

# RECLAMATION

## *Managing Water in the West*

July 10, 2009

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans prepared in July. Storage in Bighorn Lake on July 1 was 113 percent of average and 6.79 feet into the exclusive flood pool. It was also 20.69 feet higher than on June 1. Based on streamflow accretions accompanied by the planned releases out of Boysen and Buffalo Bill Reservoirs, the water supply forecast prepared in July indicated the July inflow to Bighorn Lake to be about 140 percent of average. If you have any questions or concerns, please feel free to call me at (406) 247-7318.

Tim H. Felchle  
Reservoir and River Operations



U. S. Department of the Interior  
Bureau of Reclamation  
Montana Area Office  
River and Reservoir Operations

**YELLOWTAIL RESERVOIR OPERATIONS**  
 Water Supply Forecasts and Reservoir Operations  
 July 1, 2009

**Present Elevations & Storages:**

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Normal</u>
Boysen	4726.36	768,592	117
Buffalo Bill	5387.28	596,981	106
Bighorn Lake	3646.79	1,163,711	113

**Actual Inflows (1,000 Acre-Feet):**

<u>Month</u>	<u>Inflow</u>	<u>Percent of Normal</u>
June	595.1	144
July	330.6	114
August	129.6	81
September	184.6	107
<i>April-July, 2008</i>	<i>1,298.3</i>	<i>117</i>
<i>WY-2008 Total</i>	<i>2,133.2</i>	<i>91</i>
October	151.2	83
November	118.9	78
December	98.0	71
January	112.0	84
February	113.0	84
March	138.6	82
April	142.6	87
May	268.3	109
June	771.6	187

**Actual Gains Between Boysen and Buffalo Bill to Yellowtail (1,000 Acre-Feet):**

<u>Month</u>	<u>Gains</u>	<u>Percent of Normal</u>
June	179.7	118
July	29.4	535
August	-19.1	---
September	63.4	138
<i>April-July, 2008</i>	<i>350.3</i>	<i>122</i>
<i>WY-2008 Total</i>	<i>702.8</i>	<i>100</i>
October	70.3	90
November	51.2	79
December	33.0	71
January	47.2	101
February	54.2	96
March	67.8	88
April	55.5	120
May	47.7	57
June	177.4	117

**July 1 Runoff Forecast (July Flows - 1,000 Acre-Feet):**

<u>Agency</u>	<u>Gains</u>	<u>Percent of Normal</u>
<b>USBR</b>	<b>22.7</b>	<b>---</b>
	<u>Inflows</u>	
<b>USBR</b>	<b>405.3</b>	<b>140</b>

