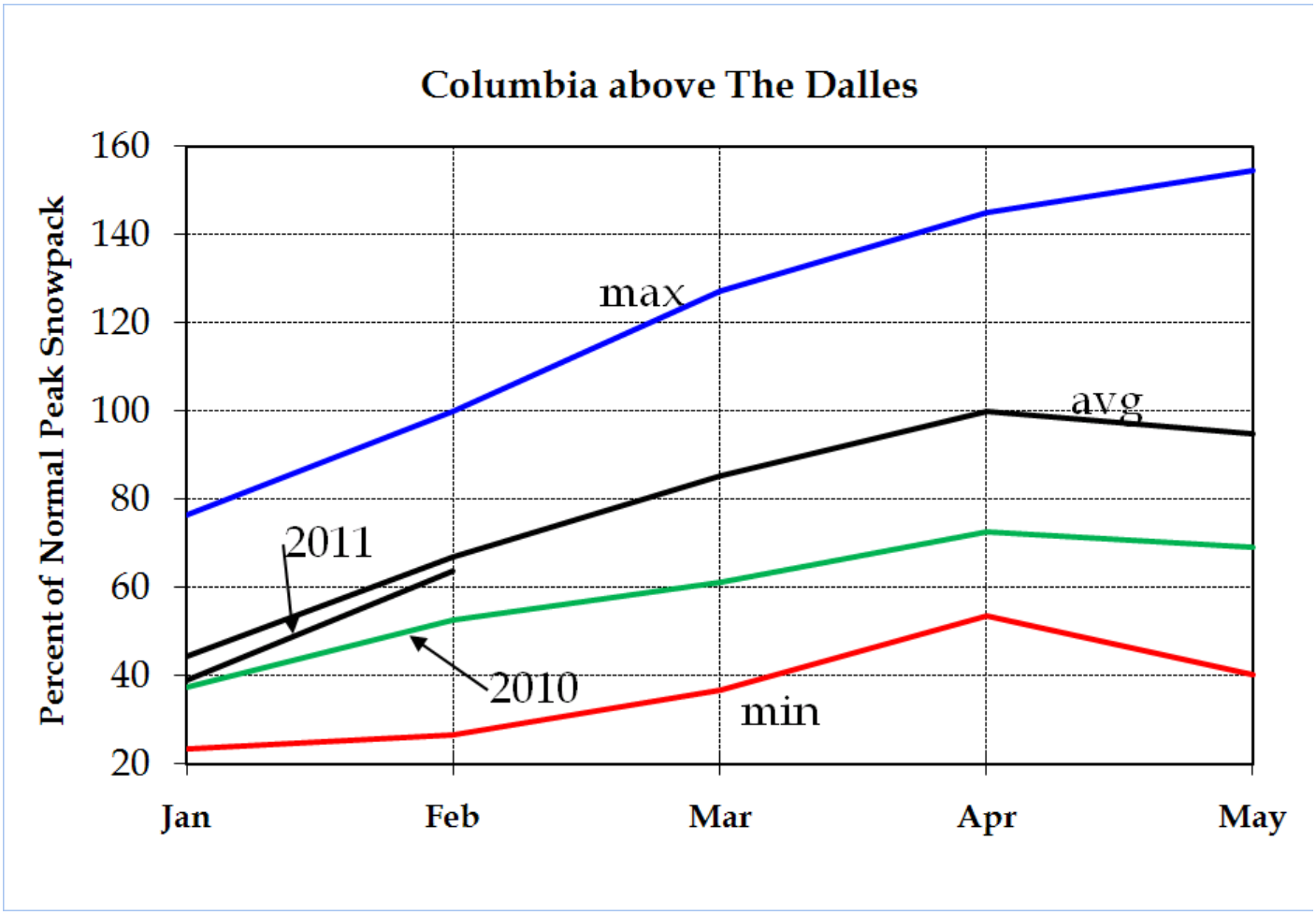
NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

February 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)





February 1, 2011

The Columbia Basin snowpack charts are produced, using only automated data. These data are telemetered via remote collection sites in Canada and the United States. The data are provisional, until they are officially released by the responsible data collection agency.

The combined Columbia Basin snowpack above The Dalles is currently at 95 percent of average, compared to 89 percent of average last month and 79 percent last year. This increase in the snowpack was due largely to increases in the northern tier of the basin that more than offset substantial snowpack losses to normal in the southern tier.

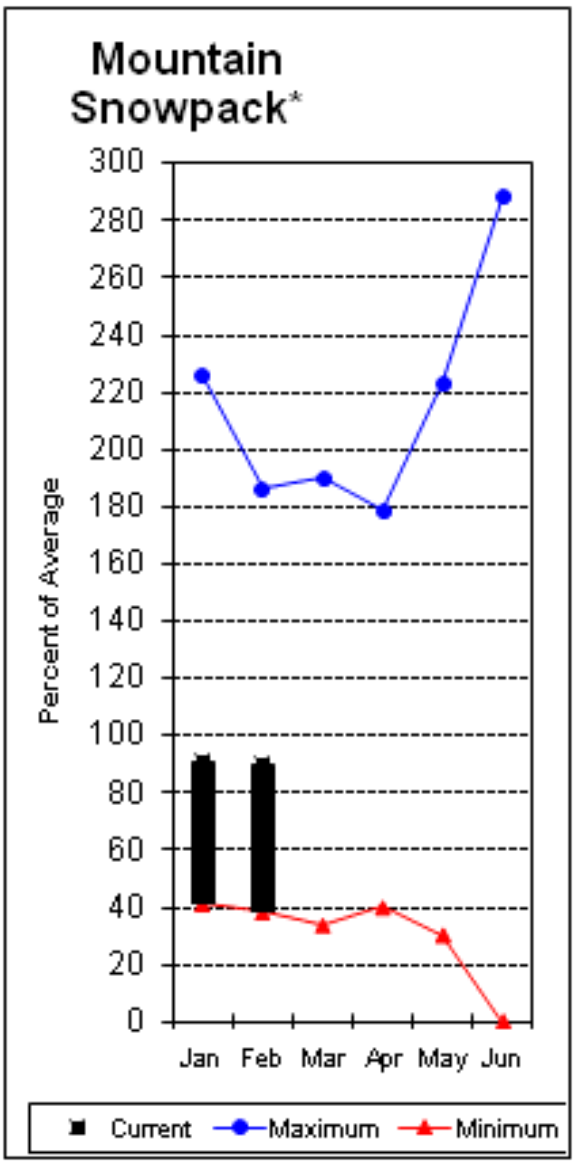
The Canadian portion of Columbia mainstem was up 25% over last month, and the Kootenay, Pend Oreille, Kettle, Spokane, and Clearwater were up 17%, 7%, 19%, 6%, and 11% respectively. As mentioned previously, the increases in the northern portions of the basin were offset by losses (some substantial) in the south. The biggest losses were reported in the John Day (-50%) and the Deschutes (-47%). Other losing snowpacks were Yakima (-20%), Snake headwaters (-16%), Boise (-31%), Eastern Oregon (-35%), Salmon (-10%). The North Cascades snowpack was unchanged.

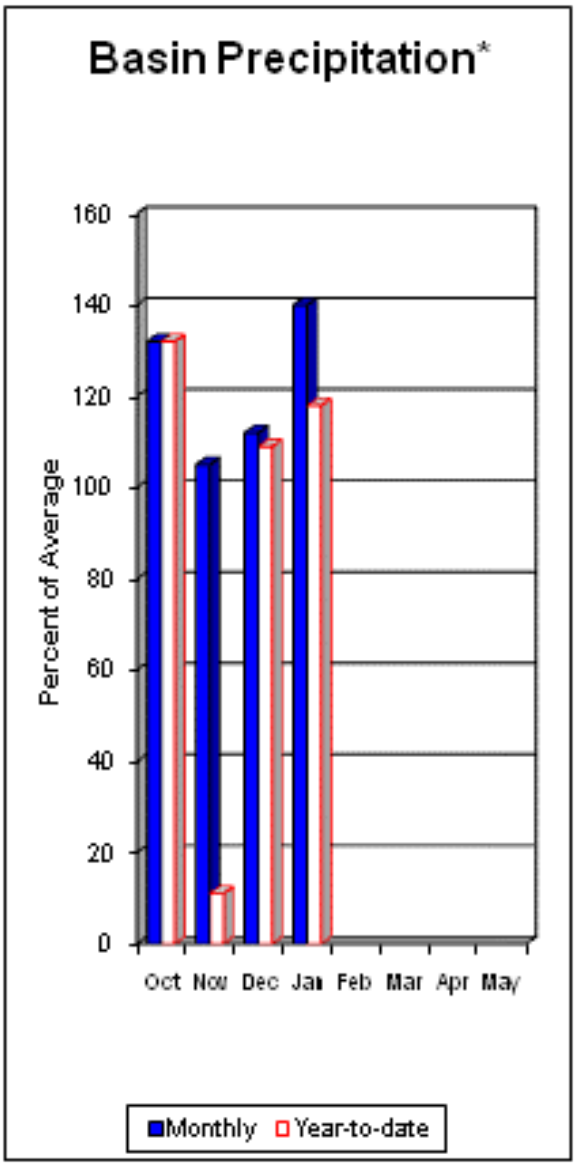
The overall snowpack above The Dalles is at 64 percent of the average peak accumulation. This compares to 53 percent last year. Normal for this time of year is 67 percent of the peak accumulation.

The snowpack in the Columbia Basin above Castlegar is at 91 percent of average. This compares to 70 percent last month and 90 percent last year. For the basin above Grand Coulee, the snowpack is at 96 percent of average, compared to 79 percent last month and 83 percent last year. The Snake River snowpack above Ice Harbor is at 100 percent of average, compared to 110 percent last month and 67 percent last year.

Last month's promise of improvement in the Spokane and Canadian snowpacks turned out to be true. The CPC forecast for the Columbia Basin during February calls for below normal temperatures over almost the entire basin, with above average precipitation. We should look for the entire snowpack to improve when the March 1 snow samples are recorded.

Spokane River Basin





*Based on selected stations

The February 1 forecasts for summer runoff within the Spokane River Basin are 103% of average near Post Falls and 91038% at Long Lake. The Chamokane River near Long Lake forecasted to have 100% of average flows for the May-August period. The forecast is based on a basin snowpack that is 90% of average and precipitation that is 118% of average for the water year. Precipitation for January was above normal at 140% of average. Streamflow on the Spokane River at Long Lake was 208% of average for January. February 1 storage in Coeur d'Alene Lake was 211,000acre feet, 182% of average and 88% of capacity. Snowpack at Quartz Peak SNOTEL site was 108% of average with 16.6 inches of water content. Average temperatures in the Spokane basin were 1-2 degrees above normal for January and 4-5 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	APR-JUL	2010	2380	2630	103	2880	3250	2550
	APR-SEP	2110	2480	2730	103	2980	3350	2650
Spokane R at Long Lake (2)	APR-JUL	2260	2660	2940	103	3220	3620	2850
	APR-SEP	2480	2890	3170	103	3450	3860	3070
Chamokane Ck nr Long Lake	MAY-AUG	4.5	7.9	10.2	100	12.5	15.9	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	210.8	54.9	115.6

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - February 1, 2011

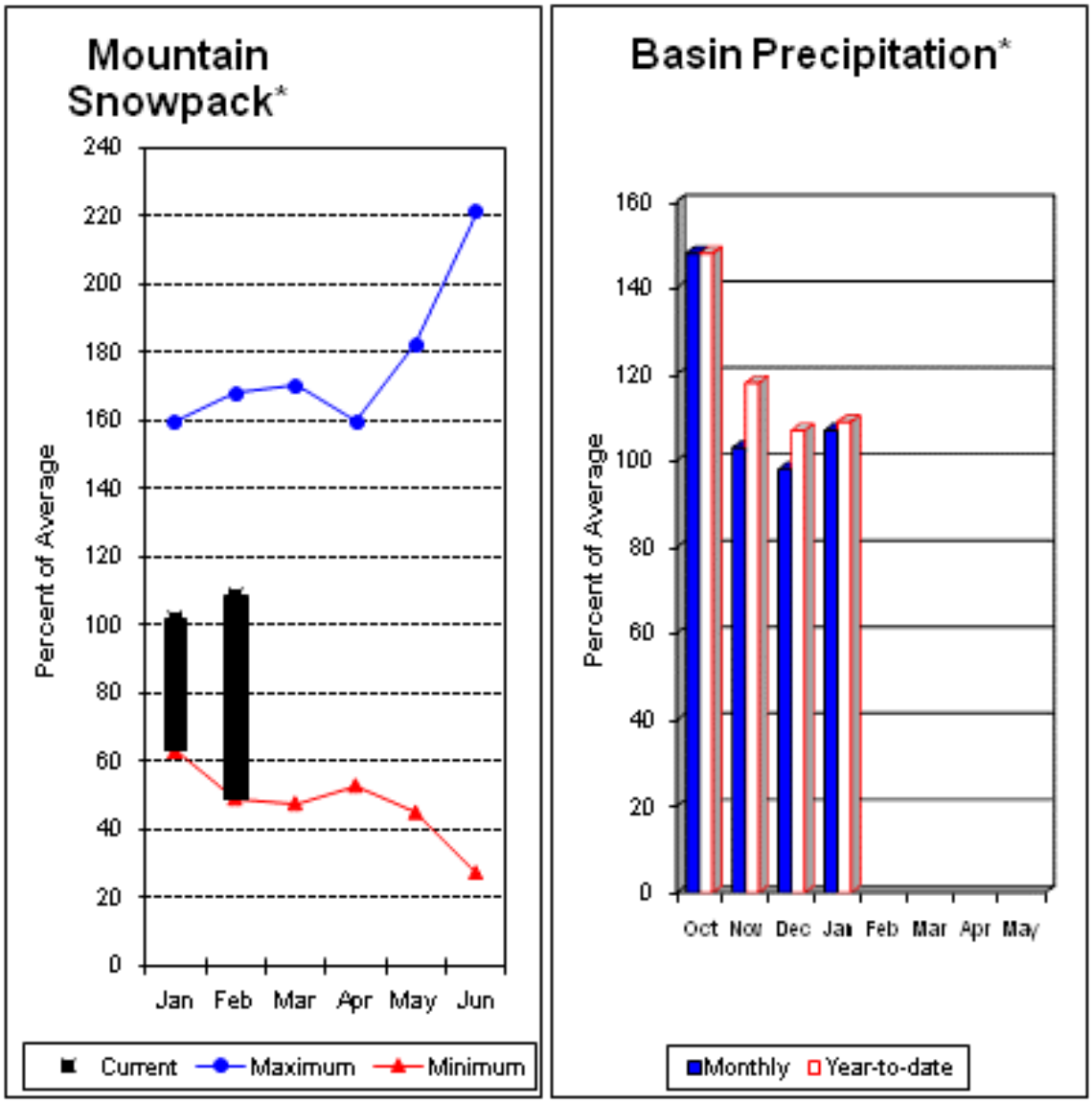
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	12	161	90
NEWMAN LAKE	1	205	108

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 101% and the Pen Orielle below Box Canyon is 107%. January streamflow was 134% of average on the Pend Oreille River and 115% on the Columbia Birchbank. February 1 snow cover was 109% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 16.3 inches of snow water on the snow pillow. Normally Bunchgrass would have 18.6 inches on February 1. Precipitation during January was 107% of average, bringing the year-to-date precipitation to 109% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 109% of normal. Average temperatures were 102 degrees above normal for January and 3-4 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	APR-JUL	11600	12900	13700	108	14500	15800	12700
	APR-SEP	12700	14000	14900	107	15800	17100	13900
Priest R nr Priest River (1,2)	APR-JUL	610	760	825	101	890	1040	815
	APR-SEP	645	805	880	101	955	1110	870
Pend Oreille R bl Box Canyon (2)	APR-JUL	11700	12900	13800	107	14700	15900	12900
	APR-SEP	12900	14200	15100	107	16000	17300	14100

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PEND OREILLE	1561.3	827.0	475.1	749.3
PRIEST LAKE	119.3	53.2	55.0	55.5

PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

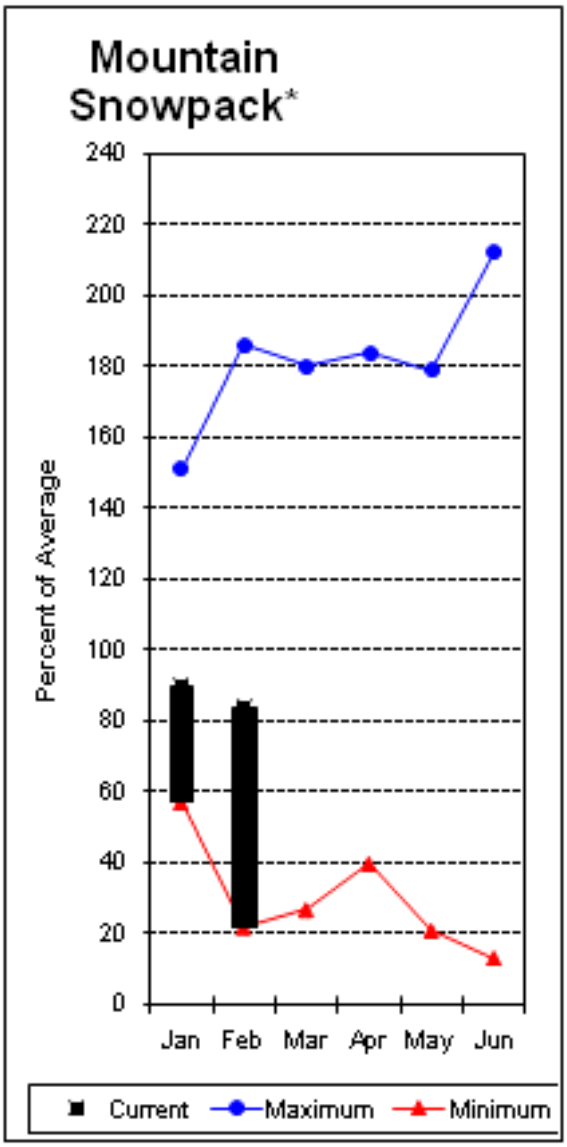
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	113	0
PEND OREILLE RIVER	8	148	98
KETTLE RIVER	3	93	103

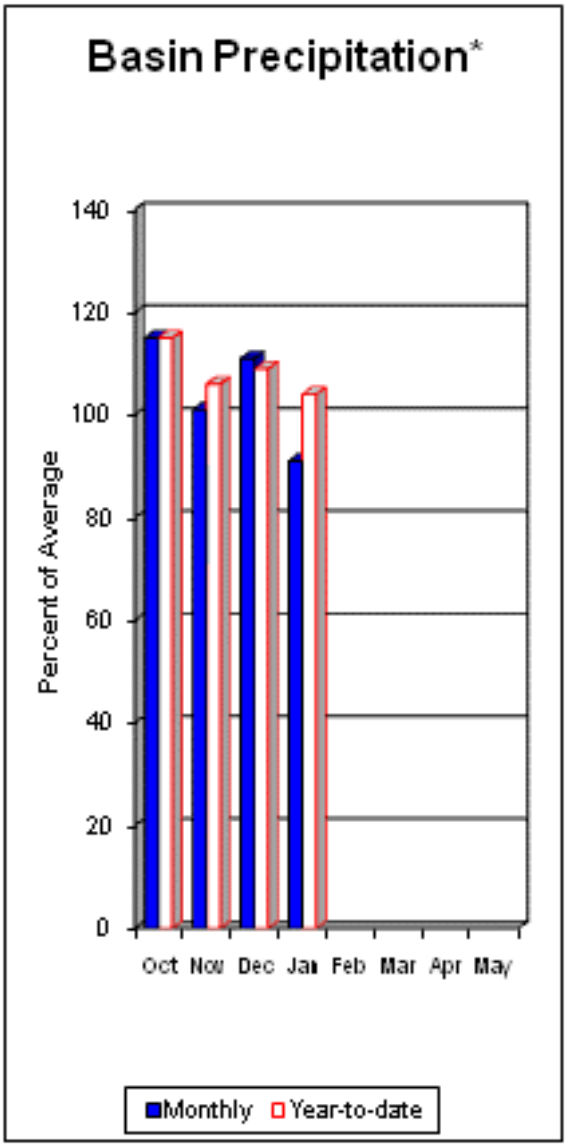
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Upper Columbia River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 88%, Similkameen River is 89%, Kettle River 95% and Methow River is 91%. February 1 snow cover on the Okanogan was 94% of average, Omak Creek was 91% and the Methow was 89%. January precipitation in the Upper Columbia was 91% of average, with precipitation for the water year at 104% of average. January streamflow for the Methow River was 161% of average, 102% for the Okanogan River and 141% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 6.4 inches. Average for this site is 7.5 inches on February 1. Combined storage in the Conconully Reservoirs was 21,000-acre feet, which is 88% of capacity and 124% of the February 1 average. Temperatures were 2-3 degrees above normal for January and 1-2 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Colville R at Kettle Falls	APR-JUL	50	91	119	93	147	188	128
	APR-SEP	55	100	131	93	162	205	141
Kettle R nr Laurier	APR-JUL	1420	1640	1780	95	1920	2140	1870
	APR-SEP	1490	1710	1870	95	2030	2250	1970
Columbia R at Birchbank (1,2)	APR-JUL	29300	33300	35100	101	36900	40900	34900
	APR-SEP	36600	41500	43800	101	46100	51000	43500
Columbia R at Grand Coulee (2)	APR-JUL	44300	51500	54800	102	58100	65300	53800
	APR-SEP	52800	61400	65300	102	69200	77800	64000
Similkameen R nr Nighthawk (1)	APR-JUL	830	1080	1200	89	1320	1570	1350
	APR-SEP	915	1170	1290	89	1410	1660	1450
Okanogan R nr Tonasket (1)	APR-JUL	835	1220	1390	88	1560	1940	1580
	APR-SEP	945	1360	1550	88	1740	2150	1770
Okanogan R at Malott (1)	APR-JUL	845	1250	1430	88	1610	2020	1630
	APR-SEP	970	1410	1610	88	1810	2250	1830
Methow R nr Pateros	APR-SEP	725	830	900	91	970	1070	985
	APR-JUL	670	765	830	91	895	990	910

UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	8.6	5.7	8.4
CONCONULLY RESERVOIR	13.0	12.0	4.7	8.2

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	5	108	94
OMAK CREEK	3	85	91
SANPOIL RIVER	1	108	58
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	1	83	81
CONCONULLY LAKE	3	75	83
METHOW RIVER	8	98	89

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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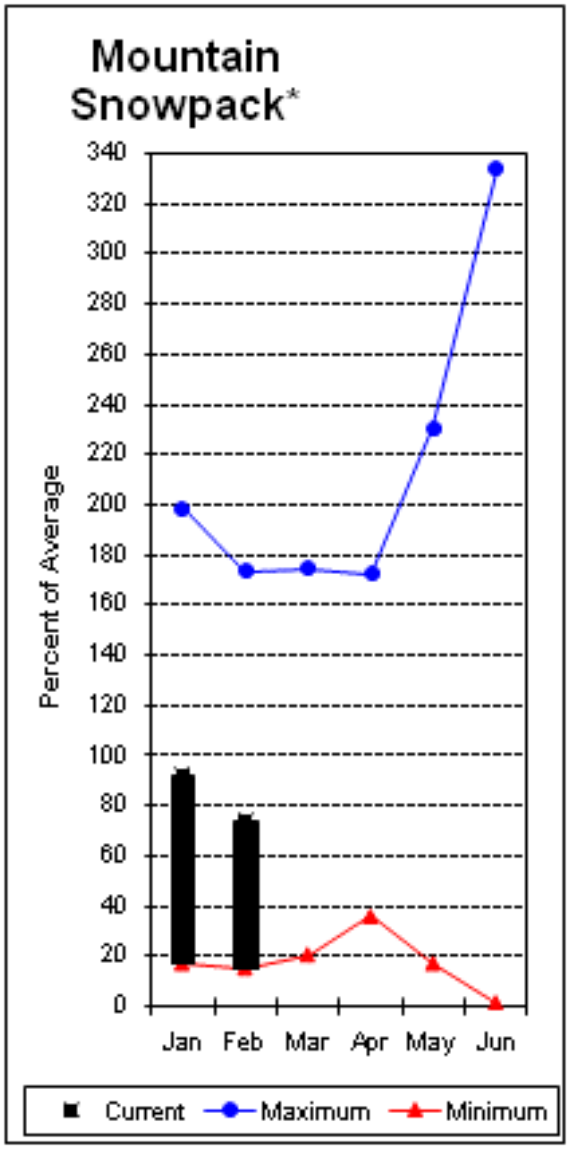
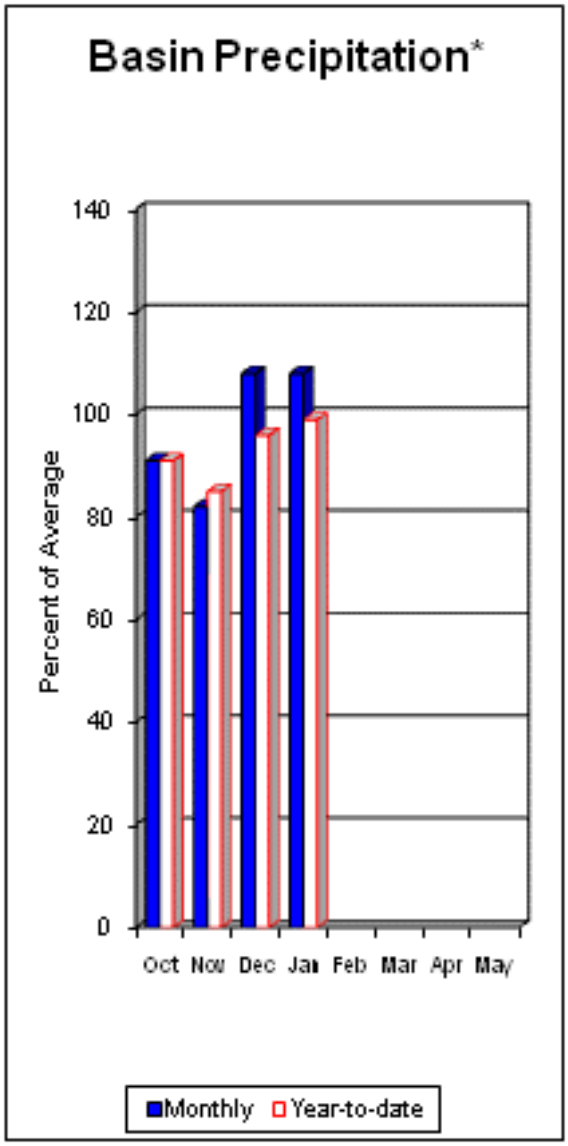
Central Columbia River Basins





*Based on selected stations

Precipitation during January was 108% of average in the basin and 99% for the year-to-date. Runoff for Entiat River is forecast to be 80% of average for the summer. The February-September average forecast for Chelan River is 87%, Wenatchee River at Plain is 85%, Stehekin River is 89% and Icicle Creek is 77%. January average streamflows on the Chelan River were 206% and on the Wenatchee River 226%. February 1 snowpack in the Wenatchee River Basin was 68% of average; the Chelan, 75%; the Entiat, 69%; Stemilt Creek, 71% and Colockum Creek, 84%. Reservoir storage in Lake Chelan was 290,000-acre feet, 92% of February 1 average and 43% of capacity. Lyman Lake SNOTEL had the most snow water with 34.4 inches of water. This site would normally have 43.4 inches on February 1. Temperatures were 1-3 degrees above normal for January and 3-4 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	APR-JUL	490	580	645	92	710	800	700
	APR-SEP	595	695	765	92	835	935	830
Chelan R at Chelan (2)	APR-JUL	735	855	935	89	1020	1140	1050
	APR-SEP	820	965	1060	89	1160	1300	1190
Entiat R nr Ardenvoir	APR-JUL	128	162	185	86	210	240	215
	APR-SEP	144	180	205	85	230	265	240
Wenatchee R at Plain	APR-JUL	700	850	950	89	1050	1200	1070
	APR-SEP	775	940	1050	89	1160	1320	1180
Icicle Ck nr Leavenworth	APR-JUL	193	235	260	84	285	325	310
	APR-SEP	215	255	285	84	315	355	340
Wenatchee R at Peshastin	APR-JUL	995	1190	1330	90	1470	1670	1480
	APR-SEP	1100	1320	1470	90	1620	1840	1630
Columbia R bl Rock Island Dam (2)	APR-JUL	42600	50500	55900	95	61300	69200	59000
	APR-SEP	50100	59400	65800	95	72200	81500	69500

CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	322.8	449.6	396.9

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
CHELAN LAKE BASIN	3	93	74
ENTIAT RIVER	1	112	77
WENATCHEE RIVER	7	109	82
STEMILT CREEK	1	146	102
COLOCKUM CREEK	1	135	125

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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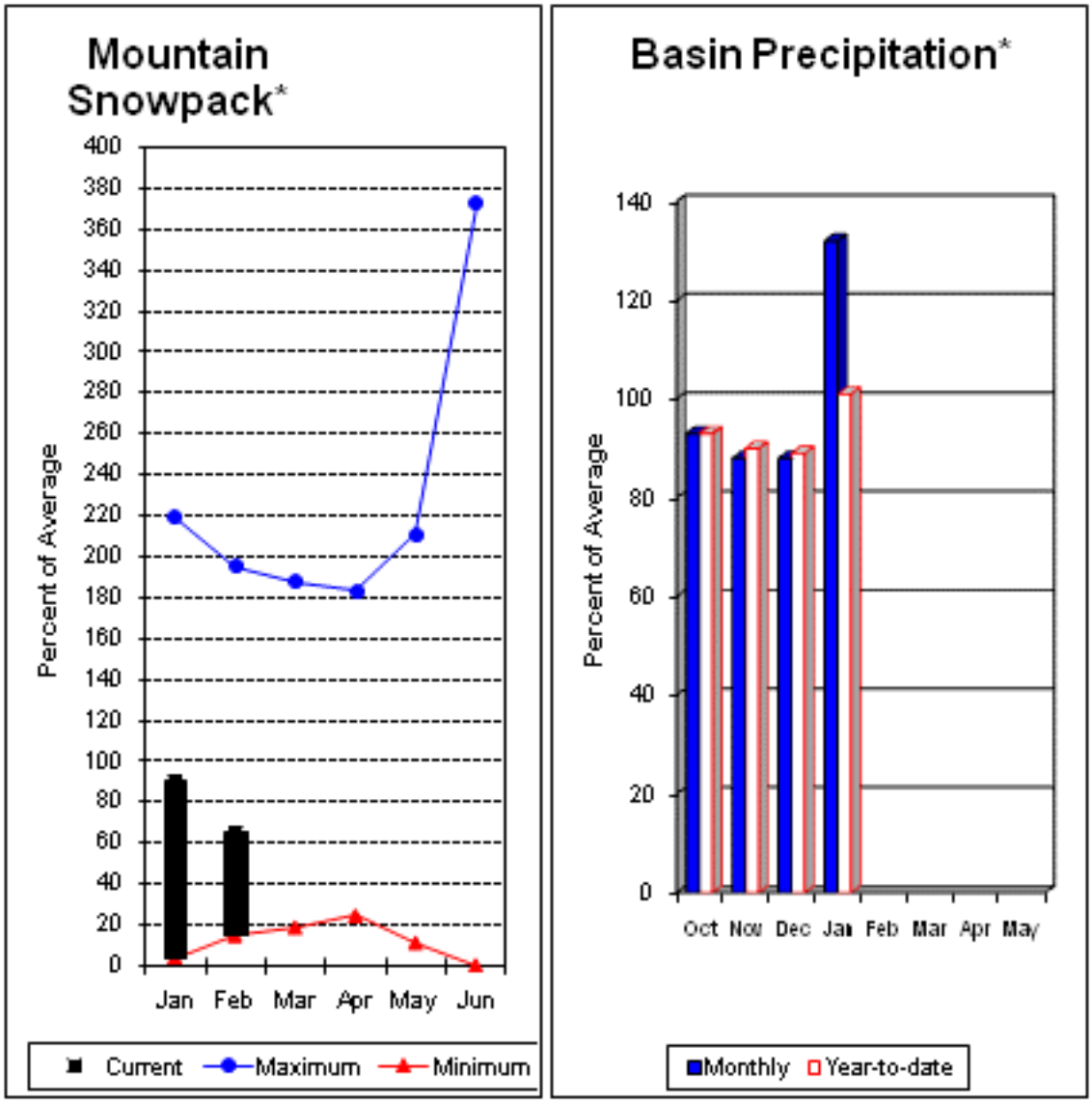
Upper Yakima River Basin



*Based on selected stations

February 1 reservoir storage for the Upper Yakima reservoirs was 633,000-acre feet, 142% of average. Forecasts for the Yakima River at Cle Elum are 84% of average and the Teanaway River near Cle Elum is at 81%. Lake inflows are all forecasted to be slightly below this summer as well. January streamflows within the basin were Yakima at Cle Elum at 243% and Cle Elum River near Roslyn at 264%. February 1 snowpack was 65% based upon 10 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 132% of average for January and 101% year-to-date for water. 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.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	APR-JUL	69	89	102	84	115	135	121
	APR-SEP	78	98	112	84	126	146	133
Kachess Reservoir Inflow (2)	APR-JUL	66	82	93	84	104	120	111
	APR-SEP	74	90	101	84	112	128	120
Cle Elum Lake Inflow (2)	APR-JUL	270	315	345	84	375	420	410
	APR-SEP	295	345	380	84	415	465	450
Yakima R at Cle Elum (2)	APR-JUL	480	600	680	83	760	880	820
	APR-SEP	520	655	745	83	835	970	900
Teanaway R bl Forks nr Cle Elum	APR-JUL	77	100	116	81	132	155	143
	APR-SEP	79	102	118	81	134	157	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	128.1	81.6	89.9
KACHESS	239.0	193.4	142.6	139.4
CLE ELUM	436.9	311.2	163.4	215.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	10	93	65

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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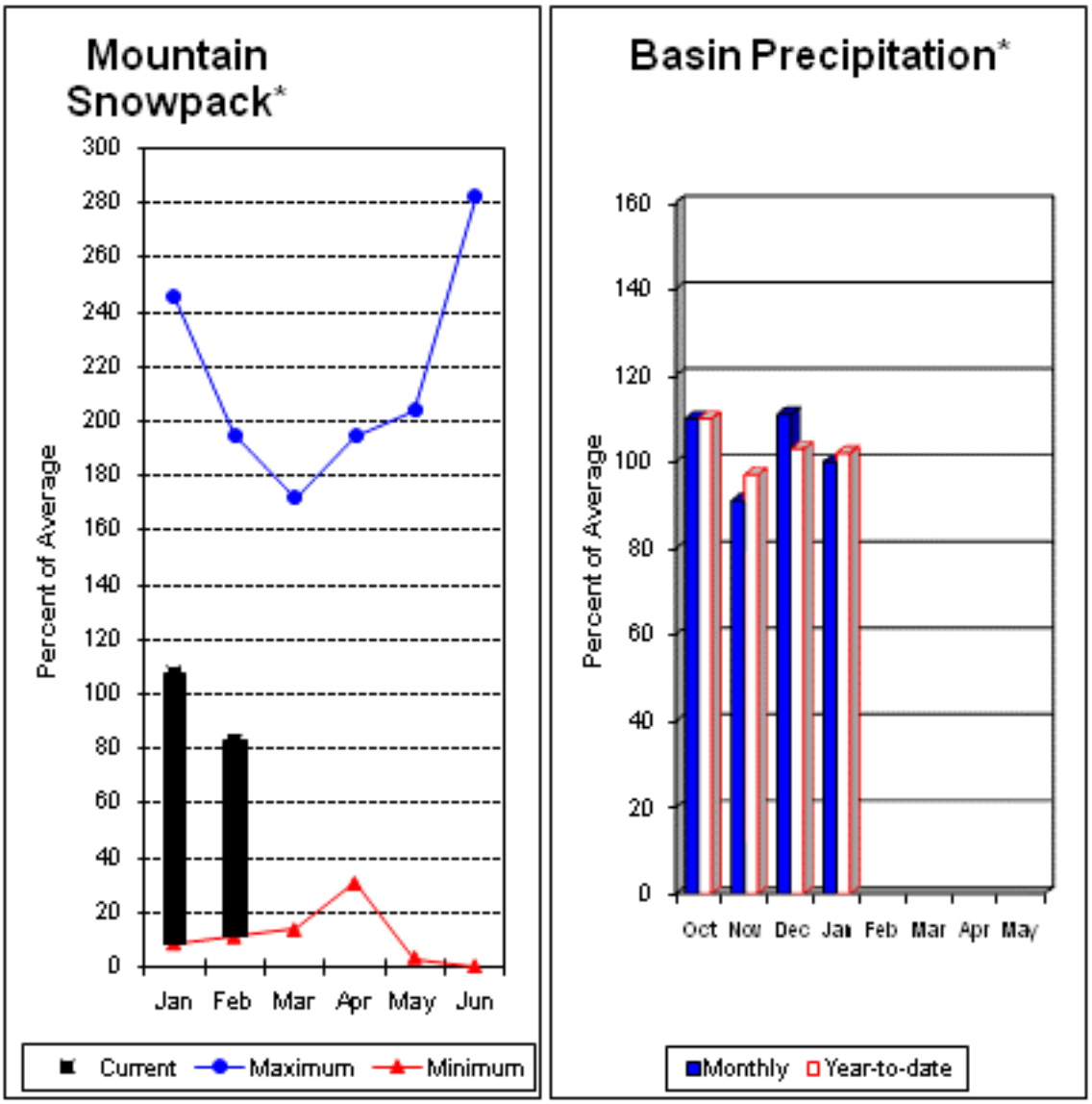
Lower Yakima River Basin



*Based on selected stations

January average streamflows within the basin were: Yakima River near Parker, 228%; Naches River near Naches, 241%; and Yakima River at Kiona, 150%. February 1 reservoir storage for Bumping and Rimrock reservoirs was 184,000-acre feet, 151% of average. Forecast averages for Yakima River near Parker are 84%; American River near Nile, 92%; Ahtanum Creek, 84%; and Klickitat River near Glenwood, 100%. February 1 snowpack was 83% based upon 8 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 73%of average. Precipitation was 100% of average for January and 102% year-to-date for water. Temperatures were near normal for January and slightly above for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they February differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	APR-JUL	93	107	116	95	125	139	122
	APR-SEP	100	115	125	95	135	150	132
American R nr Nile	APR-JUL	79	91	99	92	107	119	108
	APR-SEP	86	100	109	92	118	132	118
Rimrock Lake Inflow (2)	APR-JUL	164	179	189	92	199	215	205
	APR-SEP	189	205	220	92	235	250	240
Naches R nr Naches (2)	APR-JUL	560	635	690	96	745	820	720
	APR-SEP	600	690	750	96	810	900	780
Ahtanum Ck at Union Gap	APR-JUL	15.4	21	25	83	29	35	30
	APR-SEP	17.3	23	27	84	31	37	32
Yakima R nr Parker (2)	APR-JUL	1190	1380	1510	84	1640	1830	1800
	APR-SEP	1320	1530	1670	84	1810	2020	1980
Klickitat R nr Glenwood	APR-JUL	104	117	126	100	135	148	126
	APR-SEP	137	153	163	100	173	189	163
Klickitat R nr Pitt	APR-JUL	380	430	460	100	490	540	460
	APR-SEP	455	510	550	100	590	645	550

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	21.0	12.2	9.9
RIMROCK	198.0	162.5	91.6	111.8

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2011

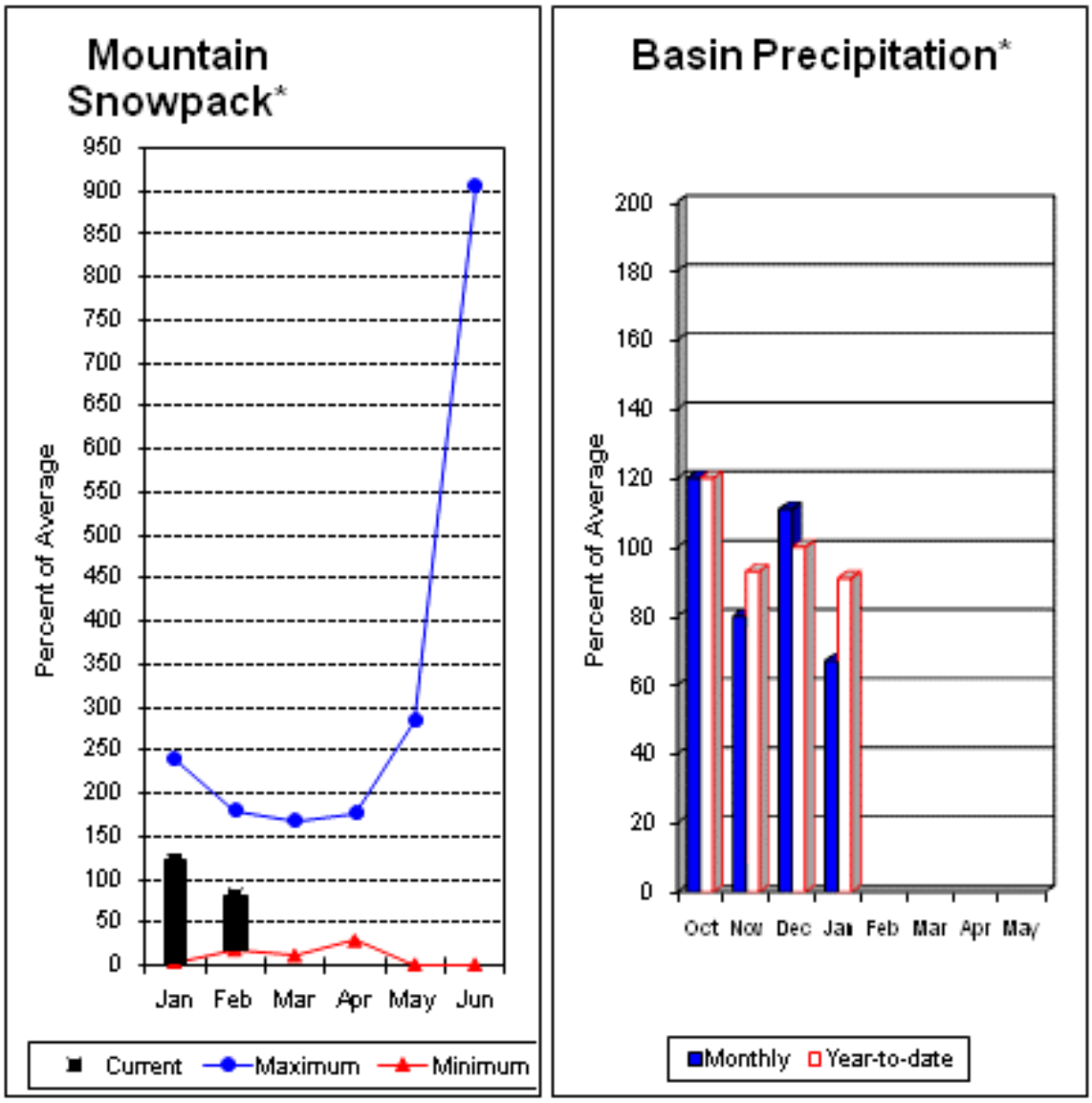
Watershed	Number of Data Sites	This Year as % of: Last Yr	Average
LOWER YAKIMA RIVER	8	105	84
AHTANUM CREEK	3	79	73

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Walla Walla River Basin



*Based on selected stations

January precipitation was 67% of average, maintaining the year-to-date precipitation at 91% of average. Snowpack in the basin was 81% of average. Streamflow forecasts are 96% of average for Mill Creek and 108% for the SF Walla Walla near Milton-Freewater. January streamflow was 220% of average for the SF Walla Walla River. Average temperatures were slightly near normal for January but 3-4 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	MAR-SEP	73	81	87	107	93	101	81
	APR-JUL	47	54	58	107	62	69	54
	APR-SEP	60	67	72	108	77	84	67
Mill Ck nr Walla Walla	APR-JUL	16.8	20	23	96	26	29	24
	APR-SEP	20	24	27	96	30	34	28

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

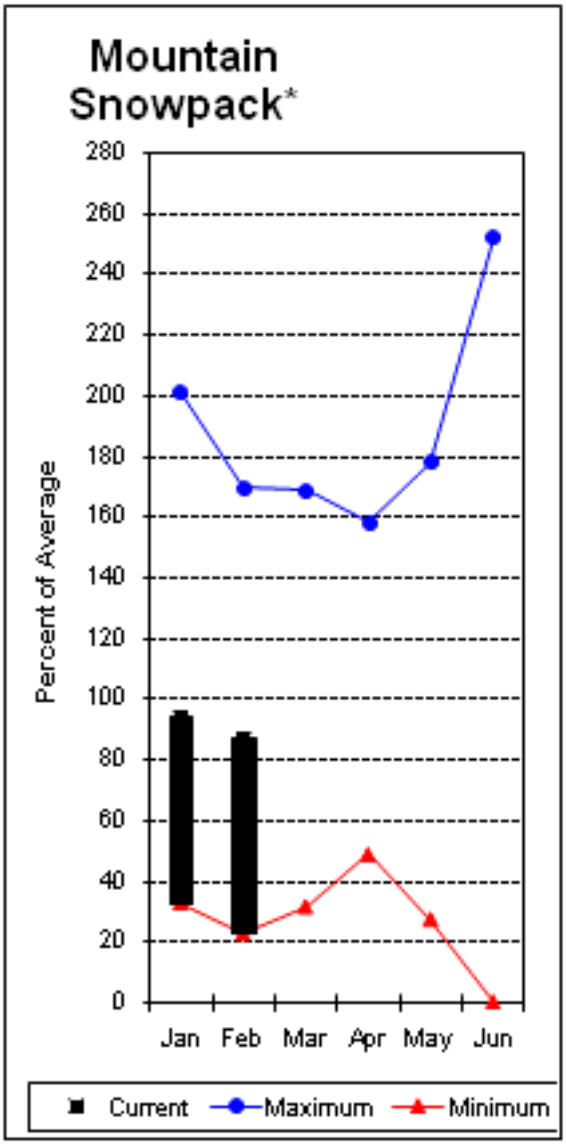
WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of January

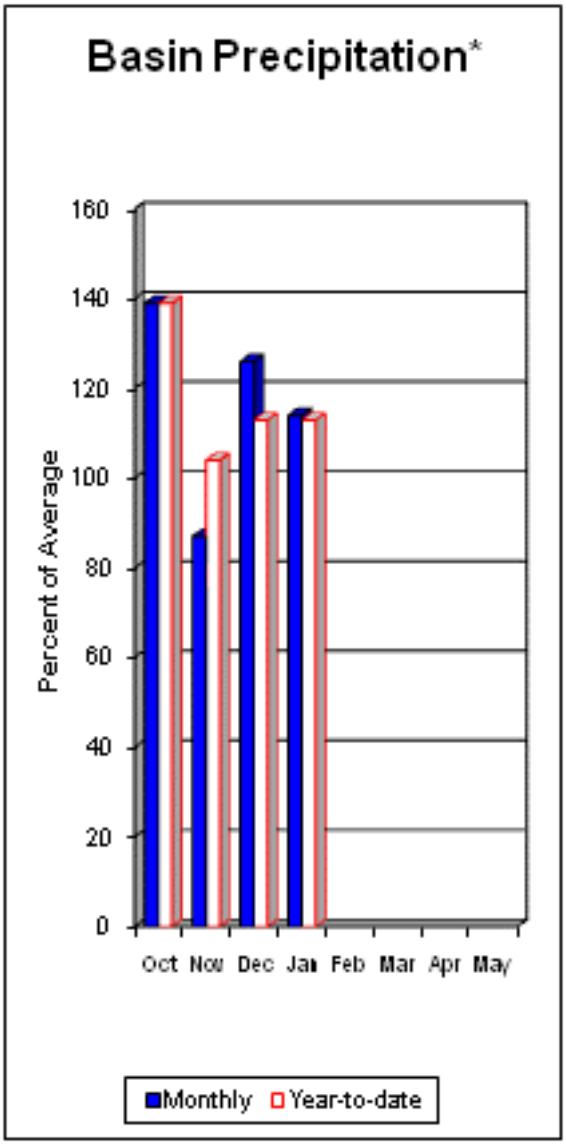
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of: Last Yr	Average
WALLA WALLA RIVER	2	110	81

Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 104% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 103% and 101% of normal respectively. A newly developed forecast point for Asotin Creek at Asotin predicts 86% of average flows for the April – July runoff period. January precipitation was 114% of average, bringing the year-to-date precipitation to 113% of average. February 1 snowpack readings averaged 87% of average. January streamflow was 126% of average for Snake River below Lower Granite Dam and 128% for Grande Ronde River near Troy. Dworshak Reservoir on the Clearwater River is at 100% of average. Average temperatures were 1-2 degrees above normal for January and 3-4 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	MAR-JUL	1180	1470	1600	101	1730	2020	1580
	APR-SEP	970	1250	1380	101	1510	1790	1370
Asotin Ck at Asotin	APR-JUL	14.8	24	30	86	36	45	35
Clearwater R at Spalding (1,2)	APR-JUL	5790	7100	7700	104	8300	9610	7430
	APR-SEP	6150	7530	8160	104	8790	10200	7850
Snake R bl Lower Granite Dam (1,2)	APR-JUL	12900	19300	22200	103	25100	31500	21600
	APR-SEP	14400	21600	24900	103	28200	35400	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DWORSHAK	3468.0	2326.8	2167.4	2324.3

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER SNAKE, GRANDE RONDE	16	121	87

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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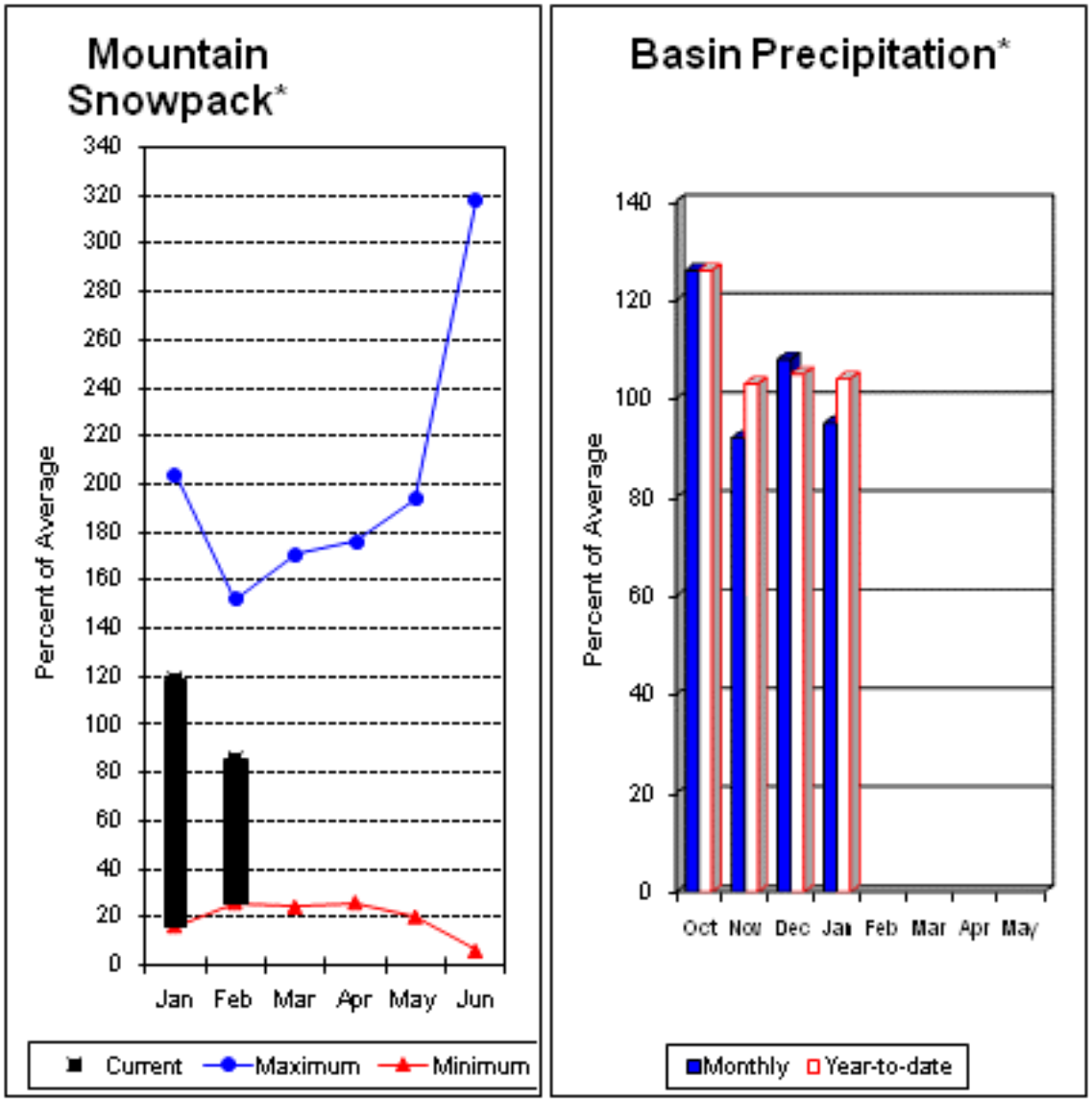
Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 88% and Cowlitz River at Castle Rock, 91% of average. The Columbia at The Dalles is forecasted to have 99% of average flows this summer. January average streamflow for Cowlitz River was 162%. The Columbia River at The Dalles was 144% of average. January precipitation was 95% of average and the water-year average was 104%. February 1 snow cover for Cowlitz River was 87%, and Lewis River was 86% of average. Average temperatures were near normal during January and 1-2 degrees above for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	APR-JUL	69100	78000	84100	99	90200	99100	84600
	APR-SEP	80500	90900	98000	99	105000	115000	98600
Klickitat R nr Glenwood	APR-JUL	104	117	126	100	135	148	126
	APR-SEP	137	153	163	100	173	189	163
Klickitat R nr Pitt	APR-JUL	380	430	460	100	490	540	460
	APR-SEP	455	510	550	100	590	645	550
Lewis R at Ariel (2)	APR-JUL	620	795	910	88	1030	1200	1031
	APR-SEP	730	915	1040	88	1160	1350	1176
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1200	1400	1540	91	1680	1880	1689
	APR-SEP	1350	1580	1740	91	1900	2130	1922
Cowlitz R at Castle Rock (2)	APR-JUL	1700	1930	2090	91	2250	2480	2295
	APR-SEP	2190	2310	2390	91	2470	2590	2639

LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MOSSYROCK	0.0	1386.5	1187.7	---
SWIFT		NO REPORT		
YALE		NO REPORT		
MERWIN		NO REPORT		

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	5	113	86
COWLITZ RIVER	6	119	88

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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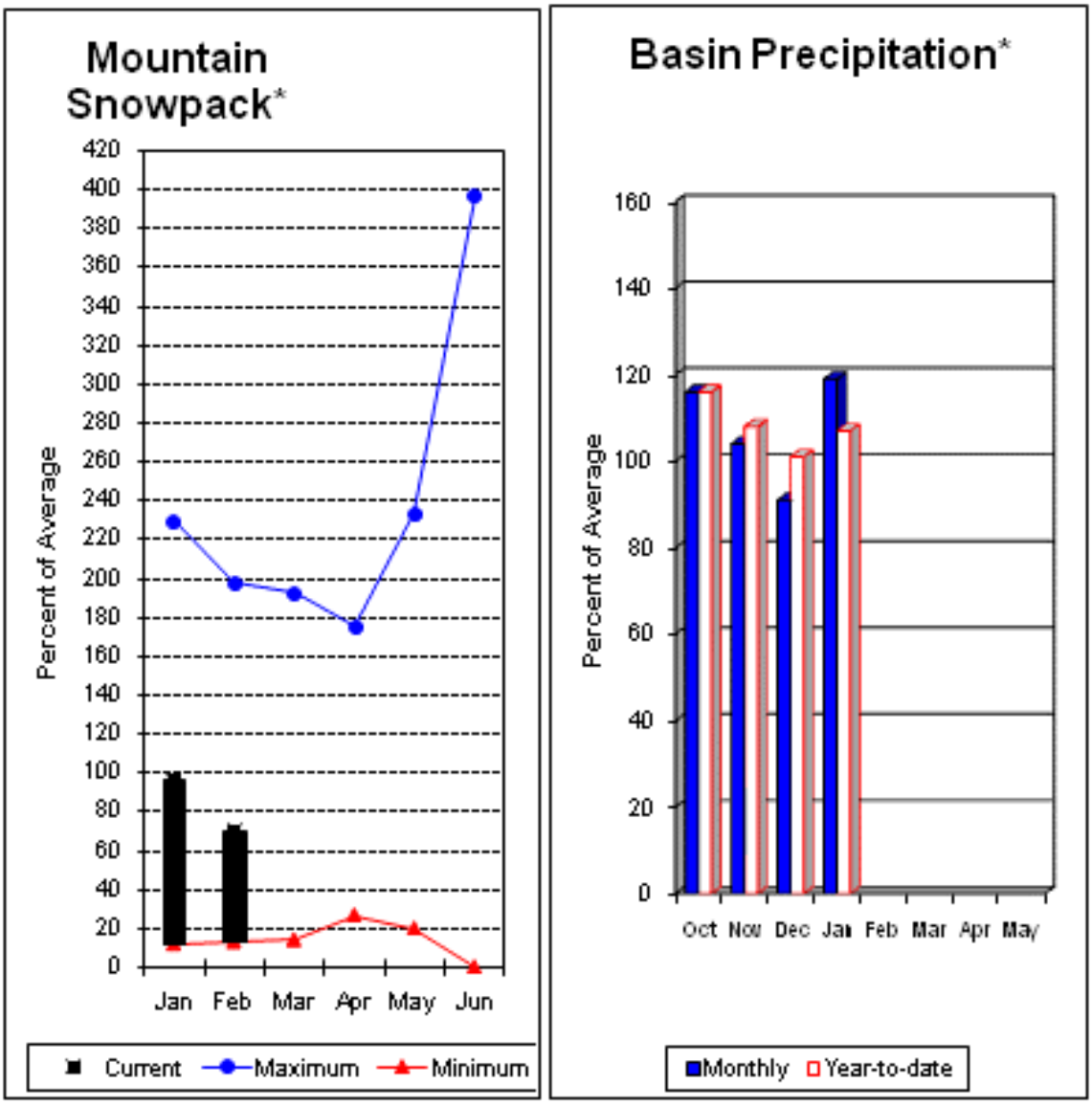
South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 82% of normal for the Green River below Howard Hanson Dam and 97% for the White River near Buckley. February 1 snowpack was 85% of average for the White River, 80 % for Puyallup River and 45% in the Green River Basin. Water content on February 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 20.2 inches. This site has a February 1 average of 22.1 inches. January precipitation was 119% of average, bringing the water year-to-date to 107% of average for the basins. Average temperatures in the area were near normal for January and slightly above for the water-year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	APR-JUL	315	390	425	97	460	535	440
	APR-SEP	390	480	520	97	560	650	534
Green R bl Howard Hanson Dam (1,2)	APR-JUL	104	170	200	82	230	295	245
	APR-SEP	123	190	220	82	250	315	268

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

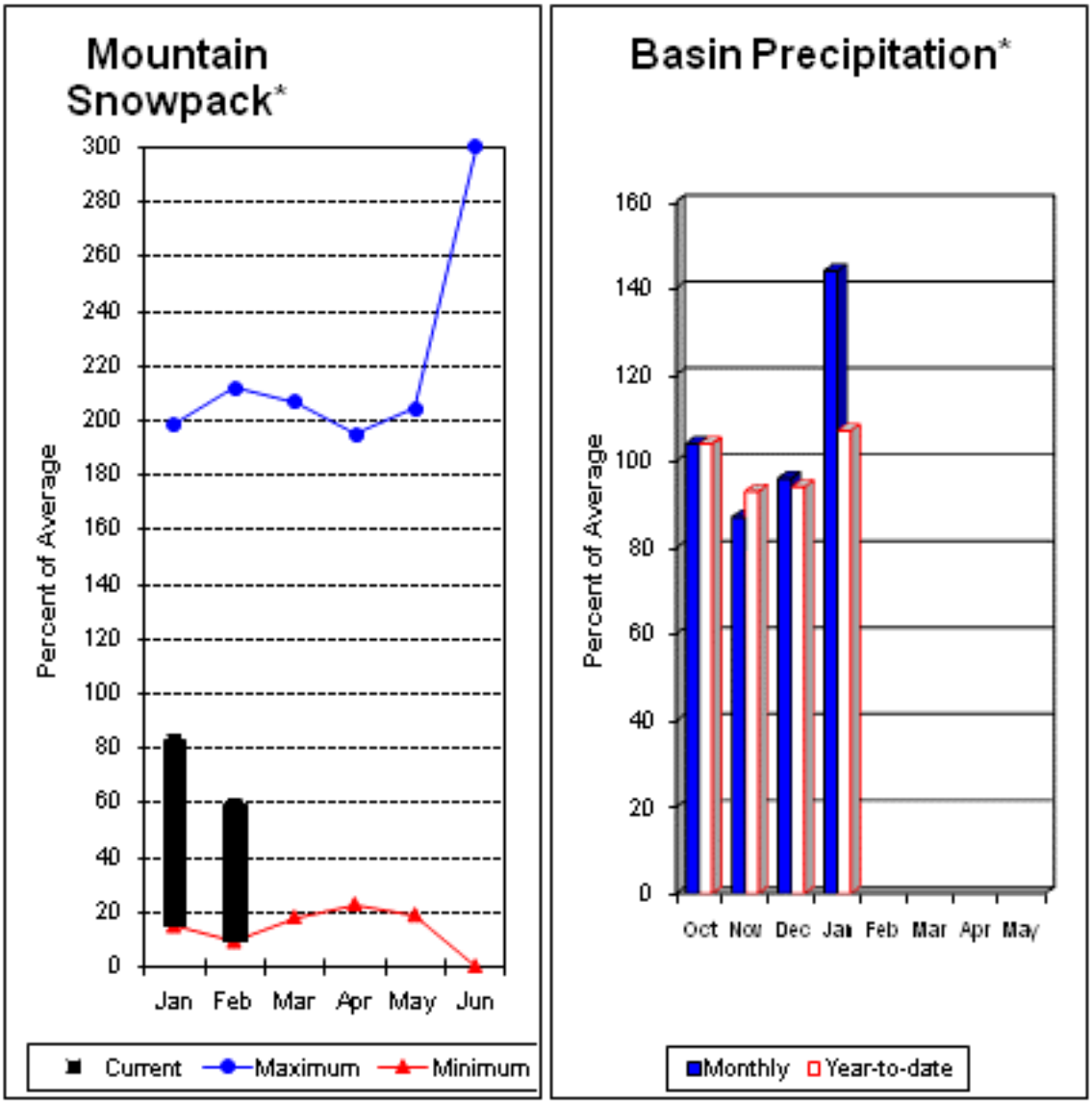
SOUTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	111	85
GREEN RIVER	4	95	45
PUYALLUP RIVER	5	103	80

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 90% for Cedar River near Cedar Falls; 89% for Rex River; 90% for South Fork of the Tolt River; 92% for Taylor Creek near Selleck, and 89% for Cedar River at Cedar Falls. Basin-wide precipitation for January was 144% of average, bringing water-year-to-date to 107% of average. February 1 average snow cover in Cedar River Basin was 65%, Tolt River Basin was 54%, Snoqualmie River Basin was 56%, and Skykomish River Basin was 62%. Olallie Meadows SNOTEL site, at 3960 feet, had 24.6 inches of water content. Average February 1 water content is 39.2 inches at Olallie Meadows. Temperatures were near normal for January and slightly above for the water-year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	APR-JUL	48	59	66	90	73	84	73
	APR-SEP	53	64	72	90	80	91	80
Rex R nr Cedar Falls	APR-JUL	5.3	15.3	22	88	29	39	25
	APR-SEP	8.0	18.1	25	89	32	42	28
Cedar R at Cedar Falls (2)	APR-JUL	36	54	66	89	78	96	74
	APR-SEP	33	52	65	89	78	97	73
Taylor Ck nr Selleck	APR-JUL	13.3	16.3	18.4	92	20	23	20
	APR-SEP	16.6	19.8	22	92	24	27	24
SF Tolt R nr Index	APR-JUL	9.3	11.6	13.2	90	14.8	17.1	14.7
	APR-SEP	11.0	13.5	15.2	90	16.9	19.4	16.9

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	137	65
TOLT RIVER	2	157	54
SNOQUALMIE RIVER	4	116	56
SKYKOMISH RIVER	2	108	62

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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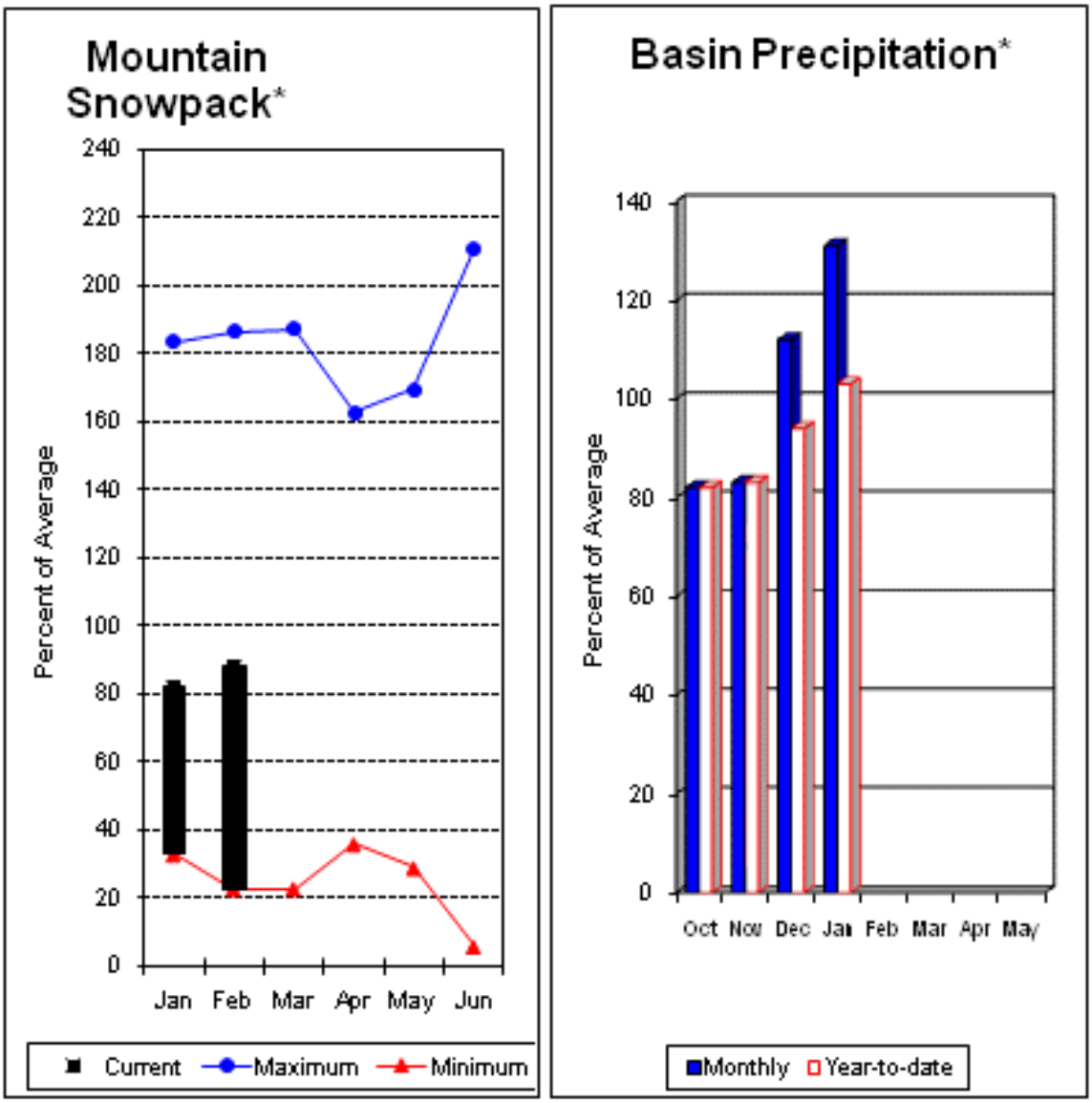
North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 95% of average for the spring and summer period. January streamflow in Skagit River was 159% of average. Other forecast points included Baker River at 92% and Thunder Creek at 93% of average. Basin-wide precipitation for January was 131% of average, bringing water-year-to-date to 103% of average. February 1 average snow cover in Skagit River Basin was 87%, Nooksack River Basin was 88% and Baker River Basin was 90% of average. Rainy Pass SNOTEL, at 4,780 feet, had 20.5 inches of water content. Average February 1 water content is 30.2 inches at Rainy Pass. February 1 Skagit River reservoir storage was 111% of average and 79% of capacity. Average temperatures for January were slightly below normal for the basin and near average for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	APR-JUL	190	210	220	94	230	250	234
	APR-SEP	275	295	310	93	325	345	333
Skagit R at Newhalem (2)	APR-JUL	1550	1690	1790	96	1890	2030	1864
	APR-SEP	1830	2000	2110	95	2220	2390	2217
Baker R nr Concrete (2)	APR-JUL	620	705	760	92	815	900	828
	APR-SEP	815	910	970	92	1030	1120	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of January

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	1092.6	1078.6	978.3
DIABLO RESERVOIR	90.6	87.2	86.0	85.5

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	15	111	87
BAKER RIVER	8	137	90
NOOKSACK RIVER	3	121	88

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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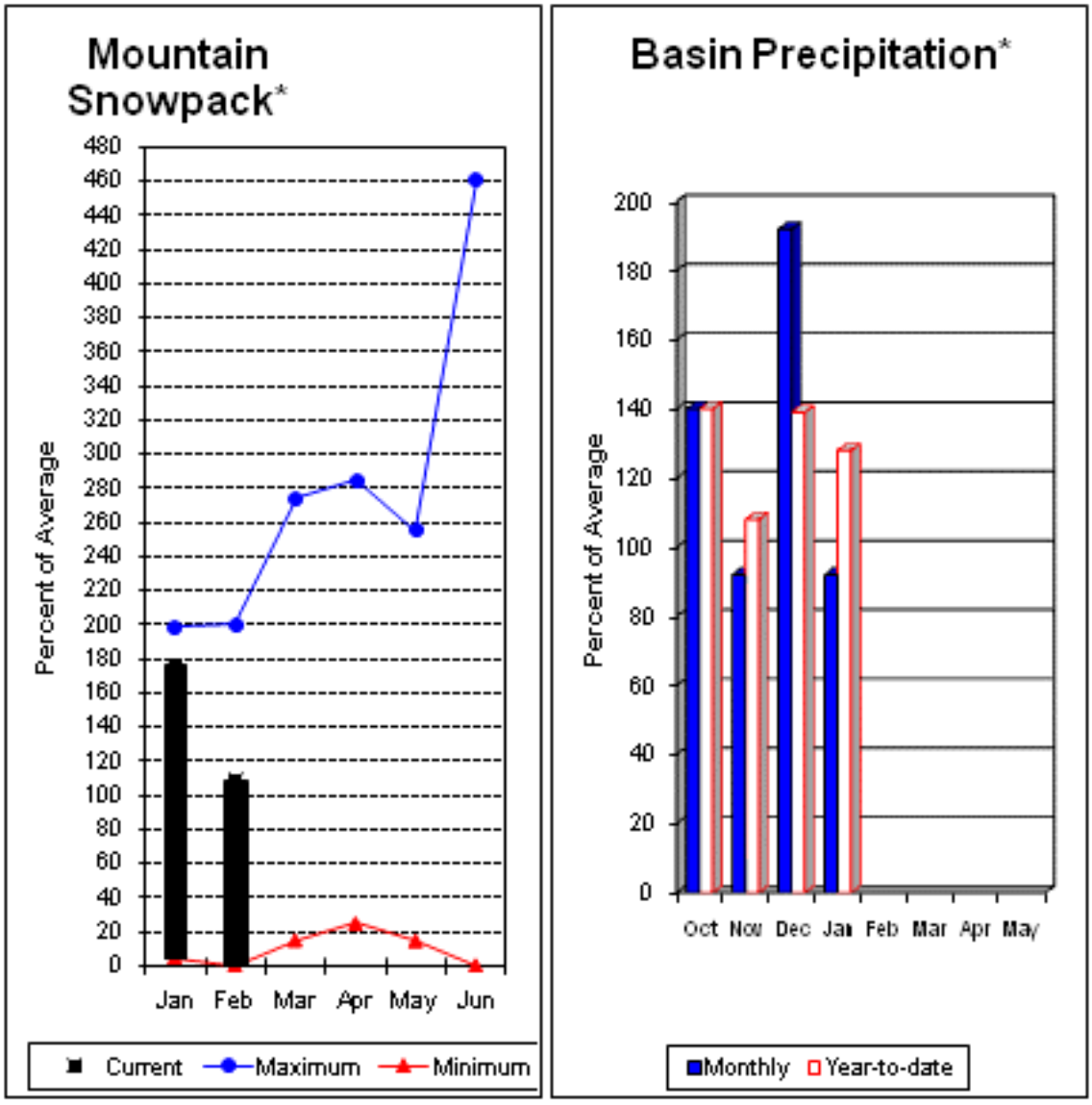
Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 103% and Elwha River is 97%. January runoff in the Dungeness River was 117% of normal. Big Quilcene and Wynoochee rivers should expect near average runoff this summer also. January precipitation was 92% of average. Precipitation has accumulated at 128% of average for the water year. January precipitation at Quillayute was 17.58 inches. The thirty-year average for January is 13.65 inches. Olympic Peninsula snowpack averaged 123% of normal on February 1. Temperatures were near average for January and for the water year.

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

Streamflow Forecasts - February 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	APR-JUL	103	118	128	103	138	153	124
	APR-SEP	123	143	157	103	171	191	152
Elwha R at McDonald Bridge	APR-JUL	330	375	405	97	435	480	419
	APR-SEP	390	450	490	97	530	590	503

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - February 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	6	103	109

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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Issued by

Dave White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

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

Canada	Ministry of Sustainable Resources
	Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	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
	Recourse Conservation & Development Councils
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	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
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	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.**

Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873

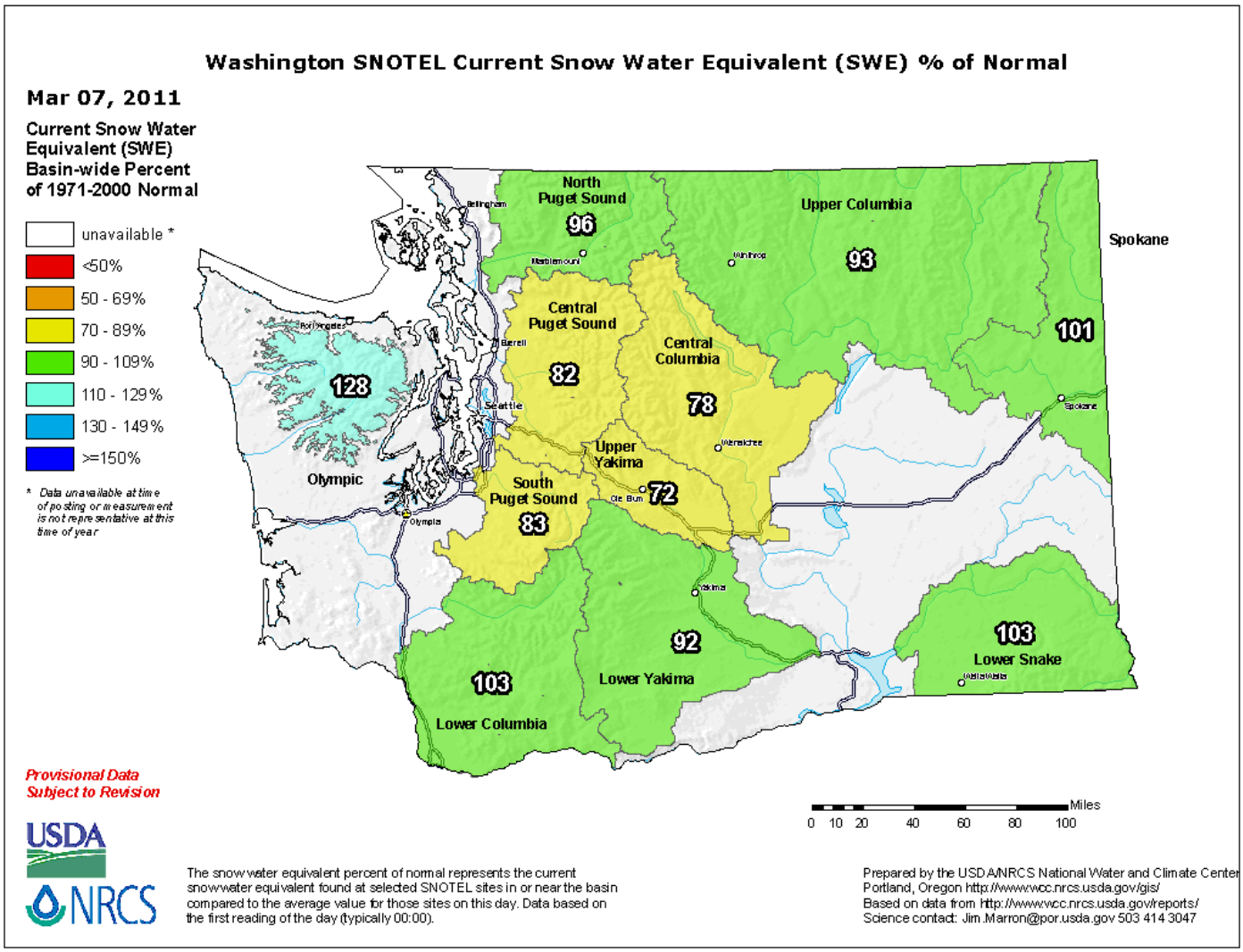
Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Washington
Water Supply Outlook Report
February 1, 2011



The snow water equivalent percent of normal represents the current snowwater equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684

or

Larry Johnson
Engineering Team Leader
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2955

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 2011

General Outlook

Another one for the record books is all that really can be said about the month of February. Just when we all thought that near record high temperatures were to be the early demise of winter the old man stepped up to the plate and delivered a homerun with record low temperatures and what would appear to be near record snowfall, which was measured in feet not inches. Snowpack averages increased in some basins by as much as 20%, lifting them just out of the range of potential disaster. What happens next is anyone's guess but the forecasters are predicting above average precipitation and below average temperatures for the rest of this month. Spring forecasts appear to be cooler than normal with equal chances for precipitation. With only a month to go before reaching the average peak snow accumulation date of April 1, even a "normal" month would be nice.

Snowpack

The March 1 statewide SNOTEL readings were 89% of average, up 9% from last month. The Green River snow survey data reported the lowest readings at 60% of average, a 15% increase from last month. Readings from the Pend Oreille Basin reported the highest at 112% of average. Westside averages from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 90% of average, the Central Puget river basins with 78%, and the Lewis-Cowlitz basins with 100% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 78% and the Wenatchee area with 77%. Snowpack in the Spokane River Basin was at 94% and the Walla Walla River Basin had 87% of average. Maximum confirmed snow cover in Washington was at Paradise SNOTEL, with water content of 56.6 inches. The 30-year average for Paradise on March 1 is 59.7 inches leaving the site at 95% of average, up 9% from last month.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	182	94
Newman Lake	190	90
Pend Oreille	172	112
Okanogan	112	90
Methow	106	87
Conconully Lake	75	80
Wenatchee	100	75
Chelan	108	80
Upper Yakima	110	72
Lower Yakima	109	84
Ahtanum Creek	82	77
Walla Walla	128	87
Lower Snake	150	95
Cowlitz	145	99
Lewis	139	102
White	119	90
Green	184	60
Puyallup	121	89
Cedar	230	85
Snoqualmie	160	73
Skykomish	145	71
Skagit	135	90
Baker	n/a	90e
Nooksack	143	89
Olympic Peninsula	121	107

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported near average precipitation in all river basins excluding the Lower Yakima where they only received 77% of average. Precipitation came in two main storm systems, mid-month and again at the end of the month, being mostly dry in between. The highest percent of average in the state was at Elbow Lake SNOTEL in the South Fork Nooksack which reported 172% of average for a total of 25.3 inches. The average for Elbow Lake is 14.7 inches for February. Elbow lake SNOTEL was also the wettest spot in the state last month. Though basin averages were near normal some notable dry spots include Wenatchee at 32%, Walla Walla at 36% and Moses Mountain SNOTEL at 47%of average for the month.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	112	117
Pend Oreille	97	106
Upper Columbia	95	102
Central Columbia	95	98
Upper Yakima	96	100
Lower Yakima	77	97
Walla Walla	96	92
Lower Snake	106	110
Lower Columbia	89	101
South Puget Sound	89	103
Central Puget Sound	104	107
North Puget Sound	108	104
Olympic Peninsula	93	120

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 700,000-acre feet, 140% of average for the Upper Reaches and 179,000-acre feet or 130% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 124% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 87,000-acre feet, 60% of average and 37% of capacity; Chelan Lake, 239,000-acre feet, 95% of average and 35 of capacity; and the Skagit River reservoirs at 110% of average and 67% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	37	60
Pend Oreille	53	106
Upper Columbia	90	124
Central Columbia	35	95
Upper Yakima	84	140
Lower Yakima	77	130
Lower Snake	59	90
North Puget Sound	67	110

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

Streamflow

Forecasts vary from 79% of average for the Icicle Creek near Leavenworth to 109% of average for the Clearwater River. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 96%; White River, 102%; and Skagit River, 93%. Some Eastern Washington streams include the Yakima River near Parker, 84%: Wenatchee River at Plain, 88%; and Spokane River near Post Falls, 108%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide February streamflows varied by region and by the extent of the warm spell early in the month. It appears that the north central part of the state was effected the most showing above average runoff for most of the month on many streams. The Stehekin River had the highest reported natural flows with 188% of average. The Okanogan at Tonasket with 74% of average was the lowest in the state however that could be due to reservoir control or ice influence. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 82%; the Spokane at Spokane, 91%; the Columbia below Rock Island Dam, 92%; and the Cle Elum near Roslyn, 123%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	90-108
Pend Oreille	102-110
Upper Columbia	90-103
Central Columbia	79-104
Upper Yakima	83-89
Lower Yakima	84-101
Walla Walla	96-103
Lower Snake	94-109
Lower Columbia	94-101
South Puget Sound	82-102
Central Puget Sound	95-100
North Puget Sound	92-96
Olympic Peninsula	100-102

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
Pend Oreille Below Box Canyon	94
Kettle at Laurier	86
Columbia at Birchbank	88
Spokane at Long Lake	82
Similkameen at Nighthawk	127
Okanogan at Tonasket	74
Methow at Pateros	145
Chelan at Chelan	146
Wenatchee at Pashastin	135
Yakima at Cle Elum	140
Yakima at Parker	108
Naches at Naches	112
Grande Ronde at Troy	76
Snake below Lower Granite Dam	79
SF Walla Walla near Milton Freewater	75
Columbia River at The Dalles	92
Cowlitz below Mayfield Dam	89
Skagit at Concrete	97
Dungeness near Sequim	85

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2011 WESTERN SNOW CONFERENCE

The 79th Western Snow Conference (WSC) annual meeting will be held in Lake Tahoe at Stateline, Nevada/California April 18-21. The theme for this year is “Satellites and smart instruments - the trend from established instrumentation toward distributed SWE estimation in watersheds”. The training course on Monday is 'Forecasting with the PRMS Model’. Additional information about the conference, registration and short course is available on the WSC web page at:
http://www.westernsnowconference.org/

B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

MARCH 2011

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
AHTANUM R.S.	3100	2/25/11	10	4.2	6.1	7.0
ALPINE MEADOWS	3500	2/25/11	72	22.0	12.2	33.8
ALPINE MEADOWS SNTL	3500	3/01/11	85	30.3	16.9	36.5
AMBROSE	6480	2/25/11	45	12.6	6.2	10.5
ASHLEY DIVIDE	4820	3/03/11	38	10.1	3.6	6.2
BADGER PASS SNOTEL	6900	3/01/11	96	30.4	21.0	29.7
BAIRD #2	3220	3/01/11	34	8.4	4.9	--
BAREE MIDWAY	4600	3/02/11	111	34.4	15.8	28.7
BAREE TRAIL	3800	3/02/11	49	12.3	3.4	8.2
BARKER LAKES SNOTEL	8250	3/01/11	44	11.2	12.1	11.1
BASIN CREEK SNOTEL	7180	3/01/11	27	6.4	5.2	6.1
BASSOO PEAK	5150	2/22/11	44	11.2	4.8	9.0
BEAVER CREEK TRAIL	2200	3/01/11	56	15.3	4.6	13.0
BEAVER PASS	3680	2/26/11	69	22.1	18.4	24.9
BEAVER PASS SNOTEL	3630	3/01/11	110	33.2	25.4	33.9
BIG WHITE MTN CAN.	5510	3/01/11	53	14.2	15.1	16.8
BLACK MOUNTAIN	7750	2/24/11	42	10.3	9.4	11.4
BLACK PINE SNOTEL	7100	3/01/11	43	11.8	6.2	10.1
BLACKWALL PILL CAN.	6370	3/01/11	97	29.7	22.2	30.0
BLEWETT PASS#2SNOTEL	4240	3/01/11	39	9.5	12.8	15.7
BLUE LAKE	5900	2/26/11	67	19.2	11.0	21.1
BRENDA MINE CAN.	4450	3/01/11	43	9.4	10.1	11.3
BROOKMERE CAN.	3000	2/27/11	28	7.0	4.3	7.6
BROWN TOP AM	6000	2/26/11	132	50.4	44.9	53.4
BROWNS PASS		2/28/11	21	3.0	3.1	--
BRUSH CREEK TIMBER	5000	2/22/11	49	15.1	6.2	7.5
BUCKINGHORSE SNOTEL	4870	3/01/11	162	56.7	53.7	--
BULL MOUNTAIN	6600	2/28/11	28	5.4	2.6	5.1
BUMPING RIDGE SNOTEL	4610	3/01/11	94	22.2	18.8	24.9
BUNCHGRASS MDWSNOTEL	5000	3/01/11	72	20.1	20.1	24.4
BURNT MOUNTAIN PIL	4170	3/01/11	47	10.0	4.6	13.4
BUTTERMILK BUTTE	5250	2/28/11	51	12.1	13.6	--
CALAMITY SNOTEL	2500	3/01/11	40	7.4	.0	--
CARMI CAN.	4100	3/01/11	25	4.6	--	5.8
CAYUSE PASS SNOTEL	5240	3/01/11	159	51.0	38.7	--
CHAMOKANE 2	3520	2/23/11	19	5.6	3.5	--
CHESSMAN RESERVOIR	6200	2/24/11	23	4.8	3.3	3.1
CHEWALAH #2	4930	2/28/11	54	14.0	13.9	--
CHICKEN CREEK	4060	2/28/11	63	15.8	9.8	14.4
CHIWAUKUM G.S.	2500	2/25/11	25	8.2	6.9	10.8
CITY CABIN	2390	2/25/11	22	3.3	.0	10.2
CLOUDY PASS AM	6500	2/25/11	98	32.3	--	39.4
COLD CREEK STRIP	6020	2/28/11	31	6.1	7.0	--
COLOCKUM PASS	5370	2/28/11	44	11.6	12.6	14.6
COMBINATION SNOTEL	5600	3/01/11	20	4.4	3.6	4.5
COPPER BOTTOM SNOTEL	5200	3/01/11	28	7.1	4.6	9.9
COPPER CREEK	5700	2/25/11	37	10.0	4.2	12.5
COPPER MOUNTAIN	7700	2/26/11	33	8.0	6.7	8.9
CORRAL PASS SNOTEL	5800	3/01/11	92	26.0	19.5	29.5
COTTONWOOD CREEK	6400	2/24/11	25	5.2	3.8	6.0
COUGAR MTN. SNOTEL	3200	3/01/11	51	9.7	.0	17.1
COX VALLEY	4500	2/25/11	98	30.0	25.7	31.7
COYOTE HILL	4200	2/28/11	37	11.3	5.9	9.1
DALY CREEK SNOTEL	5780	3/01/11	38	9.9	5.7	9.4
DEER PARK	5200	2/28/11	53	14.4	13.1	15.1
DESERT MOUNTAIN	5600	3/01/11	---	15.7E	7.9	12.6
DEVILS PARK	5900	3/01/11	116	38.1	25.7	37.9
DISAUTEL PASS		2/28/11	22	3.2	2.8	--
DISCOVERY BASIN	7050	2/28/11	38	10.2	5.8	8.4
DIX HILL	6400	2/27/11	37	10.8	6.9	10.0
DOMMERIE FLATS	2200	2/28/11	30	5.3	1.1	7.2
DUNCAN RIDGE	5370	2/28/11	26	4.9	5.4	--
DUNGENESS SNOTEL	4010	3/01/11	37	10.1	5.2	8.9
EAST FORK R.S.	5400	2/23/11	21	5.0	3.2	5.6
EL DORADO MINE	7800	2/26/11	37	11.4	7.6	15.8
ELBOW LAKE SNOTEL	3200	3/01/11	---	25.0	15.0	32.5
EMERY CREEK SNOTEL	4350	3/01/11	57	16.7	9.0	13.3
ESPERON CK. UP CAN.	5050	2/28/11	44	10.9	10.2	14.6
FARRON CAN.	4000	2/24/11	37	9.8	8.8	11.3
FATTY CREEK	5500	2/26/11	84	24.9	16.8	20.4
FISH CREEK	8000	3/04/11	34	9.2	8.1	7.8
FISH LAKE	3370	3/01/11	84	23.4	21.2	29.9
FISH LAKE SNOTEL	3430	3/01/11	77	21.6	19.2	30.6
FLATTOP MTN SNOTEL	6300	3/01/11	139	42.5	28.4	39.2
FLEECER RIDGE	7500	2/28/11	36	9.4	4.0	9.2
FOURTH OF JULY SUM	3200	2/28/11	32	6.8	.0	8.2
FREEZEOUT CK. TRAIL	3500	2/26/11	34	9.1	5.2	11.3
FROHNER MDWS SNOTEL	6480	3/01/11	30	7.1	4.9	6.3
GOAT CREEK	3600	2/25/11	24	4.9	5.8	6.1
GOLD MTN LOOKOUT		2/25/11	41	8.7	11.1	--
GRAVE CRK SNOTEL	4300	3/01/11	62	16.8	10.4	14.5
GREEN LAKE SNOTEL	5920	3/01/11	71	17.3	18.5	19.7
GRIFFIN CR DIVIDE	5150	3/03/11	51	15.0	6.0	9.5
GROUSE CAMP SNOTEL	5390	3/01/11	63	15.0	16.0	17.6
GUNSIGHT LAKE	6300	3/01/11	---	41.5E	23.8	--
HAMILTON HILL CAN.	4550	2/27/11	39	8.8	6.5	12.7
HAND CREEK SNOTEL	5030	3/01/11	52	12.4	7.0	9.9
HARTS PASS SNOTEL	6490	3/01/11	110	42.4	26.5	39.7
HELL ROARING DIVIDE	5770	2/23/11	90	28.5	19.6	25.8
HERRIG JUNCTION	4850	3/03/11	82	26.9	16.3	22.2
HIGH RIDGE SNOTEL	4920	3/01/11	75	21.8	15.3	21.2
HOLBROOK	4530	2/28/11	33	8.9	5.2	8.3
HOODOO BASIN SNOTEL	6050	3/01/11	144	40.5	17.7	38.6
HUCKLEBERRY SNOTEL	2250	3/01/11	24	3.4	.0	1.8
HUMBOLDT GLCH SNOTEL	4250	3/01/11	---	13.6	5.5	11.7
HURRICANE	4500	2/24/11	50	13.8	8.8	15.6
INDIAN ROCK SNOTEL	5360	3/01/11	74	29.0	26.8	--
INTERGAARD	6450	2/26/11	27	5.9	3.5	6.2
IRENE'S CAMP	5530	2/28/11	40	7.6	7.8	--
ISINTOK LAKE CAN.	5100	2/25/11	26	6.1	4.6	6.5
JUNE LAKE SNOTEL	3440	3/01/11	127	39.3	20.1	33.9
KELLER RIDGE	3700	2/24/11	22	3.7	2.7	--
KELLOGG PEAK	5560	3/03/11	83	23.2	14.2	25.8
KISHENEHN	3890	2/28/11	40	8.8	3.3	7.3
KIT CARSON PASTURE	4950	2/22/11	25	6.9	4.6	8.2
KRAFT CREEK SNOTEL	4750	3/01/11	54	15.3	8.4	13.6
LAMB BUTTE		2/24/11	41	11.5	14.6	--
LIGHTNING LAKE CAN.	3700	2/27/11	37	9.9	7.2	10.3
LOGAN CREEK	4300	2/22/11	32	8.1	4.0	6.2
LOLO PASS SNOTEL	5240	3/01/11	103	27.2	13.3	26.8
LONE PINE SNOTEL	3930	3/01/11	122	36.3	24.2	31.7
LOOKOUT SNOTEL	5140	3/01/11	100	26.0	13.5	27.2
LOST HORSE SNOTEL	5120	3/01/11	46	13.0	17.6	18.3
LOST LAKE SNOTEL	6110	3/01/11	160	48.7	25.1	50.7
LOST LAKE	4070	2/25/11	28	5.9	6.6	--
LOUP LOUP CAMPGROUND		2/23/11	28	6.4	8.6	--
LUBRECHT FOREST NO 3	5450	3/01/11	32	7.3	2.8	5.6
LUBRECHT FOREST NO 4	4650	3/01/11	15	3.5	1.4	2.7
LUBRECHT FOREST NO 6	4040	3/01/11	22	6.2	1.5	3.2
LUBRECHT HYDROPLOT	4200	3/01/11	30	7.5	2.7	5.1
LUBRECHT SNOTEL	4680	3/01/11	29	7.1	3.3	5.3
LYMAN LAKE SNOTEL	5980	3/01/11	146	46.4	41.1	55.1
LYNN LAKE	4000	3/01/11	---	12.1E	--	16.1
LYNN LAKE SNOTEL	3900	3/01/11	57	12.5	6.1	--
MARIAS PASS	5250	2/27/11	57	16.1	7.8	14.9
MARTEN RIDGE SNOTEL	3520	3/01/11	126	47.1	34.8	--
MAZAMA		2/23/11	25	7.4	6.5	--
MCCULLOCH CAN.	4200	2/28/11	28	6.5	5.0	6.2
MEADOWS CABIN	1900	3/01/11	18	2.5	.0	5.5
MEADOWS PASS SNOTEL	3230	3/01/11	84	19.2	10.9	19.8
METEOR		2/23/11	17	3.1	.0	--
M F NOOKSACK SNOTEL	4970	3/01/11	120	47.0	35.0	52.8
MICA CREEK SNOTEL	4510	3/01/11	90	19.5	13.7	23.2
MINERAL CREEK	4000	2/23/11	53	16.6	12.0	15.8
MISSEZULA MTN CAN.	5080	2/28/11	33	7.9	5.0	8.4
MISSION CREEK CAN.	5840	3/01/11	---	13.0	12.1	17.1
MISSION RIDGE	5000	2/25/11	41	11.5	13.8	15.2
MORSE LAKE SNOTEL	5410	3/01/11	138	41.0	44.1	47.0
MOSES MOUNTAIN (2)	4800	2/28/11	35	8.0	12.6	17.5
MOSES MTN SNOTEL	5010	3/01/11	37	10.1	11.5	13.4
MOSES PEAK	6650	2/28/11	56	16.1	20.8	11.7
MOSQUITO RDG SNOTEL	5200	3/01/11	---	33.1	21.3	31.1
MOULTON RESERVOIR	6850	3/04/11	31	9.8	3.8	6.2
MOUNT CRAG SNOTEL	3960	3/01/11	110	32.1	26.4	26.8
MT. KOBAU CAN.	5500	2/27/11	35	8.5	12.1	10.2
MOUNT TOLMAN	2000	2/23/11	6	1.1	.0	3.3
MOWICH SNOTEL	3160	3/01/11	17	2.4	.0	1.5
MOUNT GARDNER	3300	2/25/11	33	7.8	.2	13.0
MOUNT GARDNER SNOTEL	2920	3/01/11	55	11.9	1.4	14.1
MUTTON CREEK #1	5700	2/24/11	41	10.2	12.6	12.0
N.F. ELK CR SNOTEL	6250	3/01/11	52	13.6	5.8	10.2
NEVADA RIDGE SNOTEL	7020	3/01/11	52	14.9	8.5	13.2
NEW HOZOMEEN LAKE	2800	2/26/11	---	2.2E	.0	10.3
NEZ PERCE CMP SNOTEL	5650	3/01/11	43	12.1	7.0	12.7
NEZ PERCE PASS	6570	2/22/11	50	15.4	7.2	15.7
NOISY BASIN SNOTEL	6040	3/01/11	146	53.0	29.5	33.8
NORTH FORK JOCKO	6330	2/26/11	130	47.5	--	36.5
OLALLIE MDWS SNOTEL	4030	3/01/11	117	36.3	35.0	48.9
OPHIR PARK	7150	2/27/11	49	15.0	9.6	14.1
OYAMA LAKE CAN.	4100	3/01/11	22	3.5	4.3	6.2
PARADISE SNOTEL	5130	3/01/11	167	56.6	43.4	59.7
PARK CK RIDGE SNOTEL	4600	3/01/11	97	32.3	36.6	44.1
PEPPER CREEK SNOTEL	2140	3/01/11	50	9.8	.0	--
PETERSON MDW SNOTEL	7200	3/01/11	34	7.7	6.1	7.8
PIGTAIL PEAK SNOTEL	5800	3/01/11	141	41.7	32.2	44.6
PIKE CREEK SNOTEL	5930	3/01/11	58	14.9	8.7	22.8
PIPESTONE PASS	7200	2/26/11	19	4.0	3.3	4.1
POPE RIDGE SNOTEL	3590	3/01/11	57	12.5	14.6	18.5
POSTILL LAKE CAN.	4200	2/28/11	26	6.7	4.6	7.3
POTATO HILL SNOTEL	4510	3/01/11	104	25.7	20.7	23.6

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
QUARTZ PEAK SNOTEL	4700	3/01/11	64	19.9	14.6	19.5
RAGGED MOUNTAIN	4200	2/27/11	59	18.6	13.5	17.5
RAGGED MTN SNOTEL	4210	3/01/11	62	19.1	13.1	--
RAGGED RIDGE	3330	2/23/11	17	4.8	.0	7.8
RAINY PASS SNOTEL	4890	3/01/11	95	29.5	24.6	38.2
RAINY PASS	4780	3/02/11	95	27.1	23.3	33.8
REX RIVER SNOTEL	3810	3/01/11	86	27.3	15.2	23.9
ROCKER PEAK SNOTEL	8000	3/01/11	47	12.7	9.3	11.2
ROLAND SUMMIT	5120	3/01/11	---	29.2E	16.6	29.2
ROUND TOP MTN	4020	2/23/11	39	12.2	8.0	--
RUSTY CREEK	4000	2/24/11	20	4.1	6.6	6.2
SADDLE MTN SNOTEL	7900	3/01/11	72	23.5	11.4	21.8
SALMON MDWS SNOTEL	4460	3/01/11	35	8.4	10.9	10.1
SASSE RIDGE SNOTEL	4340	3/01/11	37	20.2	22.2	30.3
SATUS PASS	4030	2/22/11	24	8.7	8.6	9.6
SAVAGE PASS SNOTEL	6170	3/01/11	90	25.7	11.9	22.5
SENTINEL BT SNOTEL	4680	3/01/11	33	7.9	8.1	8.4
SHEEP CANYON SNOTEL	3990	3/01/11	115	35.0	14.2	31.6
SHERWIN SNOTEL	3200	3/01/11	---	12.9	2.7	10.8
SILVER STAR MTN CAN.	5600	2/27/11	74	24.2	22.1	25.0
SKALKAHO SNOTEL	7260	3/01/11	72	21.7	9.8	20.2
SKOOKUM CREEK SNOTEL	3310	3/01/11	---	19.9	.0	18.9
SKOOKUM LAKES	4230	2/28/11	52	12.7	6.8	--
SLIDE ROCK MOUNTAIN	7100	2/26/11	46	13.2	6.4	12.6
SOURDOUGH GUL SNOTEL	4000	3/01/11	22	3.9	.0	--
SOUTH BALDY	4920	2/28/11	75	20.0	15.2	--
SPENCER MDW SNOTEL	3400	3/01/11	85	23.7	16.2	28.6
SPIRIT LAKE SNOTEL	3520	3/01/11	33	8.1	.0	6.2
SPOTTED BEAR MTN.	7000	3/01/11	---	15.8E	9.2	12.7
SPRUCE SPGS SNOTEL	5700	3/01/11	52	11.1	8.1	15.9
STARVATION MOUNTAIN	6750	2/25/11	51	15.2	15.1	16.6
STAHL PEAK SNOTEL	6030	3/01/11	117	37.2	24.7	29.9
STAMPEDE PASS SNOTEL	3850	3/01/11	87	22.1	17.3	39.8
STEMPLE PASS	6600	2/28/11	39	10.0	5.1	8.3
STEVENS PASS SNOTEL	3950	3/01/11	102	24.9	24.0	38.3
STORM LAKE	7780	2/28/11	42	11.2	9.2	10.2
STRYKER BASIN	6180	3/03/11	100	33.6	21.8	26.9
STUART MOUNTAIN	7400	2/26/11	112	3.9	--	--
SUMMERLAND RES CAN.	4200	2/25/11	34	8.5	7.5	8.4
SUMMIT G.S. #2	4600	2/25/11	36	7.8	8.8	8.1
SUNSET SNOTEL	5540	3/01/11	---	24.1	10.6	26.0
SURPRISE LKS SNOTEL	4290	3/01/11	131	39.2	33.6	40.1
SWAMP CREEK SNOTEL	3930	3/01/11	60	16.9	9.9	17.2
SWIFT CREEK SNOTEL	4440	3/01/11	150	51.8	48.5	47.1
TEN MILE LOWER	6600	2/24/11	33	7.5	4.9	5.9
TEN MILE MIDDLE	6800	2/24/11	38	7.9	6.5	8.9
THUNDER BASIN SNOTEL	4320	3/01/11	75	24.2	22.8	29.7
THOMPSON CREEK	2500	2/23/11	17	6.0	.0	--
THOMPSON RIDGE	4650	2/28/11	46	10.5	10.7	--
TINKHAM CREEK SNOTEL	2990	3/01/11	83	22.3	12.2	26.7
TOATS COULEE	2850	2/28/11	15	2.9	1.8	3.4
TOGO	3370	2/23/11	22	6.6	4.2	8.6
TOUCHET SNOTEL	5530	3/01/11	77	21.5	18.4	28.5
TRINKUS LAKE	6100	2/26/11	121	41.8	32.2	36.4
TROUGH #2 SNOTEL	5480	3/01/11	34	9.1	13.8	9.3
TROUT CREEK CAN.	5650	2/27/11	33	7.5	6.8	6.7
TRUMAN CREEK	4060	3/03/11	27	7.3	2.6	4.4
TUNNEL AVENUE	2450	3/02/11	62	17.5	8.9	18.6
TV MOUNTAIN	6800	3/01/11	---	20.2E	8.9	15.0
TWELVEMILE SNOTEL	5600	3/01/11	53	14.6	8.4	16.0
TWIN CREEKS	3580	2/26/11	34	9.9	5.1	10.2
TWIN LAKES SNOTEL	6400	3/01/11	105	36.2	17.7	34.7
TWIN SPIRIT DIVIDE	3480	2/27/11	24	5.8	2.8	13.1
UPPER HOLLAND LAKE	6200	3/01/11	---	34.3E	17.3	30.0
UPPER WHEELER SNOTEL	4330	3/01/11	38	8.8	10.5	11.7
VULCAN MTN	4660	2/25/11	35	8.3	10.2	--
VULCAN ROAD	3840	2/25/11	28	6.2	6.7	--
WARM SPRINGS SNOTEL	7800	3/01/11	67	19.7	13.8	17.0
WATERHOLE SNOTEL	5010	3/01/11	110	37.1	34.5	30.0
WEASEL DIVIDE	5450	3/03/11	103	35.0	20.4	28.7
WELLS CREEK SNOTEL	4030	3/01/11	98	28.8	20.4	28.4
WHITE PASS ES SNOTEL	4440	3/01/11	69	18.1	13.5	21.8
WHITE ROCKS MTN CAN.	7200	2/28/11	57	17.2	--	19.6

Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

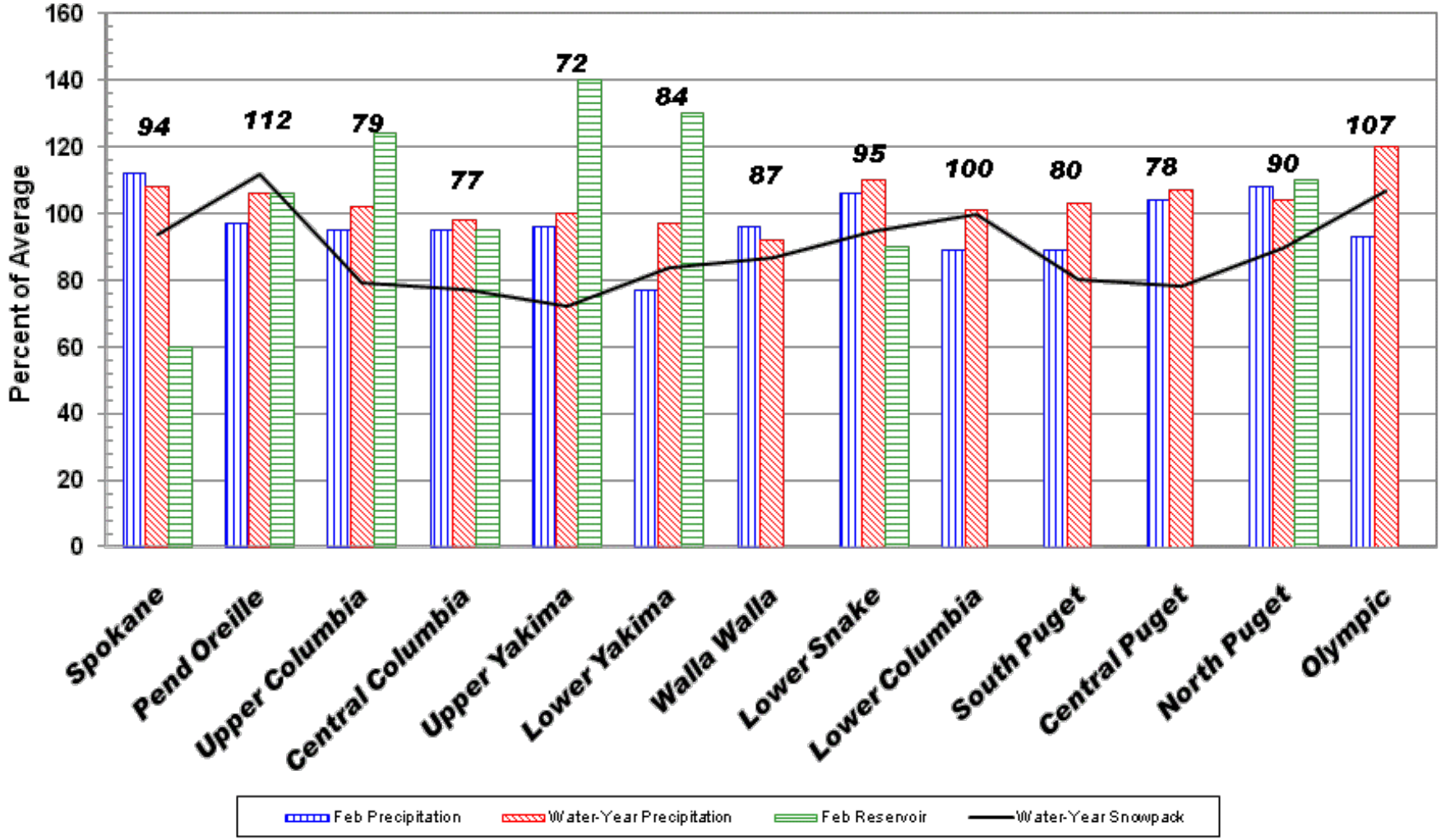
Washington:
http://www.wa.nrcs.usda.gov

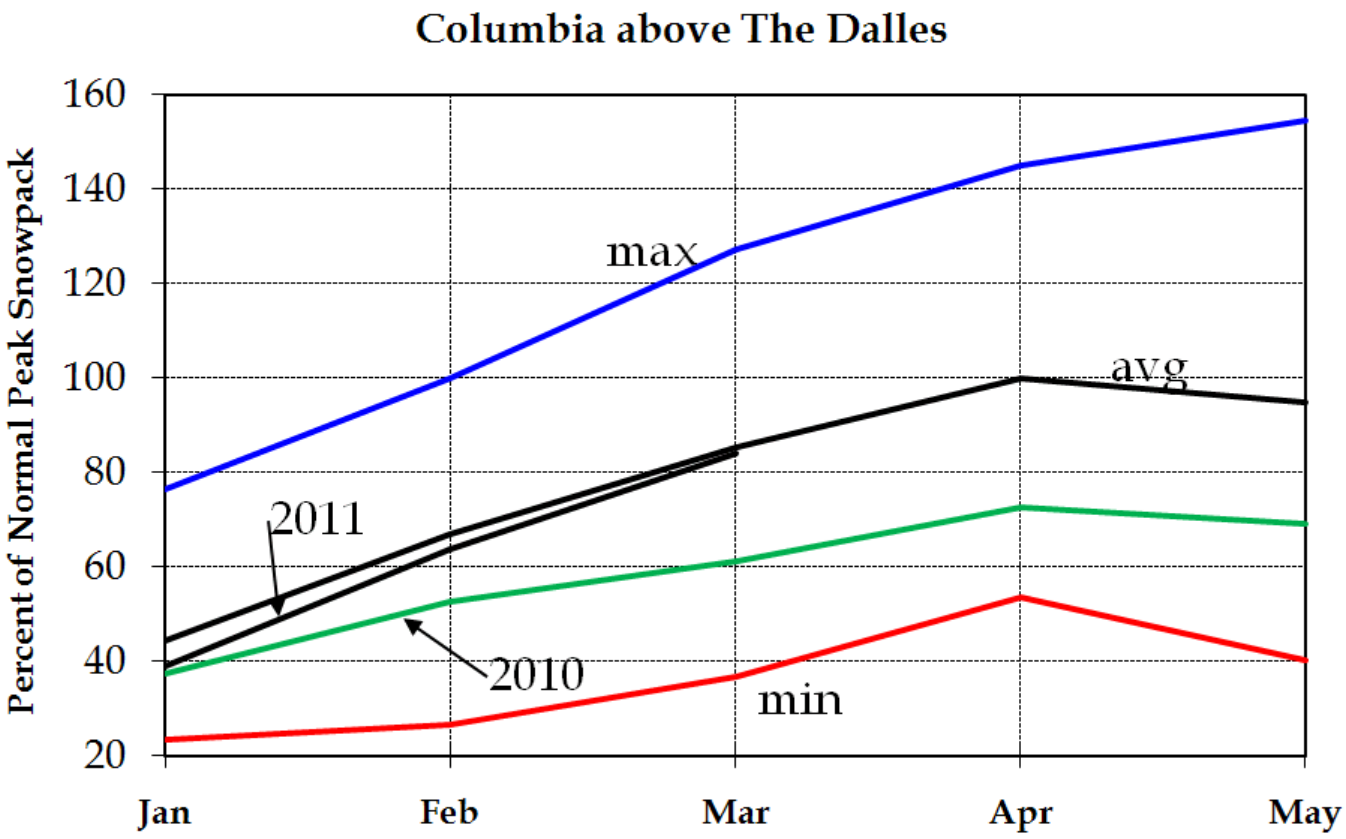
NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

March 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)





March 1, 2011

The Columbia Basin snowpack charts are produced, using only automated data. These data are telemetered via remote collection sites in Canada and the United States. The data are provisional, until they are officially released by the responsible data collection agency.

