

# RECLAMATION

## *Managing Water in the West*

March 1, 2009

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans prepared in March 2009. Storage in Bighorn Lake on March 1 was 112 percent of average and 1.95 feet lower than on February 1. Based on streamflow accretions accompanied by the planned releases out of Boysen and Buffalo Bill Reservoirs and the water supply forecast prepared on March 1, the April-July inflow to Bighorn Lake is expected to be 76 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  
 March 1, 2009

**Present Elevations & Storages:**

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Normal</u>
Boysen	4717.01	597,524	118
Buffalo Bill	5365.57	436,676	108
Bighorn Lake	3627.87	939,541	112

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

<u>Month</u>	<u>Inflow</u>	<u>Percent of Normal</u>
February	68.0	50
March	86.1	51
April	80.9	50
May	291.6	118
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

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Normal</u>
February	36.0	63
March	52.2	68
April	20.7	45
May	120.4	143
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 1 Runoff Forecast (April-July Flows - 1,000 Acre-Feet):**

<u>Agency</u>	<u>Gains</u>	<u>Percent of Normal</u>
<b>USBR</b>	<b>262.3</b>	<b>91</b>
	<u>Inflows</u>	
<b>USBR</b>	<b>850.3</b>	<b>76</b>

**Snowpack Conditions:**

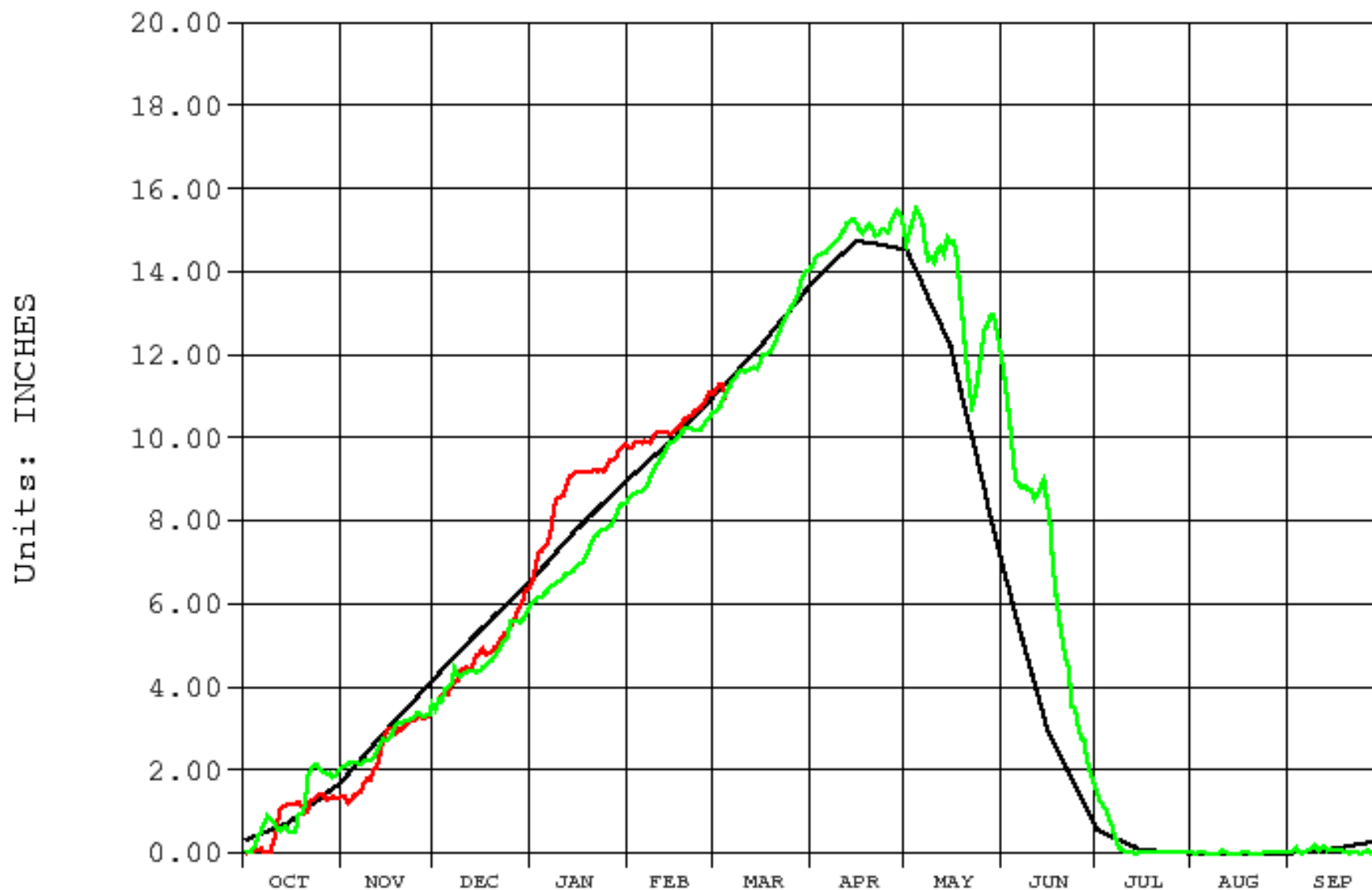
S N O W - P R E C I P I T A T I O N U P D A T E  
 Based on Mountain Data from NRCS SNOTEL Sites  
 As of SUNDAY: MARCH 1 , 2009