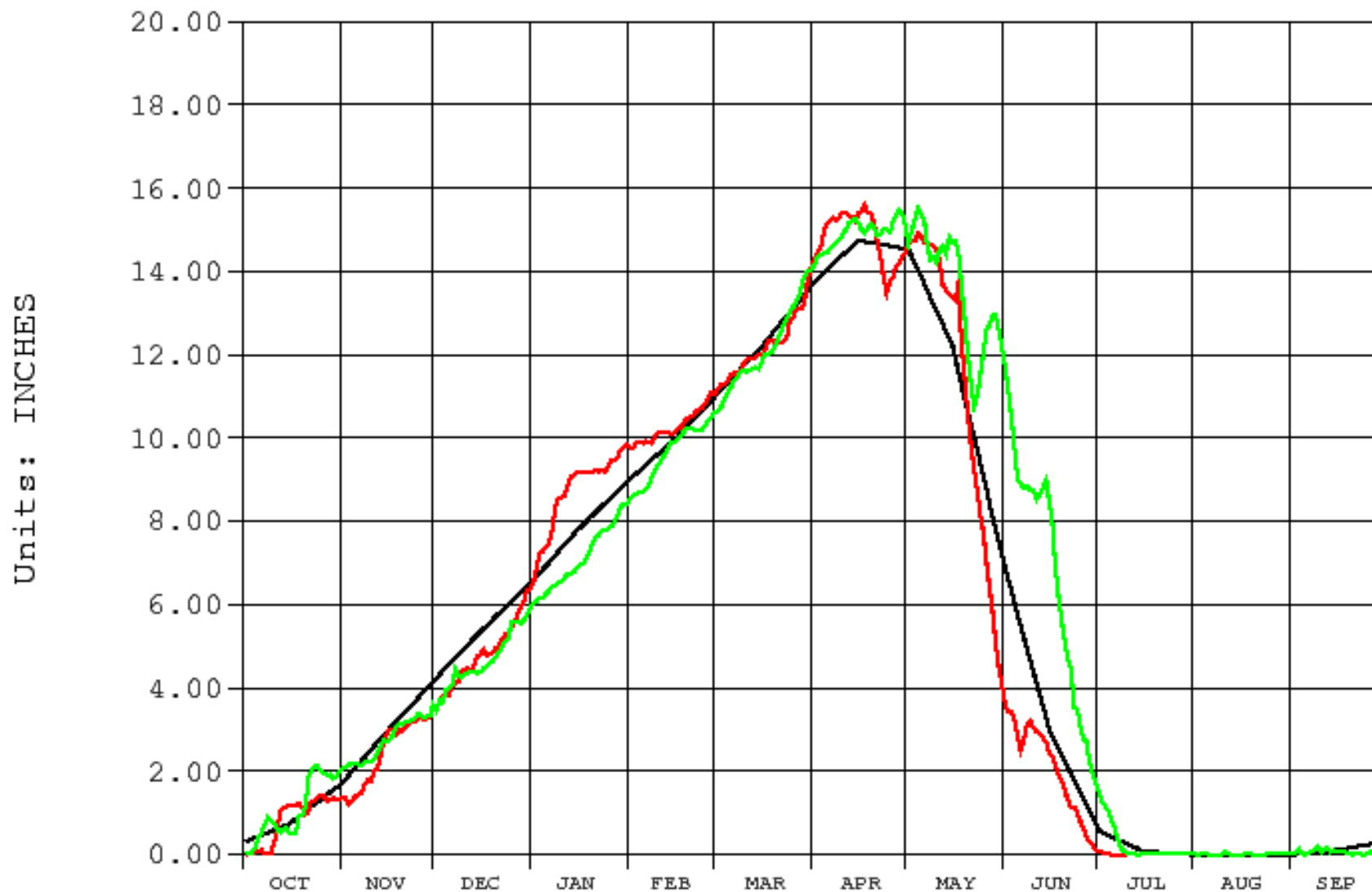
**Snowpack Conditions:**

S N O W - P R E C I P I T A T I O N U P D A T E  
 Based on Mountain Data from NRCS SNOTEL Sites  
 As of MONDAY: JULY 1 , 2009

<u>BASIN</u> Data Site Name	<u>ELEV.</u> (Ft)	<u>SNOW WATER EQUIVALENT</u>			<u>TOTAL PRECIPITATION</u>		
		<u>Current</u>	<u>Average</u>	<u>Avg %</u>	<u>Current</u>	<u>Average</u>	<u>Avg %</u>
UPPER YELLOWSTONE RIVER BASIN							
BEARTOOTH LAKE	9360	.0	2.5	0	32.7	29.7	110
BOX CANYON	6670	.0	.0	100	23.9	20.5	117