The combined Columbia Basin snowpack above The Dalles is currently at 99 percent of average, compared to 95 percent of average last month and 72 percent last year. This increase in the snowpack was due largely to increases in the British Columbia and Spokane basins that more than offset snowpack losses to normal in the Upper Snake, Boise, Salmon, and Clearwater basins.

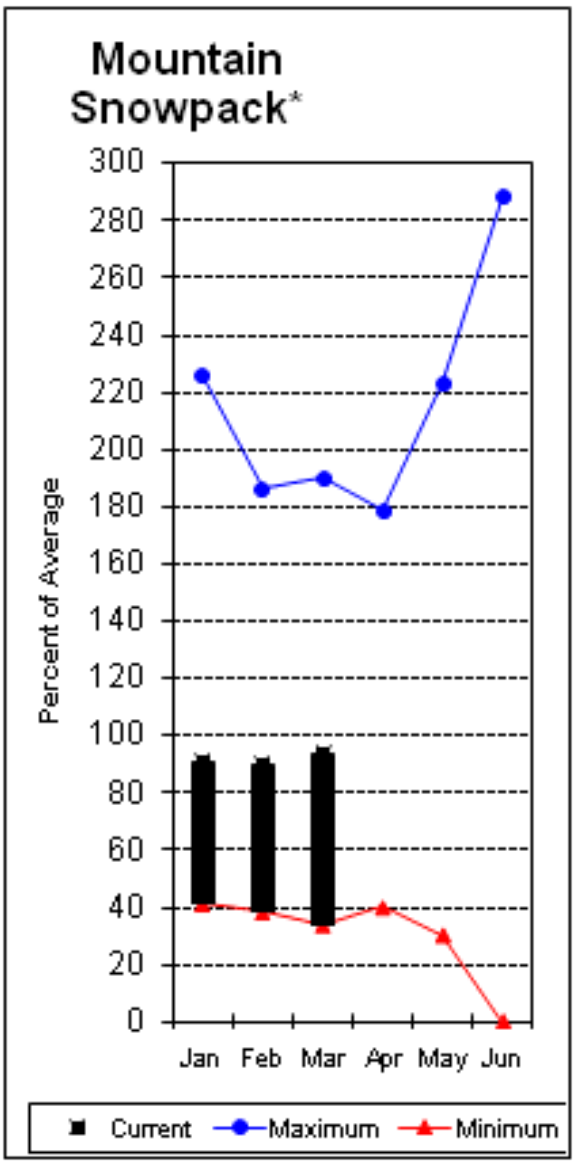
The Canadian portion of Columbia mainstem and the Spokane Basin were both up 7 percent over last month. As mentioned previously, those increases were offset by losses in the Upper Snake (9%), Boise (6%), Salmon (6%), and Clearwater (4%). The Deschutes Basin snowpack in the Oregon Cascades increased 14 percent over last month. All other basins remained near the same as last month.

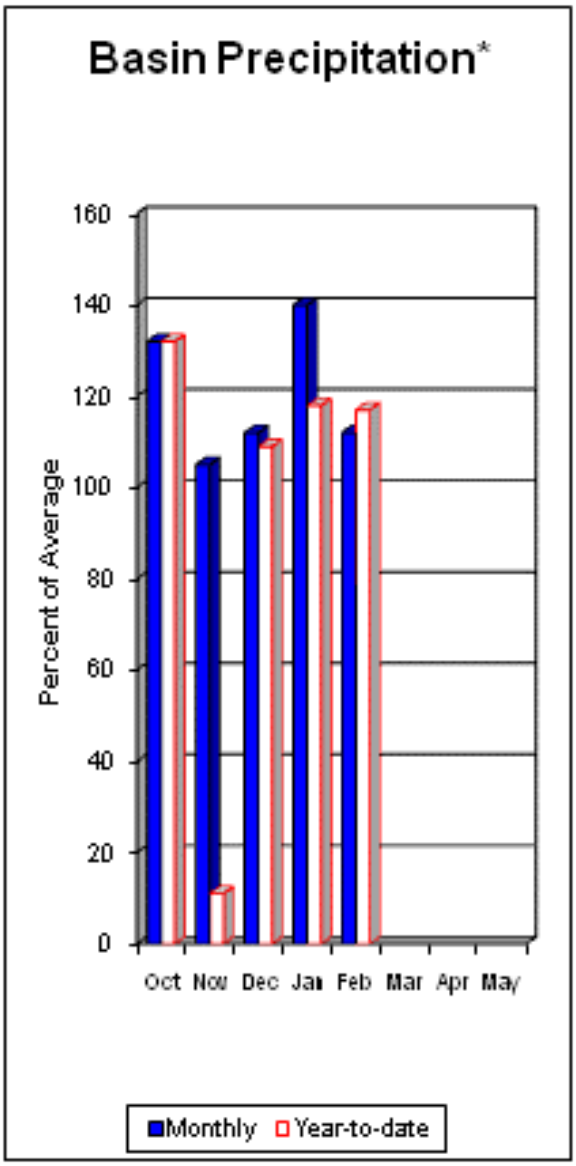
The overall snowpack above The Dalles is at 84 percent of the average peak accumulation. This compares to 61 percent last year. Normal for this time of year is 85 percent of the peak accumulation.

The snowpack in the Columbia Basin above Castlegar is at 98 percent of average. This compares to 91 percent last month and 82 percent last year. For the basin above Grand Coulee, the snowpack is at 102 percent of average, compared to 96 percent last month and 76 percent last year. The Snake River snowpack above Ice Harbor is at 98 percent of average, compared to 100 percent last month and 60 percent last year.

Long lead climate forecasts are suggesting a rather cooler than average March through May period for much of the West. Abundant moisture is expected over the Columbia Basin during March, especially over the Coastal and Cascade Ranges in Washington and Oregon. The Pacific Northwest will see a great deal of SWE catch-up.

Spokane River Basin





*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 108% of average near Post Falls and 108% at Long Lake. The Chamokane River near Long Lake forecasted to have 90% of average flows for the May-August period. The forecast is based on a basin snowpack that is 94% of average and precipitation that is 117% of average for the water year. Precipitation for February was above normal at 112% of average. Streamflow on the Spokane River at Long Lake was 82% of average for February. March 1 storage in Coeur d'Alene Lake was 87,000acre feet, 60% of average and 37% of capacity. Snowpack at Quartz Peak SNOTEL site was 102% of average with 19.9 inches of water content. Average temperatures in the Spokane basin were 4-5 degrees below normal for February and slightly below for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	APR-JUL	2060	2480	2760	108	3040	3460	2550
	APR-SEP	2160	2580	2870	108	3160	3580	2650
Spokane R at Long Lake (2)	APR-JUL	2310	2760	3070	108	3380	3830	2850
	APR-SEP	2540	3010	3320	108	3630	4100	3070
Chamokane Ck nr Long Lake	MAY-AUG	4.0	7.1	9.2	90	11.3	14.4	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	87.1	58.9	144.9

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2011

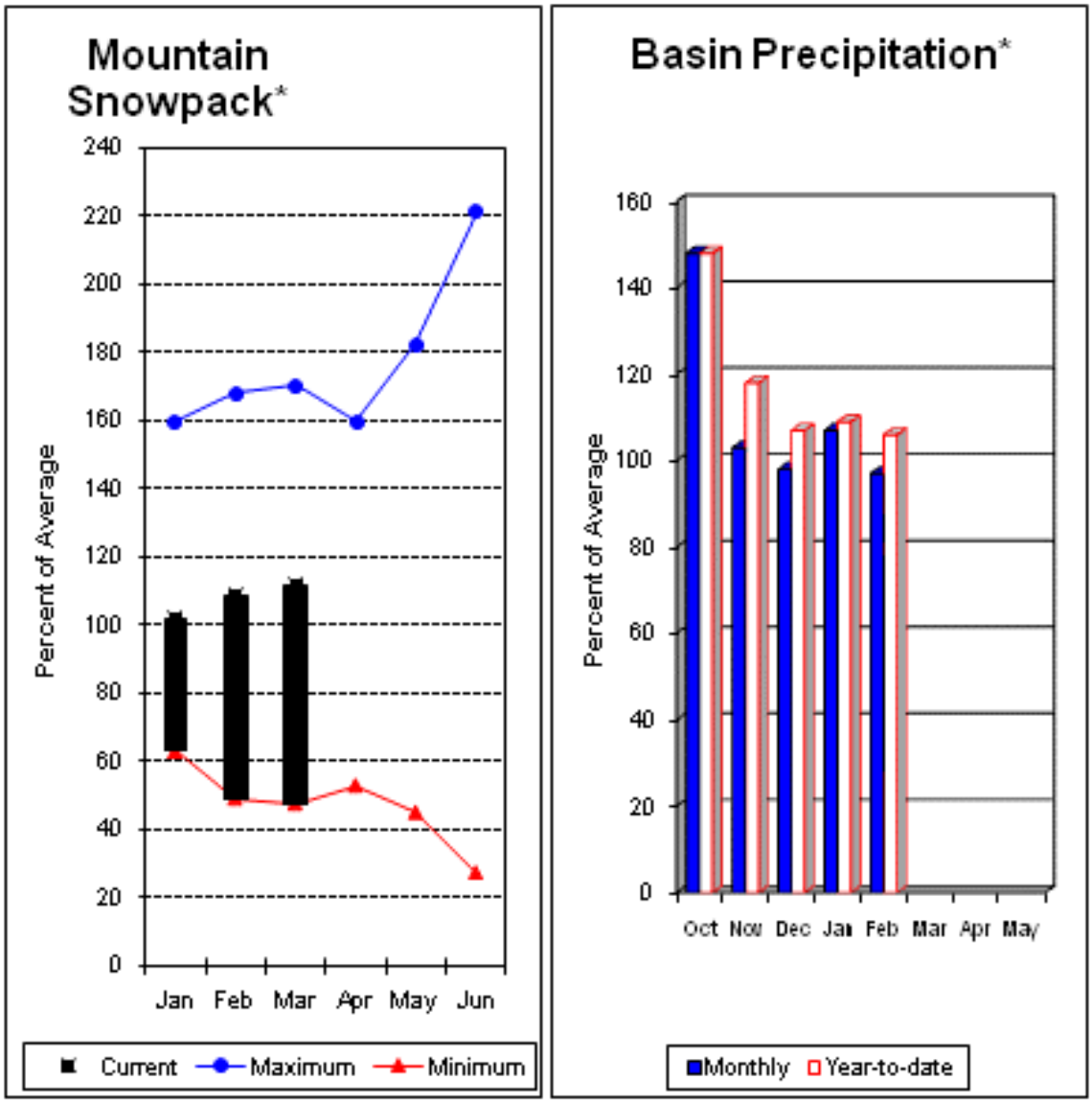
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	15	182	94
NEWMAN LAKE	2	190	90

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 102% and the Pen Orielle below Box Canyon is 110%. February streamflow was 135% of average on the Pend Oreille River and 88% on the Columbia Birchbank. March 1 snow cover was 112% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 20.1 inches of snow water on the snow pillow. Normally Bunchgrass would have 24.4 inches on March 1. Precipitation during February was 97% of average, bringing the year-to-date precipitation to 106% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 106% of normal. Average temperatures were 4-5 degrees below normal for February and near normal for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	APR-JUL	11900	13200	14000	110	14800	16100	12700
	APR-SEP	13100	14400	15300	110	16200	17500	13900
Priest R nr Priest River (1,2)	APR-JUL	645	770	830	102	890	1010	815
	APR-SEP	685	820	885	102	950	1090	870
Pend Oreille R bl Box Canyon (2)	APR-JUL	12100	13400	14200	110	15000	16300	12900
	APR-SEP	13200	14600	15500	110	16400	17800	14100

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PEND OREILLE	1561.3	835.9	551.7	778.8
PRIEST LAKE	119.3	48.9	49.4	56.8

PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	119	0
PEND OREILLE RIVER	9	166	100
KETTLE RIVER	3	89	91

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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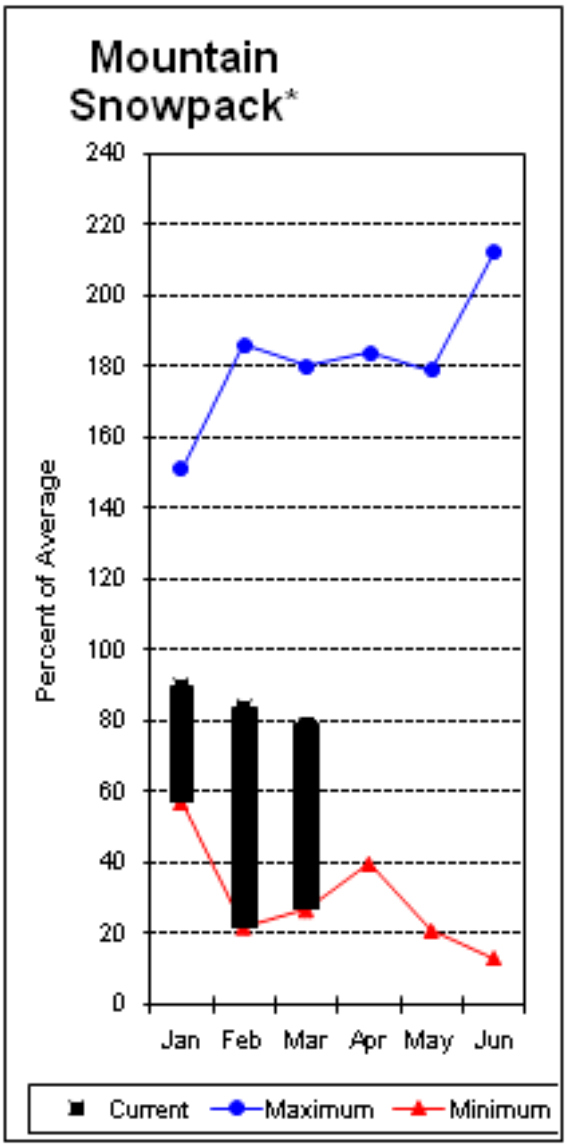
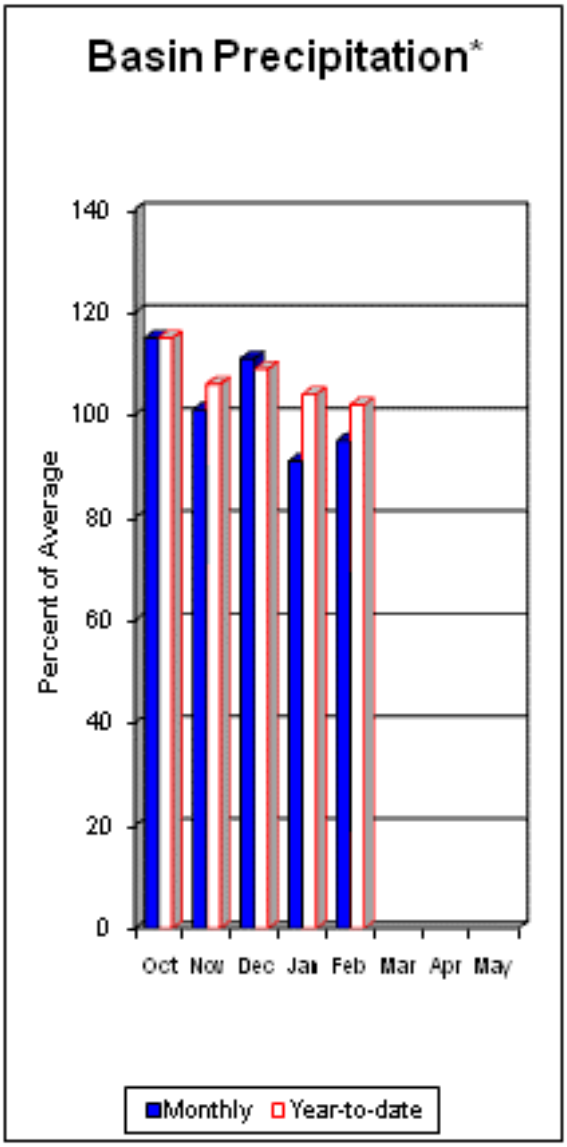
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Upper Columbia River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 94%, Similkameen River is 94%, Kettle River 93% and Methow River is 90%. March 1 snow cover on the Okanogan was 90% of average, Omak Creek was 80% and the Methow was 87%. February precipitation in the Upper Columbia was 95% of average, with precipitation for the water year at 102% of average. February streamflow for the Methow River was 145% of average, 74% for the Okanogan River and 127% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 8.4 inches. Average for this site is 10.1 inches on March 1. Combined storage in the Conconully Reservoirs was 21,000-acre feet, which is 90% of capacity and 124% of the March 1 average. Temperatures were 2-4 degrees below normal for February and 1-2 degrees above for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== 90% (1000AF)	70% (1000AF)	Future Conditions 50% (1000AF)	50% (% AVG.)	======= Wetter =====>> 30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Colville R at Kettle Falls	APR-JUL	57	94	119	93	144	181	128
	APR-SEP	63	103	131	93	159	199	141
Kettle R nr Laurier	APR-JUL	1390	1600	1750	94	1900	2110	1870
	APR-SEP	1440	1680	1840	93	2000	2240	1970
Columbia R at Grand Coulee (2)	APR-JUL	46900	52800	55500	103	58200	64100	53800
	APR-SEP	55800	62900	66100	103	69300	76400	64000
Similkameen R nr Nighthawk (1)	APR-JUL	925	1160	1270	94	1380	1610	1350
	APR-SEP	1010	1250	1360	94	1470	1710	1450
Okanogan R nr Tonasket (1)	APR-JUL	1010	1340	1490	94	1640	1970	1580
	APR-SEP	1130	1500	1660	94	1820	2190	1770
Okanogan R at Malott (1)	APR-JUL	1040	1380	1530	94	1680	2020	1630
	APR-SEP	1170	1550	1720	94	1890	2270	1830
Methow R nr Pateros	APR-SEP	725	820	885	90	950	1050	985
	APR-JUL	665	760	820	90	880	975	910

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

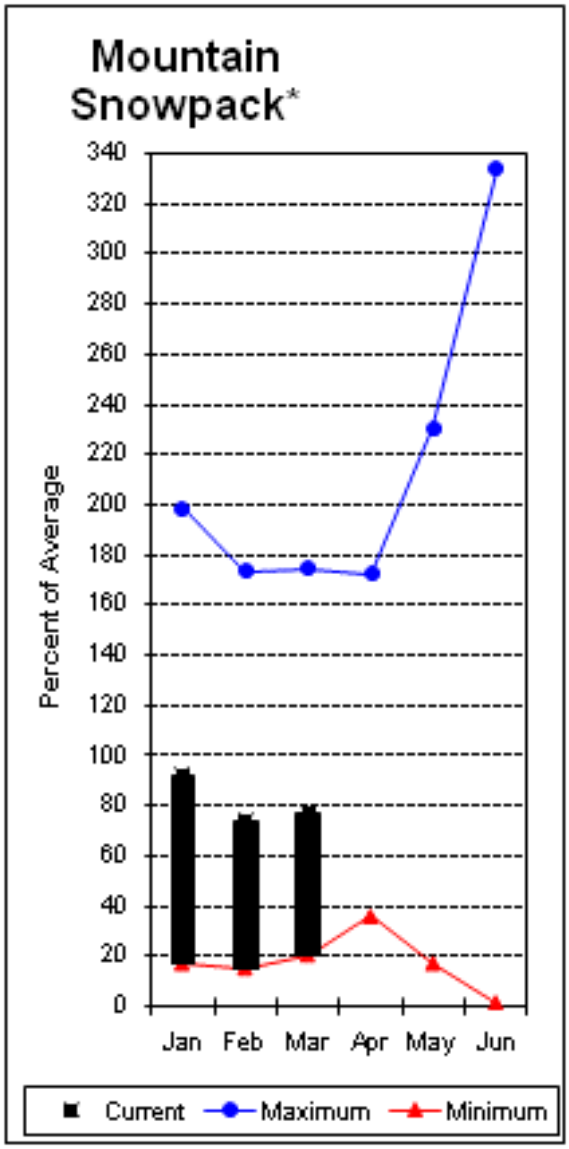
UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

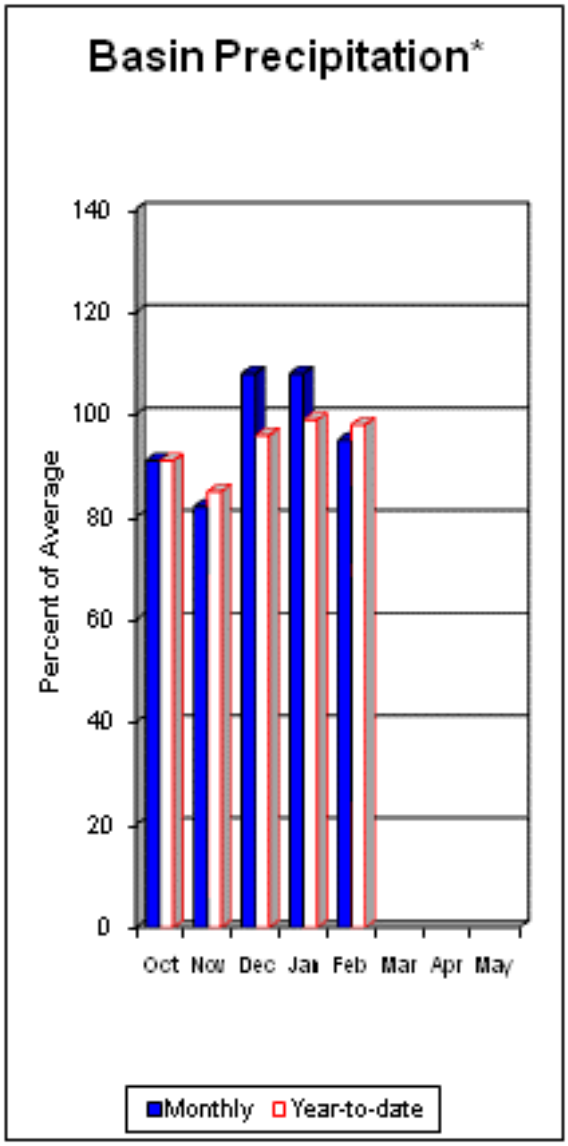
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	8.6	5.8	8.4
CONCONULLY RESERVOIR	13.0	12.6	5.2	8.7

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	5	120	94
OMAK CREEK	3	80	80
SANPOIL RIVER	1	120	33
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	1	98	85
CONCONULLY LAKE	3	75	80
METHOW RIVER	7	106	87

Central Columbia River Basins





*Based on selected stations

Precipitation during February was 95% of average in the basin and 98% for the year-to-date. Runoff for Entiat River is forecast to be 83% of average for the summer. The April-September average forecast for Chelan River is 87%, Wenatchee River at Plain is 88%, Stehekin River is 92% and Icicle Creek is 79%. February average streamflows on the Chelan River were 146% and on the Wenatchee River 135%. March 1 snowpack in the Wenatchee River Basin was 75% of average; the Chelan, 80%; the Entiat, 68%; Stemilt Creek, 75% and Colockum Creek, 87%. Reservoir storage in Lake Chelan was 237,000-acre feet, 95% of March 1 average and 35% of capacity. Lyman Lake SNOTEL had the most snow water with 46.4 inches of water. This site would normally have 55.1 inches on March 1. Temperatures were 2-4 degrees below normal for February and 1-2 degrees above for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	APR-JUL	525	595	645	92	695	765	700
	APR-SEP	635	710	760	92	810	885	830
Chelan R at Chelan (2)	APR-JUL	770	855	910	87	965	1050	1050
	APR-SEP	875	965	1030	87	1090	1190	1190
Entiat R nr Ardenvoir	APR-JUL	145	165	178	83	191	210	215
	APR-SEP	166	185	199	83	215	230	240
Wenatchee R at Plain	APR-JUL	785	880	940	88	1000	1090	1070
	APR-SEP	880	975	1040	88	1110	1200	1180
Icicle Ck nr Leavenworth	APR-JUL	205	230	245	79	260	285	310
	APR-SEP	225	250	270	79	290	315	340
Wenatchee R at Peshastin	APR-JUL	1110	1240	1320	89	1400	1530	1480
	APR-SEP	1230	1360	1450	89	1540	1670	1630
Columbia R bl Rock Island Dam (2)	APR-JUL	53300	58000	61100	104	64200	68900	59000
	APR-SEP	63000	68400	72100	104	75800	81200	69500

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

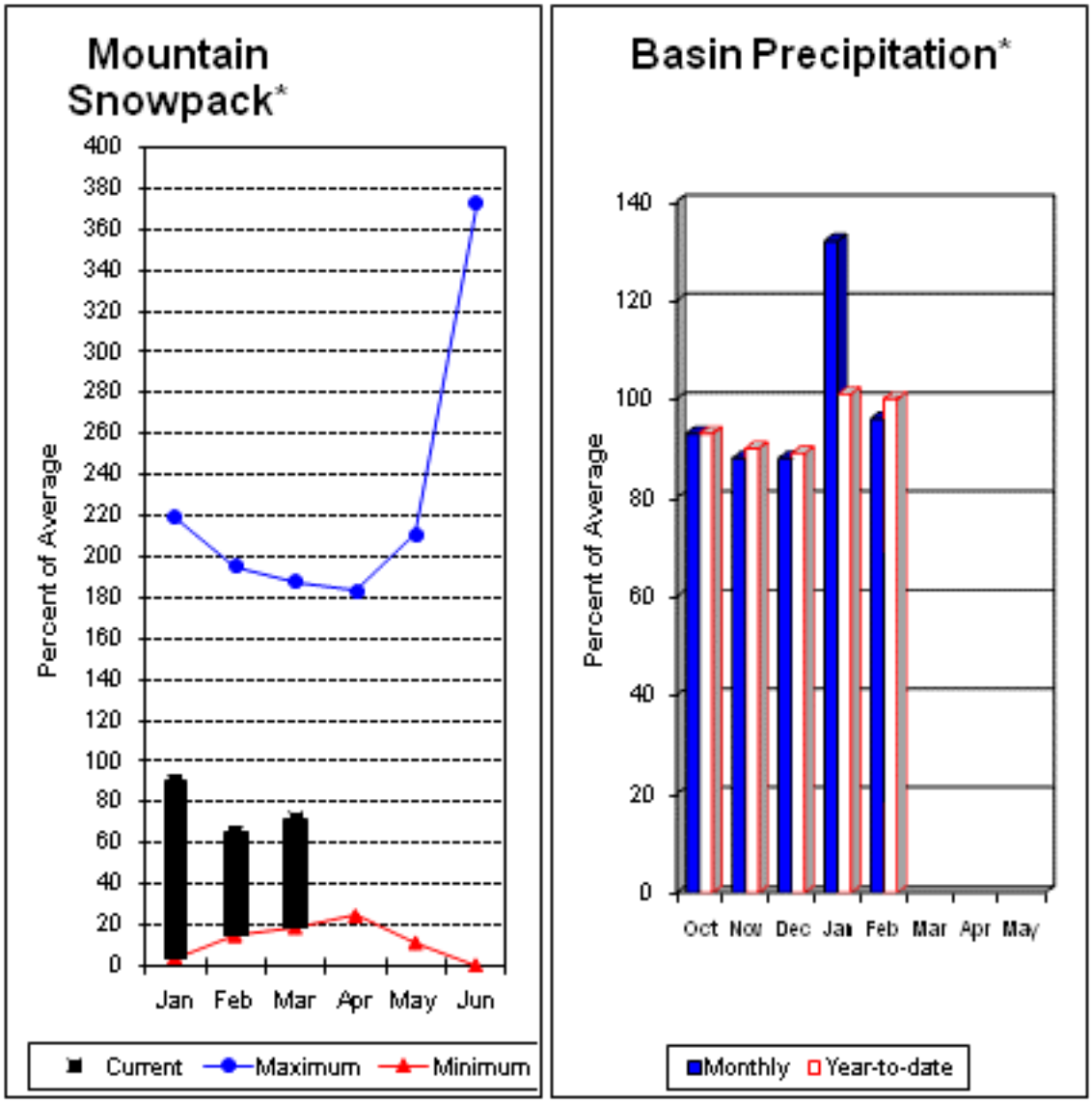
CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	236.8	378.7	250.1

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
CHELAN LAKE BASIN	6	108	80
ENTIAT RIVER	1	86	68
WENATCHEE RIVER	9	100	75
STEMILT CREEK	2	84	75
COLOCKUM CREEK	2	78	87

Upper Yakima River Basin



*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 700,000-acre feet, 140% of average. Forecasts for the Yakima River at Cle Elum are 87% of average and the Teanaway River near Cle Elum is at 83%. Lake inflows are all forecasted to be slightly below average this summer as well. February streamflows within the basin were Yakima at Cle Elum at 140% and Cle Elum River near Roslyn at 123%. March 1 snowpack was 72% based upon 10 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 96% of average for February and 100% year-to-date for water. 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.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	APR-JUL	76	93	105	87	117	134	121
	APR-SEP	86	104	116	87	128	146	133
Kachess Reservoir Inflow (2)	APR-JUL	74	88	98	88	108	122	111
	APR-SEP	82	96	106	88	116	130	120
Cle Elum Lake Inflow (2)	APR-JUL	305	340	365	89	390	425	410
	APR-SEP	335	375	400	89	425	465	450
Yakima R at Cle Elum (2)	APR-JUL	530	640	715	87	790	900	820
	APR-SEP	575	695	780	87	865	985	900
Teanaway R bl Forks nr Cle Elum	APR-JUL	88	106	119	83	132	150	143
	APR-SEP	90	108	121	83	134	152	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	142.7	86.9	102.4
KACHESS	239.0	211.5	150.6	154.7
CLE ELUM	436.9	345.7	174.6	241.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2011

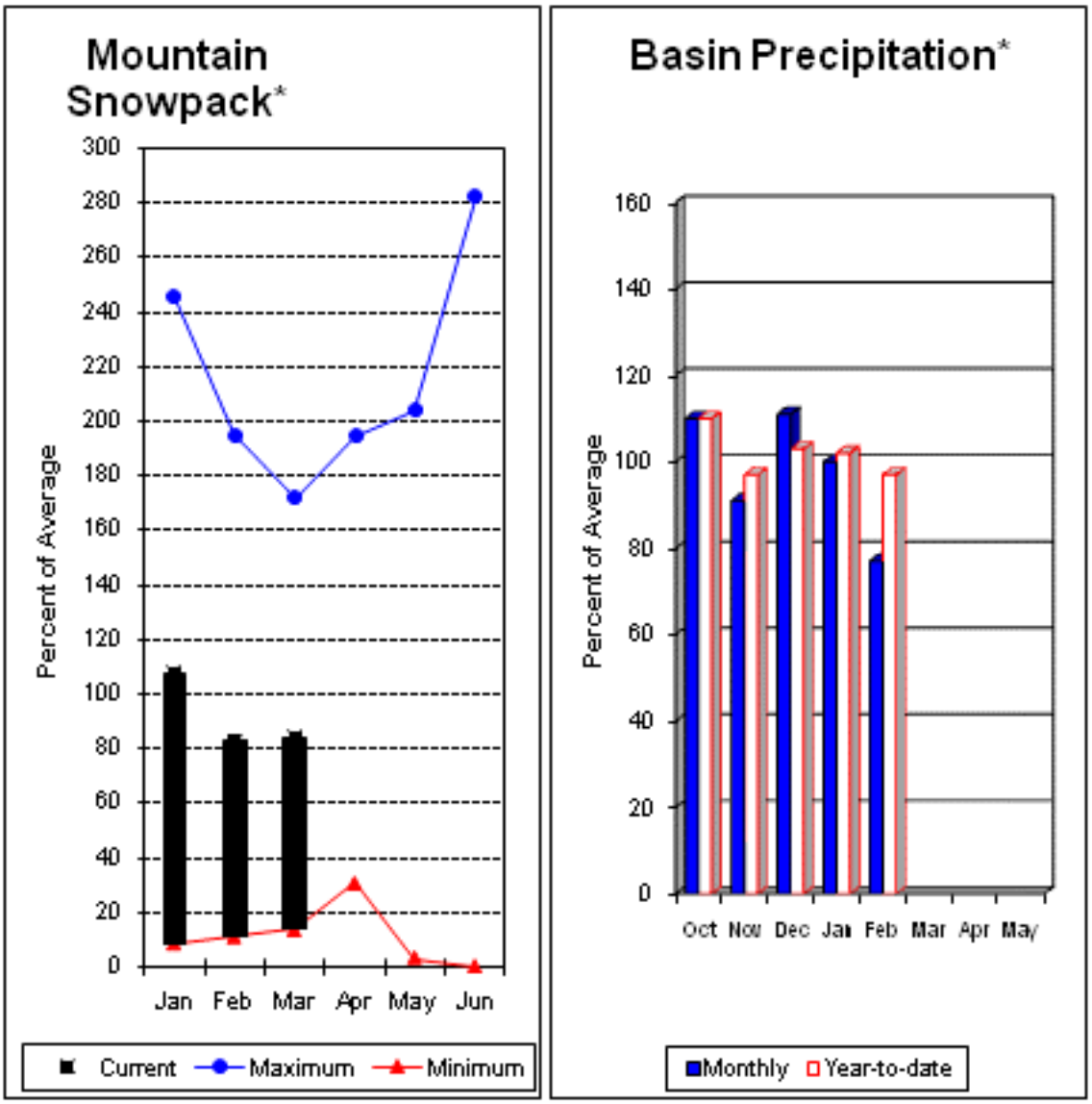
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	10	110	72

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin



*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 108%; Naches River near Naches, 112%; and Yakima River at Kiona, 102%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 179,000-acre feet, 130% of average. Forecast averages for Yakima River near Parker are 84%; American River near Nile, 93%; Ahtanum Creek, 84%; and Klickitat River near Glenwood, 100%. March 1 snowpack was 84% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 77%of average. Precipitation was 77% of average for February and 97% year-to-date for water. Temperatures were 2-4 degrees below normal for February and slightly above for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they March differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	APR-JUL	97	111	120	98	129	143	122
	APR-SEP	105	119	129	98	139	153	132
American R nr Nile	APR-JUL	80	92	100	93	108	120	108
	APR-SEP	89	101	110	93	119	131	118
Rimrock Lake Inflow (2)	APR-JUL	165	182	193	94	205	220	205
	APR-SEP	193	210	225	94	240	255	240
Naches R nr Naches (2)	APR-JUL	580	660	715	99	770	850	720
	APR-SEP	625	710	770	99	830	915	780
Ahtanum Ck at Union Gap	APR-JUL	15.4	21	25	83	29	35	30
	APR-SEP	17.3	23	27	84	31	37	32
Yakima R nr Parker (2)	APR-JUL	1160	1370	1510	84	1650	1860	1800
	APR-SEP	1310	1520	1670	84	1820	2030	1980
Klickitat R nr Glenwood	APR-JUL	103	117	127	101	137	151	126
	APR-SEP	137	152	163	100	174	189	163
Klickitat R nr Pitt	APR-JUL	380	425	460	100	495	540	460
	APR-SEP	460	515	555	101	595	650	550

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	16.0	11.8	11.5
RIMROCK	198.0	162.8	101.2	126.1

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER YAKIMA RIVER	7	109	84
AHTANUM CREEK	3	82	77

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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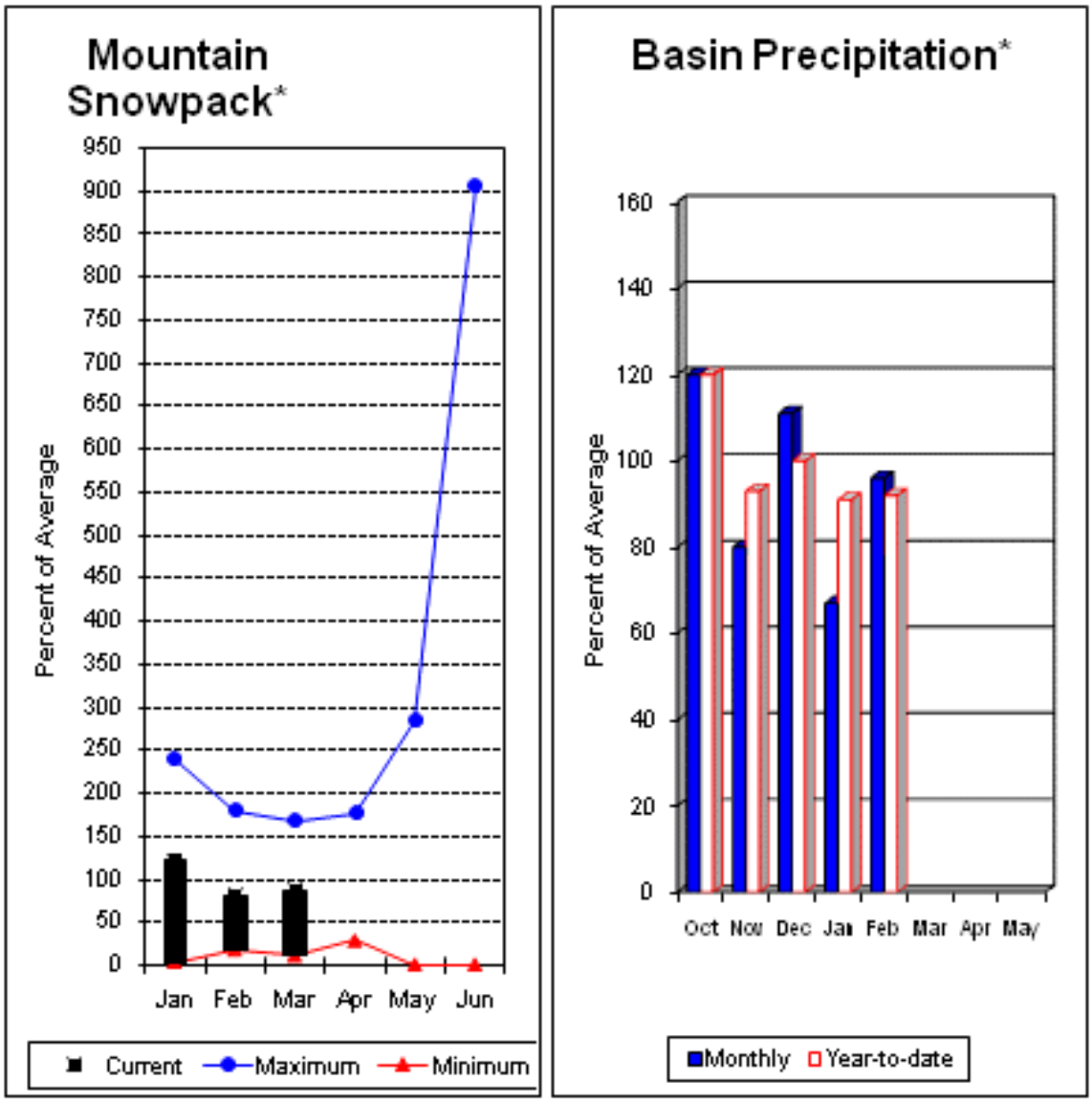
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Walla Walla River Basin



*Based on selected stations

February precipitation was 96% of average, maintaining the year-to-date precipitation at 92% of average. Snowpack in the basin was 87% of average. Streamflow forecasts are 96% of average for Mill Creek and 103% for the SF Walla Walla near Milton-Freewater. February streamflow was 75% of average for the SF Walla Walla River. Average temperatures were 2-4 degrees below normal for February but near average for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	MAR-SEP	70	78	83	103	88	96	81
	APR-JUL	46	52	56	104	60	66	54
	APR-SEP	58	64	69	103	74	80	67
Mill Ck nr Walla Walla	APR-JUL	16.1	20	23	96	26	30	24
	APR-SEP	19.7	24	27	96	30	34	28

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
WALLA WALLA RIVER	2	128	87

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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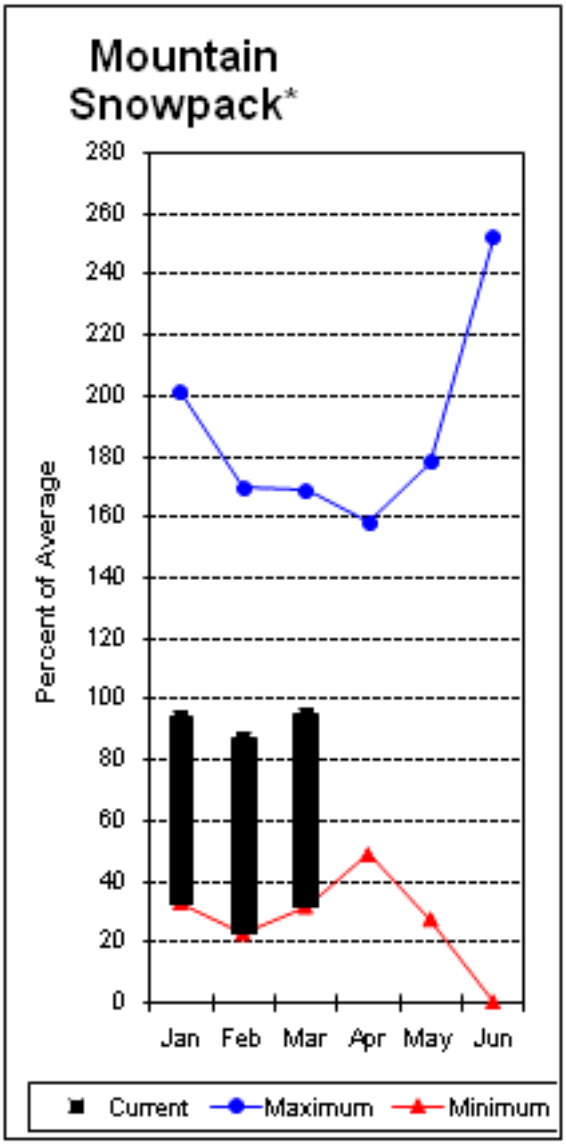
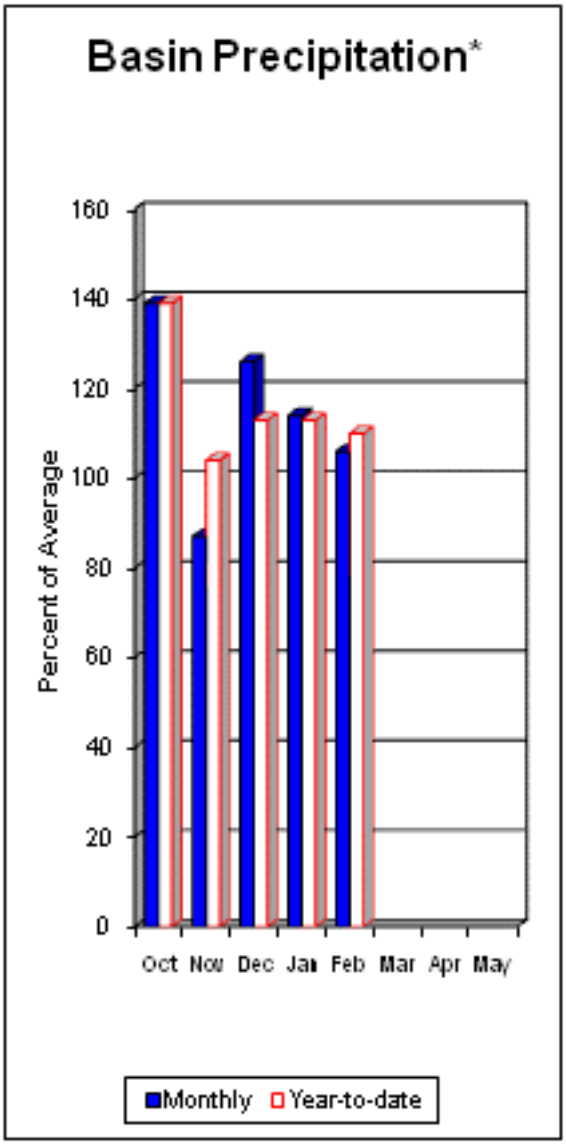
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 109% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 100% and 101% of normal respectively. A newly developed forecast point for Asotin Creek at Asotin predicts 94% of average flows for the April – July runoff period. February precipitation was 106% of average, bringing the year-to-date precipitation to 110% of average. March 1 snowpack readings averaged 95% of average. February streamflow was 98% of average for Snake River below Lower Granite Dam and 76% for Grande Ronde River near Troy. Dworshak Reservoir on the Clearwater River is at 90% of average. Average temperatures were 2-4 degrees below normal for February and near normal for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	MAR-JUL	1170	1470	1600	101	1730	2030	1580
	APR-SEP	945	1240	1380	101	1520	1810	1370
Asotin Ck at Asotin	APR-JUL	18.2	27	33	94	39	48	35
Clearwater R at Spalding (1,2)	APR-JUL	6260	7520	8090	109	8660	9920	7430
	APR-SEP	6640	7970	8570	109	9170	10500	7850
Snake R bl Lower Granite Dam (1,2)	APR-JUL	14300	19300	21600	100	23900	28900	21600
	APR-SEP	16000	21600	24200	100	26800	32400	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DWORSHAK	3468.0	2043.4	2210.6	2281.7

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER SNAKE, GRANDE RONDE	11	150	95