<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	17.8	19.7	90	16.4	17.0	96
BOX CANYON	6670	9.7	8.4	115	11.9	10.1	118

BRACKETT CREEK	7320	14.5	16.9	86	21.8	20.5	106
BURNT MTN	5880	4.6	4.9	94	10.6	11.2	95
CANYON	7870	10.4	11.3	92	11.3	12.9	88
COLE CREEK	7850	10.2	11.9	86	10.2	12.3	83
EAST BOULDER MINE	6335	3.2	-M	*	9.1	-M	*
EVENING STAR	9200	23.5	25.0	94	24.5	21.7	113
FISHER CREEK	9100	28.9	29.6	98	27.5	30.4	90
MONUMENT PEAK	8850	19.1	17.2	111	-M	17.6	*
NORTHEAST ENTRANCE	7350	8.5	9.7	88	10.8	10.7	101
PARKER PEAK	9400	19.9	18.1	110	-M	13.6	*
PLACER BASIN	8830	16.1	14.2	113	18.0	15.0	120
PORCUPINE	6500	6.0	5.8	103	10.0	9.3	108
SACAJAWEA	6550	9.4	11.9	79	22.0	18.4	120
SHOWER FALLS	8100	18.0	17.4	103	20.1	19.0	106
S FORK SHIELDS	8100	14.0	13.6	103	17.2	15.7	110
SYLVAN LAKE	8420	14.8	18.7	79	17.1	17.8	96
SYLVAN ROAD	7120	11.7	11.4	103	14.7	15.5	95
THUMB DIVIDE	7980	12.9	15.2	85	14.4	15.9	91
TWO OCEAN PLATEAU	9240	27.3	23.2	118	21.3	23.2	92
WHITE MILL	8700	19.2	20.3	95	18.8	22.6	83
WOLVERINE	7650	9.7	10.6	92	9.3	11.1	84
YOUNTS PEAK	8350	15.3	14.6	105	13.6	13.5	101
Basin wide percent of average				98			99
WIND RIVER BASIN (WYOMING)							
BURROUGHS CREEK	8750	13.0	12.6	103	13.7	13.6	101
COLD SPRINGS	9630	5.6	7.2	78	7.4	8.4	88
DEER PARK	9700	7.7	14.4	53	12.0	17.7	68
HOBBS PARK	10100	7.9	11.9	66	8.1	9.8	83
KIRWIN	9550	9.5	9.1	104	10.8	9.1	119
LITTLE WARM	9370	8.7	9.5	92	11.0	10.8	102
OWL CREEK	8975	4.2	4.1	102	4.1	4.4	93
SOUTH PASS	9040	8.3	14.0	59	10.3	14.9	69
ST. LAWRENCE ALT	8620	2.2	5.9	37	5.2	7.0	74
TOGWOTEE PASS	9580	22.4	20.6	109	24.4	20.5	119
TOWNSEND CREEK	8700	4.6	6.9	67	6.9	8.8	78
YOUNTS PEAK	8350	15.3	14.6	105	13.6	13.5	101
Basin wide percent of average				84			92
SHOSHONE RIVER BASIN (WYOMING)							
BLACKWATER	9780	18.1	20.4	89	16.7	17.1	98
EVENING STAR	9200	23.5	25.0	94	24.5	21.7	113
MARQUETTE	8760	3.2	6.9	46	6.0	7.4	81
SYLVAN LAKE	8420	14.8	18.7	79	17.1	17.8	96
SYLVAN ROAD	7120	11.7	11.4	103	14.7	15.5	95
YOUNTS PEAK	8350	15.3	14.6	105	13.6	13.5	101
Basin wide percent of average				89			100
BIGHORN RIVER BASIN (WYOMING)							
BALD MTN.	9380	15.9	16.0	99	12.8	14.0	91
BEAR TRAP MEADOW	8200	7.4	4.3	172	7.7	6.4	120
BLACKWATER	9780	18.1	20.4	89	16.7	17.1	98
BONE SPRINGS DIV	9350	15.8	13.2	120	12.3	11.5	107
EVENING STAR	9200	23.5	25.0	94	24.5	21.7	113
GRAVE SPRINGS	8550	6.8	7.3	93	7.7	7.7	100
KIRWIN	9550	9.5	9.1	104	10.8	9.1	119
MARQUETTE	8760	3.2	6.9	46	6.0	7.4	81
MIDDLE POWDER	7760	8.7	9.0	97	7.9	9.6	82
OWL CREEK	8975	4.2	4.1	102	4.1	4.4	93
POWDER RIVER PASS	9480	10.9	8.7	125	12.3	9.9	124
SHELL CREEK	9580	14.3	11.8	121	13.8	10.8	128
SYLVAN LAKE	8420	14.8	18.7	79	17.1	17.8	96
SYLVAN ROAD	7120	11.7	11.4	103	14.7	15.5	95
TIMBER CREEK	7950	3.0	4.2	71	6.1	5.4	113
YOUNTS PEAK	8350	15.3	14.6	105	13.6	13.5	101
Basin wide percent of average				99			103