BRACKETT CREEK	7320	.0	.0	100	42.6	42.0	101
BURNT MTN	5880	.0	.0	100	26.3	28.5	92
CANYON	7870	.0	.0	100	26.4	22.6	117
COLE CREEK	7850	.0	.9	0	26.0	30.8	84
EAST BOULDER MINE	6335	.0	-M	*	22.9	-M	*
EVENING STAR	9200	.0	5.2	0	44.4	37.8	117
FISHER CREEK	9100	.0	6.8	0	50.1	50.4	99
MONUMENT PEAK	8850	.0	.6	0	37.3	32.0	117
NORTHEAST ENTRANCE	7350	.0	.0	100	22.1	20.1	110
PARKER PEAK	9400	.0	2.3	0	29.1	26.0	112
PLACER BASIN	8830	.0	1.3	0	35.1	32.5	108
PORCUPINE	6500	.0	.0	100	21.1	21.8	97
SACAJAWEA	6550	.0	.0	100	39.8	37.7	106
SHOWER FALLS	8100	.0	3.0	0	44.1	42.0	105
S FORK SHIELDS	8100	.0	.0	100	33.7	35.6	95
SYLVAN LAKE	8420	.0	.0	100	36.3	32.0	113
SYLVAN ROAD	7120	.0	.0	100	30.2	25.8	117
THUMB DIVIDE	7980	.1	.0		32.3	26.8	121
TWO OCEAN PLATEAU	9240	5.0	6.8	74	44.8	39.1	115
WHITE MILL	8700	.0	1.6	0	36.6	38.4	95
WOLVERINE	7650	.0	.0	100	21.0	20.4	103
YOUNTS PEAK	8350	.0	.0	100	25.9	24.6	105
Basin wide percent of average				16			106
WIND RIVER BASIN (WYOMING)							
BURROUGHS CREEK	8750	.0	.0	100	29.1	24.7	118
COLD SPRINGS	9630	.0	.0	100	20.0	19.4	103
DEER PARK	9700	.0	.0	100	30.9	33.3	93
HOBBS PARK	10100	.0	.9	0	26.2	23.3	112
KIRWIN	9550	.0	.0	100	25.6	20.3	126
LITTLE WARM	9370	.0	.0	100	25.9	22.1	117
OWL CREEK	8975	.0	.0	100	16.7	13.5	124
SOUTH PASS	9040	.0	.0	100	26.4	28.0	94
ST. LAWRENCE ALT	8620	.0	.0	100	18.7	17.5	107
TOGWOTEE PASS	9580	3.4	3.7	92	43.8	34.9	126
TOWNSEND CREEK	8700	.0	.0	100	22.6	20.9	108
YOUNTS PEAK	8350	.0	.0	100	25.9	24.6	105
Basin wide percent of average				74			110
SHOSHONE RIVER BASIN (WYOMING)							
BLACKWATER	9780	1.5	6.0	25	36.5	32.2	113
EVENING STAR	9200	.0	5.2	0	44.4	37.8	117
MARQUETTE	8760	.0	.0	100	17.4	21.1	82
SYLVAN LAKE	8420	.0	.0	100	36.3	32.0	113
SYLVAN ROAD	7120	.0	.0	100	30.2	25.8	117
YOUNTS PEAK	8350	.0	.0	100	25.9	24.6	105
Basin wide percent of average				13			110
BIGHORN RIVER BASIN (WYOMING)							
BALD MTN.	9380	.0	1.1	0	26.3	28.2	93
BEAR TRAP MEADOW	8200	.0	.0	100	16.2	16.9	96
BLACKWATER	9780	1.5	6.0	25	36.5	32.2	113
BONE SPRINGS DIV	9350	.0	.0	100	24.4	25.5	96
EVENING STAR	9200	.0	5.2	0	44.4	37.8	117
GRAVE SPRINGS	8550	.0	.0	100	14.8	18.6	80
KIRWIN	9550	.0	.0	100	25.6	20.3	126
MARQUETTE	8760	.0	.0	100	17.4	21.1	82
MIDDLE POWDER	7760	.0	.0	100	17.1	21.7	79
OWL CREEK	8975	.0	.0	100	16.7	13.5	124
POWDER RIVER PASS	9480	.0	.0	100	24.8	22.4	111
SHELL CREEK	9580	.0	.1	0	25.9	23.8	109
SYLVAN LAKE	8420	.0	.0	100	36.3	32.0	113
SYLVAN ROAD	7120	.0	.0	100	30.2	25.8	117
TIMBER CREEK	7950	.0	.0	100	17.3	16.7	104
YOUNTS PEAK	8350	.0	.0	100	25.9	24.6	105
Basin wide percent of average				12			105