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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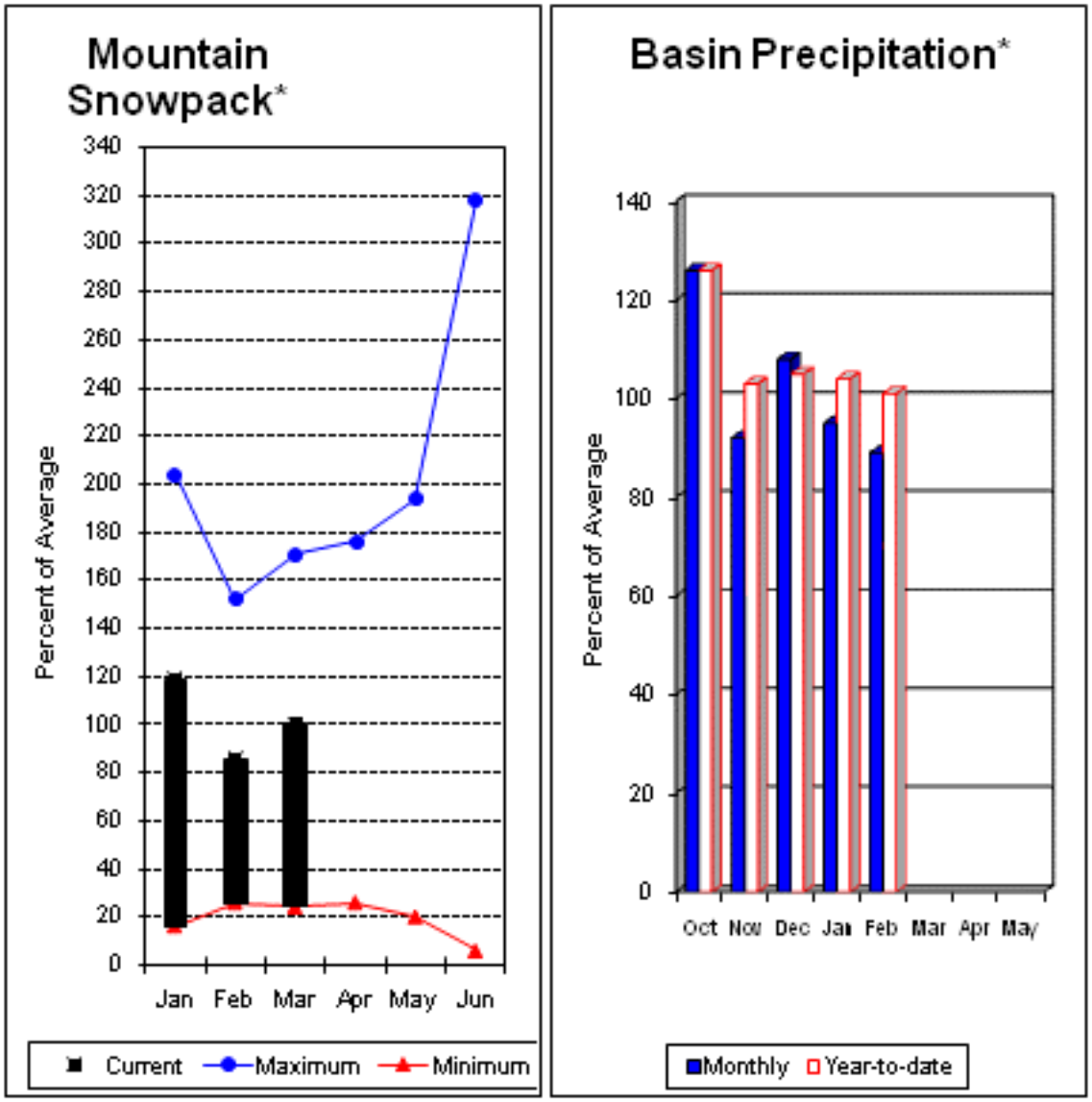
Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 96% and Cowlitz River at Castle Rock, 96% of average. The Columbia at The Dalles is forecasted to have 99% of average flows this summer. February average streamflow for Cowlitz River was 89%. The Columbia River at The Dalles was 92% of average. February precipitation was 89% of average and the water-year average was 101%. March 1 snow cover for Cowlitz River was 99%, and Lewis River was 102% of average. Average temperatures were 4-8 degrees below normal during February and 1-3 degrees below for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	APR-JUL	72100	79100	83900	99	88700	95700	84600
	APR-SEP	84000	92200	97800	99	103000	112000	98600
Klickitat R nr Glenwood	APR-JUL	103	117	127	101	137	151	126
	APR-SEP	137	152	163	100	174	189	163
Klickitat R nr Pitt	APR-JUL	380	425	460	100	495	540	460
	APR-SEP	460	515	555	101	595	650	550
Lewis R at Ariel (2)	APR-JUL	710	875	990	96	1100	1270	1031
	APR-SEP	835	1010	1130	96	1250	1420	1176
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1170	1420	1590	94	1760	2010	1689
	APR-SEP	1300	1600	1800	94	2000	2300	1922
Cowlitz R at Castle Rock (2)	APR-JUL	1710	1990	2180	95	2370	2650	2295
	APR-SEP	2010	2310	2520	96	2730	3030	2639

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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

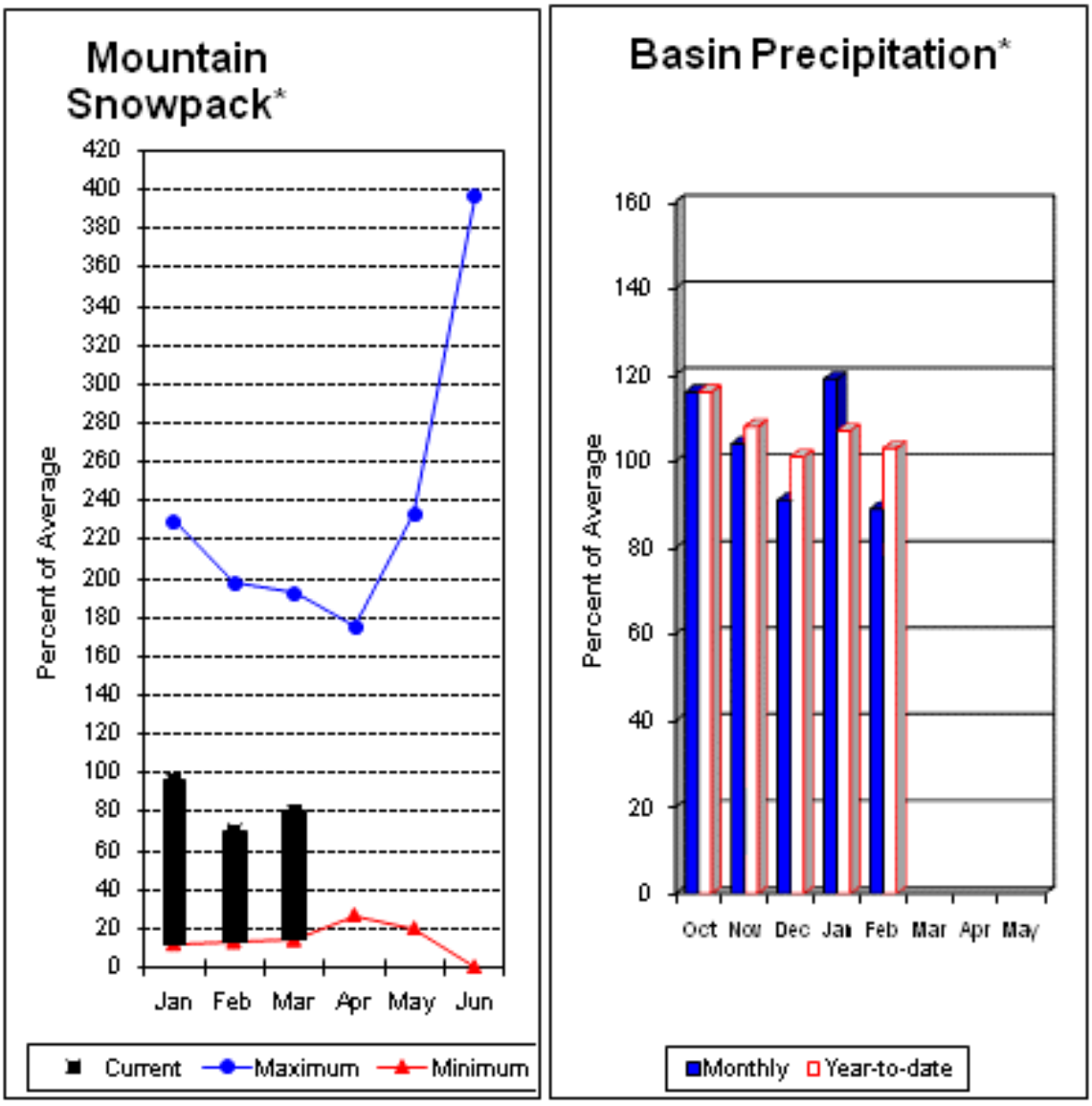
LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MOSSYROCK	0.0	1243.2	1141.4	---
SWIFT		NO REPORT		
YALE		NO REPORT		
MERWIN		NO REPORT		

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	5	139	102
COWLITZ RIVER	6	145	99

South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 82% of normal for the Green River below Howard Hanson Dam and 102% for the White River near Buckley. March 1 snowpack was 90% of average for the White River, 89 % for Puyallup River and 60% in the Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 26 inches. This site has a March 1 average of 29.5 inches. February precipitation was 89% of average, bringing the water year-to-date to 103% of average for the basins. Average temperatures in the area were 2-4 degrees below normal for February and slightly below for the water-year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	APR-JUL	335	415	450	102	485	565	440
	APR-SEP	415	505	545	102	585	675	534
Green R bl Howard Hanson Dam (1,2)	APR-JUL	102	169	200	82	230	300	245
	APR-SEP	120	189	220	82	250	320	268

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	119	90
GREEN RIVER	3	184	60
PUYALLUP RIVER	5	121	89

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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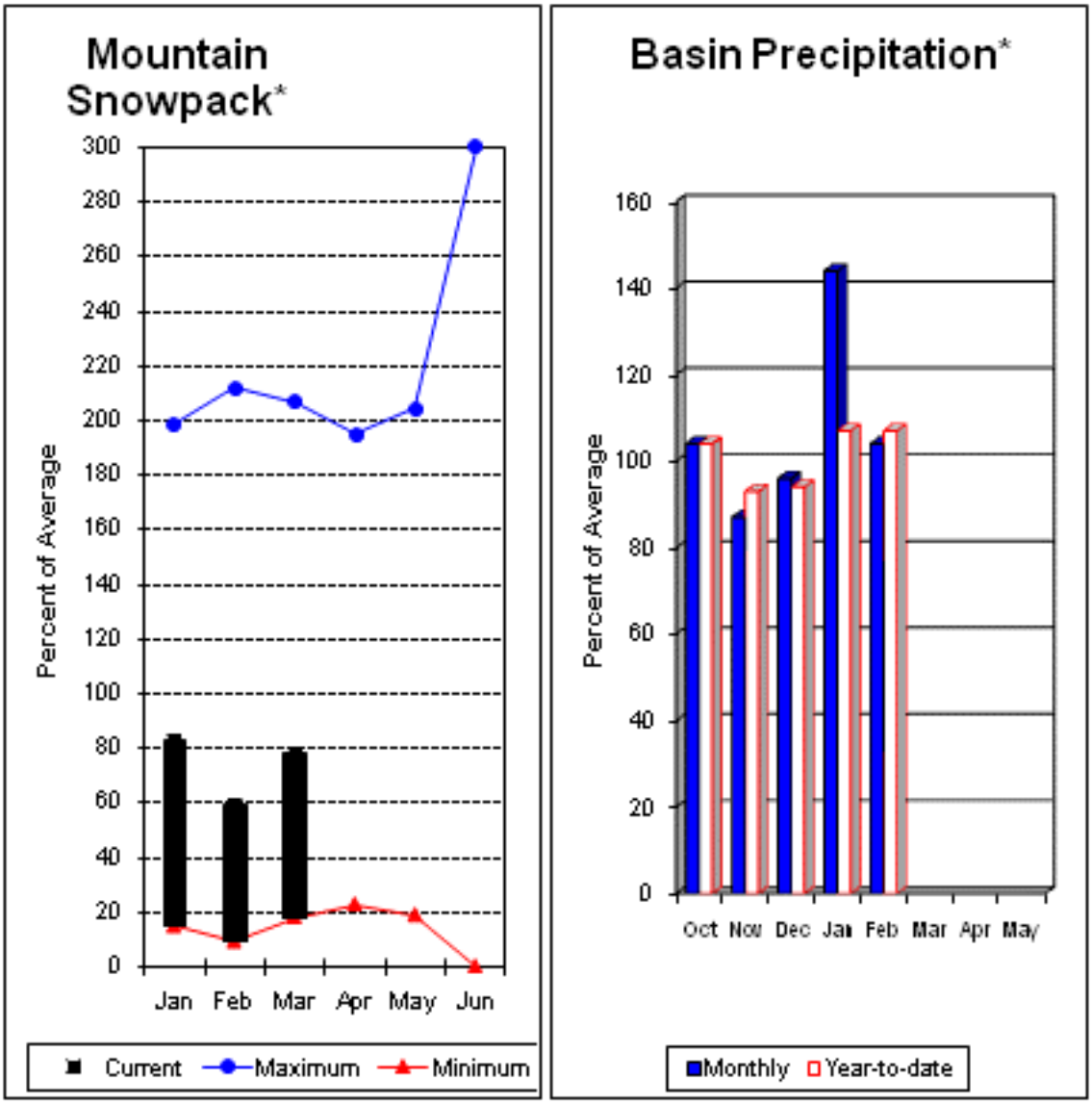
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 95% for Cedar River near Cedar Falls; 96% for Rex River; 100% for South Fork of the Tolt River; 96% for Taylor Creek near Selleck, and 96% for Cedar River at Cedar Falls. Basin-wide precipitation for February was 104% of average, bringing water-year-to-date to 107% of average. March 1 average snow cover in Cedar River Basin was 85%, Tolt River Basin was 79%, Snoqualmie River Basin was 73%, and Skykomish River Basin was 71%. Stevens Pass SNOTEL site, at 3950 feet, had 24.9 inches of water content. Average March 1 water content is 38.3 inches at Stevens Pass. Temperatures were 2-4 degrees below normal for February and slightly below for the water-year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	APR-JUL	53	63	70	96	77	87	73
	APR-SEP	58	69	76	95	83	94	80
Rex R nr Cedar Falls	APR-JUL	16.4	21	24	96	27	32	25
	APR-SEP	19.2	24	27	96	30	35	28
Cedar R at Cedar Falls (2)	APR-JUL	44	60	71	96	82	98	74
	APR-SEP	43	59	70	96	81	97	73
Taylor Ck nr Selleck	APR-JUL	14.0	17.1	19.2	96	21	24	20
	APR-SEP	17.4	21	23	96	25	29	24
SF Tolt R nr Index	APR-JUL	10.7	13.1	14.7	100	16.3	18.7	14.7
	APR-SEP	12.4	15.1	16.9	100	18.7	21	16.9

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	6	230	85
TOLT RIVER	3	248	81
SNOQUALMIE RIVER	5	160	73
SKYKOMISH RIVER	3	145	71

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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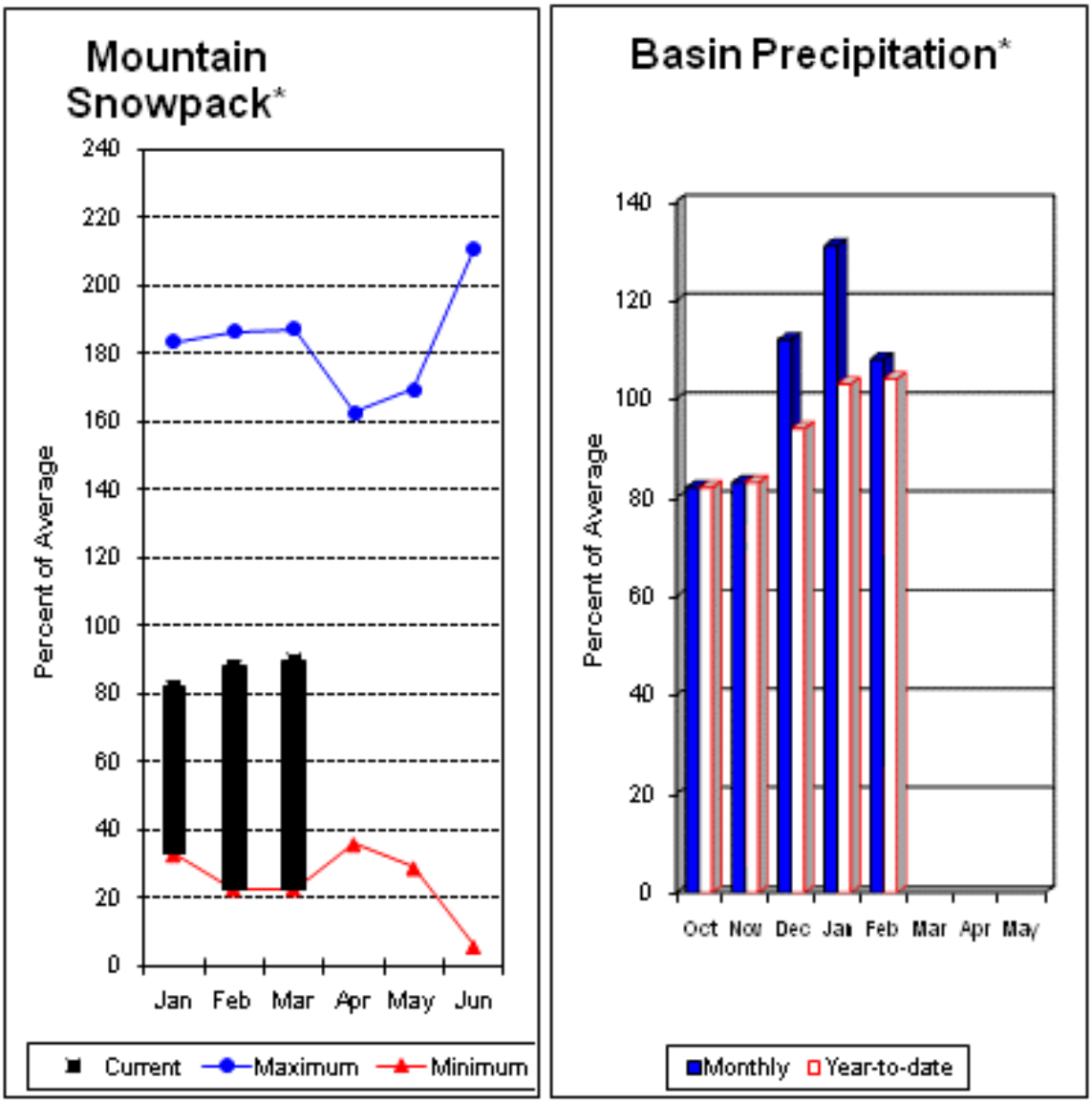
North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 93% of average for the spring and summer period. February streamflow in Skagit River was 97% of average. Other forecast points included Baker River at 92% and Thunder Creek at 96% of average. Basin-wide precipitation for February was 108% of average, bringing water-year-to-date to 104% of average. March 1 average snow cover in Skagit River Basin was 90%, Nooksack River Basin was 89% and Baker River Basin is estimated to have about 90% of average as well. Rainy Pass SNOTEL, at 4,780 feet, had 29.5 inches of water content. Average March 1 water content is 38.2 inches at Rainy Pass. March 1 Skagit River reservoir storage was 110% of average and 67% of capacity. Average temperatures for February were 4-5 degrees below normal for the basin and 1-2 degrees below average for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	APR-JUL	191	210	225	96	240	260	234
	APR-SEP	280	305	320	96	335	360	333
Skagit R at Newhalem (2)	APR-JUL	1490	1630	1730	93	1830	1970	1864
	APR-SEP	1820	1960	2060	93	2160	2300	2217
Baker R nr Concrete (2)	APR-JUL	605	700	765	92	830	925	828
	APR-SEP	750	880	965	92	1050	1180	1050

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	907.9	953.5	818.3
DIABLO RESERVOIR	90.6	86.2	85.5	85.7

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	13	135	90
BAKER RIVER	0	135	0
NOOKSACK RIVER	3	143	89

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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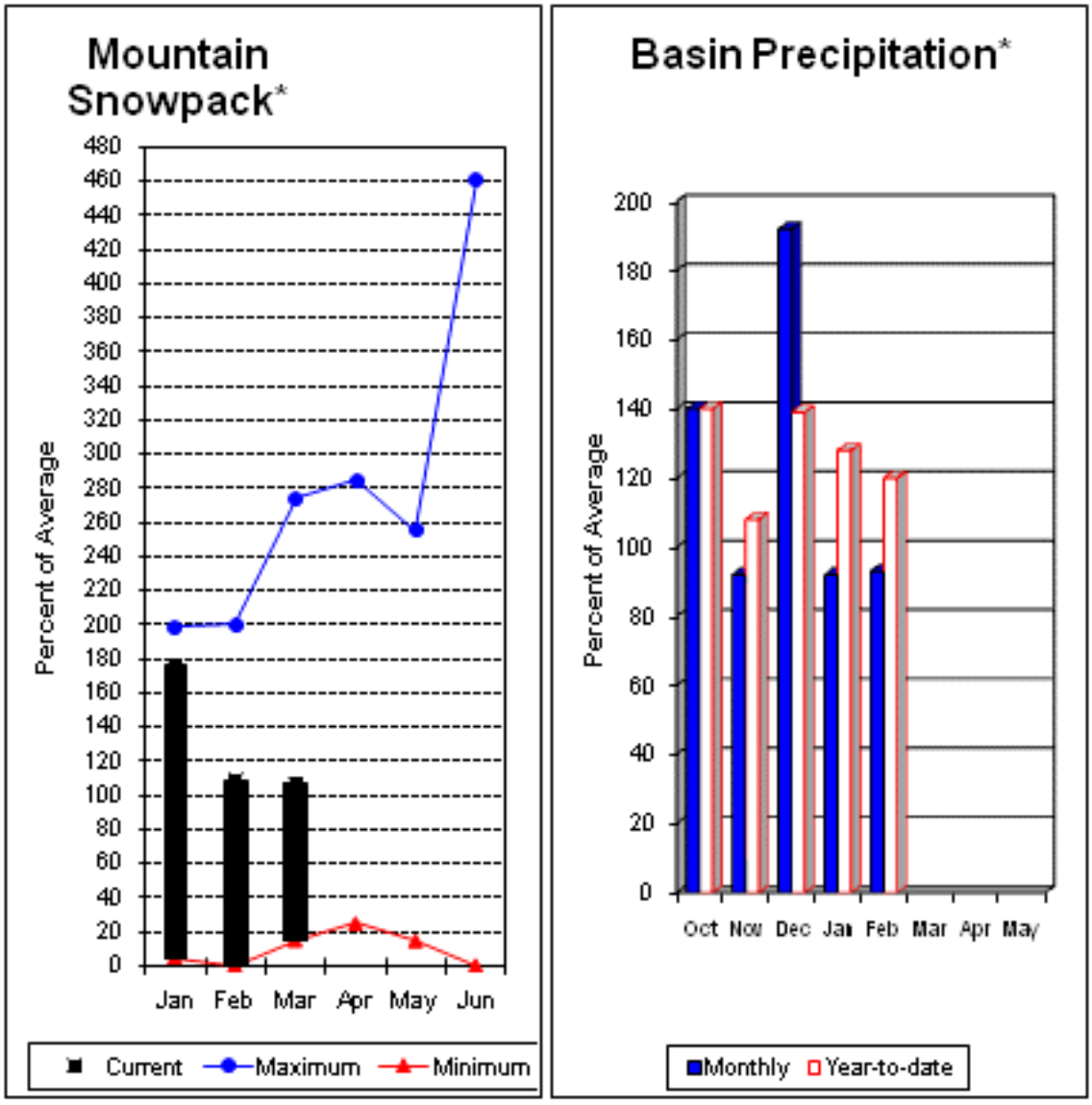
Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 102% and Elwha River is 100%. February runoff in the Dungeness River was 85% of normal. Big Quilcene and Wynoochee rivers should expect near average runoff this summer also. February precipitation was 93% of average. Precipitation has accumulated at 120% of average for the water year. February precipitation at Quillayute was 10.47 inches. The thirty-year average for February is 12.35 inches. Olympic Peninsula snowpack averaged 107% of normal on March 1. Temperatures were 2-6 degrees below average for February and slightly above normal for the water year.

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

Streamflow Forecasts - March 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	APR-JUL	102	116	126	102	136	150	124
	APR-SEP	124	142	155	102	168	186	152
Elwha R at Mcdonald Bridge	APR-JUL	350	390	420	100	450	490	419
	APR-SEP	415	470	505	100	540	595	503

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	6	121	107

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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Issued by

Dave White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

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

Canada	Ministry of Sustainable Resources
	Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	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
	Recourse Conservation & Development Councils
Local	City of Tacoma
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	Colville Confederated Tribes
	Spokane County
	Yakama Indian Nation
	Whatcom County
	Pierce County
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	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.**

Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873

Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Washington
Water Supply Outlook Report
April 1, 2011

Photo by Corey Bonsen, NRCS Yakima, WA Quartz Mountain, WA 3/28/11

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684

or

Larry Johnson
Engineering Team Leader
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2955

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

April 2011

General Outlook

The average peak snow accumulation date of April 1 has come and gone for most basins in Washington with a forecast of more snow to come. Way above average precipitation and near to below average temperatures brought tons of mountain snow in March, lifting all basins to near if not above average snowpack. With the good comes the bad in that all of this great snow caused considerable avalanche warnings and activity both natural and human triggered. Even with much above average precipitation most streams stayed within minimum flood stage causing very little damage. Rain on snow events were captured and stored in the snowpack as well. Short term weather forecasts indicate a continuation of below normal temperatures and above average precipitation however long term predictions show a trend toward a hot and dry summer.

Snowpack

The April 1 statewide SNOTEL readings were 115% of average, up 26% from last month. The Green River snow survey data reported the lowest readings at 82% of average, a 22% increase from last month. Readings from the Olympic Peninsula reported the highest at 152% of average. Westside averages from SNOTEL, and April 1 snow surveys, included the North Puget Sound river basins with 118% of average, the Central Puget river basins with 102%, and the Lewis-Cowlitz basins with 128% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 100% and the Wenatchee area with 105%. Snowpack in the Spokane River Basin was at 115% and the Walla Walla River Basin had 100% of average. Maximum confirmed snow cover in Washington was at Brown Top snow course in the Skagit River Basin, with water content of 86.4 inches, a 36 inch increase over the last month. The 30-year average for Brown Top on April 1 is 60.8 inches.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	220	115
Newman Lake	241	125
Pend Oreille	191	117
Okanogan	146	115
Methow	153	117
Conconully Lake	139	137
Wenatchee	136	98
Chelan	137	100
Upper Yakima	145	93
Lower Yakima	133	108
Ahtanum Creek	118	108
Walla Walla	153	100
Lower Snake	157	109
Cowlitz	153	118
Lewis	153	137
White	132	107
Green	216	82
Puyallup	127	107
Cedar	245	110
Snoqualmie	143	95
Skykomish	141	97
Skagit	175	118
Baker	n/a	N/A
Nooksack	155	117
Olympic Peninsula	157	152

Precipitation

During the month of March, the National Weather Service and Natural Resources Conservation Service climate stations reported much above average precipitation in all river basins in the state. Bringing all basins to near or well above normal for the water-year. The highest percent of average in the state was at Winthrop in north central Washington which reported 432% of average for a total of 4.52 inches. The average for Winthrop is 1.05 inches for March. June Lake SNOTEL was the wettest spot in the state last month with 28.9 inches.

RIVER BASIN	MARCH PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	168	124
Pend Oreille	164	116
Upper Columbia	212	119
Central Columbia	236	215
Upper Yakima	188	111
Lower Yakima	195	111
Walla Walla	129	98
Lower Snake	155	118
Lower Columbia	170	110
South Puget Sound	154	110
Central Puget Sound	174	115
North Puget Sound	188	112
Olympic Peninsula	214	134

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 743,000-acre feet, 134% of average for the Upper Reaches and 181,000-acre feet or 119% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 115% of average for April 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 178,000-acre feet, 105% of average and 75% of capacity; Chelan Lake, 171,000-acre feet, 79% of average and 25% of capacity; and the Skagit River reservoirs at 97% of average and 51% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	75	105
Pend Oreille	52	105
Upper Columbia	86	115
Central Columbia	25	79
Upper Yakima	89	134
Lower Yakima	78	119
Lower Snake	47	72
North Puget Sound	51	97

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

Streamflow

Forecasts vary from 90% of average for the Green River below Howard Hanson Dam to 127% of average for the Dungeness. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 115%; White River, 106%; and Skagit River, 107%. Some Eastern Washington streams include the Yakima River near Parker, 101%: Wenatchee River at Plain, 102%; and Spokane River near Post Falls, 124%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide March streamflows varied by region but were surprisingly low considering the amount of precipitation that we had The Walla Walla River had the highest reported natural flows with 140% of average. The kettle at Laurier with 51% of average was the lowest in the state. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 118%; the Spokane at Spokane, 103%; the Columbia below Rock Island Dam, 110%; and the Cle Elum near Roslyn, 86%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	105-124
Pend Oreille	106-122
Upper Columbia	105-116
Central Columbia	96-109
Upper Yakima	98-105
Lower Yakima	101-120
Walla Walla	106-107
Lower Snake	109-126
Lower Columbia	108-120
South Puget Sound	90-106
Central Puget Sound	113-121
North Puget Sound	105-111
Olympic Peninsula	125-127

STREAM	PERCENT OF AVERAGE MARCH STREAMFLOWS
Pend Oreille Below Box Canyon	95
Kettle at Laurier	51
Columbia at Birchbank	91
Spokane at Long Lake	102
Similkameen at Nighthawk	80
Okanogan at Tonasket	65
Methow at Pateros	95
Chelan at Chelan	105
Wenatchee at Pashastin	78
Yakima at Cle Elum	106
Yakima at Parker	87
Naches at Naches	88
Grande Ronde at Troy	92
Snake below Lower Granite Dam	93
SF Walla Walla near Milton Freewater	140
Columbia River at The Dalles	104
Cowlitz below Mayfield Dam	101
Skagit at Concrete	82
Dungeness near Sequim	120

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2011 WESTERN SNOW CONFERENCE

The 79th Western Snow Conference (WSC) annual meeting will be held in Lake Tahoe at Stateline, Nevada/California April 18-21. The theme for this year is “Satellites and smart instruments - the trend from established instrumentation toward distributed SWE estimation in watersheds”. The training course on Monday is 'Forecasting with the PRMS Model’. Additional information about the conference, registration and short course is available on the WSC web page at:
http://www.westernsnowconference.org/

B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

APRIL 2011

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
AHTANUM R.S.	3100	4/01/11	14	4.8	.0	5.3
ALPINE MEADOWS SNTL	3500	4/01/11	98	46.3	31.6	43.6
AMBROSE	6480	3/27/11	50	16.5	8.2	12.4
ASHLEY DIVIDE	4820	3/30/11	34	11.0	1.8	6.0
BADGER PASS SNOTEL	6900	4/01/11	97	37.7	24.7	35.3
BAIRD #2	3220	3/30/11	27	8.4	2.6	--
BAREE CREEK	5500	4/01/11	---	51.7E	22.7	43.1
BAREE MIDWAY	4600	4/01/11	95	35.2	17.7	33.0
BAREE TRAIL	3800	3/30/11	42	14.3	1.8	7.7
BARKER LAKES SNOTEL	8250	4/01/11	57	15.3	15.4	14.6
BARNES CREEK CAN.	5320	4/01/11	63	20.7	15.8	20.4
BASIN CREEK SNOTEL	7180	4/01/11	33	8.2	7.1	8.7
BASSOO PEAK	5150	3/29/11	46	14.3	4.3	9.7
BEAVER CREEK TRAIL	2200	4/02/11	50	18.3	.0	11.7
BEAVER PASS	3680	4/03/11	98	35.8	21.6	28.8
BEAVER PASS SNOTEL	3630	4/01/11	121	50.3	33.0	38.6
BIG WHITE MTN CAN.	5510	3/30/11	69	20.0	17.1	20.0
BLACK MOUNTAIN	7750	3/31/11	56	16.2	11.8	14.6
BLACK PINE SNOTEL	7100	4/01/11	48	15.1	8.0	12.5
BLACKWALL PILL CAN.	6370	4/01/11	100	37.2	27.1	35.1
BLEWETT PASS#2SNOTEL	4240	4/01/11	32	13.8	8.9	16.4
BLUE LAKE	5900	4/01/11	---	24.0E	13.4	23.7
BROOKMERE CAN.	3000	3/30/11	32	16.5	4.7	7.9
BROWN TOP AM	6000	4/02/11	195	86.4	47.4	60.8
BROWNS PASS		3/29/11	20	6.1	.0	--
BRUSH CREEK TIMBER	5000	3/28/11	49	19.9	3.8	8.1
BUCKINGHORSE SNOTEL	4870	4/01/11	208	83.3	66.6	--
BULL MOUNTAIN	6600	3/29/11	32	7.6	2.6	5.9
BUMPING LAKE (NEW)	3400	3/31/11	56	21.5	10.2	17.6
BUMPING RIDGE SNOTEL	4610	4/01/11	94	32.6	24.6	28.6
BUNCHGRASS MDWSNOTEL	5000	4/01/11	92	29.2	26.2	30.2
BURNT MOUNTAIN PIL	4170	4/01/11	47	15.4	7.6	13.7
BUTTE CREEK #2		3/29/11	36	9.1	7.0	--
BUTTERMILK BUTTE	5250	3/28/11	69	15.8	14.0	--
CALAMITY SNOTEL	2500	4/01/11	10	5.1	.4	--
CARMI CAN.	4100	3/31/11	23	5.2	2.5	5.6
CAYUSE PASS SNOTEL	5240	4/01/11	193	72.4	47.9	--
CEDAR GROVE	3760	3/30/11	38	13.4	4.9	11.4
CHESSMAN RESERVOIR	6200	3/28/11	24	6.4	3.5	3.5
CHEWALAH #2	4930	3/28/11	68	21.0	17.0	--
CHICKEN CREEK	4060	3/29/11	57	20.8	9.7	15.2
CHIWAUKUM G.S.	2500	4/04/11	28	9.8	5.1	9.2
COLD CREEK STRIP	6020	3/31/11	52	12.0	8.4	--
COLOCKUM PASS	5370	3/28/11	64	19.1	--	16.3
COMBINATION SNOTEL	5600	4/01/11	17	6.0	3.9	4.9
COPPER BOTTOM SNOTEL	5200	4/01/11	19	7.0	.0	11.0
COPPER CAMP	6950	3/26/11	88	35.2	11.7	--
COPPER CREEK	5700	3/26/11	37	11.2	2.9	13.3
COPPER MOUNTAIN	7700	3/29/11	49	14.0	8.7	11.2
CORRAL PASS SNOTEL	5800	4/01/11	108	36.9	25.4	34.9
COTTONWOOD CREEK	6400	3/31/11	29	8.0	4.8	8.3
COUGAR MTN. SNOTEL	3200	4/01/11	39	15.4	1.2	17.7
COX VALLEY	4500	4/01/11	129	49.3	34.4	38.7
COYOTE HILL	4200	3/31/11	31	11.2	5.4	8.7
DALY CREEK SNOTEL	5780	4/01/11	38	12.4	7.4	11.1
DEER PARK	5200	4/01/11	72	27.6	17.3	18.8
DESERT MOUNTAIN	5600	3/30/11	58	17.7	8.9	14.7
DEVILS PARK	5900	4/03/11	144	50.6	28.1	44.2
DISAUTEL PASS		4/01/11	18	4.0	.0	--
DISCOVERY BASIN	7050	3/28/11	47	12.7	7.9	10.4
DIX HILL	6400	3/27/11	36	12.1	5.8	10.3
DOMMERIE FLATS	2200	4/01/11	0	.0	.0	3.8
DUNCAN RIDGE	5370	3/31/11	36	9.0	5.0	--
DUNGENESS SNOTEL	4010	4/01/11	51	21.9	4.8	8.6
EAST FORK R.S.	5400	3/30/11	19	4.9	1.3	4.7
EL DORADO MINE	7800	3/25/11	46	12.1	7.4	20.2
EMERY CREEK SNOTEL	4350	4/01/11	52	19.4	9.1	15.3
ENDERBY CAN.	5800	3/31/11	126	59.1	36.5	40.1
ESPERON CK. MID CAN.	4250	3/29/11	42	12.7	9.5	14.6
ESPERON CK. UP CAN.	5050	3/29/11	49	14.8	11.8	17.1
FARRON CAN.	4000	3/29/11	44	14.0	9.6	12.5
FATTY CREEK	5500	4/01/11	---	31.6E	17.1	24.3
FISH CREEK	8000	3/31/11	42	10.7	9.4	9.9
FISH LAKE	3370	3/29/11	77	31.1	19.9	31.5
FISH LAKE SNOTEL	3430	4/01/11	72	30.8	20.1	34.5
FLATTOP MTN SNOTEL	6300	4/01/11	157	53.5	34.3	45.1
FLEECER RIDGE	7500	3/29/11	45	12.3	5.1	10.9
FOURTH OF JULY SUM	3200	3/31/11	20	7.9	.0	5.7
FREEZEOUT CK. TRAIL	3500	4/05/11	42	12.9	4.6	11.3
FROHNER MDWS SNOTEL	6480	4/01/11	30	8.5	6.5	8.0
FROST MEADOWS	4630	3/28/11	61	18.3	15.0	--
GOAT CREEK	3600	3/29/11	27	7.6	2.0	3.6
GOLD CREEK LAKE	7200	3/25/11	66	20.1	16.2	14.7
GOLD MTN LOOKOUT		3/28/11	48	13.8	--	--
GRASS MOUNTAIN #2	2900	4/04/11	28	10.5	--	10.0
GRAVE CRK SNOTEL	4300	4/01/11	61	21.1	10.7	15.6
GREEN LAKE SNOTEL	5920	4/01/11	82	25.6	22.2	23.0
GREYBACK RES CAN.	4700	3/30/11	33	11.0	9.0	9.2
GRIFFIN CR DIVIDE	5150	3/29/11	48	14.1	5.5	10.3
GROUSE CAMP SNOTEL	5390	4/01/11	67	21.9	17.3	19.8
GUNSIGHT LAKE	6300	4/01/11	---	47.2E	26.5	39.3
HAMILTON HILL CAN.	4550	3/30/11	43	11.6	6.3	14.0
HAND CREEK SNOTEL	5030	4/01/11	47	14.9	7.0	11.7
HARTS PASS SNOTEL	6490	4/01/11	137	57.3	32.3	46.3
HARTS PASS	6500	4/01/11	145	51.4	35.2	42.0
HELL ROARING DIVIDE	5770	3/25/11	99	35.1	21.0	29.5
HERRIG JUNCTION	4850	3/29/11	86	30.9	16.9	26.0
HIGH RIDGE SNOTEL	4920	4/01/11	75	27.4	16.3	23.1
HOLBROOK	4530	3/31/11	28	9.6	1.5	8.2
HOODOO BASIN SNOTEL	6050	4/01/11	135	49.7	23.3	45.3
HUCKLEBERRY SNOTEL	2250	4/01/11	0	.2	.0	.4
HUMBOLDT GLCH SNOTEL	4250	4/01/11	---	15.8	4.0	11.2
HURRICANE	4500	3/28/11	75	26.6	14.8	19.1
INDIAN ROCK SNOTEL	5360	4/01/11	96	40.6	32.7	--
INTERGAARD	6450	3/26/11	30	8.1	3.9	7.7
IRENE'S CAMP	5530	3/31/11	50	12.8	9.1	--
ISINTOK LAKE CAN.	5100	3/30/11	34	6.7	4.4	7.2
JUNE LAKE SNOTEL	3440	4/01/11	125	60.1	29.4	35.7
KELLER RIDGE	3700	4/01/11	14	2.8	.0	--
KELLOGG PEAK	5560	4/01/11	89	34.4	12.6	29.2
KISHENEHN	3890	3/31/11	35	10.5	2.2	6.8
KIT CARSON PASTURE	4950	3/29/11	21	5.8	2.2	8.1
KRAFT CREEK SNOTEL	4750	4/01/11	42	16.3	6.5	14.1
LAMB BUTTE		3/30/11	59	17.0	14.2	--
LIGHTNING LAKE CAN.	3700	3/31/11	43	13.6	8.6	12.0
LOGAN CREEK	4300	3/28/11	37	11.4	4.3	6.7
LOLO PASS SNOTEL	5240	4/01/11	87	32.3	15.6	30.3
LONE PINE SNOTEL	3930	4/01/11	126	55.2	34.5	36.4
LOOKOUT SNOTEL	5140	4/01/11	94	33.4	15.6	31.8
LOST HORSE MTN CAN.	6300	4/01/11	31	11.5	7.5	9.4
LOST HORSE SNOTEL	5120	4/01/11	55	19.7	20.3	18.3
LOST LAKE SNOTEL	6110	4/01/11	161	61.4	31.6	60.0
LOST LAKE	4070	3/29/11	31	7.9	7.0	--
LOUP LOUP CAMPGROUND		3/28/11	46	11.8	9.0	--
LOWER SANDS CREEK #2	3120	4/01/11	61	23.6	9.6	18.9
LUBRECHT FOREST NO 3	5450	3/30/11	24	7.1	2.4	5.7
LUBRECHT FOREST NO 4	4650	3/30/11	7	2.5	.0	1.3
LUBRECHT FOREST NO 6	4040	3/30/11	16	4.9	.0	1.6
LUBRECHT HYDROPLOT	4200	3/30/11	21	6.7	.0	2.9
LUBRECHT SNOTEL	4680	4/01/11	20	6.8	.0	3.6
LYMAN LAKE SNOTEL	5980	4/01/11	190	66.8	48.6	65.4
LYNN LAKE	4000	4/01/11	55	18.3e	--	20.4
LYNN LAKE SNOTEL	3900	4/01/11	55	18.3	8.2	--
MARIAS PASS	5250	4/01/11	63	22.3	7.0	16.8
MARTEN RIDGE SNOTEL	3520	4/01/11	155	74.6	43.6	--
MAZAMA		3/28/11	26	8.3	.8	--
MCCULLOCH CAN.	4200	3/31/11	27	8.0	3.3	6.1
MEADOWS CABIN	1900	4/03/11	6	1.8	.0	4.0
MEADOWS PASS SNOTEL	3230	4/01/11	60	29.6	11.3	23.9
METEOR		3/28/11	0	.0	.0	--
M F NOOKSACK SNOTEL	4970	4/01/11	147	68.9	46.3	64.6
MICA CREEK SNOTEL	4510	4/01/11	71	24.7	14.4	25.1
MINERAL CREEK	4000	3/29/11	52	21.2	5.6	17.4
MISSEZULA MTN CAN.	5080	3/31/11	33	9.2	5.1	9.5
MISSION CREEK CAN.	5840	4/01/11	---	20.0E	16.2	20.0
MISSION RIDGE	5000	4/04/11	58	19.2	15.2	17.4
MONASHEE PASS CAN.	4500	4/01/11	46	14.4	8.7	13.5
MORSE LAKE SNOTEL	5410	4/01/11	163	60.3	55.5	55.5
MOSES MOUNTAIN (2)	4800	3/31/11	49	13.9	16.0	22.7
MOSES MTN SNOTEL	5010	4/01/11	52	16.8	14.9	15.9
MOSES PEAK	6650	3/31/11	85	27.9	--	15.0
MOSQUITO RDG SNOTEL	5200	4/01/11	---	44.4	26.4	35.8
MOULTON RESERVOIR	6850	4/01/11	---	10.3E	3.8	6.9
MOUNT CRAG SNOTEL	3960	4/01/11	136	47.6	32.6	30.8
MT. KOBAU CAN.	5500	3/29/11	61	15.9	13.5	12.5
MOUNT TOLMAN	2000	4/01/11	0	.0	.0	--
MOWICH SNOTEL	3160	4/01/11	0	.0	.5	.6
MOUNT GARDNER SNOTEL	2920	4/01/11	39	15.6	.8	13.0
MUTTON CREEK #1	5700	3/30/11	72	19.2	14.0	13.9
N.F. ELK CR SNOTEL	6250	4/01/11	50	15.9	7.7	12.4
NEVADA RIDGE SNOTEL	7020	4/01/11	57	19.4	9.5	15.5
NEW HOZOMEEN LAKE	2800	4/05/11	---	8.4e	.0	10.0
NEZ PERCE CMP SNOTEL	5650	4/01/11	45	15.0	8.3	14.7
NEZ PERCE PASS	6570	3/29/11	84	16.0	8.3	17.8
NOISY BASIN	6040	3/30/11	162	63.2	42.3	--
NOISY BASIN SNOTEL	6040	4/01/11	155	62.4	34.9	40.9
NORTH FORK JOCKO	6330	4/01/11	---	52.4E	28.4	42.3
OLALLIE MDWS SNOTEL	4030	4/01/11	117	58.9	44.0	55.9
OPHIR PARK	7150	3/27/11	54	18.2	10.8	16.7
OYAMA LAKE CAN.	4100	4/01/11	23	6.4	4.7	6.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
PARADISE SNOTEL	5130	4/01/11	175	76.0	54.9	71.9
PARK CK RIDGE SNOTEL	4600	4/01/11	106	48.2	41.1	47.6
PEPPER CREEK SNOTEL	2140	4/01/11	20	9.2	.3	--
PETERSON MDW SNOTEL	7200	4/01/11	41	10.5	9.3	10.5
PIGTAIL PEAK SNOTEL	5800	4/01/11	155	57.8	41.3	53.2
PIKE CREEK SNOTEL	5930	4/01/11	58	21.7	8.9	27.5
PIPESTONE PASS	7200	3/29/11	28	7.8	4.3	5.7
POPE RIDGE SNOTEL	3590	4/01/11	54	17.9	13.6	18.4
POSTILL LAKE CAN.	4200	3/31/11	30	8.0	6.1	8.8
POTATO HILL SNOTEL	4510	4/01/11	109	37.7	27.2	25.3
QUARTZ PEAK SNOTEL	4700	4/01/11	71	26.3	15.4	21.2
RAGGED MTN SNOTEL	4210	4/01/11	64	26.1	14.1	--
RAGGED RIDGE	3330	3/31/11	13	5.3	.0	4.1
RAINY PASS SNOTEL	4890	4/01/11	106	44.0	28.2	44.0
RAINY PASS	4780	4/02/11	110	37.7	25.6	39.2
REX RIVER SNOTEL	3810	4/01/11	76	35.4	19.1	31.2
ROCKER PEAK SNOTEL	8000	4/01/11	57	16.4	11.4	14.3
ROLAND SUMMIT	5120	3/30/11	117	43.6	16.4	36.4
ROUND TOP MTN	4020	3/31/11	46	16.3	5.8	--
RUSTY CREEK	4000	3/30/11	29	8.8	5.0	5.5
SADDLE MTN SNOTEL	7900	4/01/11	84	29.4	13.4	25.8
SALMON MDWS SNOTEL	4460	4/01/11	45	13.7	11.0	11.1
SASSE RIDGE SNOTEL	4340	4/01/11	80	32.8	26.5	37.3
SATUS PASS	4030	3/29/11	43	14.9	5.8	--
SAVAGE PASS SNOTEL	6170	4/01/11	84	32.2	15.6	26.5
SENTINEL BT SNOTEL	4680	4/01/11	42	11.9	10.0	9.0
SHEEP CANYON SNOTEL	3990	4/01/11	120	50.2	24.7	37.8
SHERWIN SNOTEL	3200	4/01/11	---	9.9	.0	10.1
SILVER STAR MTN CAN.	5600	3/30/11	89	31.3	26.6	29.9
SKALKAHO SNOTEL	7260	4/01/11	76	26.7	12.8	24.3
SKITWISH RIDGE	5110	4/01/11	111	43.6	23.5	30.2
SKOOKUM LAKES	4230	3/30/11	55	17.7	5.4	--
SLIDE ROCK MOUNTAIN	7100	3/27/11	52	15.2	7.2	15.5
SOURDOUGH GUL SNOTEL	4000	4/01/11	0	.0	.0	--
SOUTH BALDY	4920	3/30/11	86	28.0	16.5	--
SPENCER MDW SNOTEL	3400	4/01/11	76	36.9	23.6	30.8
SPIRIT LAKE SNOTEL	3520	4/01/11	12	11.4	1.5	3.9
SPOTTED BEAR MTN.	7000	4/01/11	---	18.6E	8.1	14.1
SPRUCE SPGS SNOTEL	5700	4/01/11	47	15.7	7.8	19.7
STARVATION MOUNTAIN	6750	3/28/11	90	26.1	15.0	19.5
STAHL PEAK SNOTEL	6030	4/01/11	137	47.9	29.8	35.3
STAMPEDE PASS SNOTEL	3850	4/01/11	83	32.6	21.0	45.3
STEMPLE PASS	6600	3/30/11	47	12.7	5.4	10.2
STEVENS PASS SNOTEL	3950	4/01/11	112	37.0	27.4	42.6
STORM LAKE	7780	3/29/11	52	14.8	11.1	13.3
STRANGER MOUNTAIN	4230	3/28/11	40	12.0	8.6	12.2
STRYKER BASIN	6180	3/29/11	112	40.9	24.1	31.9
SUMMERLAND RES CAN.	4200	3/29/11	36	12.0	6.6	8.9
SUMMIT G.S. #2	4600	3/29/11	49	12.4	8.9	8.4
SUNSET SNOTEL	5540	4/01/11	---	30.2	12.9	31.5
SURPRISE LKS SNOTEL	4290	4/01/11	140	57.4	43.3	46.1
SWAMP CREEK SNOTEL	3930	4/01/11	65	25.2	8.6	16.2
SWIFT CREEK SNOTEL	4440	4/01/11	182	80.1	67.3	56.1
TEN MILE LOWER	6600	3/29/11	34	8.6	5.4	7.0
TEN MILE MIDDLE	6800	3/29/11	43	11.0	9.2	11.4
THUNDER BASIN SNOTEL	4320	4/01/11	80	32.8	26.8	33.7
THUNDER BASIN	4200	4/03/11	68	22.7	14.7	21.9
THOMPSON CREEK	2500	3/31/11	9	3.2	.0	--
THOMPSON RIDGE	4650	3/30/11	52	16.1	9.9	--
TINKHAM CREEK SNOTEL	2990	4/01/11	67	27.7	13.0	30.0
TOATS COULEE	2850	3/31/11	4	1.0	.0	1.4
TOUCHET SNOTEL	5530	4/01/11	74	30.4	21.5	34.7
TRINKUS LAKE	6100	4/01/11	---	51.4E	33.4	42.0
TROUGH #2 SNOTEL	5480	4/01/11	43	13.8	15.7	10.0
TRUMAN CREEK	4060	3/30/11	22	7.0	.6	3.7
TUNNEL AVENUE	2450	3/29/11	47	19.8	6.5	19.2
TV MOUNTAIN	6800	4/01/11	---	23.1E	10.5	18.3
TWELVEMILE SNOTEL	5600	4/01/11	49	17.7	10.3	17.5
TWIN CREEKS	3580	4/01/11	---	9.6E	6.7	9.6
TWIN LAKES SNOTEL	6400	4/01/11	107	41.9	23.2	39.7
UPPER HOLLAND LAKE	6200	4/01/11	---	41.6E	19.9	34.6
UPPER WHEELER SNOTEL	4330	4/01/11	42	13.2	11.8	13.1
VASEUX CREEK CAN.	4250	3/30/11	20	6.1	--	6.2
VULCAN MTN	4660	3/29/11	46	12.7	11.6	--
VULCAN ROAD	3840	3/29/11	28	8.1	6.0	--
WARM SPRINGS SNOTEL	7800	4/01/11	83	25.3	17.4	21.2
WATERHOLE SNOTEL	5010	4/01/11	130	56.6	42.0	35.3
WEASEL DIVIDE	5450	3/31/11	111	40.5	21.1	32.9
WELLS CREEK SNOTEL	4030	4/01/11	107	45.7	27.4	33.6
WHITE PASS ES SNOTEL	4440	4/01/11	75	22.5	16.5	23.9
WHITE ROCKS MTN CAN.	7200	3/29/11	65	21.7	19.4	23.1

Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

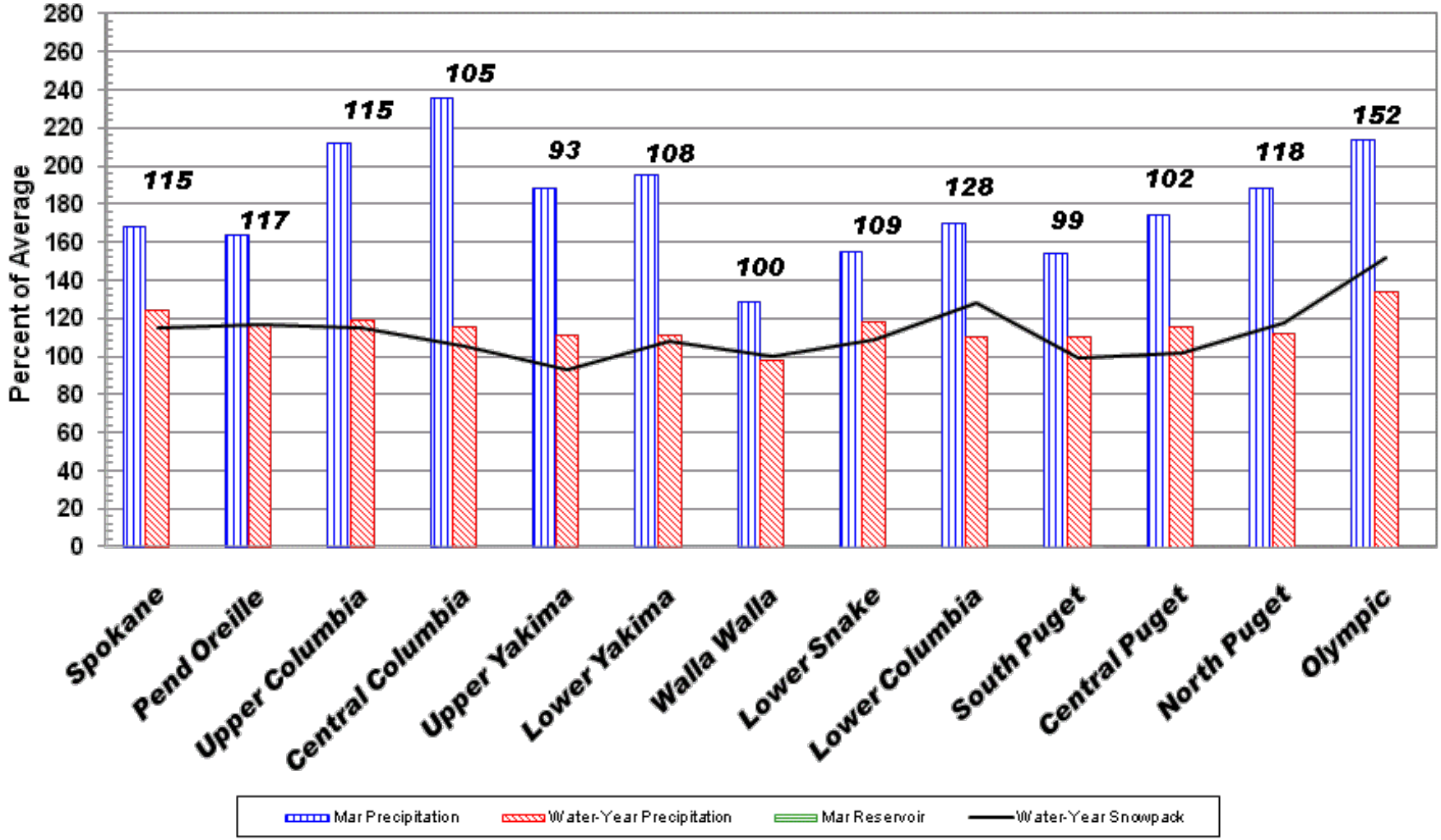
Washington:
http://www.wa.nrcs.usda.gov

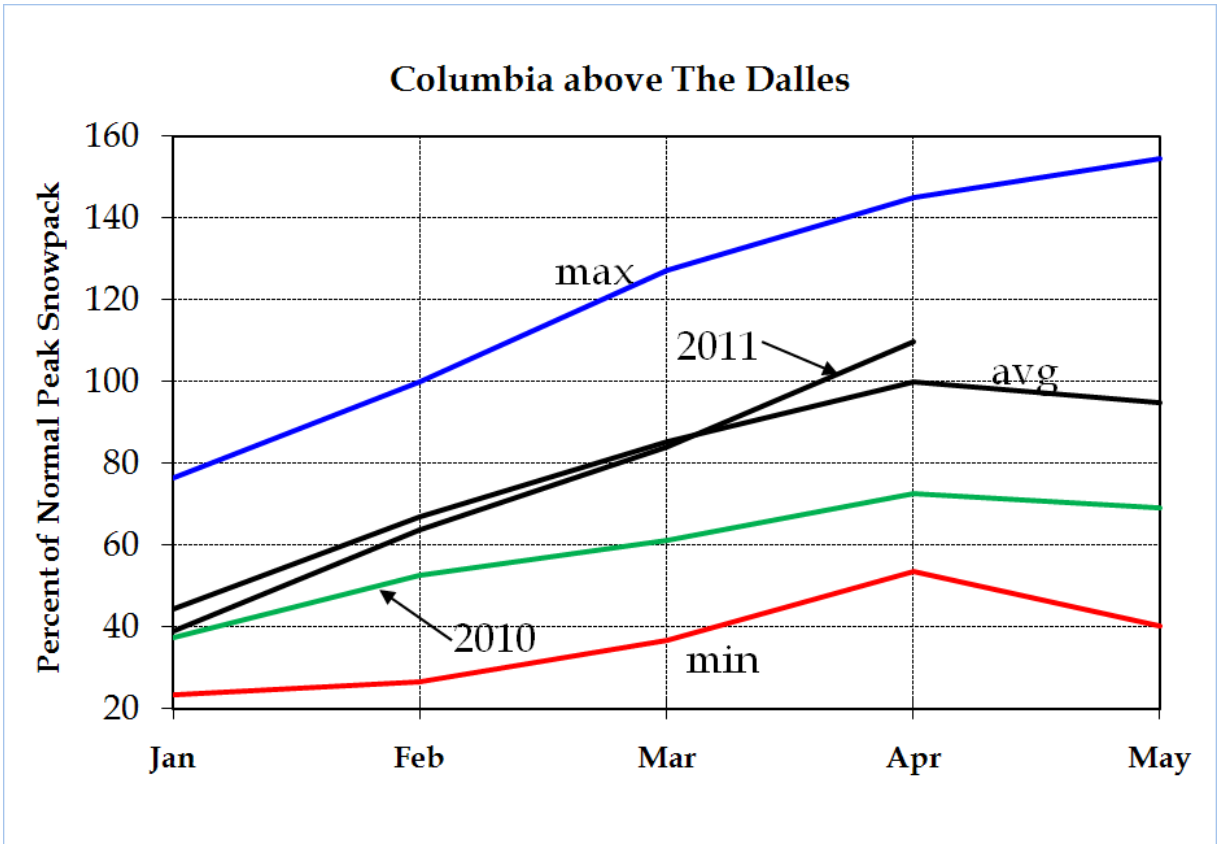
NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

April 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)





April 1, 2011

The Columbia Basin snowpack charts are produced, using only automated data. These data are telemetered via remote collection sites in Canada and the United States. The data are provisional, until they are officially released by the responsible data collection agency.

The combined Columbia Basin snowpack above The Dalles is currently at 110 percent of average, compared to 99 percent of average last month and 73 percent last year. This increase in the snowpack was due to heavy precipitation over the basin, combined with temperatures that were 3 to 6 degrees below normal. Snow was especially heavy over the Oregon and Washington Cascades. There wasn't a watershed within the basin that escaped the onslaught of cold, wet weather.

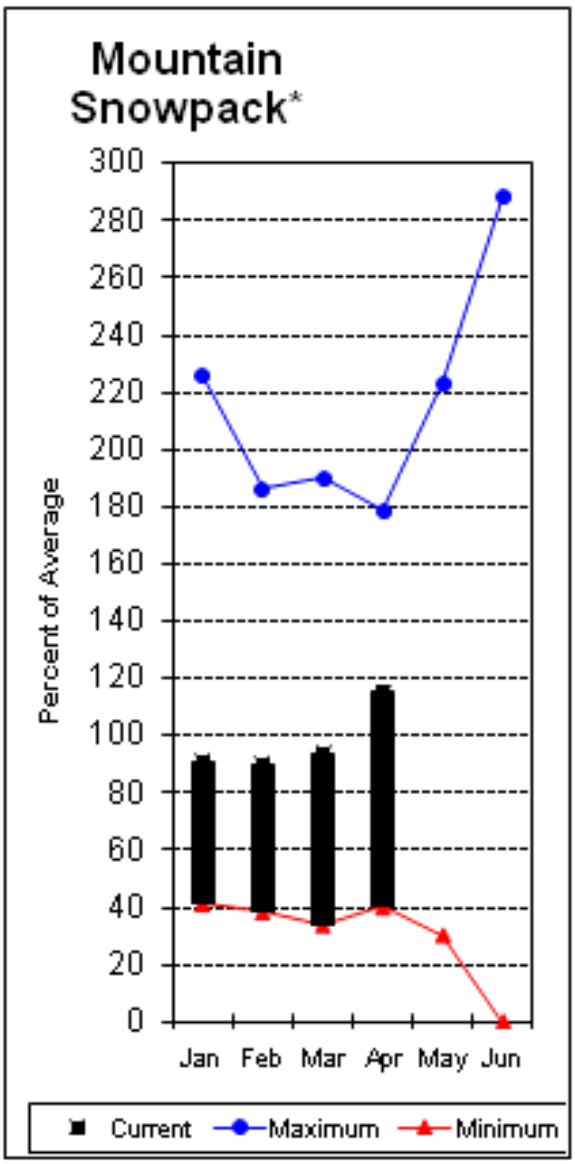
The northern portion of Columbia Basin snowpack was up 6 to 12 percent over last month. The Oregon and Washington Cascade snowpacks increased 21 to 23 percent over the same period. The central and southern sections of the basin, comprising the Snake headwaters, Boise/southern Snake tribs, Salmon, eastern Oregon, and the John Day watersheds, experienced snowpack increases of 15 to 35 percent.

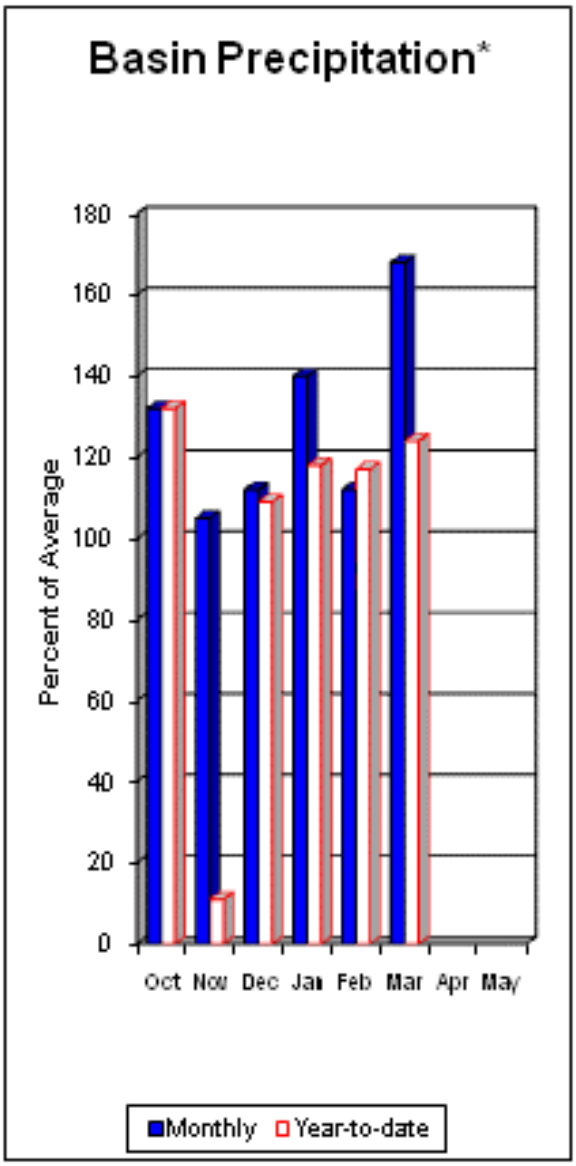
The overall snowpack above The Dalles is at 110 percent of the average peak accumulation. This compares to 73 percent last year. April 1 is usually near the time of peak accumulation for the basin. There are indications that the timing of the peak accumulation may be delayed this year.

The snowpack in the Columbia Basin above Castlegar is at 106 percent of average. This compares to 98 percent last month and 81 percent last year. For the basin above Grand Coulee, the snowpack is at 109 percent of average, compared to 102 percent last month and 76 percent last year. The Snake River snowpack above Ice Harbor is at 112 percent of average, compared to 98 percent last month and 63 percent last year.

Long lead climate forecasts are suggesting cool and wet weather for much of the Columbia Basin during April. Last month's forecast of abundant moisture over the Columbia Basin; especially over the Cascade Ranges in Washington and Oregon was right on target. The Pacific Northwest mountains could see a great deal more snow in April.

Spokane River Basin





*Based on selected stations

The April 1 forecasts for summer runoff within the Spokane River Basin are 124% of average near Post Falls and 122% at Long Lake. The Chamokane River near Long Lake forecasted to have 105% of average flows for the May-August period. The forecast is based on a basin snowpack that is 115% of average and precipitation that is 124% of average for the water year. Precipitation for March was above normal at 168% of average. Streamflow on the Spokane River at Long Lake was 109% of average for March. April 1 storage in Coeur d'Alene Lake was 178,000acre feet, 105% of average and 75% of capacity. Snowpack at Quartz Peak SNOTEL site was 124% of average with 26.3 inches of water content. Average temperatures in the Spokane basin were slightly below normal for March and near normal for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	APR-JUL	2600	2930	3160	124	3390	3720	2550
	APR-SEP	2700	3050	3280	124	3510	3860	2650
Spokane R at Long Lake (2)	APR-JUL	2860	3220	3470	122	3720	4080	2850
	APR-SEP	3110	3490	3750	122	4010	4390	3070
Chamokane Ck nr Long Lake	MAY-AUG	7.0	9.2	10.7	105	12.2	14.4	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	178.1	93.3	169.5

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - April 1, 2011

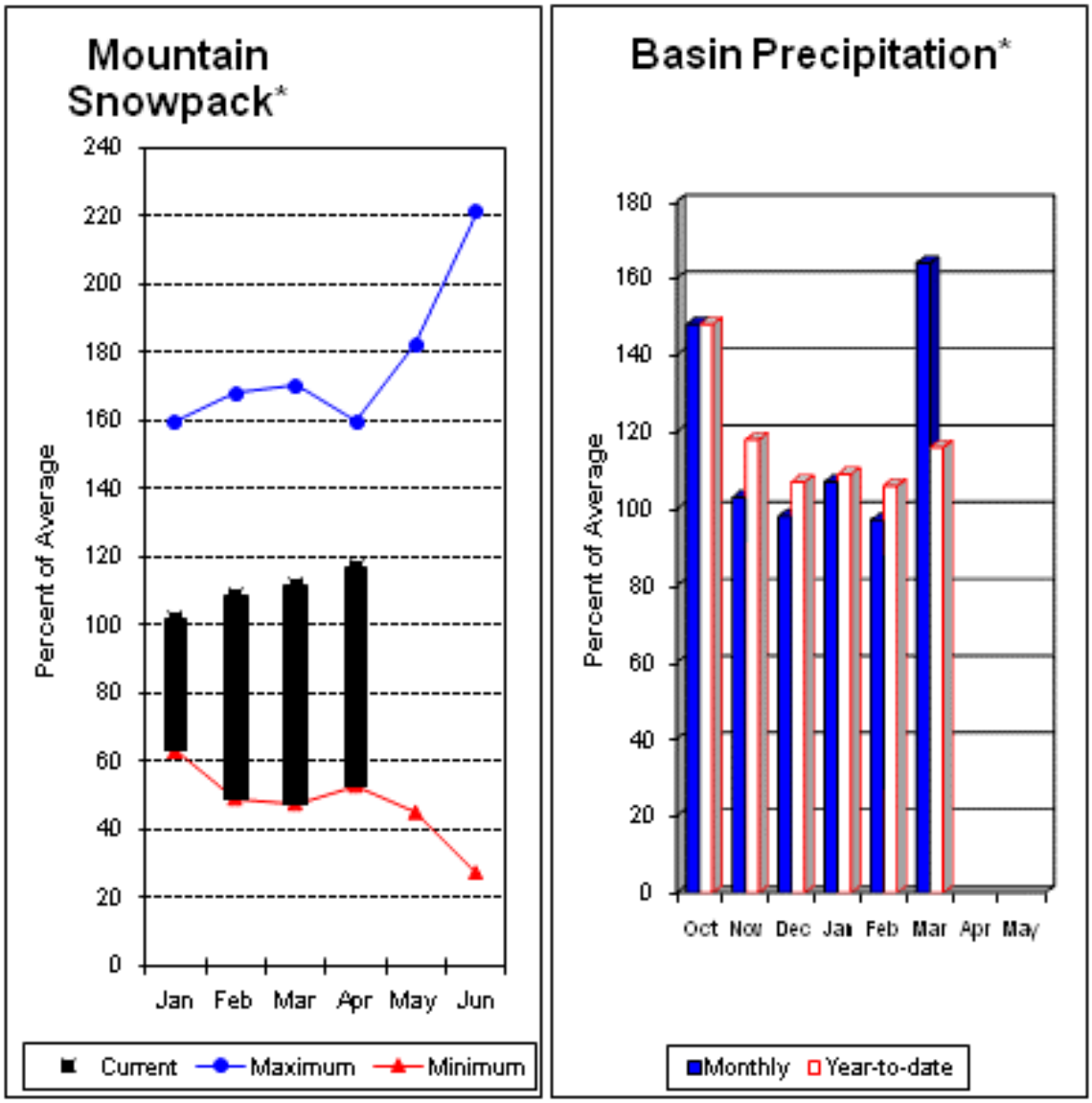
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	15	220	115
NEWMAN LAKE	2	241	125

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 106% and the Pen Orielle below Box Canyon is 122%. March streamflow was 95% of average on the Pend Oreille River and 91% on the Columbia at Birchbank. April 1 snow cover was 117% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 29.2 inches of snow water on the snow pillow. Normally Bunchgrass would have 30.2 inches on April 1. Precipitation during March was 164% of average, bringing the year-to-date precipitation to 116% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 105% of normal. Average temperatures were slightly below normal for March and near normal for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	APR-JUL	13800	14800	15500	122	16200	17200	12700
	APR-SEP	14900	16100	16900	122	17700	18900	13900
Priest R nr Priest River (1,2)	APR-JUL	700	815	865	106	915	1030	815
	APR-SEP	735	865	920	106	975	1100	870
Pend Oreille R bl Box Canyon (2)	APR-JUL	14000	15100	15800	123	16500	17600	12900
	APR-SEP	15200	16400	17200	122	18000	19200	14100

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PEND OREILLE	1561.3	818.1	553.4	763.6
PRIEST LAKE	119.3	54.1	49.5	65.5

PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

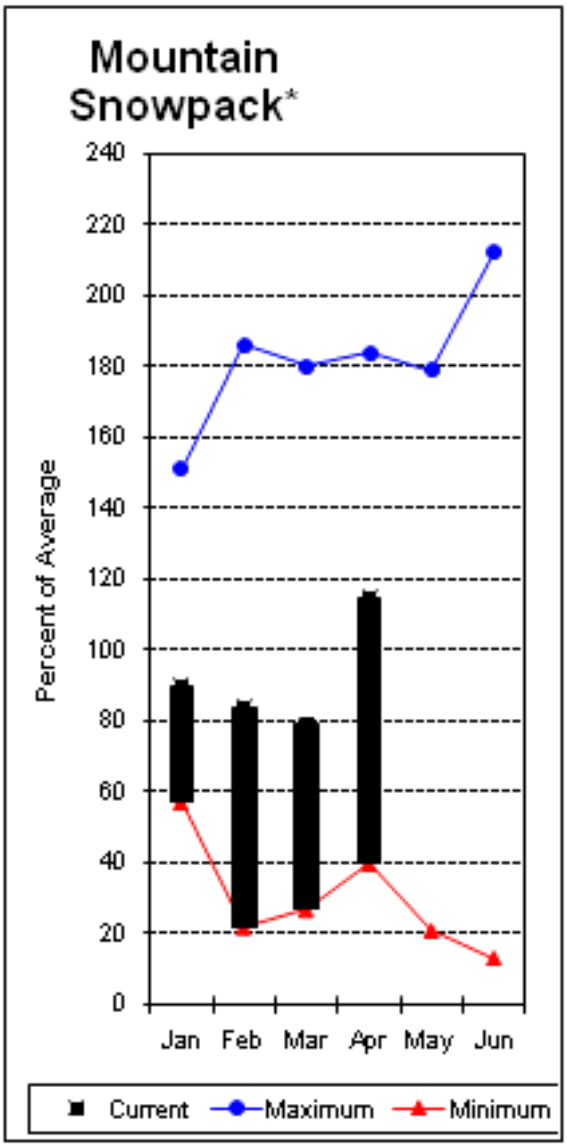
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	1	147	98
PEND OREILLE RIVER	10	187	108
KETTLE RIVER	3	136	152

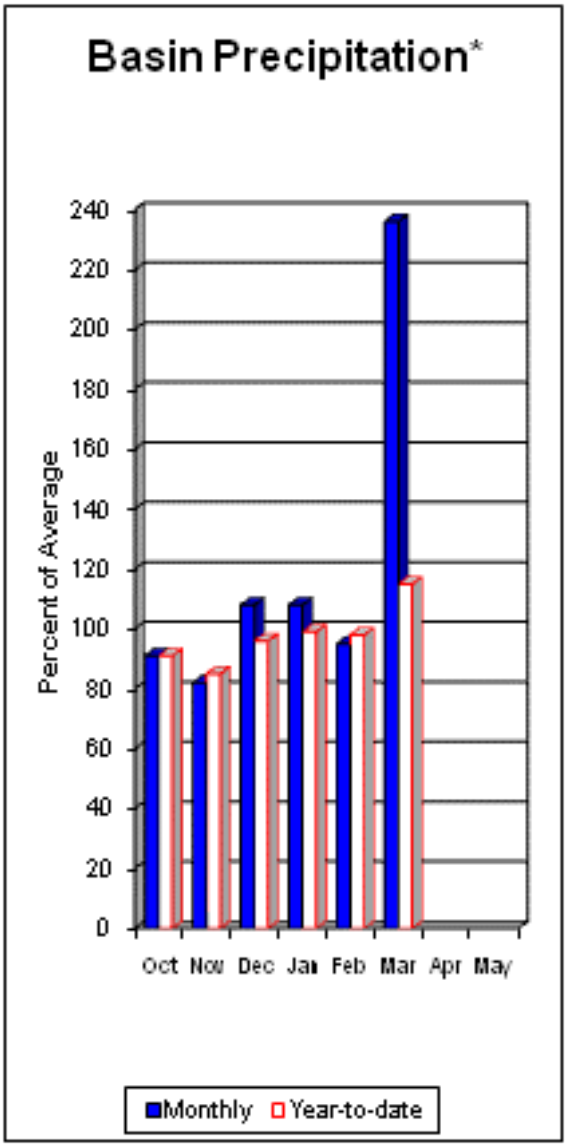
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Upper Columbia River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 108%, Similkameen River is 105%, Kettle River 105% and Methow River is 116%. April 1 snow cover on the Okanogan was 115% of average, Omak Creek was 109% and the Methow was 117%. March precipitation in the Upper Columbia was 212% of average, with precipitation for the water year at 119% of average. March streamflow for the Methow River was 95% of average, 65% for the Okanogan River and 80% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 13.7 inches. Average for this site is 11.1 inches on April 1. Combined storage in the Conconully Reservoirs was 20,000-acre feet, which is 86% of capacity and 115% of the April 1 average. Temperatures were near normal for March and 1-2 degrees above for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== 90% (1000AF)	70% (1000AF)	Future Conditions 50% (1000AF)	50% (% AVG.)	======= Wetter =====>> 30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Kettle R nr Laurier	APR-JUL	1660	1840	1970	105	2100	2280	1870
	APR-SEP	1730	1930	2070	105	2210	2410	1970
Columbia R at Birchbank (1,2)	APR-JUL	32100	35000	36300	104	37600	40500	34900
	APR-SEP	39900	43600	45200	104	46800	50500	43500
Columbia R at Grand Coulee (2)	APR-JUL	52300	56000	57600	107	59200	62900	53800
	APR-SEP	58900	65500	68500	107	71500	78100	64000
Similkameen R nr Nighthawk (1)	APR-JUL	1200	1380	1460	108	1540	1720	1350
	APR-SEP	1300	1490	1570	108	1650	1840	1450
Okanogan R nr Tonasket (1)	APR-JUL	1300	1580	1710	108	1840	2120	1580
	APR-SEP	1450	1770	1920	109	2070	2390	1770
Okanogan R at Malott (1)	APR-JUL	1350	1630	1760	108	1890	2170	1630
	APR-SEP	1510	1830	1980	108	2130	2450	1830
Methow R nr Pateros	APR-SEP	990	1080	1140	116	1200	1290	985
	APR-JUL	920	1000	1060	117	1120	1200	910

UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	8.7	6.0	8.4
CONCONULLY RESERVOIR	13.0	11.5	5.4	9.2

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

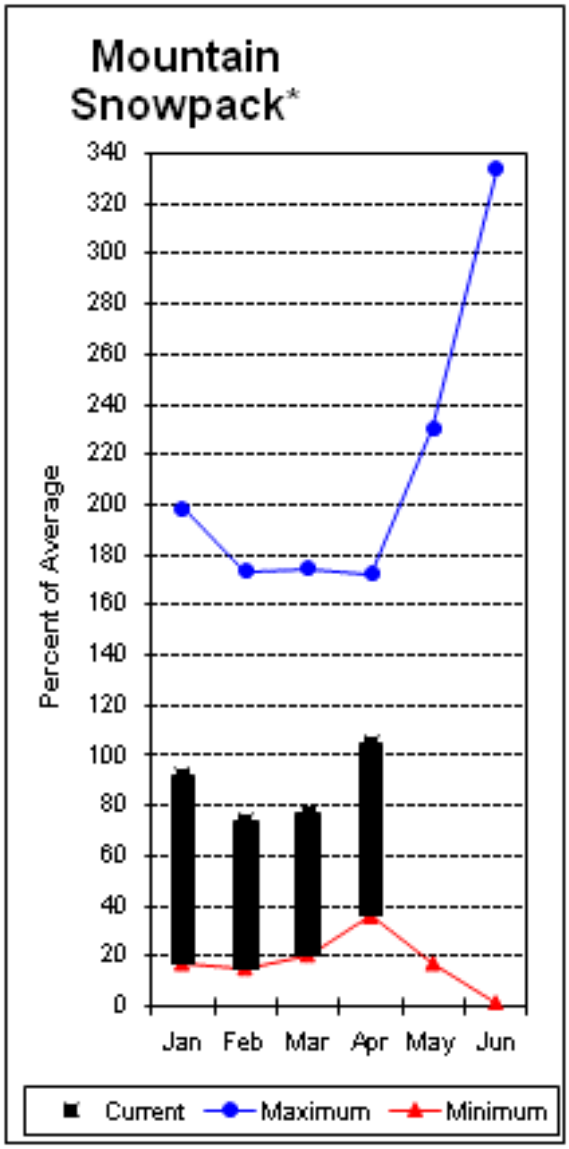
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	5	167	127
OMAK CREEK	3	132	109
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	1	155	71
CONCONULLY LAKE	3	139	137
METHOW RIVER	8	153	117

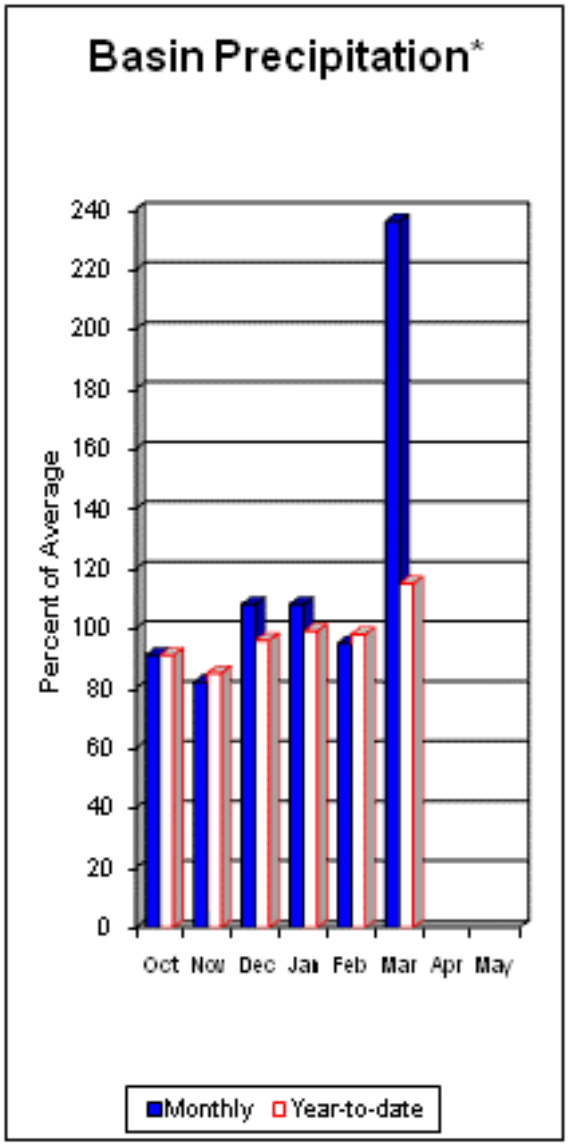
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Central Columbia River Basins





*Based on selected stations

Precipitation during March was 236% of average in the basin and 115% for the year-to-date. Runoff for Entiat River is forecast to be 106% of average for the summer. The April-September average forecast for Chelan River is 102%, Wenatchee River at Plain is 102%, Stehekin River is 105% and Icicle Creek is 96%. March average streamflows on the Chelan River were 105% and on the Wenatchee River 78%. April 1 snowpack in the Wenatchee River Basin was 98% of average; the Chelan, 100%; the Entiat, 97%; Stemilt Creek, 106% and Colockum Creek, 125%. Reservoir storage in Lake Chelan was 171,000-acre feet, 79% of April 1 average and 25% of capacity. Lyman Lake SNOTEL had the most snow water with 66.8 inches of water. This site would normally have 65.4 inches on April 1. Temperatures were 1-2 degrees below normal for March and near normal for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	APR-JUL	635	700	740	106	780	845	700
	APR-SEP	775	835	875	105	915	975	830
Chelan R at Chelan (2)	APR-JUL	980	1030	1070	102	1110	1160	1050
	APR-SEP	1120	1170	1210	102	1250	1300	1190
Entiat R nr Ardenvoir	APR-JUL	205	220	230	107	240	255	215
	APR-SEP	230	245	255	106	265	280	240
Wenatchee R at Plain	APR-JUL	980	1040	1090	102	1140	1200	1070
	APR-SEP	1080	1150	1200	102	1250	1320	1180
Icicle Ck nr Leavenworth	APR-JUL	265	285	300	97	315	335	310
	APR-SEP	285	310	325	96	340	365	340
Wenatchee R at Peshastin	APR-JUL	1400	1490	1550	105	1610	1700	1480
	APR-SEP	1550	1640	1710	105	1780	1870	1630
Columbia R bl Rock Island Dam (2)	APR-JUL	58100	61800	64300	109	66800	70500	59000
	APR-SEP	68600	73000	75900	109	78800	83200	69500

CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	171.0	350.5	216.3

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

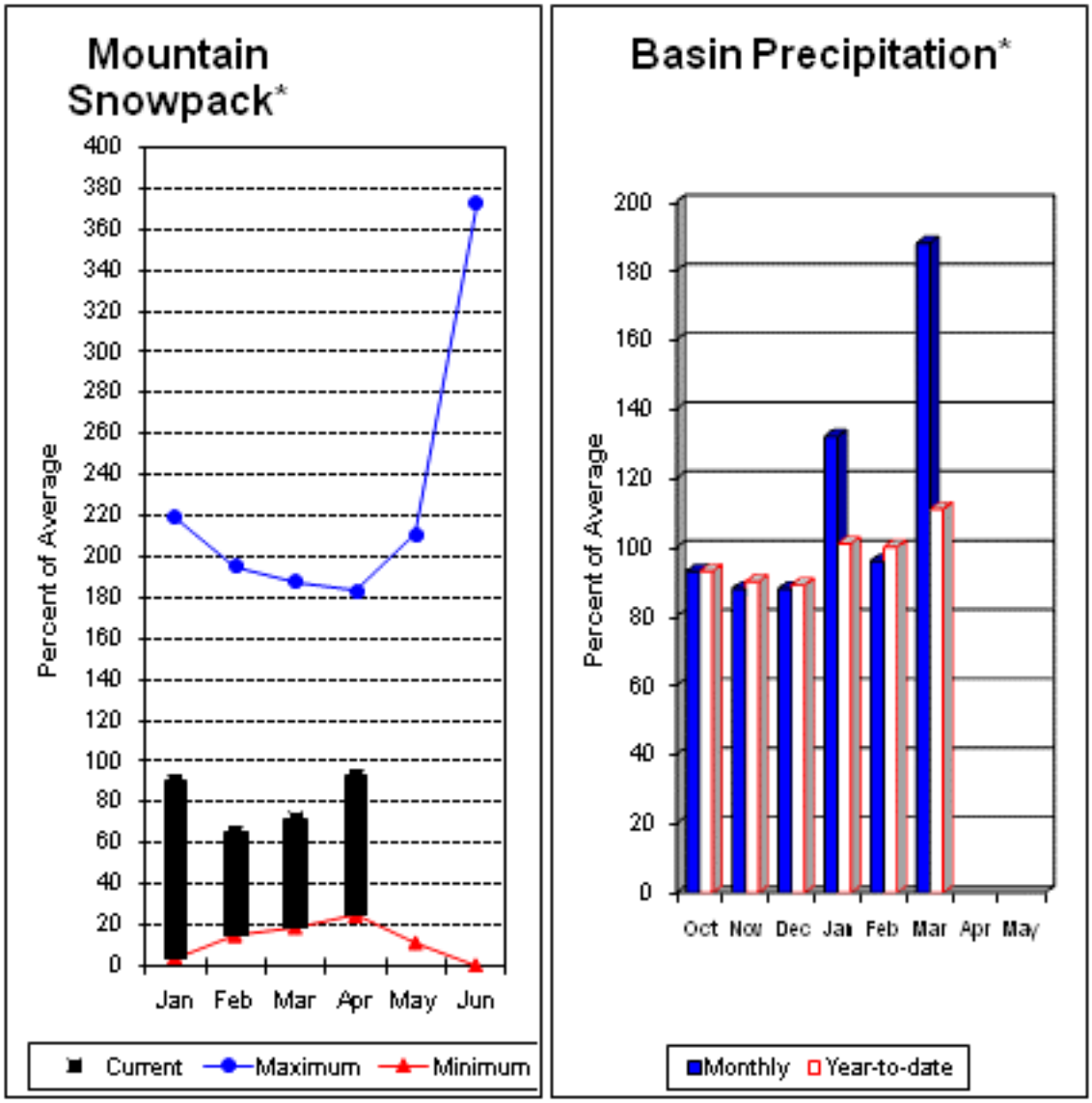
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	4	137	100
ENTIAT RIVER	1	132	97
WENATCHEE RIVER	9	136	98
STEMILT CREEK	2	120	106
COLOCKUM CREEK	2	88	125

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin



*Based on selected stations

April 1 reservoir storage for the Upper Yakima reservoirs was 743,000-acre feet, 134% of average. Forecasts for the Yakima River at Cle Elum are 98% of average and the Teanaway River near Cle Elum is at 105%. Lake inflows are all forecasted to be near average this summer as well. March streamflows within the basin were Yakima at Cle Elum at 106% and Cle Elum River near Roslyn at 86%. April 1 snowpack was 93% based upon 10 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 188% of average for March and 111% year-to-date for water. 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.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	APR-JUL	103	114	122	101	130	141	121
	APR-SEP	114	126	134	101	142	154	133
Kachess Reservoir Inflow (2)	APR-JUL	94	103	109	98	115	124	111
	APR-SEP	102	111	117	98	123	132	120
Cle Elum Lake Inflow (2)	APR-JUL	365	385	400	98	415	435	410
	APR-SEP	395	420	440	98	460	485	450
Yakima R at Cle Elum (2)	APR-JUL	685	755	805	98	855	925	820
	APR-SEP	740	825	885	98	945	1030	900
Teanaway R bl Forks nr Cle Elum	APR-JUL	121	138	150	105	162	179	143
	APR-SEP	124	141	153	105	165	182	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	146.7	97.8	114.1
KACHESS	239.0	226.7	163.4	169.4
CLE ELUM	436.9	369.9	196.5	270.1

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2011

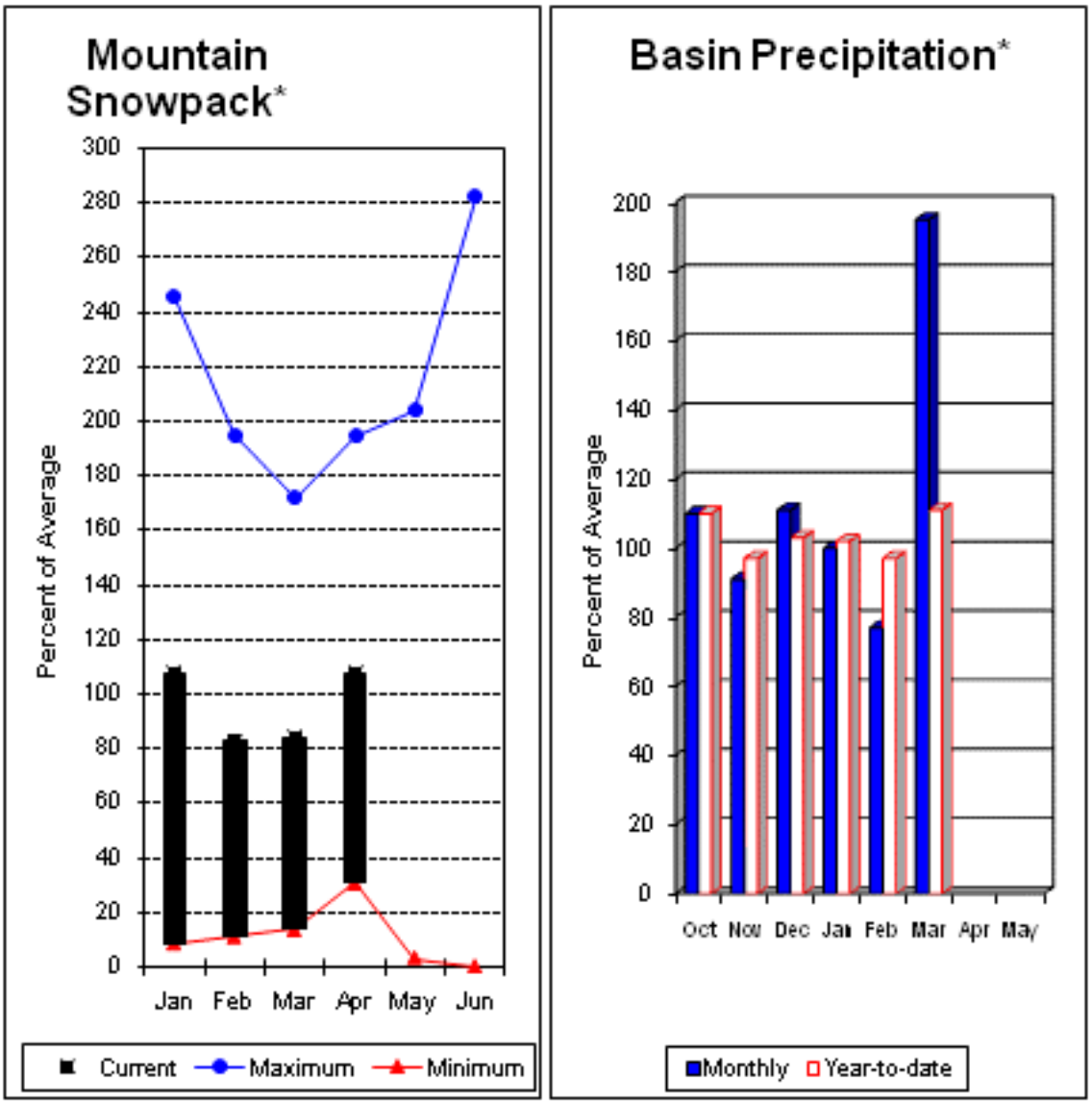
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	10	145	93

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin



*Based on selected stations

March average streamflows within the basin were: Yakima River near Parker, 87%; Naches River near Naches, 88%; and Yakima River at Kiona, 91%. April 1 reservoir storage for Bumping and Rimrock reservoirs was 181,000-acre feet, 119% of average. Forecast averages for Yakima River near Parker are 101%; American River near Nile, 110%; Ahtanum Creek, 103%; and Klickitat River near Glenwood, 120%. April 1 snowpack was 108% based upon 8 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 108%of average. Precipitation was 195% of average for March and 111% year-to-date for water. Temperatures were 1-3degrees below normal for March and slightly above for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they April differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	APR-JUL	117	128	135	111	142	153	122
	APR-SEP	128	139	147	111	155	166	132
American R nr Nile	APR-JUL	105	113	119	110	125	133	108
	APR-SEP	116	124	130	110	136	144	118
Rimrock Lake Inflow (2)	APR-JUL	210	220	230	112	240	250	205
	APR-SEP	245	260	270	113	280	295	240
Naches R nr Naches (2)	APR-JUL	745	800	840	117	880	935	720
	APR-SEP	805	870	910	117	950	1010	780
Ahtanum Ck at Union Gap	APR-JUL	24	28	31	103	34	38	30
	APR-SEP	26	30	33	103	36	40	32
Yakima R nr Parker (2)	APR-JUL	1610	1740	1820	101	1900	2030	1800
	APR-SEP	1770	1900	1990	101	2080	2210	1980
Klickitat R nr Glenwood	APR-JUL	131	143	151	120	159	171	126
	APR-SEP	173	187	196	120	205	220	163
Klickitat R nr Pitt	APR-JUL	465	510	545	119	580	625	460
	APR-SEP	555	610	650	118	690	745	550

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	14.7	11.8	13.1
RIMROCK	198.0	165.8	113.0	138.5

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2011

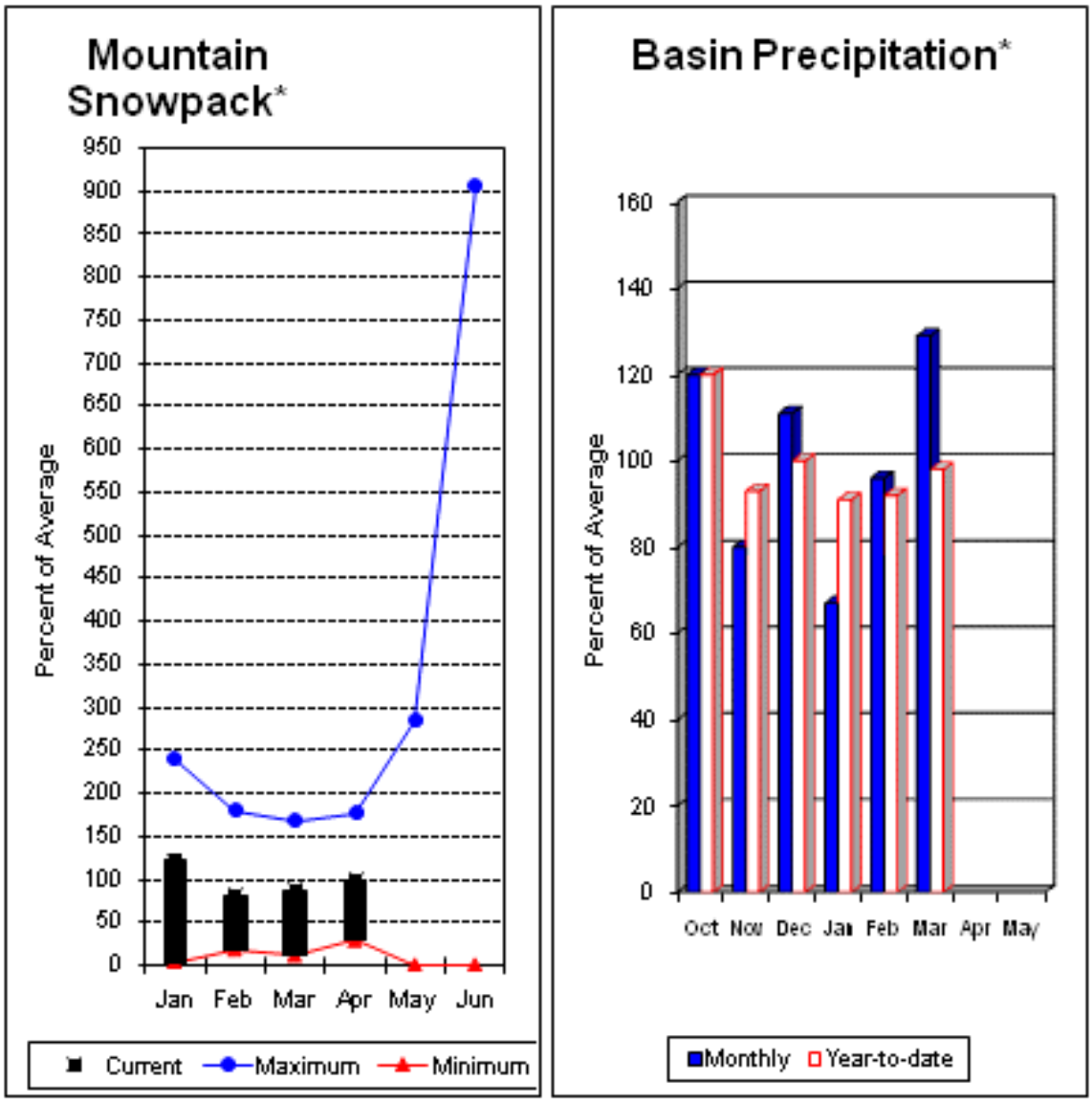
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER YAKIMA RIVER	8	133	108
AHTANUM CREEK	3	118	108

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Walla Walla River Basin



*Based on selected stations

March precipitation was 129% of average, maintaining the year-to-date precipitation at 98% of average. Snowpack in the basin was 100% of average. Streamflow forecasts are 107% of average for Mill Creek and 106% for the SF Walla Walla near Milton-Freewater. March streamflow was 140% of average for the SF Walla Walla River. Average temperatures were near normal for March and for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	APR-JUL	47	53	57	106	61	67	54
	APR-SEP	59	66	71	106	76	83	67
Mill Ck nr Walla Walla	APR-JUL	20	24	26	108	28	32	24
	APR-SEP	24	28	30	107	32	36	28

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	153	100

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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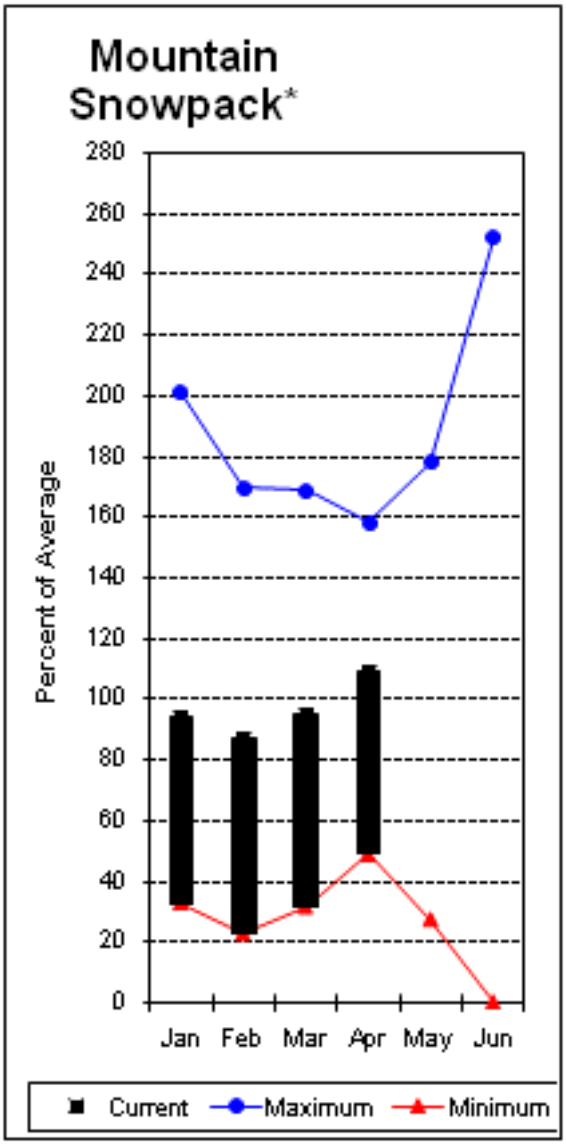
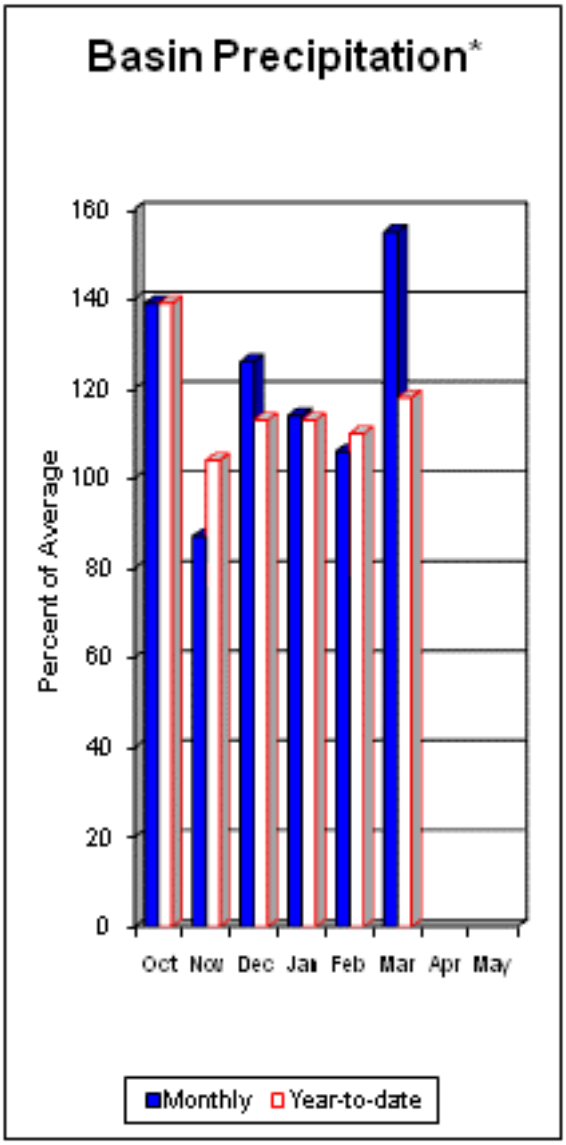
Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 116% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 116% and 126% of normal respectively. A newly developed forecast point for Asotin Creek at Asotin predicts 109% of average flows for the April – July runoff period. March precipitation was 155% of average, bringing the year-to-date precipitation to 118% of average. April 1 snowpack readings averaged 109% of average. March streamflow was 93% of average for Snake River below Lower Granite Dam and 92% for Grande Ronde River near Troy. Dworshak Reservoir on the Clearwater River is at 72% of average. Average temperatures were near normal for March and for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	APR-SEP	1320	1600	1720	126	1840	2120	1370
Asotin Ck at Asotin	APR-JUL	25	33	38	109	43	51	35
Clearwater R at Spalding (1,2)	APR-JUL	7200	8190	8640	116	9090	10100	7430
	APR-SEP	7610	8660	9140	116	9620	10700	7850
Snake R bl Lower Granite Dam (1,2)	APR-JUL	20200	23600	25100	116	26600	30000	21600
	APR-SEP	22400	26200	27900	116	29600	33400	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DWORSHAK	3468.0	1619.2	2308.7	2244.1

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER SNAKE, GRANDE RONDE	15	157	109

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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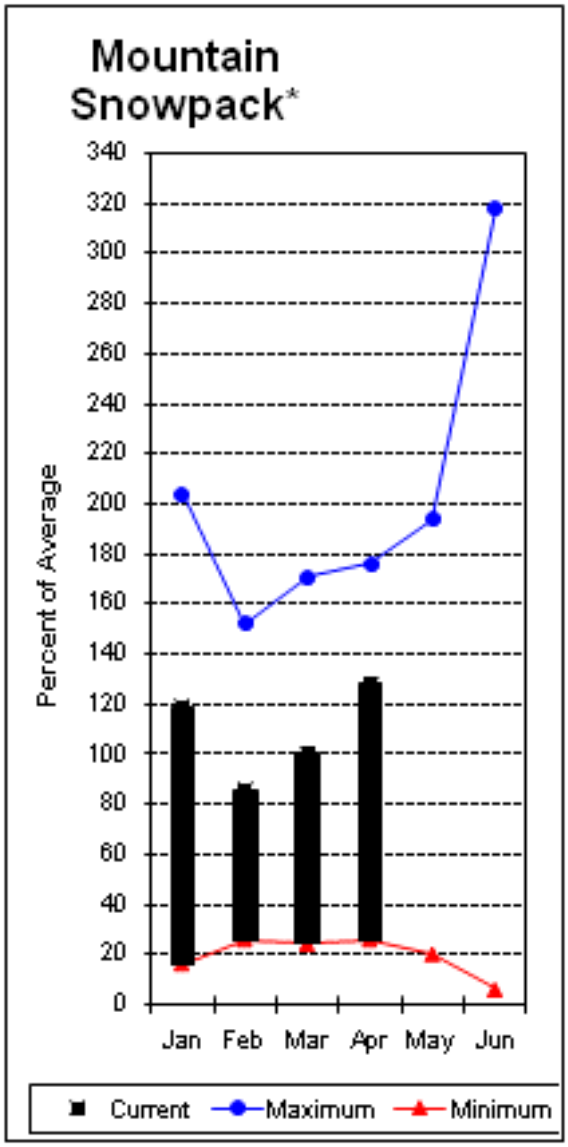
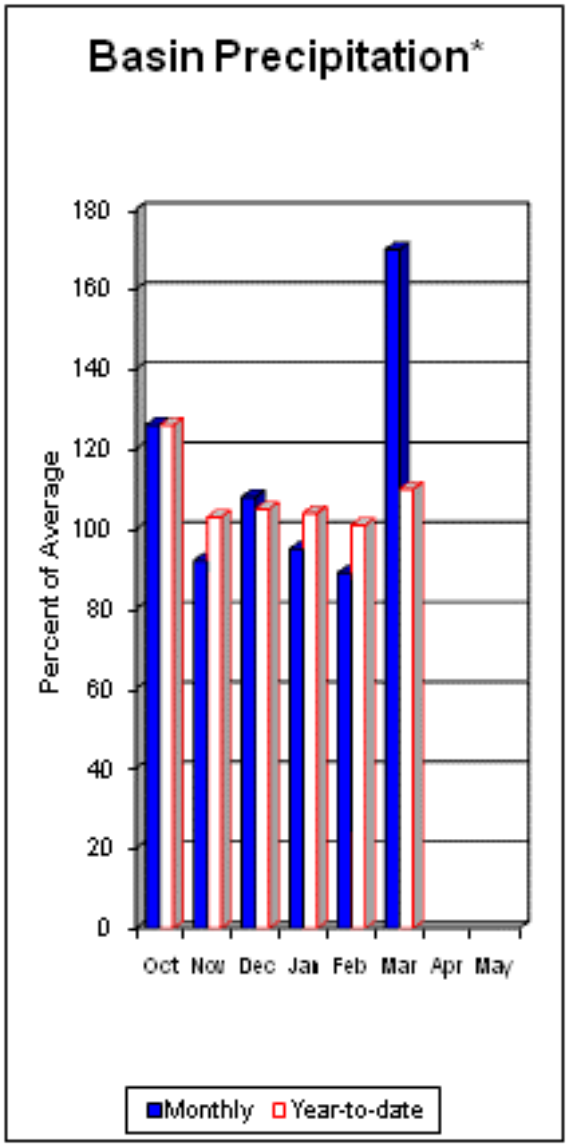
Lower Columbia River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 112% and Cowlitz River at Castle Rock, 108% of average. The Columbia at The Dalles is forecasted to have 108% of average flows this summer. March average streamflow for Cowlitz River below Mayfield Dam was 101%. The Columbia River at The Dalles was 104% of average. March precipitation was 170% of average and the water-year average was 110%. April 1 snow cover for Cowlitz River was 118%, and Lewis River was 137% of average. Average temperatures were 2-5 degrees below normal during March and 1-3 degrees below for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	APR-JUL	82600	88000	91700	108	95400	101000	84600
	APR-SEP	96300	103000	107000	108	111000	118000	98600
Klickitat R nr Glenwood	APR-JUL	131	143	151	120	159	171	126
	APR-SEP	173	187	196	120	205	220	163
Klickitat R nr Pitt	APR-JUL	465	510	545	119	580	625	460
	APR-SEP	555	610	650	118	690	745	550
Lewis R at Ariel (2)	APR-JUL	875	1040	1150	112	1260	1430	1031
	APR-SEP	1030	1200	1320	112	1440	1610	1176
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1420	1670	1840	109	2010	2260	1689
	APR-SEP	1600	1900	2100	109	2300	2600	1922
Cowlitz R at Castle Rock (2)	APR-JUL	2010	2290	2480	108	2670	2950	2295
	APR-SEP	2330	2630	2840	108	3050	3350	2639