Archive Data From 1-OCT Through 30-SEP  
Plotted 07/10/2009 09:02



BHR Bighorn Lake (Yellowtail), Bighorn River near Fort Smith, MT

SE\_AVG Snow Water Equivalent Average (inches)

2009

SE Snow Water Equivalent (inches)

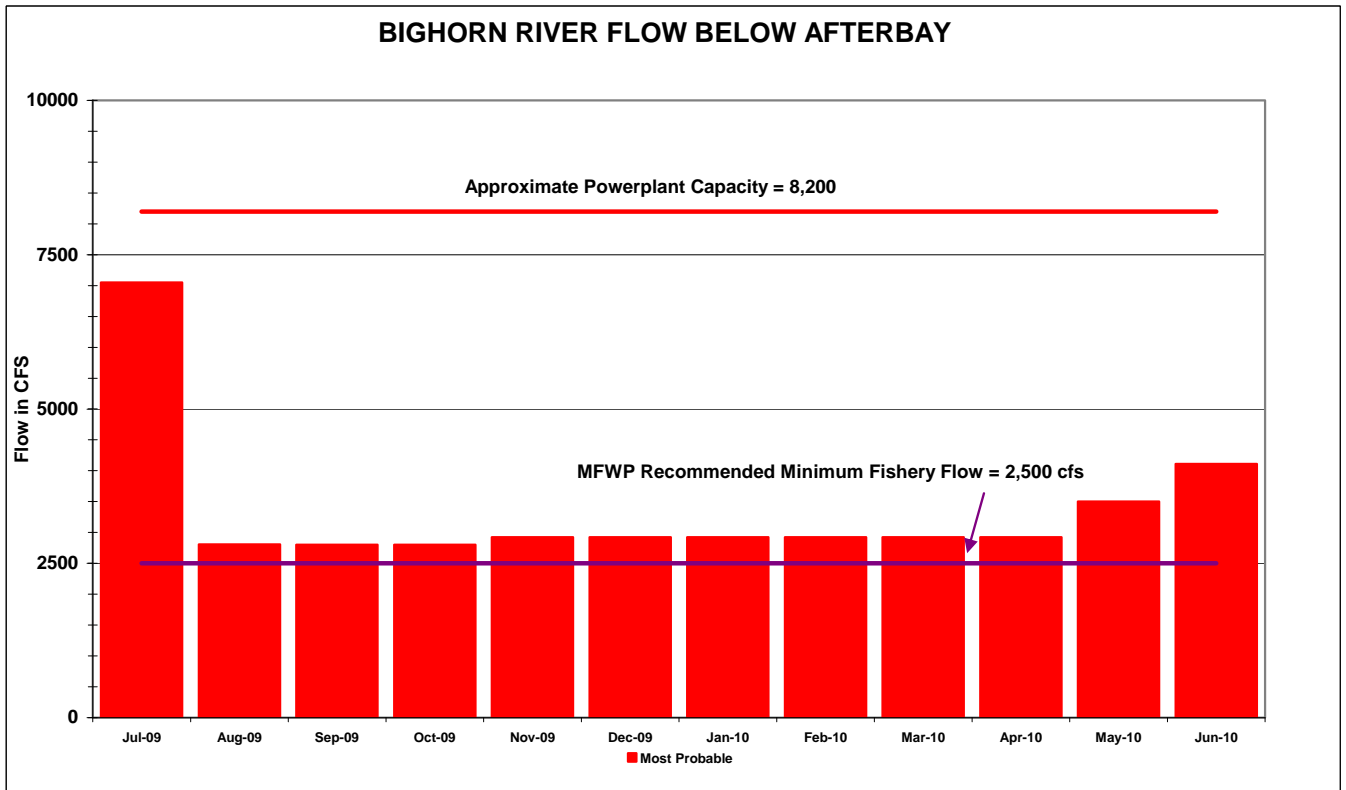
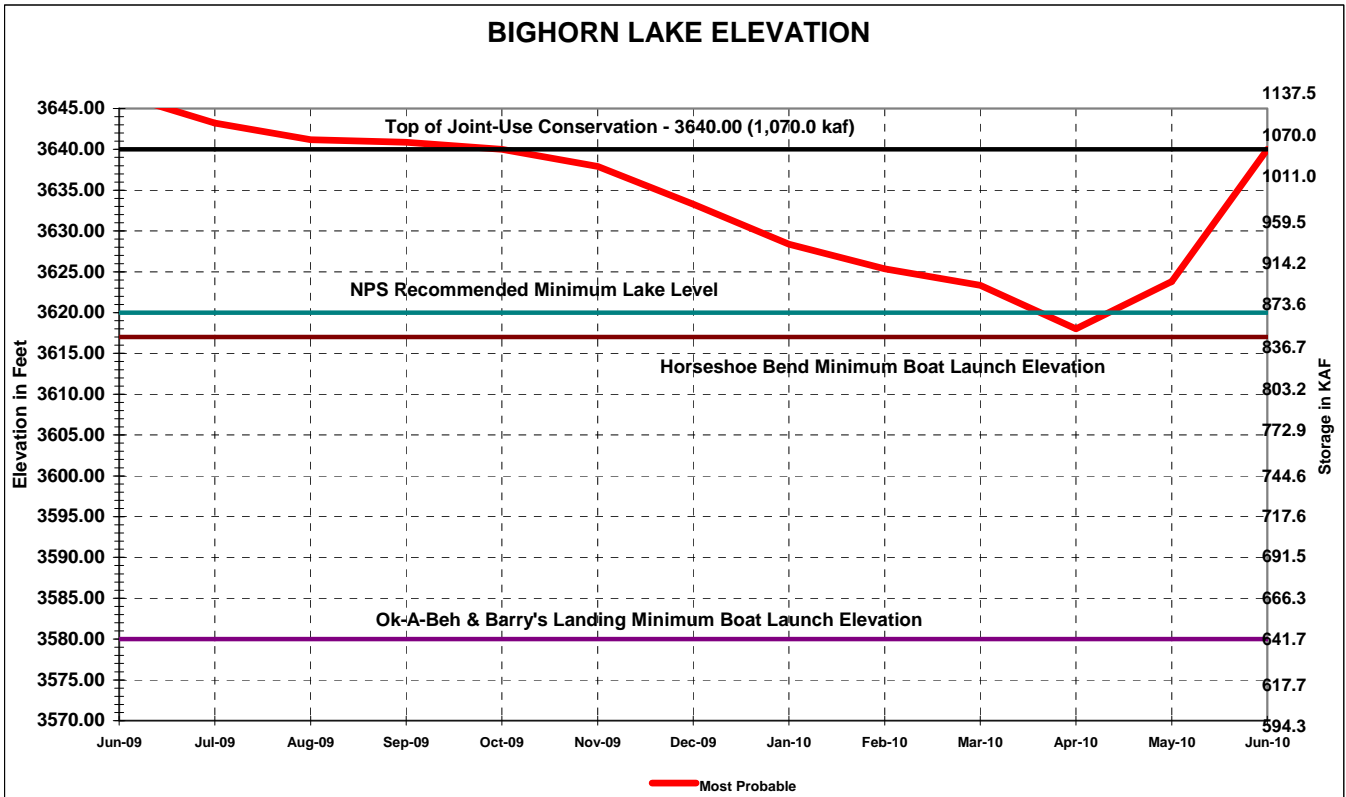
2009 2008