* Chance Of Exceeding

LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MOSSYROCK	0.0	1333.2	1123.3	---
SWIFT	0.0	715.9	729.2	---
YALE	0.0	381.6	369.3	---
MERWIN	0.0	384.9	408.2	---

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	5	153	137
COWLITZ RIVER	6	153	118

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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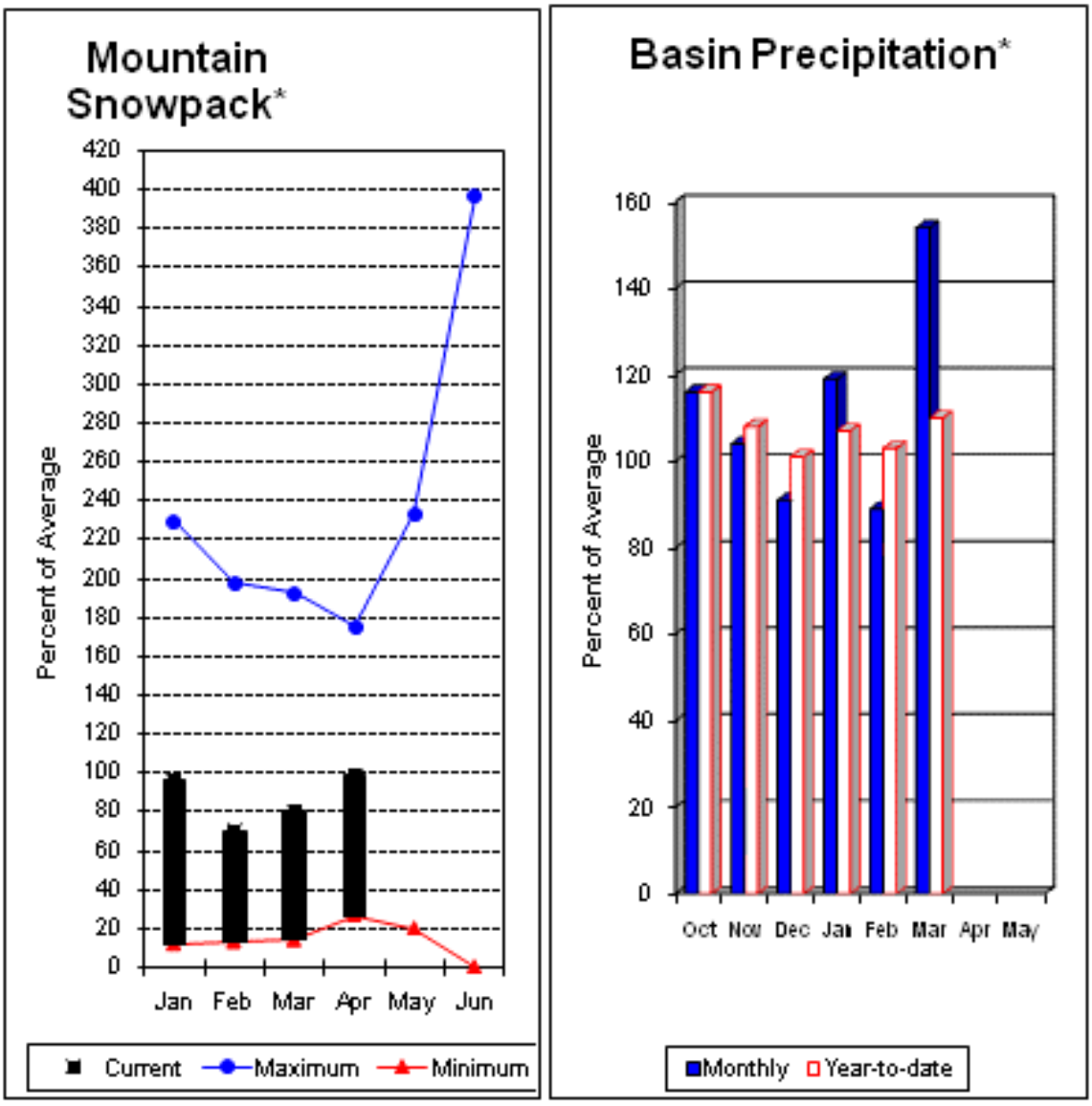
South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 90% of normal for the Green River below Howard Hanson Dam and 106% for the White River near Buckley. April 1 snowpack was 107% of average for the White River, 107% for Puyallup River and 82% in the Green River Basin. Water content on April 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 36.9 inches. This site has an April 1 average of 34.9 inches. March precipitation was 154% of average, bringing the water year-to-date to 110% of average for the basins. Average temperatures in the area were 2-4 degrees below normal for March and slightly below for the water-year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	APR-JUL	365	435	470	107	505	575	440
	APR-SEP	440	525	565	106	605	690	534
Green R bl Howard Hanson Dam (1,2)	APR-JUL	149	198	220	90	240	290	245
	APR-SEP	164	215	240	90	265	315	268

SOUTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	132	107
GREEN RIVER	4	216	82
PUYALLUP RIVER	5	127	107

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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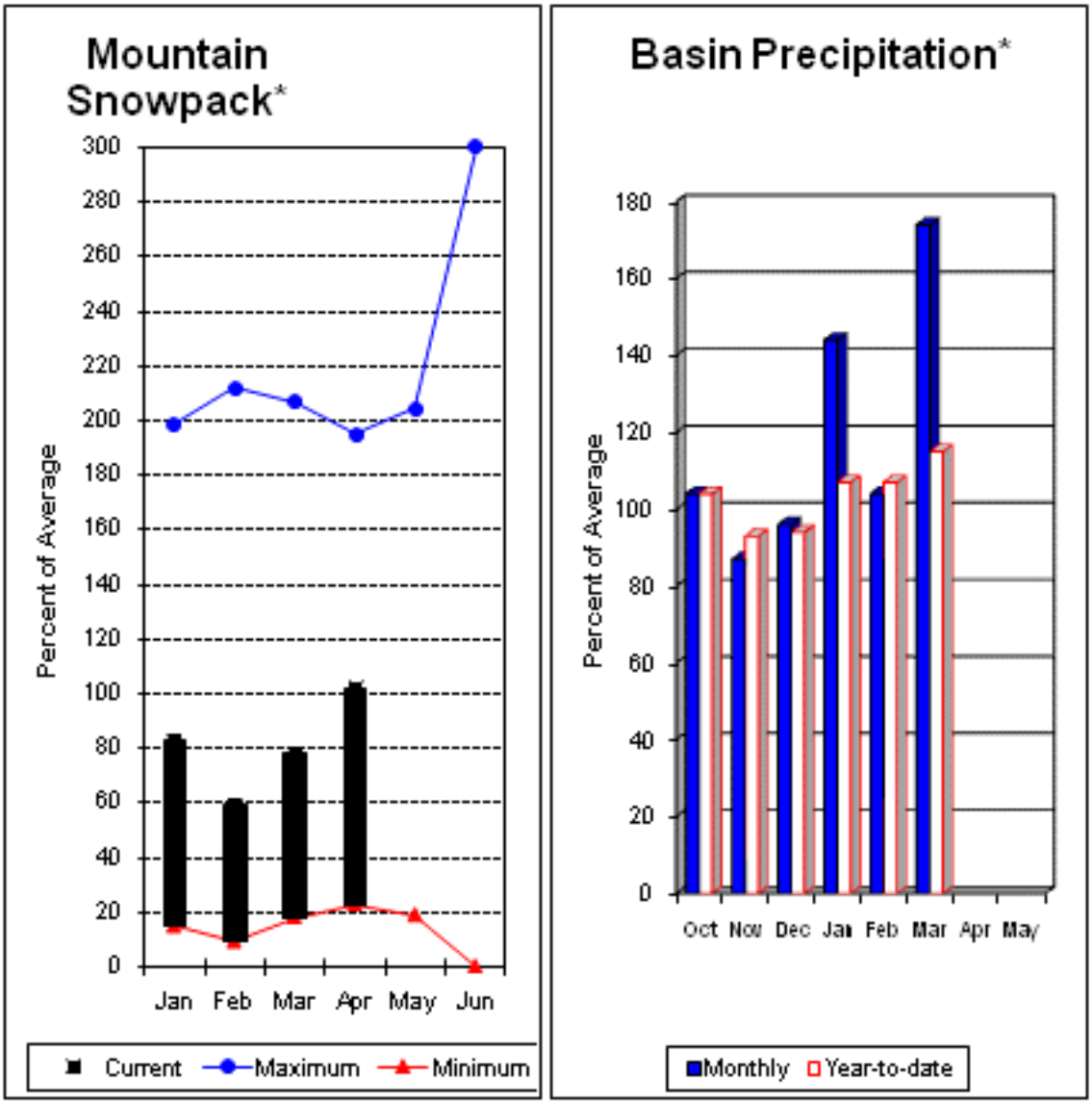
Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 115% for Cedar River near Cedar Falls; 121% for Rex River; 118% for South Fork of the Tolt River; 113% for Taylor Creek near Selleck, and 118% for Cedar River at Cedar Falls. Basin-wide precipitation for March was 174% of average, bringing water-year-to-date to 115% of average. April 1 average snow cover in Cedar River Basin was 110%, Tolt River Basin was 106%, Snoqualmie River Basin was 95%, and Skykomish River Basin was 97%. Stevens Pass SNOTEL site, at 3950 feet, had 37 inches of water content. Average April 1 water content is 42.6 inches at Stevens Pass. Temperatures were 1-2 degrees below normal for March and slightly below for the water-year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	APR-JUL	70	78	84	115	90	98	73
	APR-SEP	77	86	92	115	98	107	80
Rex R nr Cedar Falls	APR-JUL	24	27	30	120	33	36	25
	APR-SEP	27	31	34	121	37	41	28
Cedar R at Cedar Falls (2)	APR-JUL	62	77	87	118	97	112	74
	APR-SEP	58	75	86	118	97	114	73
Taylor Ck nr Selleck	APR-JUL	18.3	21	23	115	25	28	20
	APR-SEP	22	25	27	113	29	32	24
SF Tolt R nr Index	APR-JUL	13.9	16.0	17.4	118	18.8	21	14.7
	APR-SEP	15.7	18.2	19.9	118	22	24	16.9

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	245	110
TOLT RIVER	1	147	106
SNOQUALMIE RIVER	3	143	95
SKYKOMISH RIVER	2	141	97

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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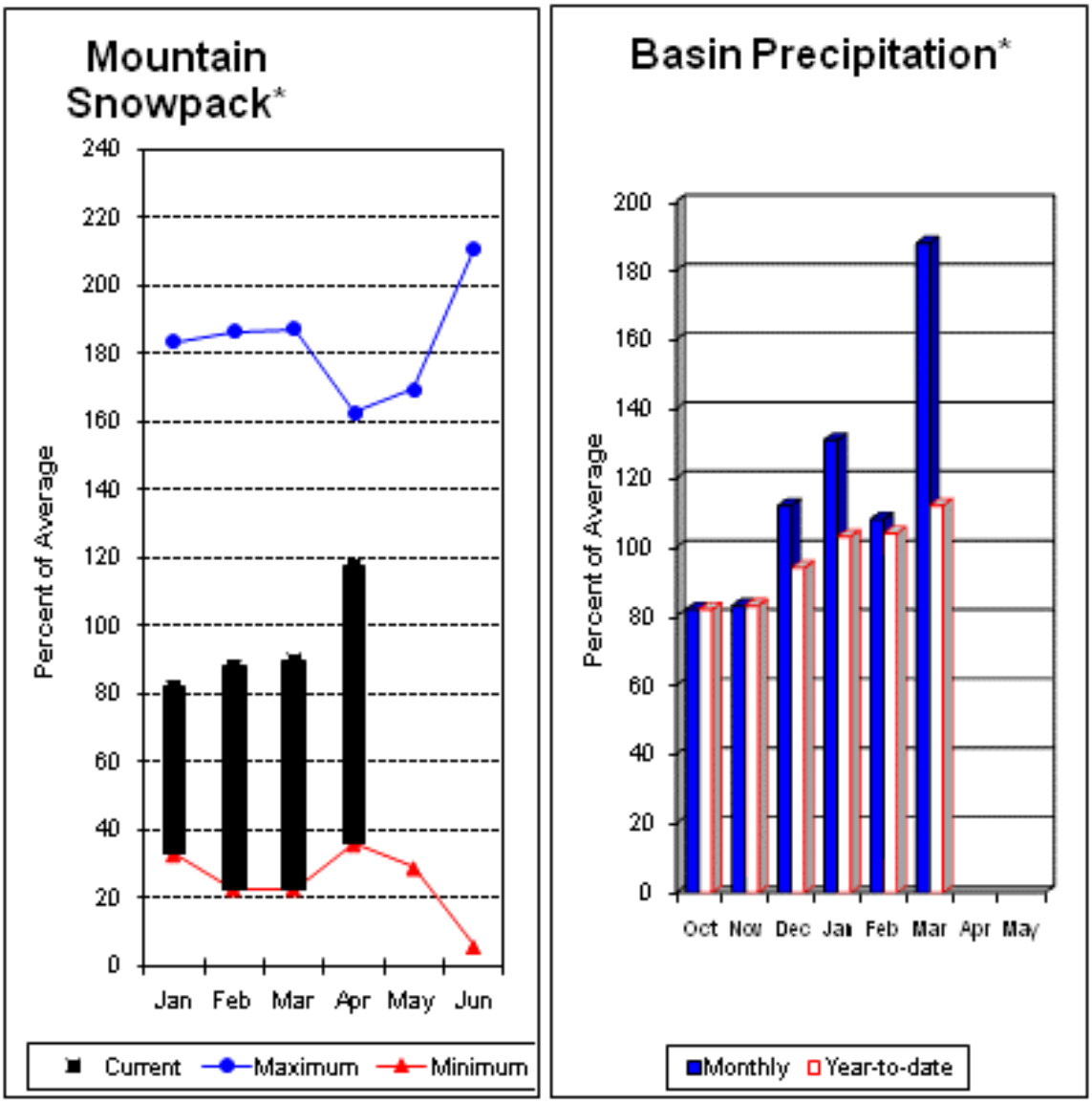
North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 107% of average for the spring and summer period. March streamflow in Skagit River was 82% of average. Other forecast points included Baker River at 111% and Thunder Creek at 105% of average. Basin-wide precipitation for March was 188% of average, bringing water-year-to-date to 112% of average. April 1 average snow cover in Skagit River Basin was 118% and Nooksack River Basin was 117%. Brown Top snow course, at 6,000 feet, had 86.4 inches of water content. Average April 1 water content is 60.8 inches at Brown Top. April 1 Skagit River reservoir storage was 97% of average and 51% of capacity. Average temperatures for March were 1-3 degrees below normal for the basin and 1-2 degrees below average for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	APR-JUL	215	230	245	105	260	275	234
	APR-SEP	315	335	350	105	365	385	333
Skagit R at Newhalem (2)	APR-JUL	1800	1920	2000	107	2080	2200	1864
	APR-SEP	2180	2290	2370	107	2450	2560	2217
Baker R nr Concrete (2)	APR-JUL	770	855	910	110	965	1050	828
	APR-SEP	945	1070	1160	111	1250	1370	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	675.0	865.0	693.0
DIABLO RESERVOIR	90.6	84.0	85.0	86.2

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

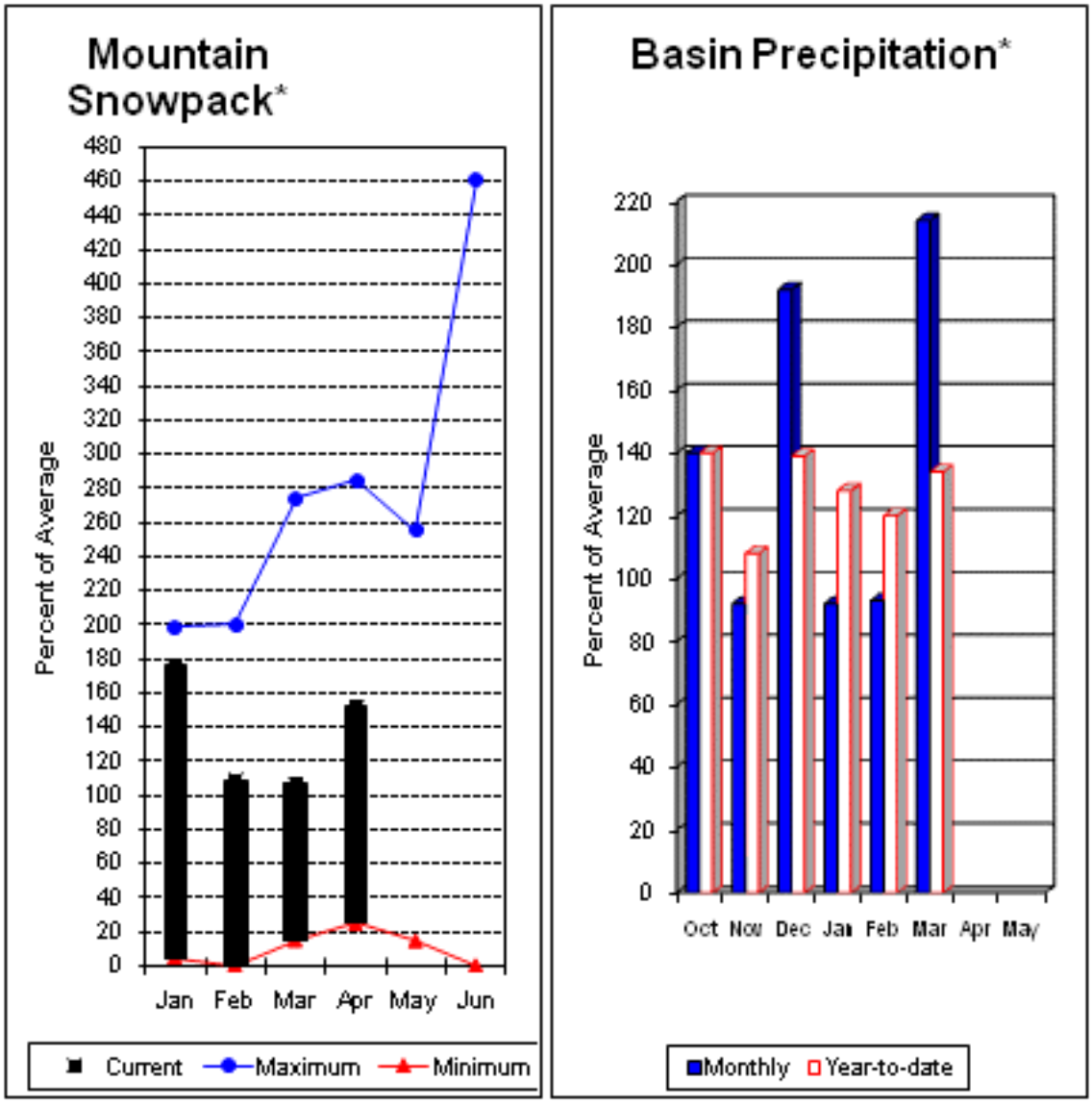
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	15	175	118
BAKER RIVER	0	171	0
NOOKSACK RIVER	2	155	117

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 127% and Elwha River is 125%. March runoff in the Dungeness River was 120% of normal. Big Quilcene and Wynoochee rivers should expect near to above average runoff this summer also. March precipitation was 214% of average. Precipitation has accumulated at 134% of average for the water year. March precipitation at Quillayute was 17.95 inches. The thirty-year average for March is 10.98 inches. Olympic Peninsula snowpack averaged 152% of normal on April 1. Temperatures were slightly below average for March and near normal for the water year.

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

Streamflow Forecasts - April 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	APR-JUL	134	148	157	127	166	180	124
	APR-SEP	163	181	193	127	205	225	152
Elwha R at Mcdonald Bridge	APR-JUL	460	500	525	125	550	590	419
	APR-SEP	550	600	630	125	660	710	503

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - April 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	6	157	152

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Issued by

Dave White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

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

Canada	Ministry of Sustainable Resources
	Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	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
	Recourse Conservation & Development Councils
Local	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
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	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.**

Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873

Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

NRCS
Natural
Resources
Conservation
Service

United States Department of Agriculture

Washington
Water Supply Outlook Report
May 1, 2011

Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684

or

Larry Johnson
Engineering Team Leader
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2955

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

May 2011

General Outlook

Just like the Energizer Bunny; this winter just keeps going and going and going. With temperatures running way below normal last month the snowpack is just now reaching peak density and beginning to show signs of melt. It is important to realize that the increased percent of averages over last month are as much related to the lack of normal melt rates then to the actual increase in snow water content. However above normal precipitation in most all mountain locations did indeed help build additional snowpack. Swamp Creek, Potato Hill and Waterhole SNOTEL sites, all located in completely different regions of the state, had one thing in common in that they all surpassed the previous record maximum May 1st snow water content set in 2008. Short term forecasts are for continued colder than normal temperatures but there are mixed opinions for below, above or normal precipitation. Long term projections call for gradual warming and drying to near normal conditions for the summer.

Snowpack

The May 1 statewide SNOTEL readings were 156% of average, up 41% from last month. The Chelan River snow survey data reported the lowest readings at 113% of average Colockum Creek near Wenatchee reported the highest at 323% of average. Westside averages from SNOTEL, and May 1 snow surveys, included the North Puget Sound river basins with 136% of average, the Central Puget river basins with 177%, and the Lewis-Cowlitz basins with 170% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 120% and the Wenatchee area with 191%. Snowpack in the Spokane River Basin was at 167% and the Walla Walla River Basin had 153% of average. Maximum confirmed snow cover in Washington was at Paradise SNOTEL, with water content of 95.8 inches. The 30-year average for Paradise on May 1 is 74.8 inches.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	324	167
Newman Lake	583	230
Pend Oreille	236	162
Okanogan	199	140
Methow	160	124
Conconully Lake	369	246
Wenatchee	165	124
Chelan	147	113
Upper Yakima	169	119
Lower Yakima	134	122
Ahtanum Creek	134	133
Walla Walla	241	153
Lower Snake	226	155
Cowlitz	160	151
Lewis	174	189
White	132	118
Green	185	119
Puyallup	135	139
Cedar	338	257
Snoqualmie	186	136
Skykomish	179	132
Skagit	171	133
Baker	n/a	N/A
Nooksack	163	140
Olympic Peninsula	148	177

Precipitation

During the month of April, the National Weather Service and Natural Resources Conservation Service climate stations reported much above average precipitation in all river basins in the state, bringing all basins to well above normal for the water-year. The lowest percent of average in the state was at Winthrop in north central Washington which reported 55% of average for a total of 0.42 inches. The average for Winthrop is 0.77 inches for April. Paradise SNOTEL was the wettest spot in the state last month with 23.4 inches or 245% of average. Valley versus mountain precipitation varied greatly throughout Central WA with examples of Yakima Airport at only 60% and Morse Lake SNOTEL at 284%, both within the Lower Yakima River Basin.

RIVER BASIN	APRIL PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	244	135
Pend Oreille	246	127
Upper Columbia	179	125
Central Columbia	144	117
Upper Yakima	162	115
Lower Yakima	186	116
Walla Walla	160	118
Lower Snake	160	122
Lower Columbia	179	117
South Puget Sound	198	119
Central Puget Sound	184	122
North Puget Sound	156	118
Olympic Peninsula	118	13

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 725,000-acre feet, 117% of average for the Upper Reaches and 182,000-acre feet or 108% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 104% of average for May 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 202,000-acre feet, 81% of average and 85% of capacity; Chelan Lake, 134,000-acre feet, 51% of average and 20% of capacity; and the Skagit River reservoirs at 81% of average and 43% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	85	81
Pend Oreille	44	76
Upper Columbia	84	104
Central Columbia	20	51
Upper Yakima	87	117
Lower Yakima	79	108
Lower Snake	43	59
North Puget Sound	43	81

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

Streamflow

Forecasts vary from 106% of average for the S.F. Walla Walla near Milton-Freewater to 170% of average for the Cedar River at Cedar Falls. May-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 146%; White River, 119%; and Skagit River, 114%. Some Eastern Washington streams include the Yakima River near Parker, 115%: Wenatchee River at Plain, 120%; and Spokane River near Post Falls, 164%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide April streamflows varied by region but were surprisingly low in some locations considering the amount of precipitation that we had. The Walla Walla River had the highest reported natural flows with 220% of average. The Similkameen at Nighthawk with 41% of average was the lowest in the state. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 152%; the Spokane at Spokane, 128%; the Columbia below Rock Island Dam, 81%; and the Cle Elum near Roslyn, 80%. Some operations were obviously voiding storage to make room for the impending snowmelt which is running surprisingly late this season.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	146-164
Pend Oreille	133-150
Upper Columbia	127-172
Central Columbia	112-120
Upper Yakima	113-131
Lower Yakima	115-137
Walla Walla	106-114
Lower Snake	121-144
Lower Columbia	118-137
South Puget Sound	106-119
Central Puget Sound	129-170
North Puget Sound	108-121
Olympic Peninsula	140-141

STREAM	PERCENT OF AVERAGE APRIL STREAMFLOWS
Pend Oreille Below Box Canyon	96
Kettle at Laurier	43
Columbia at Birchbank	62
Spokane at Long Lake	129
Similkameen at Nighthawk	41
Okanogan at Tonasket	52
Methow at Pateros	79
Chelan at Chelan	76
Wenatchee at Pashastin	85
Yakima at Cle Elum	74
Yakima at Parker	117
Naches at Naches	121
Grande Ronde at Troy	148
Snake below Lower Granite Dam	129
SF Walla Walla near Milton Freewater	220
Columbia River at The Dalles	109
Cowlitz below Mayfield Dam	151
Skagit at Concrete	75
Dungeness near Sequim	97

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

Soil Moisture

Current soil moisture data is available from a limited number of SNOTEL sites scattered throughout each basin. As the effort continues to install additional sensors and more years of data are acquired this information will become invaluable to the streamflow forecasting community. Heavy fall precipitation has allowed for above the curve soil moisture carryover through the winter. This will be of great benefit to water supplies come runoff season since the melting snow won't have to first fill a depleted soil moisture profile.

BASIN	ESTIMATED PERCENT SATURATION
Spokane	64
Pend Oreille	71
Upper Columbia	54
Central Columbia	67
Upper Yakima	62
Lower Yakima	71
Walla Walla	74
Lower Snake	74
Lower Columbia	70
South Puget Sound	67
Central Puget Sound	N/A
North Puget Sound	89
Olympic Peninsula	48

B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

MAY 2011

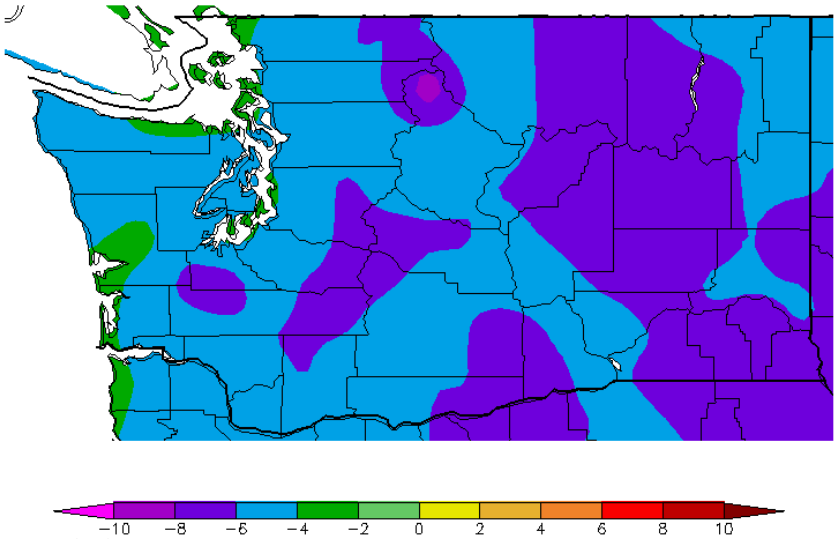
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ALPINE MEADOWS SNTL	3500	5/01/11	139	66.0	35.1	45.8
AMBROSE	6480	4/29/11	56	18.4	7.0	11.1
ASHLEY DIVIDE	4820	4/29/11	20	7.6	.0	1.1
BADGER PASS SNOTEL	6900	5/01/11	129	52.5	26.9	36.2
BAREE CREEK	5500	4/28/11	140	57.4	27.4	40.3
BAREE MIDWAY	4600	4/28/11	111	40.9	18.1	27.4
BAREE TRAIL	3800	4/28/11	30	10.8	.0	1.3
BARKER LAKES SNOTEL	8250	5/01/11	71	21.1	17.3	16.2
BARNES CREEK CAN.	5320	5/01/11	70	26.0	11.1	19.7
BASIN CREEK SNOTEL	7180	5/01/11	44	12.3	7.0	10.0
BEAVER CREEK TRAIL	2200	4/30/11	34	14.4	.0	4.4
BEAVER PASS	3680	5/01/11	100	44.0	23.2	27.2
BEAVER PASS SNOTEL	3630	5/01/11	116	54.6	33.6	35.5
BIG WHITE MTN CAN.	5510	4/30/11	75	25.4	15.4	19.4
BLACK MOUNTAIN	7750	4/27/11	68	22.3	11.5	16.9
BLACK PINE SNOTEL	7100	5/01/11	52	18.0	6.1	11.0
BLACKWALL PILL CAN.	6370	5/01/11	98	41.0	28.1	34.9
BLEWETT PASS#2SNOTEL	4240	5/01/11	17	8.4	.0	5.0
BLUE LAKE	5900	5/02/11	85	32.6	15.5	22.4
BROOKMERE CAN.	3000	4/30/11	25	8.6	.9	4.0
BROWN TOP AM	6000	5/01/11	168	72.2	56.0	62.1
BRUSH CREEK TIMBER	5000	4/27/11	45	18.6	.0	3.6
BUCKINGHORSE SNOTEL	4870	5/01/11	257	95.0	72.1	--
BULL MOUNTAIN	6600	4/25/11	27	9.1	.0	2.6
BUMPING RIDGE SNOTEL	4610	5/01/11	95	36.4	24.7	27.5
BUNCHGRASS MDWSNOTEL	5000	5/01/11	97	36.6	23.2	28.6
BURNT MOUNTAIN PIL	4170	5/01/11	74	27.1	7.4	5.6
CALAMITY SNOTEL	2500	5/01/11	7	4.0	.0	--
CARMI CAN.	4100	4/30/11	18	5.7	--	1.1
CAYUSE PASS SNOTEL	5240	5/01/11	211	85.1	53.4	--
CHESSMAN RESERVOIR	6200	4/28/11	21	7.6	.0	1.7
CHICKEN CREEK	4060	4/26/11	56	20.9	4.7	5.4
COMBINATION SNOTEL	5600	5/01/11	14	4.5	.0	1.2
COPPER BOTTOM SNOTEL	5200	5/01/11	12	4.8	.0	4.5
COPPER MOUNTAIN	7700	4/26/11	52	15.5	6.7	10.0
CORRAL PASS SNOTEL	5800	5/01/11	123	44.3	30.8	35.3
COTTONWOOD CREEK	6400	4/27/11	33	9.8	4.0	7.3
COUGAR MTN. SNOTEL	3200	5/01/11	62	24.4	1.0	11.0
COX VALLEY	4500	5/01/11	142	40.0	37.8	37.1
COYOTE HILL	4200	4/29/11	22	8.2	.3	2.6
DALY CREEK SNOTEL	5780	5/01/11	36	12.7	2.3	5.3
DEER PARK	5200	4/27/11	77	30.9	18.6	15.2
DEVILS PARK	5900	4/29/11	135	54.3	35.5	44.7
DISCOVERY BASIN	7050	4/26/11	52	16.6	7.2	9.4
DIX HILL	6400	5/01/11	38	14.3	.0	3.8
DOMMERIE FLATS	2200	4/28/11	0	.0	.0	--
DUNGENESS SNOTEL	4010	5/01/11	49	22.7	2.9	.9
EAST FORK R.S.	5400	4/28/11	2	.3	.0	.7
EMERY CREEK SNOTEL	4350	5/01/11	58	22.2	2.3	7.4
ESPERON CK. UP CAN.	5050	4/29/11	50	16.4	10.6	15.4
FARRON CAN.	4000	4/27/11	41	15.7	4.1	8.1
FATTY CREEK	5500	5/02/11	113	43.4	25.2	23.4
FISH CREEK	8000	4/29/11	53	15.2	8.7	11.5
FISH LAKE	3370	5/02/11	62	30.1	15.8	23.1
FISH LAKE SNOTEL	3430	5/01/11	69	31.3	17.0	28.8
FLATTOP MTN SNOTEL	6300	5/01/11	169	64.7	39.8	46.7
FLEECER RIDGE	7500	4/25/11	41	13.6	1.1	8.7
FOURTH OF JULY SUM	3200	4/29/11	7	1.8	.0	.3
FREEZEOUT CK. TRAIL	3500	5/01/11	34	12.3	.0	6.4
FROHNER MDWS SNOTEL	6480	5/01/11	37	11.3	4.3	6.5
GRAVE CRK SNOTEL	4300	5/01/11	63	25.2	5.5	7.0
GREEN LAKE SNOTEL	5920	5/01/11	84	29.6	23.7	24.6
GRIFFIN CR DIVIDE	5150	4/27/11	39	14.1	.0	4.9
GROUSE CAMP SNOTEL	5390	5/01/11	56	21.3	13.1	11.1
GUNSIGHT LAKE	6300	5/02/11	141	57.6	25.4	--
HAND CREEK SNOTEL	5030	5/01/11	42	16.4	4.1	6.8
HARTS PASS SNOTEL	6490	5/01/11	132	66.1	35.8	47.7
HARTS PASS	6500	4/29/11	140	58.0	43.6	44.4
HELL ROARING DIVIDE	5770	4/29/11	122	48.3	21.5	29.0
HERRIG JUNCTION	4850	4/26/11	90	35.8	18.8	22.9
HIGH RIDGE SNOTEL	4920	5/01/11	74	29.6	9.3	15.9
HOLBROOK	4530	5/02/11	12	3.0	.0	1.2
HOODOO BASIN SNOTEL	6050	5/01/11	157	59.2	26.7	45.7
HUCKLEBERRY SNOTEL	2250	5/01/11	0	.0	.0	.0
HUMBOLDT GLCH SNOTEL	4250	5/01/11	---	17.7	1.7	5.5
HURRICANE	4500	4/25/11	74	30.9	14.5	17.9
INDIAN ROCK SNOTEL	5360	5/01/11	95	45.2	27.7	--
INTERGAARD	6450	4/24/11	32	7.4	1.9	6.1
ISINTOK LAKE CAN.	5100	4/28/11	33	8.1	1.3	5.4
JUNE LAKE SNOTEL	3440	5/01/11	144	70.3	32.5	29.6
KRAFT CREEK SNOTEL	4750	5/01/11	39	14.8	.6	5.2
LOGAN CREEK	4300	4/27/11	32	10.4	.0	1.7
LOLO PASS SNOTEL	5240	5/01/11	90	37.4	10.8	24.5
LONE PINE SNOTEL	3930	5/01/11	144	65.3	39.0	34.2
LOOKOUT SNOTEL	5140	5/01/11	112	41.6	12.4	27.2
LOST HORSE SNOTEL	5120	5/01/11	41	17.3	11.4	10.7
LOST LAKE SNOTEL	6110	5/01/11	201	75.8	32.9	59.7
LOWER SANDS CREEK #2	3120	5/02/11	66	26.9	.0	15.8
LUBRECHT FOREST NO 3	5450	4/28/11	15	3.8	.0	1.7
LUBRECHT FOREST NO 4	4650	4/28/11	0	.0	.0	.1
LUBRECHT FOREST NO 6	4040	4/28/11	0	.0	.0	.0
LUBRECHT HYDROPLOT	4200	4/28/11	0	.0	--	.1
LUBRECHT SNOTEL	4680	5/01/11	0	.0	.0	.5
LYMAN LAKE SNOTEL	5980	5/01/11	182	74.9	55.3	67.2
LYNN LAKE SNOTEL	3900	5/01/11	91	34.6	11.4	--
MARIAS PASS	5250	4/30/11	72	26.9	4.0	12.5
MARTEN RIDGE SNOTEL	3520	5/01/11	168	85.8	47.5	--
MEADOWS CABIN	1900	5/02/11	0	.0	.0	1.1
MEADOWS PASS SNOTEL	3230	5/01/11	77	35.2	9.1	10.8
M F NOOKSACK SNOTEL	4970	5/01/11	193	83.2	53.9	69.9
MICA CREEK SNOTEL	4510	5/01/11	85	27.3	8.6	15.3
MINERAL CREEK	4000	4/27/11	41	17.8	.0	9.6
MISSION CREEK CAN.	5840	5/01/11	77	25.9	17.3	21.3
MONASHEE PASS CAN.	4500	5/01/11	48	17.0	5.9	11.4
MORSE LAKE SNOTEL	5410	5/01/11	164	65.0	63.0	57.0
MOSES MTN SNOTEL	5010	5/01/11	49	20.5	11.4	10.9
MOSQUITO RDG SNOTEL	5200	5/01/11	---	55.9	25.0	32.2
MOULTON RESERVOIR	6850	4/29/11	31	8.0	.0	3.5
MOUNT CRAG SNOTEL	3960	5/01/11	139	48.7	36.8	27.8
MT. KOBAU CAN.	5500	4/30/11	53	17.2	13.3	12.8
MOWICH SNOTEL	3160	5/01/11	0	.0	.0	.0
MOUNT GARDNER SNOTEL	2920	5/01/11	51	20.0	.0	4.8
N.F. ELK CR SNOTEL	6250	5/01/11	53	18.6	5.2	8.0
NEVADA RIDGE SNOTEL	7020	5/01/11	69	25.0	8.8	14.4
NEW HOZOMEEN LAKE	2800	4/29/11	0	.0	.0	3.9
NEZ PERCE CMP SNOTEL	5650	5/01/11	46	16.8	5.5	10.8
NEZ PERCE PASS	6570	4/29/11	61	23.4	7.8	14.2
NOISY BASIN SNOTEL	6040	5/01/11	192	76.6	38.8	43.8
NORTH FORK JOCKO	6330	5/01/11	---	63.2E	38.1	41.2
OLALLIE MDWS SNOTEL	4030	5/01/11	139	65.1	51.2	55.1
OPHIR PARK	7150	5/01/11	67	21.9	8.2	16.0
OYAMA LAKE CAN.	4100	4/28/11	25	6.9	.3	2.6
PARADISE SNOTEL	5130	5/01/11	205	95.8	64.4	74.8
PARK CK RIDGE SNOTEL	4600	5/01/11	105	52.3	34.8	39.8
PEPPER CREEK SNOTEL	2140	5/01/11	8	4.2	.0	--
PETERSON MDW SNOTEL	7200	5/01/11	58	15.3	10.4	11.0
PIGTAIL PEAK SNOTEL	5800	5/01/11	173	64.9	51.3	56.5
PIKE CREEK SNOTEL	5930	5/01/11	72	27.7	5.0	25.9
PIPESTONE PASS	7200	4/26/11	32	9.2	1.8	4.8
POPE RIDGE SNOTEL	3590	5/01/11	38	14.5	8.8	7.0
POSTILL LAKE CAN.	4200	4/29/11	32	8.9	1.7	5.3
POTATO HILL SNOTEL	4510	5/01/11	113	44.9	28.1	18.9
QUARTZ PEAK SNOTEL	4700	5/01/11	95	34.2	8.5	14.9
RAGGED MTN SNOTEL	4210	5/01/11	74	31.9	5.1	--
RAGGED RIDGE	3330	4/29/11	7	2.1	.0	--
RAINY PASS SNOTEL	4890	5/01/11	102	48.7	27.4	43.2
RAINY PASS	4780	4/30/11	102	38.3	28.5	39.3
REX RIVER SNOTEL	3810	5/01/11	101	50.5	20.0	19.0
ROCKER PEAK SNOTEL	8000	5/01/11	80	23.0	13.6	16.6
ROUND TOP MTN	4020	5/02/11	48	17.6	1.0	--
SADDLE MTN SNOTEL	7900	5/01/11	94	35.5	13.7	26.5
SALMON MDWS SNOTEL	4460	5/01/11	26	9.6	2.6	3.9
SASSE RIDGE SNOTEL	4340	5/01/11	90	35.9	26.0	32.3
SATUS PASS	4030	5/02/11	19	8.2	--	--
SAVAGE PASS SNOTEL	6170	5/01/11	93	37.2	14.3	25.2
SAWMILL RIDGE SNOTEL	4640	5/01/11	109	56.1	40.8	--
SENTINEL BT SNOTEL	4680	5/01/11	44	14.7	5.4	3.5
SHEEP CANYON SNOTEL	3990	5/01/11	146	64.8	31.7	32.0
SHERWIN SNOTEL	3200	5/01/11	---	4.9	.0	3.3
SILVER STAR MTN CAN.	5600	5/01/11	93	38.1	25.9	30.1
SKALKAHO SNOTEL	7260	5/01/11	87	32.6	12.3	25.4
SKITWISH RIDGE	5110	5/02/11	133	56.4	21.3	25.8
SKOOKUM CREEK SNOTEL	3310	5/01/11	88	44.3	6.0	14.6
SLIDE ROCK MOUNTAIN	7100	4/24/11	65	20.6	8.8	15.7
SOURDOUGH GUL SNOTEL	4000	5/01/11	0	.0	.0	--
SPENCER MDW SNOTEL	3400	5/01/11	89	44.3	23.3	21.8
SPIRIT LAKE SNOTEL	3520	5/01/11	22	14.7	.0	.6
SPOTTED BEAR MTN.	7000	5/02/11	54	22.1	3.6	7.6
SPRUCE SPGS SNOTEL	5700	5/01/11	51	19.7	.8	--
STAHL PEAK SNOTEL	6030	5/01/11	161	59.3	34.0	37.1
STAMPEDE PASS SNOTEL	3850	5/01/11	98	39.7	23.3	42.7
STEMPLE PASS	6600	5/01/11	---	14.5E	5.6	9.3
STEVENS PASS SNOTEL	3950	5/01/11	113	40.8	24.4	35.2
STORM LAKE	7780	4/26/11	63	20.4	12.3	14.3
STRYKER BASIN	6180	4/26/11	131	47.7	25.1	32.6
SUMMERLAND RES CAN.	4200	4/29/11	28	8.5	.0	5.1
SUNSET SNOTEL	5540	5/01/11	---	38.7	12.7	28.7
SURPRISE LKS SNOTEL	4290	5/01/11	158	70.2	44.6	41.8
SWAMP CREEK SNOTEL	3930	5/01/11	53	24.6	.0	4.6
SWIFT CREEK SNOTEL	4440	5/01/11	210	100.4	78.7	59.7

TEN MILE LOWER	6600	4/28/11	34	10.9	1.2	4.5
TEN MILE MIDDLE	6800	4/28/11	48	14.1	7.5	11.2
THUNDER BASIN SNOTEL	4320	5/01/11	76	35.2	23.3	27.4
THUNDER BASIN	4200	5/02/11	67	24.9	12.7	21.2

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
THOMPSON CREEK	2500	4/28/11	4	1.5	.0	--
TINKHAM CREEK SNOTEL	2990	5/01/11	82	34.4	12.3	20.0
TOUCHET SNOTEL	5530	5/01/11	81	34.9	17.5	26.2
TRINKUS LAKE	6100	5/02/11	146	58.6	45.9	40.8
TROUGH #2 SNOTEL	5480	5/01/11	33	13.9	9.1	4.3
TROUT CREEK CAN.	5650	4/29/11	35	10.6	3.0	3.7
TRUMAN CREEK	4060	4/29/11	6	1.8	.0	.1
TUNNEL AVENUE	2450	4/29/11	42	19.2	2.0	12.0
TV MOUNTAIN	6800	5/02/11	76	29.5	12.8	17.1

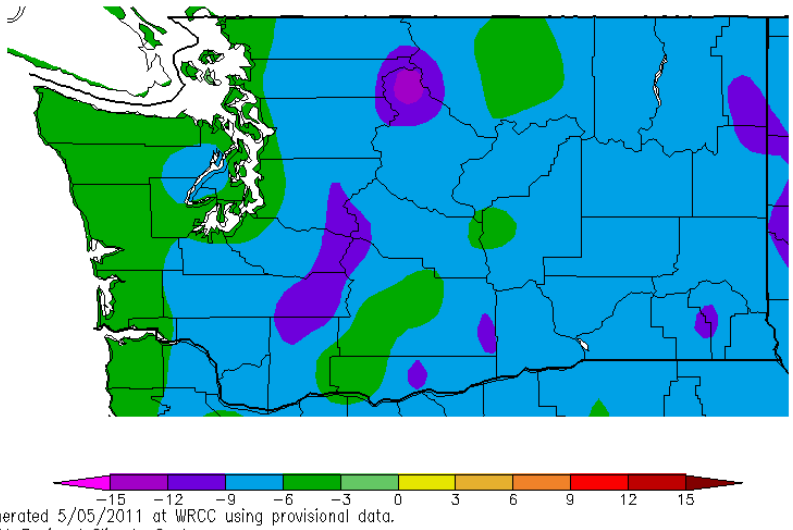
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
TWELVEMILE SNOTEL	5600	5/01/11	51	18.6	.9	8.8
TWIN CREEKS	3580	5/02/11	21	9.1	.7	1.7
TWIN LAKES SNOTEL	6400	5/01/11	127	52.6	22.8	38.5
UPPER HOLLAND LAKE	6200	5/02/11	126	53.3	25.2	33.5
UPPER WHEELER SNOTEL	4330	5/01/11	29	12.0	6.6	6.3
WARM SPRINGS SNOTEL	7800	5/01/11	107	33.3	21.6	23.7
WATERHOLE SNOTEL	5010	5/01/11	143	65.9	50.6	36.4
WEASEL DIVIDE	5450	5/01/11	---	49.0E	23.2	32.7
WELLS CREEK SNOTEL	4030	5/01/11	119	52.1	29.3	26.9
WHITE PASS ES SNOTEL	4440	5/01/11	78	23.4	17.0	21.4
WHITE ROCKS MTN CAN.	7200	4/29/11	61	23.2	17.6	21.0

Ave. Temperature dep from Ave (deg F)
4/5/2011 – 5/4/2011



Generated 5/05/2011 at WRCC using provisional data.
NOAA Regional Climate Centers

Av. Max. Temperature dep from Ave (deg F)
4/5/2011 – 5/4/2011



Generated 5/05/2011 at WRCC using provisional data.
NOAA Regional Climate Centers

Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

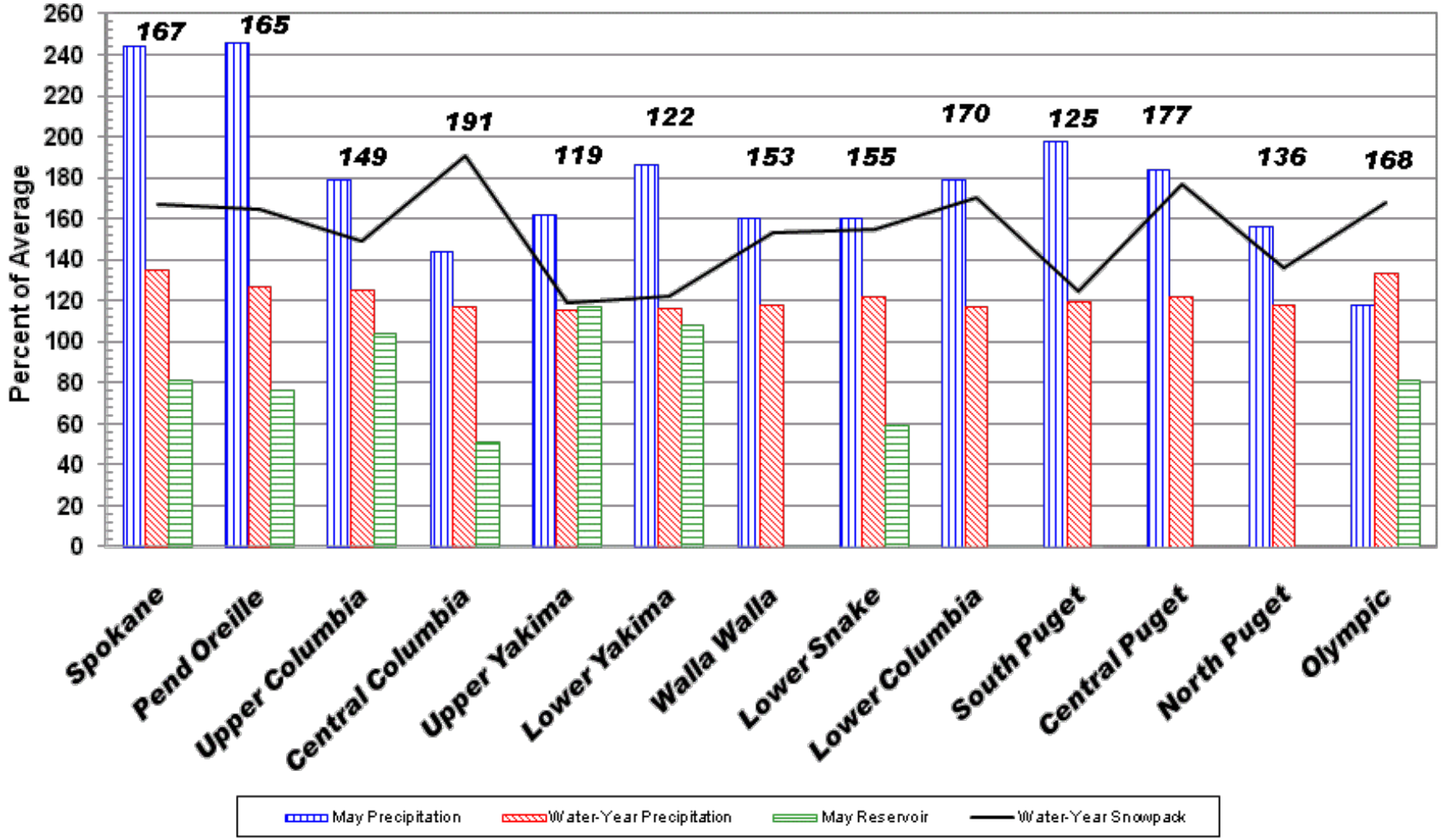
Washington:
http://www.wa.nrcs.usda.gov

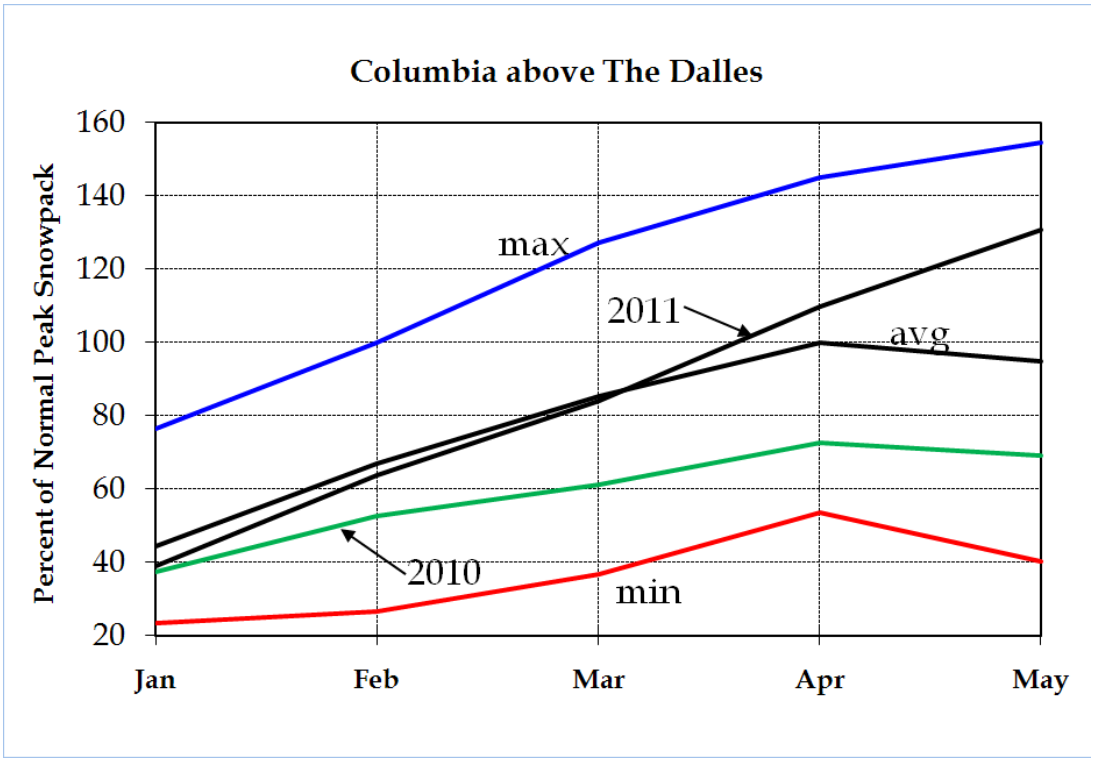
NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

May 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)





May 1, 2011

The Columbia Basin snowpack charts are produced, using only automated data. These data are telemetered via remote collection sites in Canada and the United States. The data are provisional, until they are officially released by the responsible data collection agency.