BHXAOP V1.12 Run: 14-Jul-2009 10:13  
 Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 1163.7 kaf Elev 3646.79 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
	2009	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Boysen Release	kaf	222.3	81.3	56.5	55.3	53.5	55.2	55.3	49.9	55.2	53.5	111.8	178.7	1028.5
Boysen Release	cfs	3615	1322	950	899	899	898	899	898	898	899	1818	3003	
Buffalo Bill Riv Flo	kaf	160.3	75.9	73.5	26.2	25.4	21.5	21.5	19.4	21.5	24.4	85.2	117.5	672.3
Buffalo Bill Riv Flo	cfs	2607	1234	1235	426	427	350	350	349	350	410	1386	1975	
Station Gain	kaf	22.7	11.0	47.1	79.4	65.1	46.9	50.4	62.0	81.7	50.8	84.2	136.9	738.2
Monthly Inflow	kaf	405.3	168.2	177.1	160.9	144.0	123.6	127.2	131.3	158.4	128.7	281.2	433.1	2439.0
Monthly Inflow	cfs	6592	2736	2976	2617	2420	2010	2069	2364	2576	2163	4573	7278	
Turbine Release	kaf	456.8	194.9	181.4	172.1	169.7	175.4	175.4	158.4	175.4	170.4	235.5	267.3	2532.7
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	456.8	194.9	181.4	172.1	169.7	175.4	175.4	158.4	175.4	170.4	235.5	267.3	2532.7
Total Release	cfs	7429	3170	3049	2799	2852	2853	2853	2852	2853	2864	3830	4492	
Spring Flow	kaf	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	50.8
Irrigation Reqmnt	kaf	27.7	26.8	18.8	4.1	0.0	0.0	0.0	0.0	0.0	0.6	24.6	26.8	129.4
Afterbay Rels	kaf	461.1	199.2	185.6	176.4	173.9	179.7	179.7	162.3	179.7	174.6	239.8	271.5	2583.5
Afterbay Rels	cfs	7499	3240	3119	2869	2922	2923	2923	2922	2923	2934	3900	4563	
River Release	kaf	433.4	172.4	166.8	172.3	173.9	179.7	179.7	162.3	179.7	174.0	215.2	244.7	2454.1
River Release	cfs	7049	2804	2803	2802	2922	2923	2923	2922	2923	2924	3500	4112	
Min Release	kaf	153.7	153.7	148.8	153.7	148.8	153.7	153.7	138.8	153.7	148.8	215.2	148.8	1871.4
End-Month Targets	kaf				1070.0						858.5		1070.0	
End-Month Content	kaf	1112.2	1085.5	1081.2	1070.0	1044.3	992.5	944.3	917.2	900.2	858.5	904.2	1070.0	
End-Month Elevation	ft	3643.20	3641.20	3640.87	3640.00	3637.90	3633.27	3628.38	3625.35	3623.33	3618.01	3623.82	3640.00	
Net Change Content	kaf	-51.5	-26.7	-4.3	-11.2	-25.7	-51.8	-48.2	-27.1	-17.0	-41.7	45.7	165.8	-93.7
Yellowtail Power	2009	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Turbine Release	kaf	456.8	194.9	181.4	172.1	169.7	175.4	175.4	158.4	175.4	170.4	235.5	267.3	2532.7
Generation	gwh	190.941	80.582	74.668	70.681	69.319	70.816	69.710	62.178	68.337	65.711	90.879	106.871	1020.693
End-Month Power Cap	mw	288.0	288.0	288.0	287.5	285.4	280.8	276.1	273.2	271.3	266.4	271.8	287.5	
% Max Gen		89	38	36	33	33	33	33	32	32	32	42	52	
Ave kwh/af		418	413	412	411	408	404	397	393	390	386	386	400	403
Upstream Generation	gwh	35.198	30.316	26.928	13.157	11.639	10.633	10.584	9.498	10.486	12.063	32.470	33.856	236.828
Total Generation	gwh	226.139	110.898	101.596	83.838	80.958	81.449	80.294	71.676	78.823	77.774	123.349	140.727	1257.521

# BIGHORN LAKE



# WATER YEAR 2009