The combined Columbia Basin snowpack above The Dalles is currently at 138 percent of average, compared to 110 percent of average last month and 73 percent last year. This increase in the snowpack percent of average was due to generally above normal precipitation over the basin, combined with temperatures that were 6 to 8 degrees below normal. The cool weather over the entire basin prevented or slowed down the normal April snowmelt significantly, allowing the snowpack to remain the same in areas where precipitation was at or below normal and increase significantly in those areas that experienced above normal precipitation. All areas of the basin were affected.

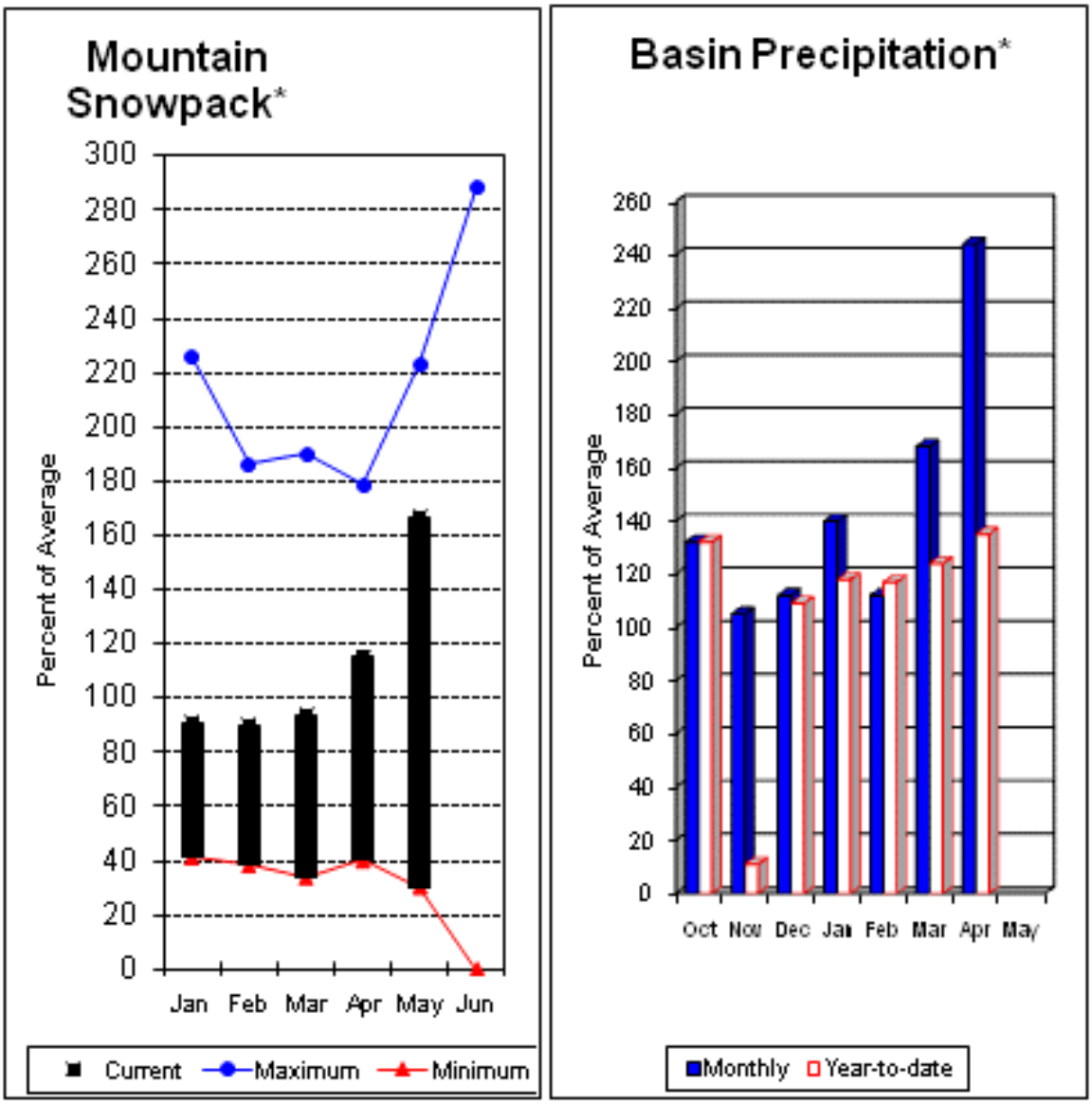
The snowpack increases as a percent of average were quite impressive. The increases ranged from 12% along the Columbia River mainstem in Canada to 71% in eastern Oregon. The Kootenay Basin snowpack percent of average increased 25% from April 1, Pend Oreille 40%, Kettle 15%, Spokane 44%, North Cascades 24%, Yakima 19%, Snake headwaters 47%, southern Idaho 38%, Salmon 28%, Clearwater 34%, John Day 70% and Deschutes 31%.

The overall snowpack above The Dalles is at 131 percent of the average peak accumulation. This compares to 69 percent last year. The snowpack continues to build. Normally, the snowpack reaches its peak near April 1 and declines afterward. This delay in the onset of significant melt has the potential to intensify the amount of runoff when temperatures finally warm up. The delay and subsequent warming could start melting at all elevations at once, instead of an orderly meltout.

The snowpack in the Columbia Basin above Castlegar is at 124 percent of average. This compares to 106 percent last month and 80 percent last year. For the basin above Grand Coulee, the snowpack is at 134 percent of average, compared to 109 percent last month and 76 percent last year. The Snake River snowpack above Ice Harbor is at 151 percent of average, compared to 112 percent last month and 62 percent last year.

An early forecast at The Dalles by the National Weather Service projects the 2011 April-September runoff at 120 million acre-feet (MAF), or 122% of the 1971-2000 average. Years with similar snowpack are 1971, 1975, 1982, and 1999. The runoff for those years was 127 MAF, 109 MAF, 123 MAF, and 118 MAF respectively. One of the highest snowpack years, 1997, was only slightly higher than this year and the seasonal runoff was 141 MAF.

Spokane River Basin



*Based on selected stations

The May 1 forecasts for summer runoff within the Spokane River Basin are 164% of average near Post Falls and 160% at Long Lake. The Chamokane River near Long Lake forecasted to have 146% of average flows for the May-August period. The forecast is based on a basin snowpack that is 167% of average and precipitation that is 135% of average for the water year. Precipitation for April was above normal at 244% of average. Streamflow on the Spokane River at Long Lake was 129% of average for April. May 1 storage in Coeur d'Alene Lake was 202,000acre feet, 81% of average and 85% of capacity. Snowpack at Quartz Peak SNOTEL site was 230% of average with 34.2 inches of water content. Average temperatures in the Spokane basin were 4-6 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spokane R nr Post Falls (2)	MAY-JUL	2290	2570	2750	165	2930	3210	1670
	MAY-SEP	2400	2700	2900	164	3100	3400	1770
Spokane R at Long Lake (2)	MAY-JUL	2520	2850	3070	161	3290	3620	1910
	MAY-SEP	2820	3160	3400	160	3640	3980	2130
Chamokane Ck nr Long Lake	MAY-AUG	10.3	13.0	14.9	146	16.8	19.5	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	201.8	182.3	249.7

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - May 1, 2011

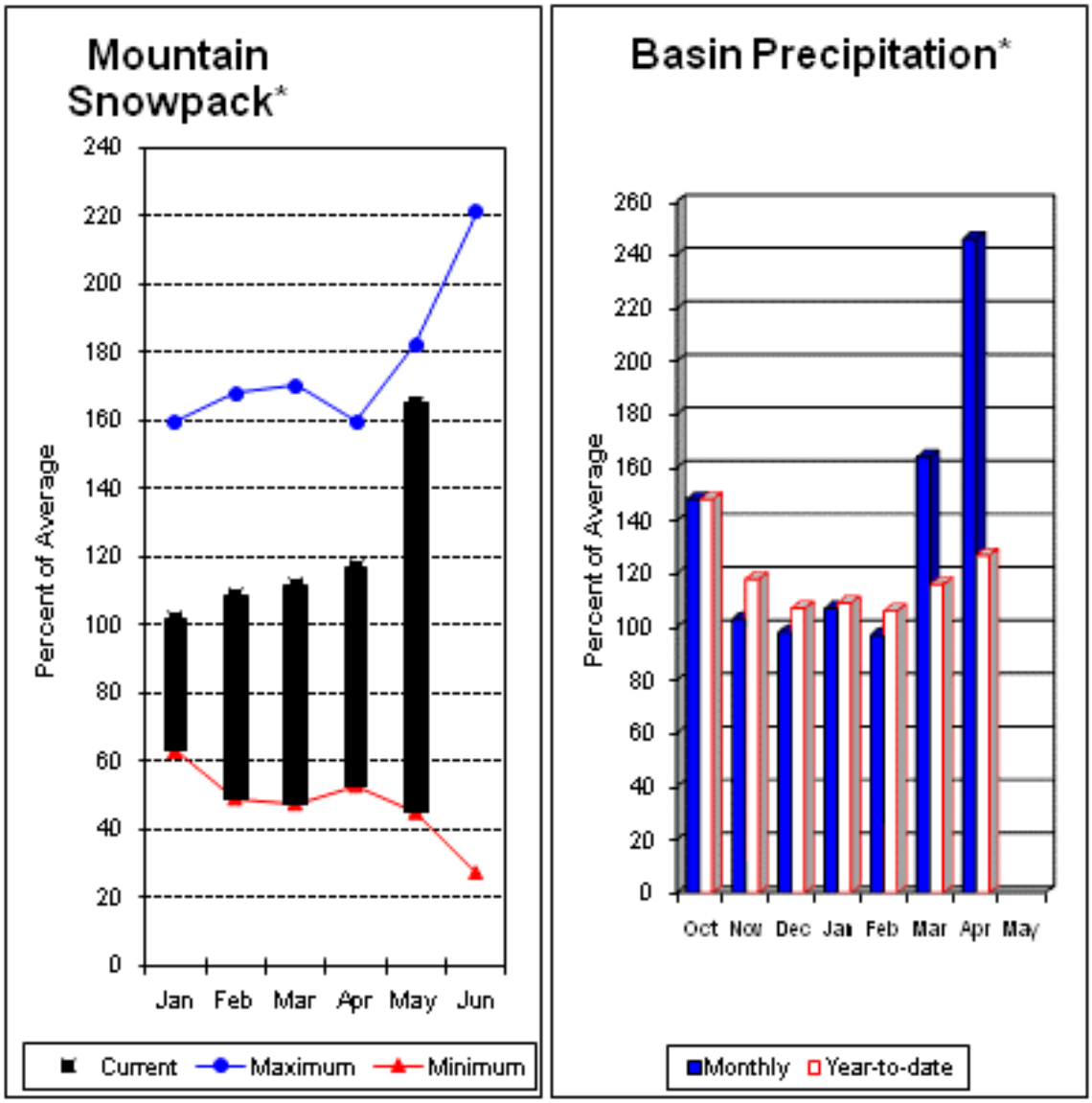
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	11	324	167
NEWMAN LAKE	1	583	230

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Pend Oreille River Basins



*Based on selected stations

The May – September average forecast for the Priest River near the town of Priest River is 133% and the Pen Orielle below Box Canyon is 150%. April streamflow was 114% of average on the Pend Oreille River and 62% on the Columbia at Birchbank. May 1 snow cover was 162% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 36.6 inches of snow water on the snow pillow. Normally Bunchgrass would have 28.6 inches on May 1. Precipitation during April was 246% of average, bringing the year-to-date precipitation to 127% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 76% of normal. Average temperatures were 4-6 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Pend Oreille Lake Inflow (2)	MAY-JUL	14400	15400	16000	151	16600	17600	10600
	MAY-SEP	15800	16900	17600	149	18300	19400	11800
Priest R nr Priest River (1,2)	MAY-JUL	680	780	825	134	870	970	615
	MAY-SEP	725	840	890	133	940	1050	670
Pend Oreille R bl Box Canyon (2)	MAY-JUL	14500	15500	16100	151	16700	17700	10700
	MAY-SEP	16000	17100	17800	150	18500	19600	11900

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PEND OREILLE	1561.3	693.8	844.8	916.7
PRIEST LAKE	119.3	71.5	94.9	102.5

PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - May 1, 2011

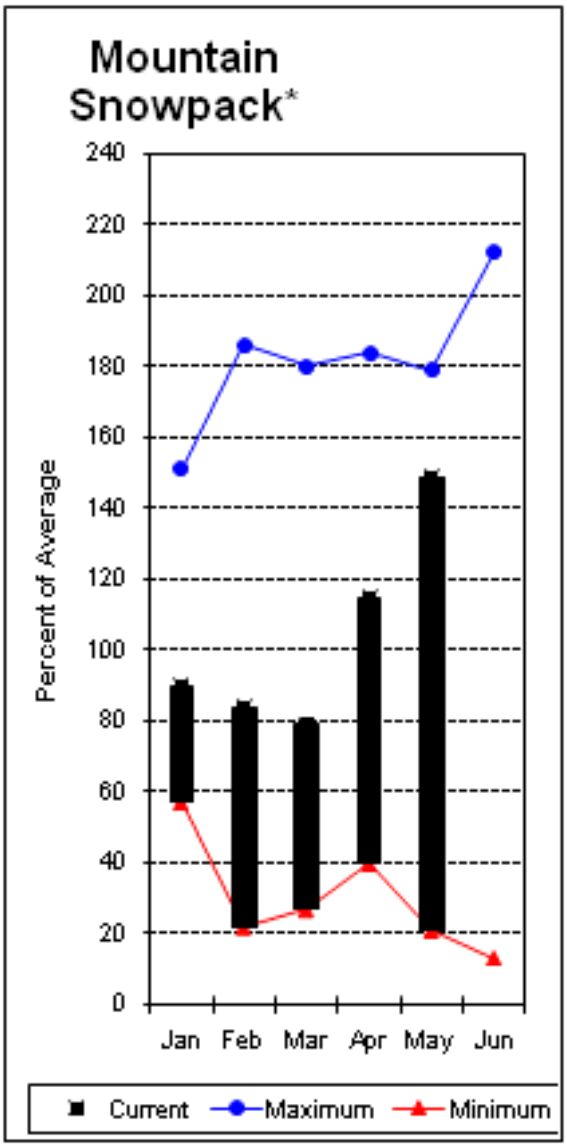
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	8	275	154
KETTLE RIVER	1	272	420

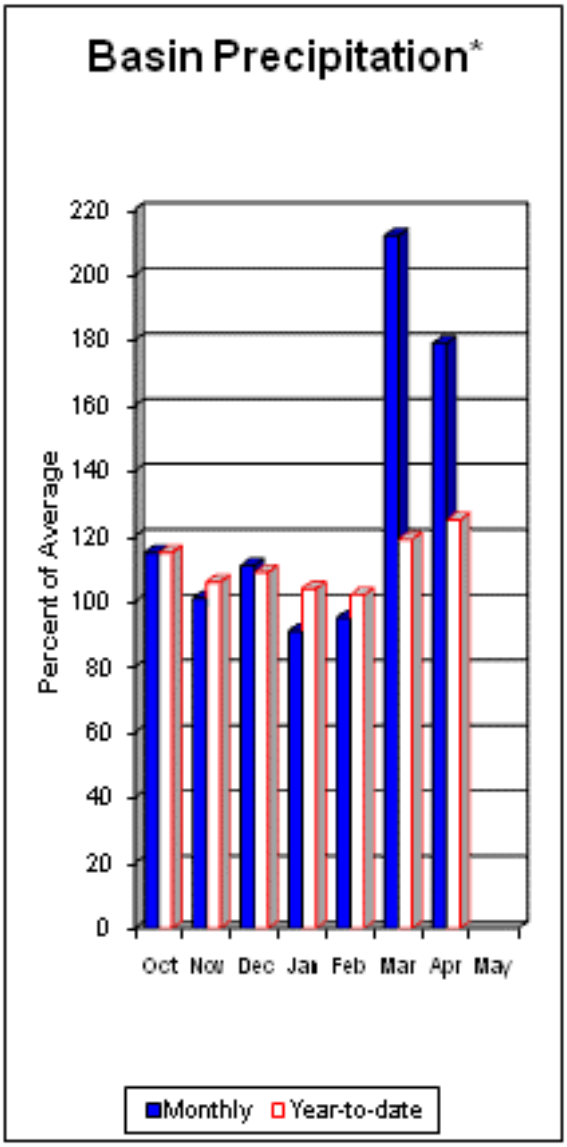
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Upper Columbia River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 132%, Similkameen River is 127%, Kettle River 127% and Methow River is 130%. May 1 snow cover on the Okanogan was 140% of average, Omak Creek was 188% and the Methow was 124%. April precipitation in the Upper Columbia was 179% of average, with precipitation for the water year at 125% of average. April streamflow for the Methow River was 79% of average, 52% for the Okanogan River and 41% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 9.6 inches. Average for this site is 3.9 inches on May 1. Combined storage in the Conconully Reservoirs was 20,000-acre feet, which is 84% of capacity and 104% of the May 1 average. Temperatures were 4-8 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Colville R at Kettle Falls	MAY-JUL	97	120	136	172	152	175	79
	MAY-SEP	113	140	158	172	176	205	92
Kettle R nr Laurier	MAY-JUL	1710	1860	1970	128	2080	2230	1540
	MAY-SEP	1780	1960	2080	127	2200	2380	1640
Columbia R at Birchbank (1,2)	MAY-JUL	31300	34500	36000	114	37500	40700	31600
	MAY-SEP	40100	44000	45800	114	47600	51500	40200
Columbia R at Grand Coulee (2)	MAY-JUL	53400	56100	57300	123	58500	61200	46600
	MAY-SEP	65400	68400	69700	123	71000	74000	56700
Similkameen R nr Nighthawk (1)	MAY-JUL	1310	1480	1560	128	1640	1810	1220
	MAY-SEP	1430	1610	1700	129	1790	1970	1320
Okanogan R nr Tonasket (1)	MAY-JUL	1400	1710	1850	132	1990	2300	1400
	MAY-SEP	1590	1940	2100	132	2260	2610	1590
Okanogan R at Malott (1)	MAY-JUL	1440	1760	1910	132	2060	2380	1450
	MAY-SEP	1630	1990	2160	132	2330	2690	1640
Methow R nr Pateros	MAY-SEP	1010	1090	1140	130	1190	1270	880
	MAY-JUL	915	990	1040	128	1090	1160	810

UPPER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	9.0	7.4	8.9
CONCONULLY RESERVOIR	13.0	10.8	7.8	10.1

UPPER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

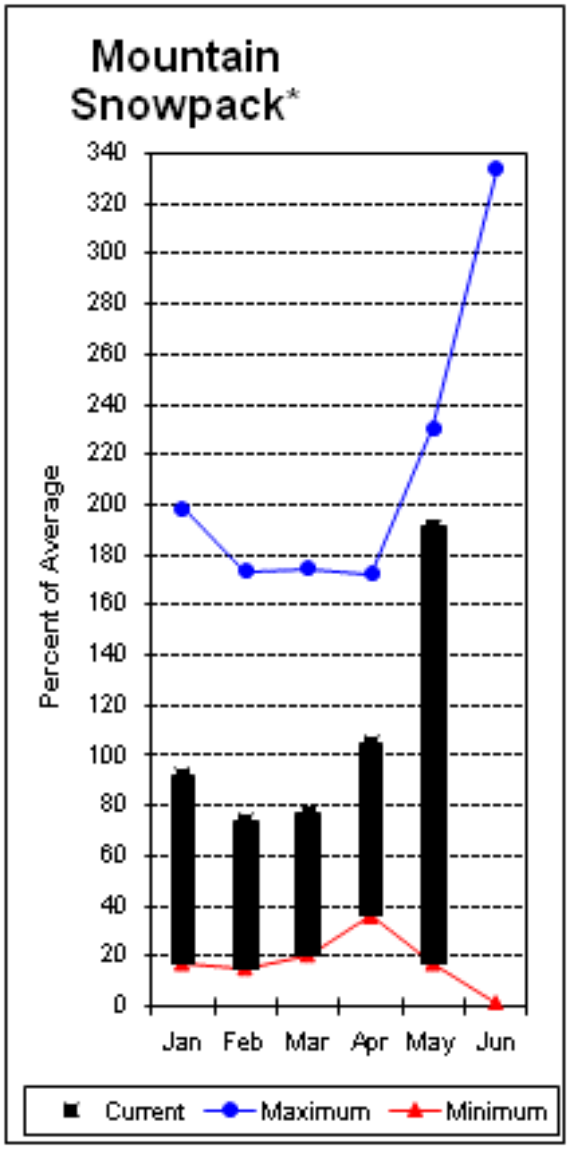
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
OKANOGAN RIVER	3	229	152
OMAK CREEK	1	180	188
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	0	0	0
CONCONULLY LAKE	1	369	246
METHOW RIVER	5	160	124

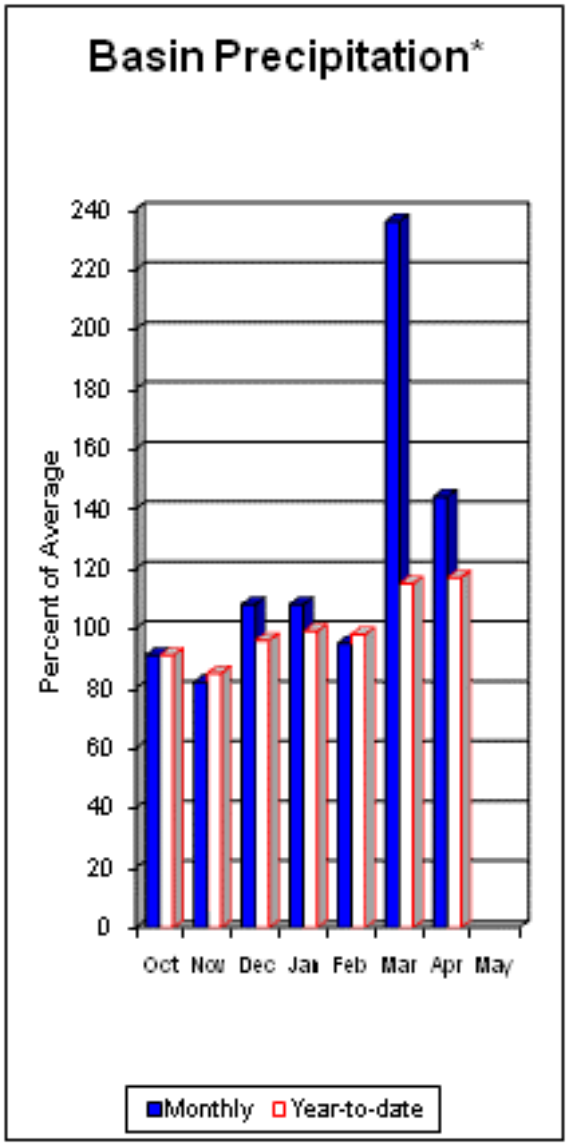
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Central Columbia River Basins





*Based on selected stations

Precipitation during April was 144% of average in the basin and 117% for the year-to-date. Runoff for Entiat River is forecast to be 121% of average for the summer. The May-September average forecast for Chelan River is 112%, Wenatchee River at Plain is 120%, Stehekin River is 111605% and Icicle Creek is 112%. April average streamflows on the Chelan River were 76% and on the Wenatchee River 85%. May 1 snowpack in the Wenatchee River Basin was 124% of average; the Chelan, 113%; the Entiat, 207%; Stemilt Creek, 190% and Colockum Creek, 323%. Reservoir storage in Lake Chelan was 134,000-acre feet, 7519% of May 1 average and 20% of capacity. Lyman Lake SNOTEL had the most snow water with 74.9 inches of water. This site would normally have 67.2 inches on May 1. Temperatures were 4-6 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Stehekin R at Stehekin	MAY-JUL	610	675	720	116	765	830	620
	MAY-SEP	760	825	865	116	905	970	745
Chelan R at Chelan (2)	MAY-JUL	930	985	1020	112	1060	1110	910
	MAY-SEP	1090	1140	1180	112	1220	1270	1050
Entiat R nr Ardenvoir	MAY-JUL	210	225	235	121	245	260	195
	MAY-SEP	235	250	260	121	270	285	215
Wenatchee R at Plain	MAY-JUL	985	1050	1090	120	1130	1200	905
	MAY-SEP	1110	1170	1220	120	1270	1330	1020
Icicle Ck nr Leavenworth	MAY-JUL	260	285	300	111	315	340	270
	MAY-SEP	290	320	335	112	350	380	300
Wenatchee R at Peshastin	MAY-JUL	1320	1400	1460	117	1520	1600	1250
	MAY-SEP	1500	1590	1650	117	1710	1800	1410
Columbia R bl Rock Island Dam (2)	MAY-JUL	59100	62100	64100	125	66100	69100	51100
	MAY-SEP	70600	74200	76600	124	79000	82600	61600

CENTRAL COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	134.4	391.3	265.6

CENTRAL COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

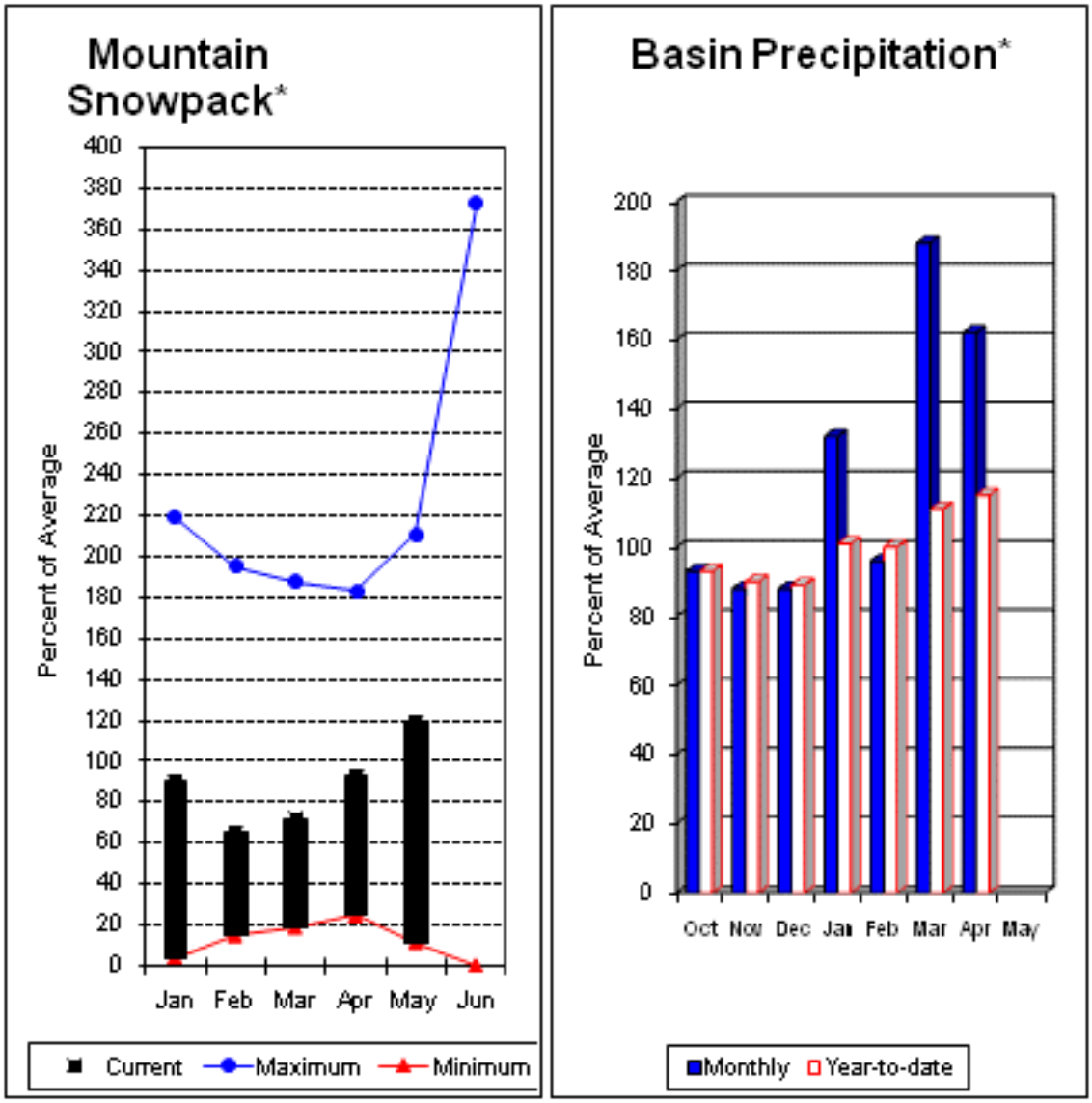
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	4	147	113
ENTIAT RIVER	1	165	207
WENATCHEE RIVER	7	165	124
STEMILT CREEK	1	182	190
COLOCKUM CREEK	1	153	323

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin



*Based on selected stations

May 1 reservoir storage for the Upper Yakima reservoirs was 725,000-acre feet, 117% of average. Forecasts for the Yakima River at Cle Elum are 116% of average and the Teanaway River near Cle Elum is at 131%. Lake inflows are all forecasted to be above average this summer as well. April streamflows within the basin were Yakima at Cle Elum at 74% and Cle Elum River near Roslyn at 80%. May 1 snowpack was 119% based upon 8 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 162% of average for April and 115% year-to-date for water. 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.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Keechelus Reservoir Inflow (2)	MAY-JUL	95	103	108	117	113	121	92
	MAY-SEP	105	114	121	118	128	137	103
Kachess Reservoir Inflow (2)	MAY-JUL	89	94	98	117	102	107	84
	MAY-SEP	97	103	108	117	113	119	92
Cle Elum Lake Inflow (2)	MAY-JUL	345	365	375	114	385	405	330
	MAY-SEP	390	410	425	113	440	460	375
Yakima R at Cle Elum (2)	MAY-JUL	665	705	735	116	765	805	635
	MAY-SEP	730	790	830	116	870	930	715
Teanaway R bl Forks nr Cle Elum	MAY-JUL	94	109	119	131	129	144	91
	MAY-SEP	99	114	124	131	134	149	95

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	132.4	112.1	125.6
KACHESS	239.0	216.0	180.9	188.3
CLE ELUM	436.9	376.2	244.6	307.0

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - May 1, 2011

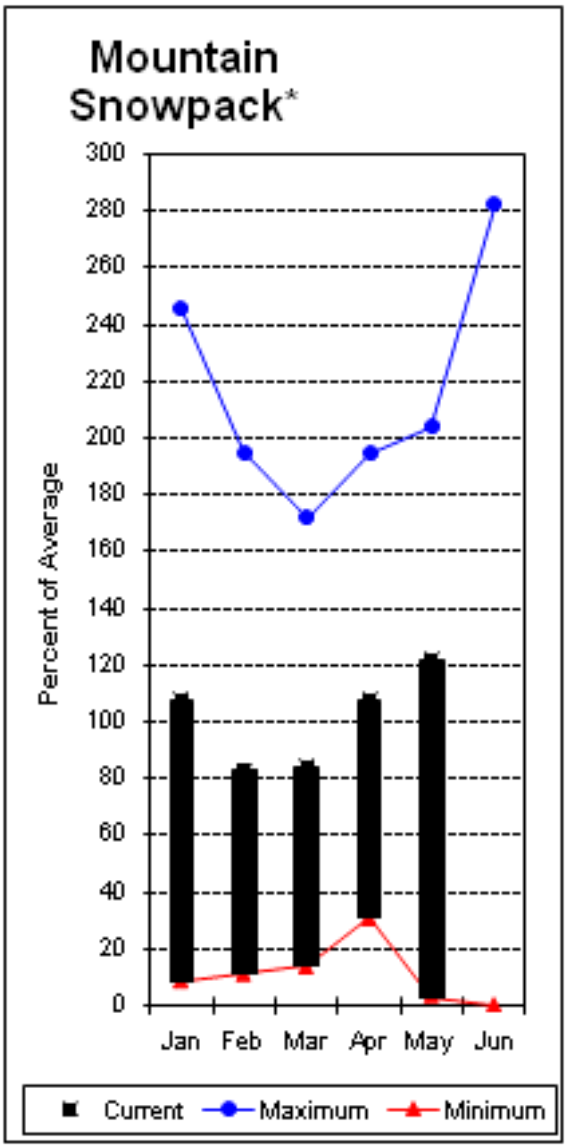
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	8	169	119

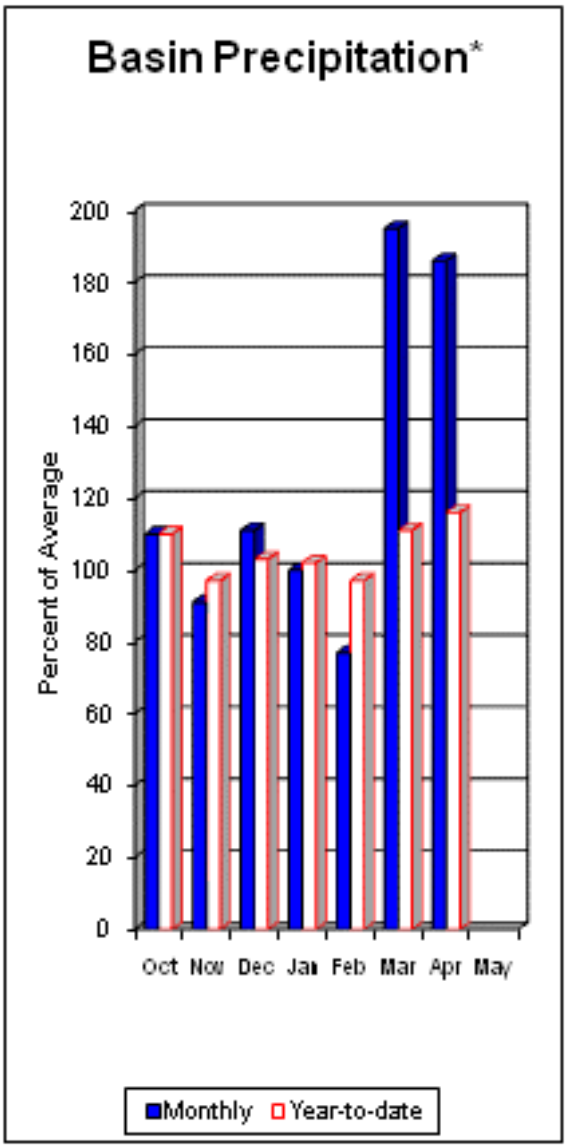
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin





*Based on selected stations

April average streamflows within the basin were: Yakima River near Parker, 117%; Naches River near Naches, 121%; and Yakima River at Kiona, 165%. May 1 reservoir storage for Bumping and Rimrock reservoirs was 182,000-acre feet, 108% of average. Forecast averages for Yakima River near Parker are 115%; American River near Nile, 117%; Ahtanum Creek, 117%; and Klickitat River near Glenwood, 137%. May 1 snowpack was 122% based upon 6 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 133%of average. Precipitation was 186% of average for April and 116% year-to-date for water. Temperatures were 4-8degrees below normal for April and slightly below for the water year. Volume forecasts for 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.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bumping Lake Inflow (2)	MAY-JUL	101	114	123	119	132	145	103
	MAY-SEP	111	125	134	119	143	157	113
American R nr Nile	MAY-JUL	89	98	105	117	112	121	90
	MAY-SEP	99	110	117	117	124	135	100
Rimrock Lake Inflow (2)	MAY-JUL	170	184	193	115	200	215	168
	MAY-SEP	210	225	235	115	245	260	205
Naches R nr Naches (2)	MAY-JUL	595	660	705	124	750	815	570
	MAY-SEP	655	730	780	124	830	905	630
Ahtanum Ck at Union Gap	MAY-JUL	18.0	22	25	119	28	32	21
	MAY-SEP	19.9	24	27	117	30	34	23
Yakima R nr Parker (2)	MAY-JUL	1390	1490	1560	115	1630	1730	1360
	MAY-SEP	1580	1690	1770	115	1850	1960	1540
Klickitat R nr Glenwood	MAY-JUL	135	145	151	137	157	167	110
	MAY-SEP	167	178	185	137	192	205	135
Klickitat R nr Pitt	MAY-JUL	405	435	455	138	475	505	330
	MAY-SEP	515	550	575	137	600	635	420

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

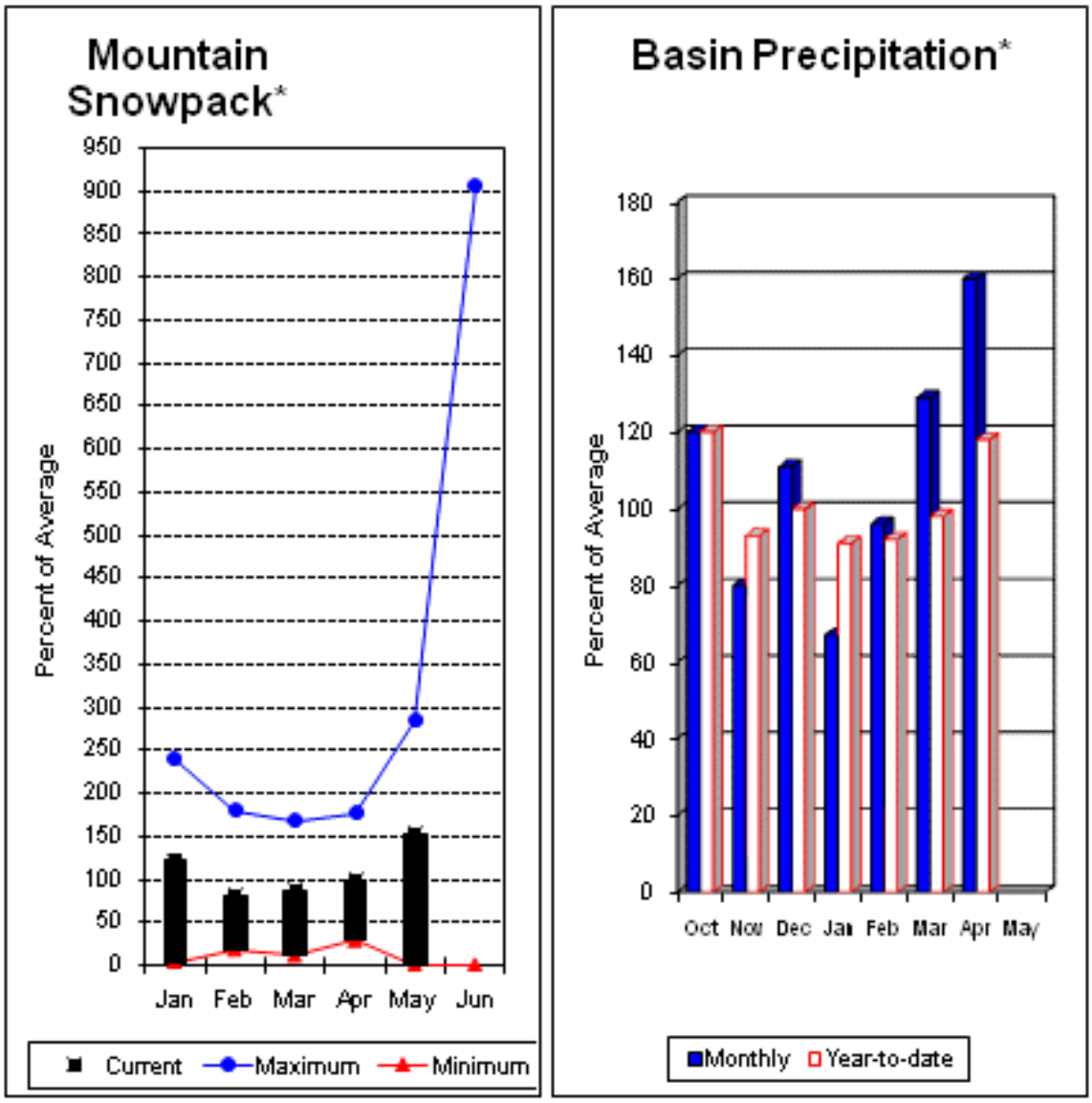
LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	15.3	14.0	19.6
RIMROCK	198.0	167.0	132.7	149.4

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of: Last Yr	Average
LOWER YAKIMA RIVER	6	134	122
AHTANUM CREEK	2	134	133

Walla Walla River Basin



*Based on selected stations

April precipitation was 160% of average, maintaining the year-to-date precipitation at 118% of average. Snowpack in the basin was 153% of average. Streamflow forecasts are 114% of average for Mill Creek and 106% for the SF Walla Walla near Milton-Freewater. April streamflow was 220% of average for the SF Walla Walla River. Average temperatures were 4-6 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== 90% (1000AF)	70% (1000AF)	Future Conditions ======= 50% (1000AF)	50% (% AVG.)	Wetter =====>> 30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF Walla Walla R nr Milton-Freewater	MAY-JUL	31	37	40	105	43	49	38
	MAY-SEP	44	50	54	106	58	64	51
Mill Ck nr Walla Walla	MAY-JUL	13.0	15.2	16.8	114	18.4	21	14.7
	MAY-SEP	16.9	19.3	21	114	23	25	18.4

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	241	153

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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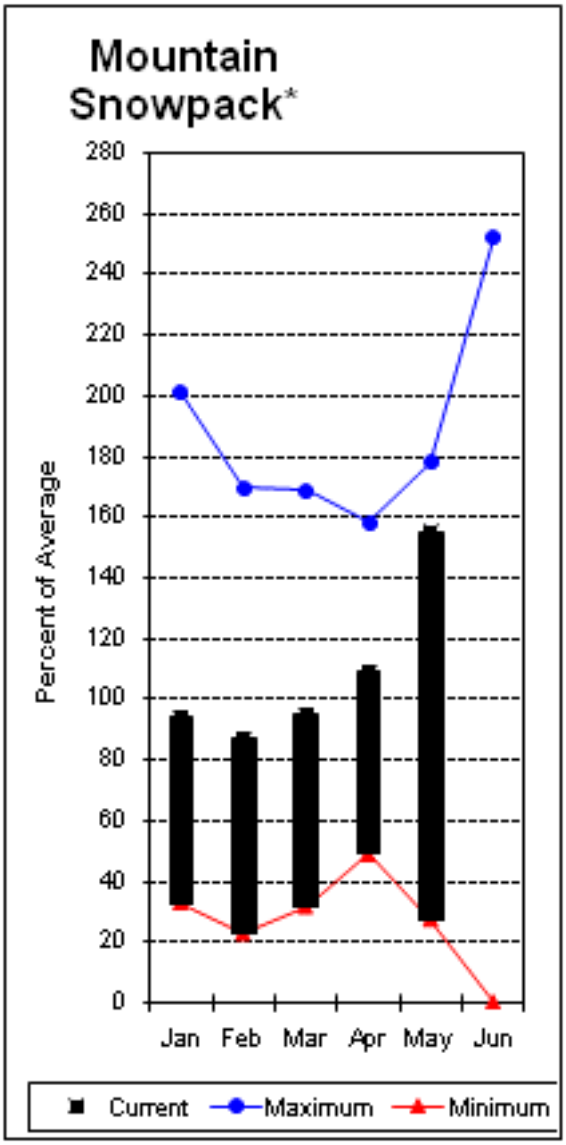
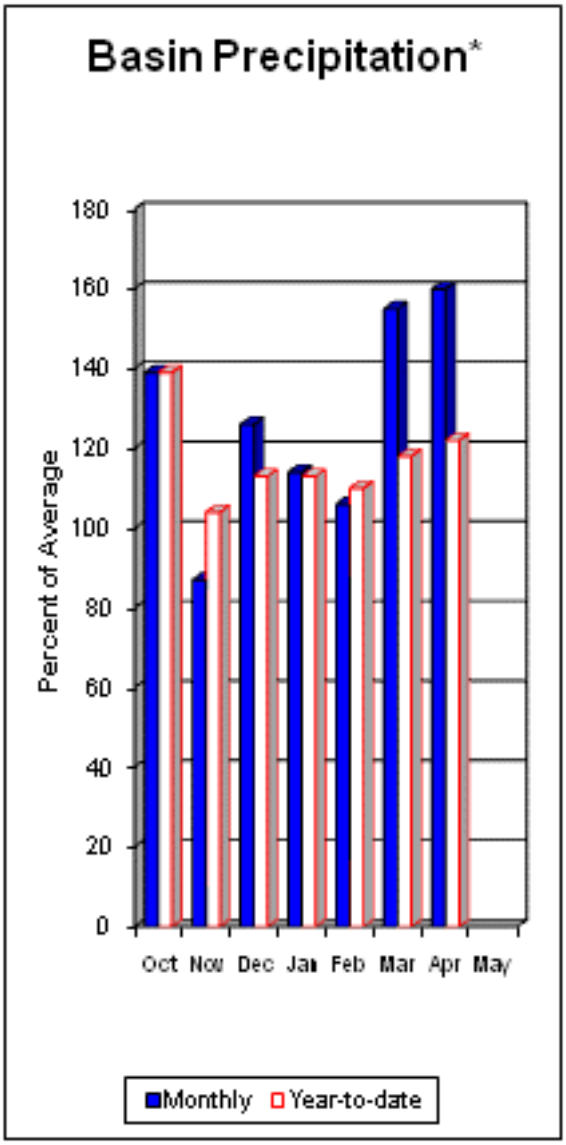
Lower Snake River Basin





*Based on selected stations

The May - September forecast is for 116% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 116% and 144% of normal respectively. A newly developed forecast point for Asotin Creek at Asotin predicts 121% of average flows for the May – July runoff period. April precipitation was 160% of average, bringing the year-to-date precipitation to 122% of average. May 1 snowpack readings averaged 155% of average. April streamflow was 129% of average for Snake River below Lower Granite Dam and 148% for Grande Ronde River near Troy. Dworshak Reservoir on the Clearwater River is at 59% of average. Average temperatures were 408 degrees below normal for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Grande Ronde R at Troy (1)	MAY-JUL	830	1040	1140	125	1240	1450	910
	MAY-SEP	945	1160	1260	125	1360	1570	1010
Asotin Ck at Asotin	MAY-JUL	20	26	29	121	32	38	24
Clearwater R at Spalding (1,2)	MAY-JUL	6640	7440	7800	135	8160	8960	5770
	MAY-SEP	7180	8040	8430	136	8820	9680	6190
Snake R bl Lower Granite Dam (1,2)	MAY-JUL	18800	21100	22100	132	23100	25400	16700
	MAY-SEP	21500	24100	25300	131	26500	29100	19300

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DWORSHAK	3468.0	1502.8	2621.0	2560.7

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
LOWER SNAKE, GRANDE RONDE	10	226	155

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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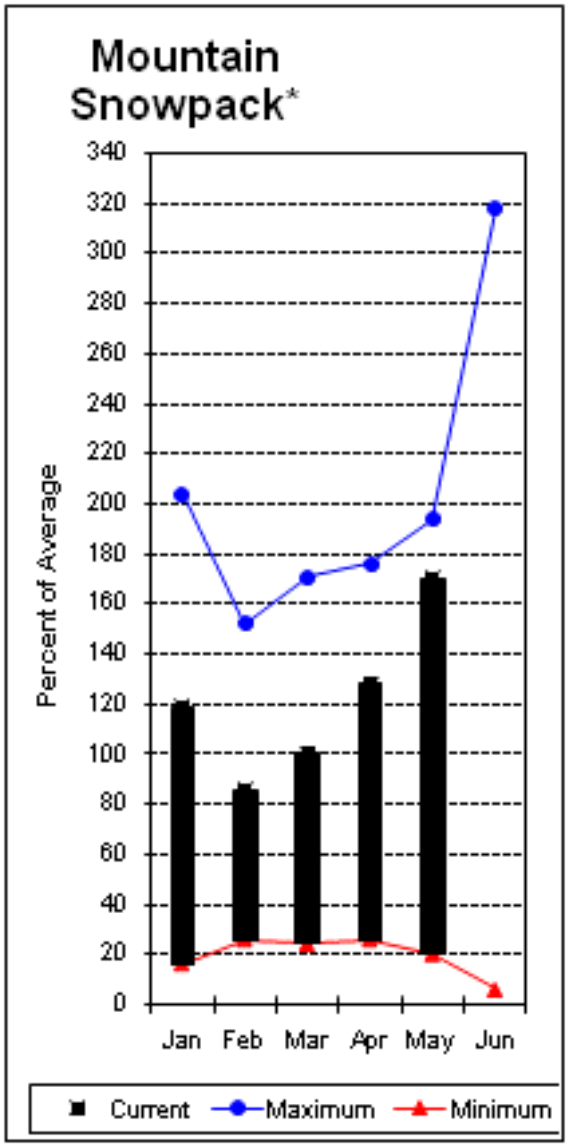
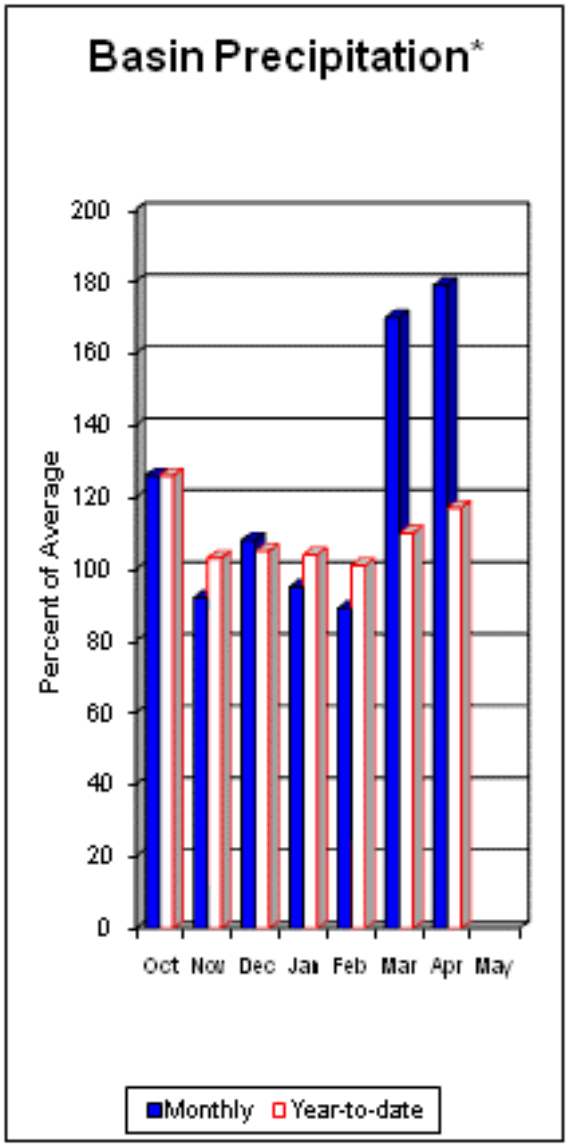
Lower Columbia River Basins





*Based on selected stations

Forecasts for May – September streamflows within the basin are Lewis River at Ariel, 120% and Cowlitz River at Castle Rock, 119% of average. The Columbia at The Dalles is forecasted to have 123% of average flows this summer. April average streamflow for Cowlitz River below Mayfield Dam was 151%. The Columbia River at The Dalles was 109% of average. April precipitation was 179% of average and the water-year average was 117%. May 1 snow cover for Cowlitz River was 151%, and Lewis River was 189% of average. Average temperatures were 2-6 degrees below normal during April and 1-4 degrees below for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Columbia R at The Dalles (2)	MAY-JUL	80400	84600	87400	124	90200	94400	70500
	MAY-SEP	95600	101000	104000	123	107000	112000	84500
Klickitat R nr Glenwood	MAY-JUL	135	145	151	137	157	167	110
	MAY-SEP	167	178	185	137	192	205	135
Klickitat R nr Pitt	MAY-JUL	405	435	455	138	475	505	330
	MAY-SEP	515	550	575	137	600	635	420
Lewis R at Ariel (2)	MAY-JUL	655	740	800	120	860	945	667
	MAY-SEP	815	910	975	120	1040	1130	812
Cowlitz R bl Mayfield Dam (2)	MAY-JUL	1180	1350	1470	118	1590	1760	1247
	MAY-SEP	1360	1590	1750	118	1910	2140	1478
Cowlitz R at Castle Rock (2)	MAY-JUL	1610	1810	1940	119	2070	2270	1629
	MAY-SEP	1990	2200	2350	119	2500	2710	1972

LOWER COLUMBIA RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MOSSYROCK	0.0	1310.0	1260.4	---
SWIFT	0.0	723.4	727.9	---
YALE	0.0	371.7	394.8	---
MERWIN	0.0	395.3	417.6	---

LOWER COLUMBIA RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	5	174	189
COWLITZ RIVER	6	160	151

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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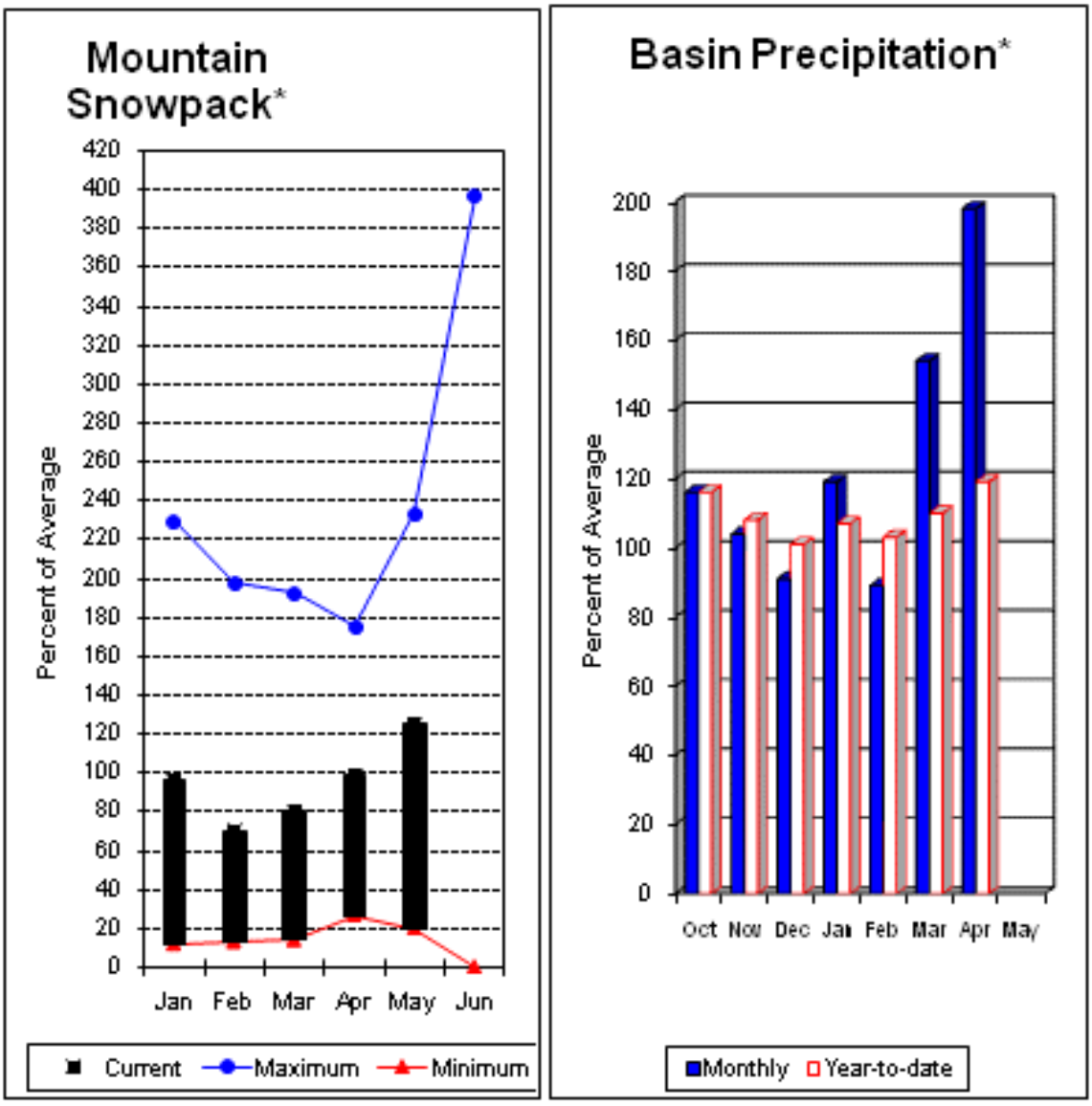
South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 106% of normal for the Green River below Howard Hanson Dam and 119% for the White River near Buckley. May 1 snowpack was 118% of average for the White River, 139% for Puyallup River and 119% in the Green River Basin. Water content on May 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 44.3 inches. This site has a May 1 average of 35.3 inches. April precipitation was 198% of average, bringing the water year-to-date to 119% of average for the basins. Average temperatures in the area were 4-8 degrees below normal for April and slightly below for the water-year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
White R nr Buckley (1)	MAY-JUL	320	385	415	119	445	510	348
	MAY-SEP	410	490	525	119	560	640	442
Green R bl Howard Hanson Dam (1,2)	MAY-JUL	138	172	188	107	205	240	176
	MAY-SEP	157	197	215	106	235	275	202

SOUTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

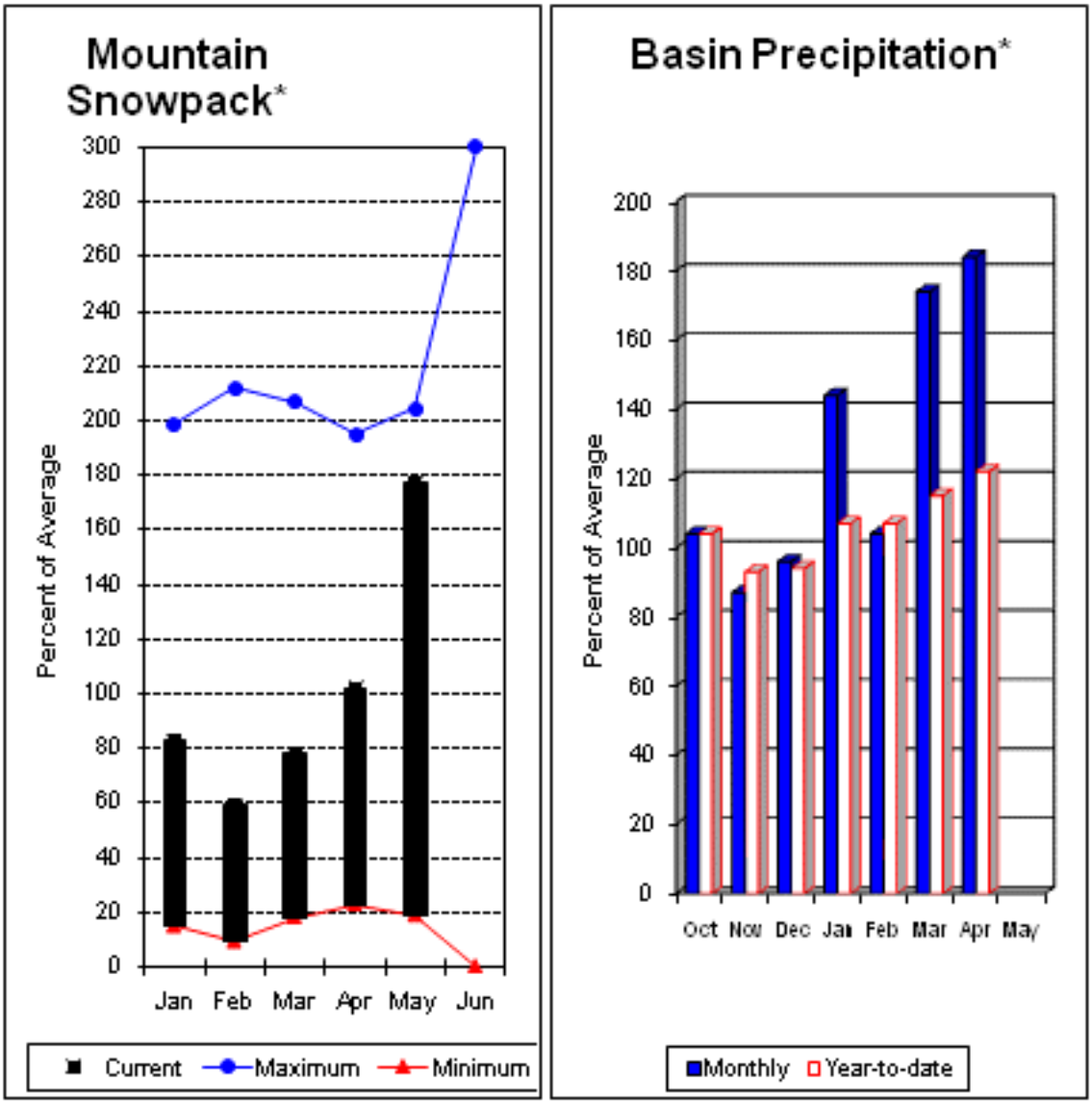
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	132	118
GREEN RIVER	2	185	119
PUYALLUP RIVER	5	135	139

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 146% for Cedar River near Cedar Falls; 145% for Rex River; 145% for South Fork of the Tolt River; 113% for Taylor Creek near Selleck, and 170% for Cedar River at Cedar Falls. Basin-wide precipitation for April was 184% of average, bringing water-year-to-date to 122% of average. May 1 average snow cover in Cedar River Basin was 257%, Tolt River Basin was 183%, Snoqualmie River Basin was 136%, and Skykomish River Basin was 132%. Stevens Pass SNOTEL site, at 3950 feet, had 40.8 inches of water content. Average May 1 water content is 35.2 inches at Stevens Pass. Temperatures were 4-8 degrees below normal for April and slightly below for the water-year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Cedar R nr Cedar Falls	MAY-JUL	66	72	76	146	80	86	52
	MAY-SEP	74	81	86	146	91	98	59
Rex R nr Cedar Falls	MAY-JUL	21	23	25	144	27	29	17.4
	MAY-SEP	24	27	29	145	31	34	20
Cedar R at Cedar Falls (2)	MAY-JUL	63	73	80	170	87	97	47
	MAY-SEP	59	70	78	170	86	97	46
Taylor Ck nr Selleck	MAY-JUL	13.1	15.3	16.8	129	18.3	20	13.0
	MAY-SEP	17.5	20	22	129	24	27	17.0
SF Tolt R nr Index	MAY-JUL	12.6	14.6	16.0	146	17.4	19.4	11.0
	MAY-SEP	14.6	17.3	19.1	145	21	24	13.2

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	338	257
TOLT RIVER	2	268	183
SNOQUALMIE RIVER	4	186	136
SKYKOMISH RIVER	2	179	132

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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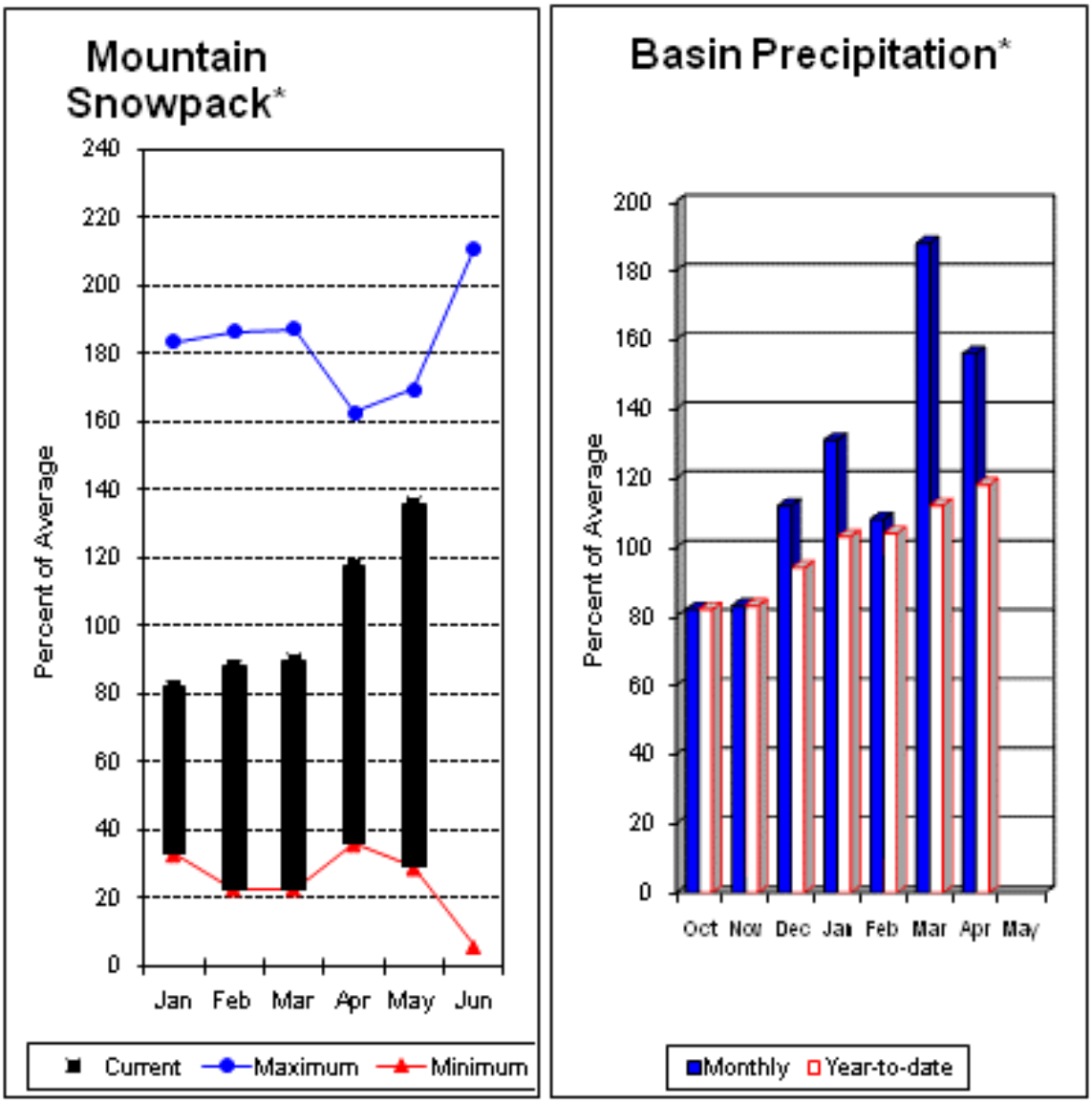
North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 114% of average for the spring and summer period. April streamflow in Skagit River was 75% of average. Other forecast points included Baker River at 121% and Thunder Creek at 108% of average. Basin-wide precipitation for April was 156% of average, bringing water-year-to-date to 118% of average. May 1 average snow cover in Skagit River Basin was 133% and Nooksack River Basin was 140%. Brown Top snow course, at 6,000 feet, had 72.2 inches of water content. Average May 1 water content is 62.1 inches at Brown Top. May 1 Skagit River reservoir storage was 81% of average and 43% of capacity. Average temperatures for April were 4-8 degrees below normal for the basin and 1-2 degrees below average for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Thunder Ck nr Newhalem	MAY-JUL	197	215	230	109	245	265	212
	MAY-SEP	300	320	335	108	350	370	310
Skagit R at Newhalem (2)	MAY-JUL	1690	1780	1840	114	1900	1990	1611
	MAY-SEP	2060	2170	2240	114	2310	2420	1964
Baker R nr Concrete (2)	MAY-JUL	705	775	825	121	875	945	684
	MAY-SEP	905	1020	1100	121	1180	1300	906

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	561.4	860.2	708.8
DIABLO RESERVOIR	90.6	85.5	86.0	85.9

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

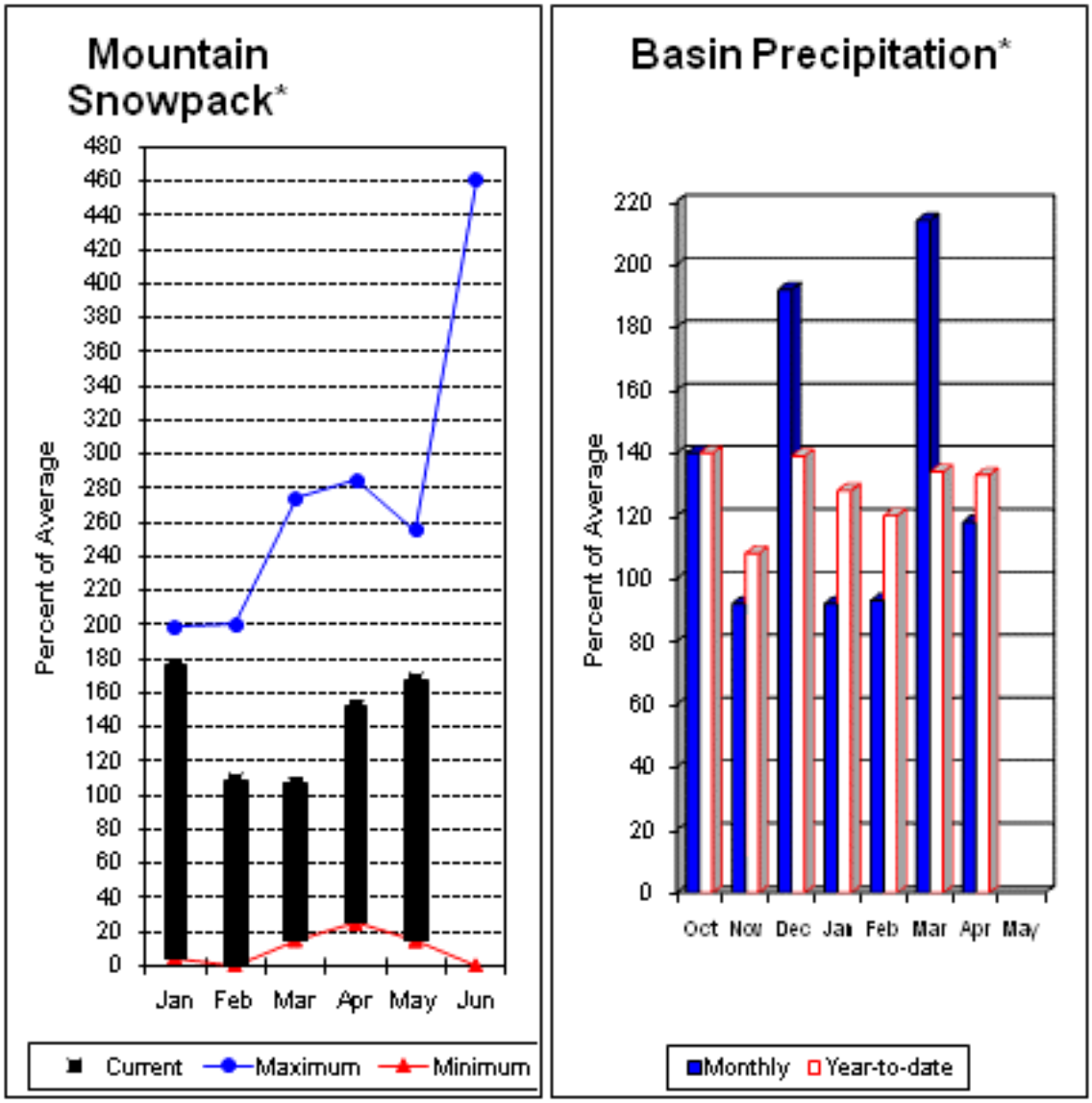
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	15	171	133
BAKER RIVER	0	181	0
NOOKSACK RIVER	2	163	140

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 140% and Elwha River is 141%. April runoff in the Dungeness River was 97% of normal. Big Quilcene and Wynoochee rivers should expect near to above average runoff this summer also. April precipitation was 118% of average. Precipitation has accumulated at 133% of average for the water year. April precipitation at Quillayute was 7.84 inches. The thirty-year average for April is 7.44 inches. Olympic Peninsula snowpack averaged 168% of normal on May 1. Temperatures were 4-6 below average for April and near normal for the water year.

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

Streamflow Forecasts - May 1, 2011

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Dungeness R nr Sequim	MAY-JUL	128	139	147	140	155	166	105
	MAY-SEP	159	175	185	140	195	210	132
Elwha R at Mcdonald Bridge	MAY-JUL	430	455	475	141	495	520	338
	MAY-SEP	535	570	595	141	620	655	423

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

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - May 1, 2011

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	6	148	177

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 volume - actual volume may be affected by upstream water management.

Issued by

Dave White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

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

Canada	Ministry of Sustainable Resources
	Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology
	Washington State Department of Natural Resources
Federal	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
	Recourse Conservation & Development Councils
Local	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
	Kalispel Tribe of Indians
	Spokane Indian Tribe
	Jamestown S'klallum Tribe
Private	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.**

Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873

Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

Washington
Water Supply Outlook

June 2011

General Outlook

The month of May was another one for the record books. Below normal temperatures prevented much of the normal snowmelt so numbers went through the roof. A cloud burst that hit much of Central Washington on May 14-15 caused extensive flooding and road damage, effectively closing or blocking access to many forest roads and camp grounds. Mountain soil moisture is at an all time high since we began collecting data eight years ago as well. With current conditions the way they are pretty much all summer streamflow forecasts increased by at least 20% over last month. Short term weather forecasts call for continued cool temperatures. Month to date precipitation has been hit and miss with as little as no rain recorded to well over 200% in other locations. Long lead forecasts call for more seasonal temperatures with good chances of below normal precipitation for the rest of summer. The North Cascades National Park has conducted preliminary glacier studies for this season. Attached is their report of the on-going inventory and analysis of four glaciers within the park.

Snowpack

The June 1 statewide SNOTEL readings were 266% of average, up 110% from last month. Though all basins are above the 30-year average it is important to keep in mind that this mostly is not due to excessive late season snow accumulation but the extreme lag of normal snowmelt. Another way to look at it is that normally Washington would have about 40% of the peak snow accumulation still on the ground, meaning that 60% would have all ready melted. As of June 1 that number sits at 97% which means that we still have almost all of an “average” snowpack to melt out.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	556	277
Pend Oreille	238	236
Okanogan	349	225
Methow	276	193
Wenatchee	179	173
Chelan	169	171
Upper Yakima	207	201
Lower Yakima	152	209
Ahtanum Creek	154	346
Walla Walla	N/A	824
Lower Snake	310	320
Cowlitz	164	221
Lewis	239	382
White	148	190
Green	248	214
Puyallup	157	223
Cedar	N/A	768
Snoqualmie	227	218
Skykomish	220	218
Skagit	237	207
Nooksack	265	251
Olympic Peninsula	137	439

Precipitation

For the 3rd consecutive month the National Weather Service and Natural Resources Conservation Service climate stations reported much above average precipitation in all river basins in the state, bringing all basins to well above normal for the water-year. The lowest percent of average in the state was at Beaver Pass SNOTEL in the upper Skagit River which reported 67% of average. Alpine Meadows SNOTEL was the wettest spot in the state last month with 14 inches or 169% of average. Valley versus mountain precipitation was very consistent throughout the state.

RIVER BASIN	MAY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	147	135
Pend Oreille	127	140
Upper Columbia	168	126
Central Columbia	196	120
Upper Yakima	179	119
Lower Yakima	201	122
Walla Walla	160	106
Lower Snake	154	124
Lower Columbia	134	118
South Puget Sound	159	121
Central Puget Sound	157	124
North Puget Sound	123	117
Olympic Peninsula	156	134

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 791,000-acre feet, 114% of average for the Upper Reaches and 208,000-acre feet or 109% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 114% of average for June 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 419,000-acre feet, 155% of average and 176% of capacity; Chelan Lake, 323,000-acre feet, 68% of average and 48% of capacity; and the Skagit River reservoirs at 76% of average and 57% of capacity. All reservoirs are expected to have sufficient inflow to fill to capacity however pool size will be dependent on the above describe management objectives.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	176	155
Pend Oreille	44	50
Upper Columbia	102	114
Central Columbia	48	68
Upper Yakima	95	109
Lower Yakima	90	102
Lower Snake	71	80
North Puget Sound	57	76

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

Streamflow

Forecasts vary from 116% of average for the Mill Creek near Walla Walla to 226% of average for the Spokane River near Post Falls. June-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 156%; White River, 128%; and Skagit River, 134%. Some Eastern Washington streams include the Yakima River near Parker, 144%: Wenatchee River at Plain, 144%; and Spokane River at Long Lake, 201%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide May streamflows varied by region but were surprisingly low in some locations considering the amount of precipitation that we had. The Walla Walla River had the highest reported natural flows with 231% of average. The Similkameen at Nighthawk with 79% of average was the lowest in the state. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 126%; the Spokane at Spokane, 176%; the Columbia below Rock Island Dam, 107%; and the Cle Elum near Roslyn, 89%. Some operations were obviously voiding storage to make room for the impending snowmelt which is running surprisingly late this season.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	183-226
Pend Oreille	171-178
Upper Columbia	124-206
Central Columbia	128-145
Upper Yakima	129-168
Lower Yakima	128-164
Walla Walla	113-130
Lower Snake	141-163
Lower Columbia	146-167
South Puget Sound	116-128
Central Puget Sound	132-220
North Puget Sound	121-134
Olympic Peninsula	154-163

STREAM	PERCENT OF AVERAGE MAY STREAMFLOWS
Pend Oreille Below Box Canyon	124
Kettle at Laurier	124
Columbia at Birchbank	93
Spokane at Long Lake	170
Similkameen at Nighthawk	95
Okanogan at Tonasket	107
Methow at Pateros	135
Chelan at Chelan	101
Wenatchee at Pashastin	96
Yakima at Cle Elum	95
Yakima at Parker	133
Naches at Naches	141
Grande Ronde at Troy	138
Snake below Lower Granite Dam	136
SF Walla Walla near Milton Freewater	231
Columbia River at The Dalles	119
Cowlitz below Mayfield Dam	119
Skagit at Concrete	79
Dungeness near Sequim	106

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

Soil Moisture

Current soil moisture data is available from a limited number of SNOTEL sites scattered throughout each basin. As the effort continues to install additional sensors and more years of data are acquired this information will become invaluable to the streamflow forecasting community. Heavy fall precipitation has allowed for above the curve soil moisture carryover through the winter. This will be of great benefit to water supplies come runoff season since the melting snow won't have to first fill a depleted soil moisture profile.

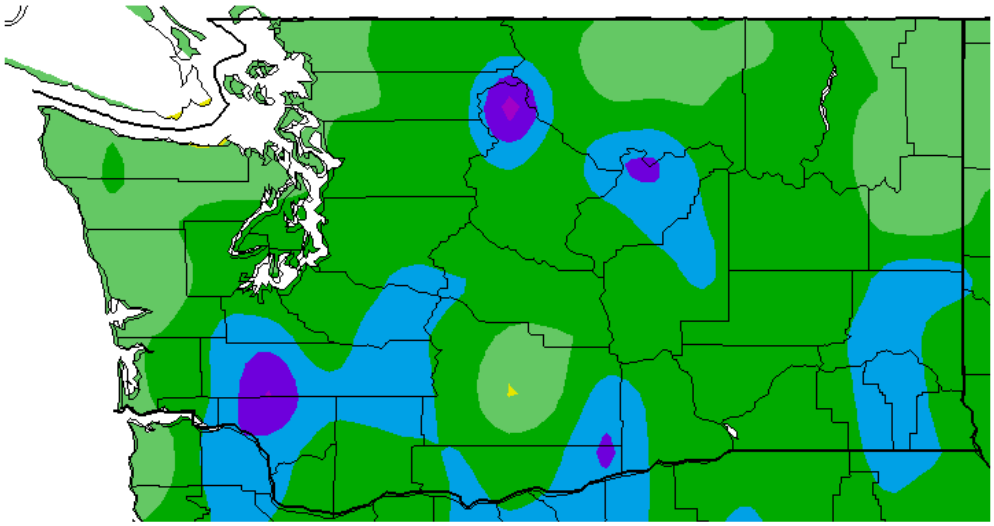
BASIN	ESTIMATED PERCENT SATURATION
Spokane	65
Pend Oreille	79
Upper Columbia	65
Central Columbia	66
Upper Yakima	88
Lower Yakima	74
Walla Walla	87
Lower Snake	86
Lower Columbia	75
South Puget Sound	63
Central Puget Sound	N/A
North Puget Sound	98
Olympic Peninsula	49

B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

JUNE 2011

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ALPINE MEADOWS SNTL	3500	6/01/11	110	63.0	29.8	31.4
BADGER PASS SNOTEL	6900	6/01/11	101	49.3	26.2	22.9
BARKER LAKES SNOTEL	8250	6/01/11	77	25.6	20.0	9.5
BASIN CREEK SNOTEL	7180	6/01/11	26	8.1	3.4	4.1
BEAVER PASS SNOTEL	3630	6/01/11	79	39.0	22.1	16.8
BLACK PINE SNOTEL	7100	6/01/11	22	8.1	.0	1.9
BLEWETT PASS#2SNOTEL	4240	6/01/11	0	.0	.0	.0
BUCKINGHORSE SNOTEL	4870	6/01/11	147	85.2	64.5	--
BUMPING LAKE (NEW)	3400	5/31/11	0	.0	--	--
BUMPING RIDGE SNOTEL	4610	6/01/11	52	23.0	13.5	11.6
BUNCHGRASS MDWSNOTEL	5000	6/01/11	62	26.5	10.9	9.7
BURNT MOUNTAIN PIL	4170	6/01/11	44	19.4	.0	.4
CALAMITY SNOTEL	2500	6/01/11	0	.0	.0	--
CAYUSE PASS SNOTEL	5240	6/01/11	179	81.7	47.4	--
CHICKEN CREEK	4060	5/26/11	0	.0	.0	.0
COMBINATION SNOTEL	5600	6/01/11	0	.0	.0	.0
COPPER BOTTOM SNOTEL	5200	6/01/11	0	.0	.0	.0
CORRAL PASS SNOTEL	5800	6/01/11	113	47.0	30.7	23.1
COUGAR MTN. SNOTEL	3200	6/01/11	25	11.7	.0	1.5
COYOTE HILL	4200	5/27/11	0	.0	.0	--
DALY CREEK SNOTEL	5780	6/01/11	0	.0	.0	.0
DISCOVERY BASIN	7050	5/27/11	30	10.7	5.7	2.4
DIX HILL	6400	5/29/11	0	.0	.0	--
DUNGENESS SNOTEL	4010	6/01/11	12	6.2	.0	.0
ELBOW LAKE SNOTEL	3200	6/01/11	67	33.5	.0	8.5
EMERY CREEK SNOTEL	4350	6/01/11	0	.0	.0	.0
FISH LAKE	3370	5/31/11	10	5.0	--	--
FISH LAKE SNOTEL	3430	6/01/11	26	10.9	.0	7.5
FLATTOP MTN SNOTEL	6300	6/01/11	142	62.0	38.5	36.5
FROHNER MDWS SNOTEL	6480	6/01/11	2	.7	.0	.7
GRAVE CRK SNOTEL	4300	6/01/11	21	8.7	.0	.0
GREEN LAKE SNOTEL	5920	6/01/11	56	23.5	15.3	6.6
GROUSE CAMP SNOTEL	5390	6/01/11	19	8.3	.0	.2
HAND CREEK SNOTEL	5030	6/01/11	0	.0	.0	.0
HARTS PASS SNOTEL	6490	6/01/11	105	65.7	18.8	29.2
HELL ROARING DIVIDE	5770	5/27/11	98	41.4	16.3	10.8
HERRIG JUNCTION	4850	5/26/11	58	26.8	8.7	5.4
HIGH RIDGE SNOTEL	4920	6/01/11	32	18.6	.0	1.2
HOODOO BASIN SNOTEL	6050	6/01/11	117	53.8	19.6	28.4
HUCKLEBERRY SNOTEL	2250	6/01/11	0	.0	.0	.0
HUMBOLDT GLCH SNOTEL	4250	6/01/11	---	2.2	.0	.0
INDIAN ROCK SNOTEL	5360	6/01/11	51	26.9	10.6	--
JUNE LAKE SNOTEL	3440	6/01/11	104	59.9	16.1	10.1
KRAFT CREEK SNOTEL	4750	6/01/11	0	.0	.0	.0
LOLO PASS SNOTEL	5240	6/01/11	44	20.1	.0	4.9
LONE PINE SNOTEL	3930	6/01/11	109	60.4	30.6	18.4
LOOKOUT SNOTEL	5140	6/01/11	51	25.1	.0	8.0
LOST HORSE SNOTEL	5120	6/01/11	0	.0	.0	.2
LOST LAKE SNOTEL	6110	6/01/11	155	67.2	23.0	41.5
LUBRECHT SNOTEL	4680	6/01/11	0	.0	.0	.0
LYMAN LAKE SNOTEL	5980	6/01/11	146	80.5	55.0	50.8
LYNN LAKE SNOTEL	3900	6/01/11	59	26.2	.9	--
MARIAS PASS	5250	5/30/11	34	15.2	--	--
MARTEN RIDGE SNOTEL	3520	6/01/11	128	74.9	33.4	--
MEADOWS PASS SNOTEL	3230	6/01/11	34	14.7	.0	.9
M F NOOKSACK SNOTEL	4970	6/01/11	149	86.2	49.2	49.6
MICA CREEK SNOTEL	4510	6/01/11	40	21.4	.0	.0
MORSE LAKE SNOTEL	5410	6/01/11	129	61.0	50.5	33.6
MOSES MTN SNOTEL	5010	6/01/11	17	7.6	.0	.1
MOSQUITO RDG SNOTEL	5200	6/01/11	---	41.9	9.6	11.0
MOUNT CRAG SNOTEL	3960	6/01/11	101	35.4	26.1	7.8
MOWICH SNOTEL	3160	6/01/11	0	.0	.0	.0
MOUNT GARDNER SNOTEL	2920	6/01/11	7	5.0	.0	.0
N.F. ELK CR SNOTEL	6250	6/01/11	8	3.1	.0	.6
NEVADA RIDGE SNOTEL	7020	6/01/11	43	19.2	3.8	3.4
NEZ PERCE CMP SNOTEL	5650	6/01/11	8	4.3	.0	.3
NOISY BASIN SNOTEL	6040	6/01/11	140	69.7	38.2	30.1
NORTH FORK JOCKO	6330	5/31/11	106	51.4	22.7	23.3
OLALLIE MDWS SNOTEL	4030	6/01/11	107	56.7	38.6	31.8
OPHIR PARK	7150	5/29/11	33	13.9	4.9	--
PARADISE SNOTEL	5130	6/01/11	174	99.5	65.8	61.6
PARK CK RIDGE SNOTEL	4600	6/01/11	57	30.5	14.4	11.5
PEPPER CREEK SNOTEL	2140	6/01/11	0	.0	.0	--
PETERSON MDW SNOTEL	7200	6/01/11	36	11.4	10.6	2.7
PIGTAIL PEAK SNOTEL	5800	6/01/11	145	67.2	53.7	39.9
PIKE CREEK SNOTEL	5930	6/01/11	29	13.5	.0	7.3
POPE RIDGE SNOTEL	3590	6/01/11	0	.0	.0	.0
POTATO HILL SNOTEL	4510	6/01/11	77	32.4	17.8	2.7
QUARTZ PEAK SNOTEL	4700	6/01/11	41	18.0	.0	.0
RAGGED MTN SNOTEL	4210	6/01/11	7	2.5	.0	--
RAINY PASS SNOTEL	4890	6/01/11	69	37.4	18.5	24.3
REX RIVER SNOTEL	3810	6/01/11	62	33.0	3.2	6.1
ROCKER PEAK SNOTEL	8000	6/01/11	59	23.1	15.0	11.7
SADDLE MTN SNOTEL	7900	6/01/11	73	33.2	12.6	16.3
SALMON MDWS SNOTEL	4460	6/01/11	0	.0	.0	.0
SASSE RIDGE SNOTEL	4340	6/01/11	53	21.3	11.8	5.9
SAVAGE PASS SNOTEL	6170	6/01/11	54	26.4	4.3	10.4
SAWMILL RIDGE SNOTEL	4640	6/01/11	75	46.8	24.6	--
SENTINEL BT SNOTEL	4680	6/01/11	0	.0	.0	.0
SHEEP CANYON SNOTEL	3990	6/01/11	120	60.1	24.5	13.7
SHERWIN SNOTEL	3200	6/01/11	---	.0	.0	.0
SKALKAHO SNOTEL	7260	6/01/11	54	25.1	6.9	14.6
SKOOKUM CREEK SNOTEL	3310	6/01/11	52	30.5	.0	1.5
SOURDOUGH GUL SNOTEL	4000	6/01/11	0	.0	.0	--
SPENCER MDW SNOTEL	3400	6/01/11	50	28.9	.7	3.0
SPIRIT LAKE SNOTEL	3520	6/01/11	0	.0	.0	.0
SPOTTED BEAR MTN.	7000	5/31/11	15	6.1	--	--
SPRUCE SPGS SNOTEL	5700	6/01/11	12	5.0	.0	--
STAHL PEAK SNOTEL	6030	6/01/11	134	57.4	34.8	28.0
STAMPEDE PASS SNOTEL	3850	6/01/11	65	31.4	11.6	18.6
STEVENS PASS SNOTEL	3950	6/01/11	71	24.9	10.1	9.0
STRYKER BASIN	6180	5/26/11	99	46.8	26.9	19.4
STUART MOUNTAIN	7400	5/31/11	91	44.5	--	--
SUNSET SNOTEL	5540	6/01/11	---	29.5	4.8	13.5
SURPRISE LKS SNOTEL	4290	6/01/11	120	58.3	32.0	19.0
SWAMP CREEK SNOTEL	3930	6/01/11	2	.7	.0	.0
SWIFT CREEK SNOTEL	4440	6/01/11	172	100.6	74.1	40.0
THUNDER BASIN SNOTEL	4320	6/01/11	40	22.3	10.2	9.3
TINKHAM CREEK SNOTEL	2990	6/01/11	52	23.3	.0	2.9
TOUCHET SNOTEL	5530	6/01/11	39	20.6	.0	2.5
TROUGH #2 SNOTEL	5480	6/01/11	0	.0	.0	.0
TUNNEL AVENUE	2450	6/01/11	8	3.5	--	--
TV MOUNTAIN	6800	5/31/11	40	18.8	6.9	6.8
TWELVEMILE SNOTEL	5600	6/01/11	0	.0	.0	.4
TWIN LAKES SNOTEL	6400	6/01/11	75	38.8	12.4	22.3
UPPER WHEELER SNOTEL	4330	6/01/11	0	.0	.0	.0
WARM SPRINGS SNOTEL	7800	6/01/11	77	32.5	24.1	17.0
WATERHOLE SNOTEL	5010	6/01/11	109	58.5	46.9	15.0
WELLS CREEK SNOTEL	4030	6/01/11	84	48.6	14.3	8.9
WHITE PASS ES SNOTEL	4440	6/01/11	46	13.8	7.6	5.6

Ave. Temperature dep from Ave (deg F)
5/9/2011 – 6/7/2011



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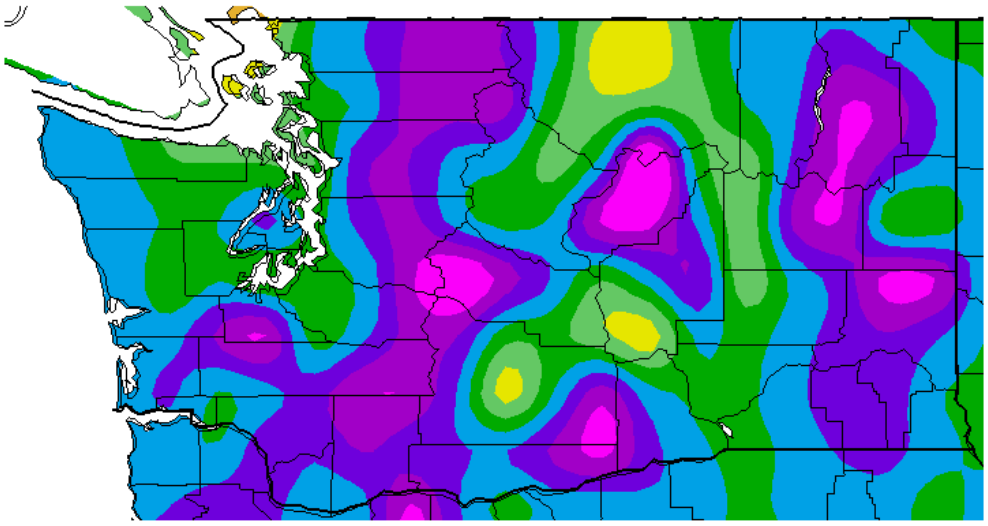
Generated 6/08/2011 at WRCC using provisional data.
NOAA Regional Climate Centers

Ave. Temperature dep from Ave (deg F)
10/1/2010 – 6/6/2011



−2.5 −2 −1.5 −1 −0.5 0 0.5 1 1.5 2 2.5

Generated 6/07/2011 at WRCC using provisional data.
NOAA Regional Climate Centers

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Jon Lea
DCO Supervisor
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
jon.lea@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow

Oregon:
http://www.or.nrcs.usda.gov/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

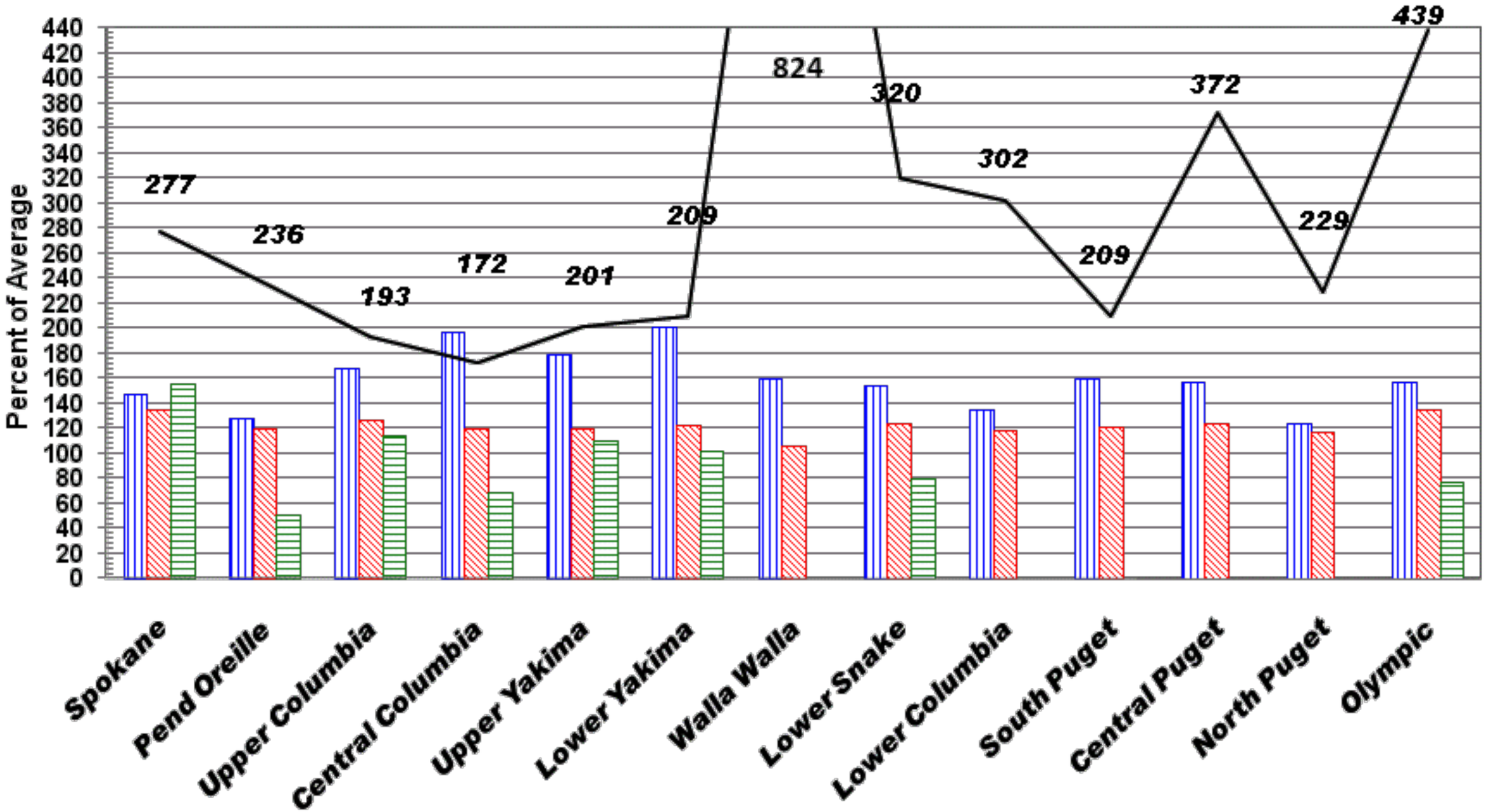
Washington:
http://www.wa.nrcs.usda.gov

NRCS National:
http://www.nrcs.usda.gov

NRCS Natural Resources Conservation Service

June 1, 2011 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2010 - Current Date)



NORTH CASCADES GLACIER PAGE 2011

North Cascades National Park Glacier Monitoring Program

The National Park Service began monitoring glaciers in North Cascades National Park in 1993 and Mount Rainier glaciers in 2003 (see the Mount Rainier Glacier Page). Goals for this program and additional data can be found at North Cascades National Park home page at http://www.nps.gov/noca/naturescience/glacial-mass-balance1.htm or contact Jon_Riedel@nps.gov or Mike_Larrabee@nps.gov.

The four glaciers monitored are located at the headwaters of four watersheds, each with large hydroelectric dams (Figure 1). The glaciers represent a range in elevation from 8800 to 5600 feet, and a range in climatic conditions from maritime to continental. Methods include three visits annually to each glacier to measure winter accumulation and summer melt. Measurements are taken at a series of points down the centerline of the glacier (Table 1), and then integrated across the entire glacier surface to determine mass balance for the entire glacier. In 2010, Silver Glacier was the only glacier to record a positive net balance. The remaining three glaciers all had negative net balances, for the eighth consecutive year.

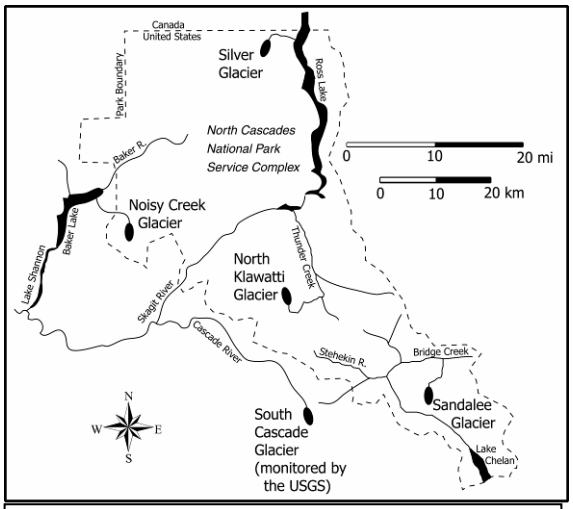


Figure 1. Glaciers monitored in North Cascades N.P.S. Complex.

Table 1 Glacier:	Elev. (feet)	**Average** Accumulation (inches W.E.)	**2011** Accumulation (inches W.E.)	**2011 Percent of Average**
Noisy Creek Density = 0.5	**Entire Glacier**	**122**	**152**	**125**
	6061	131	179	137
	6035	136	188	138
	5904	119	142	119
	5756	111	133	120
	5655	113	133	118
Silver Density = 0.46	**Entire Glacier**	**92**	**96**	**104**
	8420	107	97	91
	7938	90	105	118
	7606	110	90	82
	7209	63	82	130
North Klawatti Density = 0.50	**Entire Glacier**	**113**	**139**	**123**
	7669	114	145	128
	7301	119	148	124
	6901	119	159	133
	6396	102	117	114
	6094	91	99	109
Sandalee Density = 0.44	**Entire Glacier**	**114**	**115**	**101**
	7360	108	109	101
	7203	116	123	106
	6868	109	101	93
	6521	126	133	105

Table 1. Table 1 presents this spring's provisional winter accumulation data, along with average values and percent of the 18-year average. The 2011 snow depths were measured on April 19th and May 19th on the four glaciers. The provisional data show 2011 winter accumulation as near or above average, depending on the glacier. However, due to the cool and wet spring, most measurements were collected a month later than normal. Glaciers located on the west-slopes of the Cascades observed a larger increase from averages than glaciers located further east. These data are tentative and will be revised after a July visit. Based on historical field data, a snow density of 0.46 was assumed for Silver Glacier, 0.44 for Sandalee Glacier and 0.50 for Noisy and North Klawatti glaciers. Densities are in fraction of water

The 2010 estimates of glacial contribution to runoff for four watersheds are based on the mass balance measurements and GIS analyses to determine glacier area within 165 ft (50-meter) elevation bands (Table 2). Glaciers reduce the variation of flow in these watersheds by providing melt water from firn and ice during summer drought, in dry/warm years, and by storing water in excess snowpack during wet/cool years. Glacial contribution to stream flow in these watersheds varies by as much as 100% annually. Magnitude of glacial contribution to streamflow is large, but varies by the amount of glacial cover in each watershed. Thunder Creek is 13% glacierized; Baker River, 3%; Stehekin River, 6%; and Ross Lake, 0.9% (Post and others, 1971; Granshaw, 2002).

The glacierized area of a watershed primarily dictates the glacier contribution to runoff. However, the relative importance of glacial contribution to streamflow also generally increases from west to east. For example, glaciers annually contribute a higher percentage of meltwater to streamflow in the Stehekin watershed than in the Baker, despite the fact that the Baker is more highly glacierized. This is due to lower snowfall east of the hydrologic crest of the North Cascades.

Table 2 *Provisional Data*	May-September Runoff (thousands acre-feet)				Percent Glacial Runoff to Total Summer Runoff		
	2010	mean	min	max	2010	min	max
Noisy Creek Glacier	1.4	1.5	1.2	1.9			
Baker River Watershed	**45.1**	**69.2**	**45.1**	**87.2**	**6.4**	**5.6**	**14.6**
North Klawatti Glacier	2.8	4.0	2.8	5.1			
Thunder Creek Watershed	**66.5**	**98.2**	**66.5**	**118.8**	**24.0**	**20.7**	**47.7**
Sandalee Glacier	0.6	0.5	0.4	0.7			
Stehekin River Watershed	**48.3**	**71.0**	**51.6**	**88.1**	**6.9**	**5.4**	**22.9**
Silver Glacier	0.5	1.0	0.5	1.3			
Ross Lake Watershed	**43.8**	**64.5**	**43.8**	**80.5**	**3.5**	**2.5**	**13.5**

Table 2. Glacial contribution to summer stream flow (May 1 to Sept. 30) for four watersheds. Runoff units are thousands of acre-feet. Data from 1993-2010 except the Sandalee Glacier and Stehekin River Watershed (1995-2010).

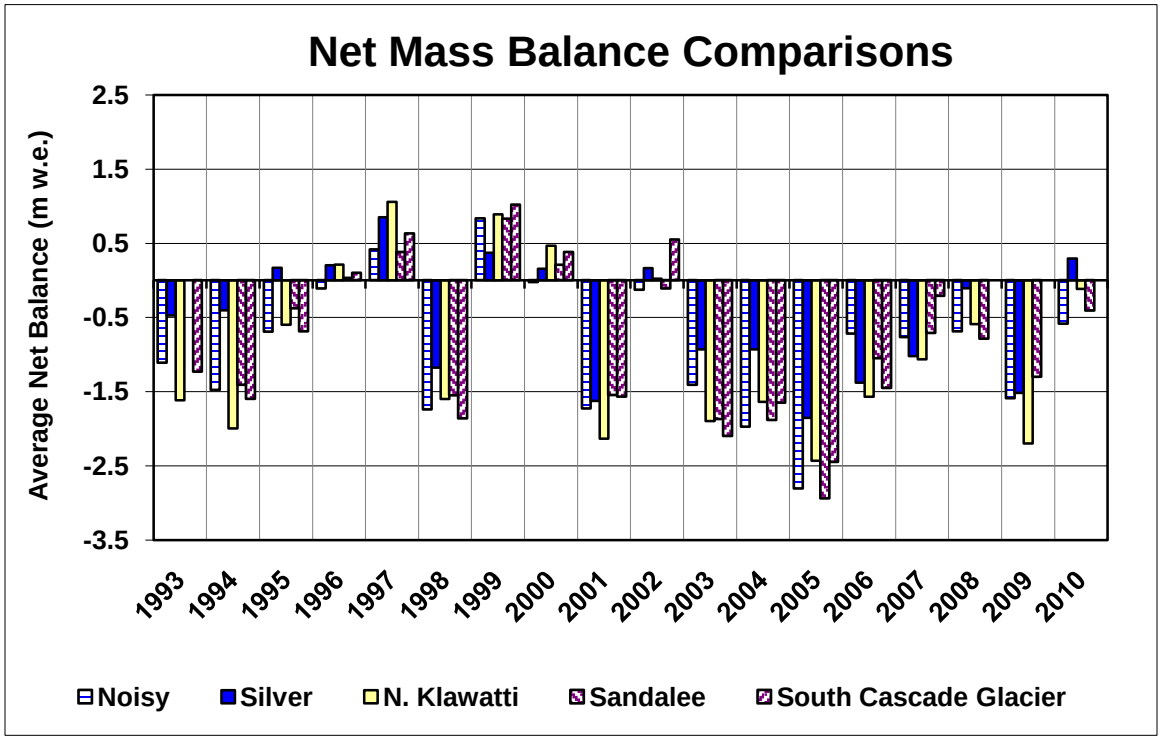


Figure 2. Net annual mass balance for the five glaciers monitored in the North Cascades.