Archive Data From 1-OCT Through 30-SEP

Plotted 03/04/2009 10:56



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

SE\_AVG Snow Water Equivalent Average (inches)

SE Snow Water Equivalent (inches)

2009

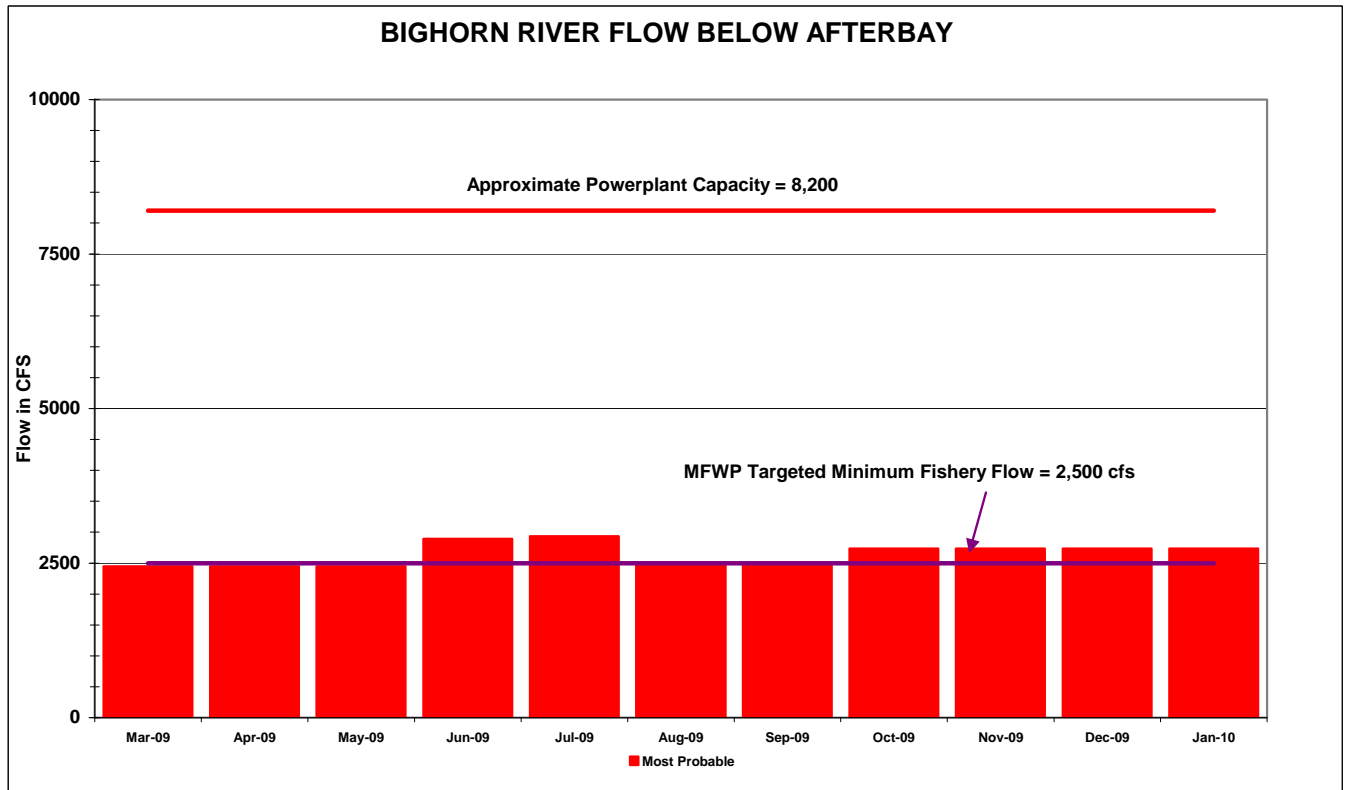
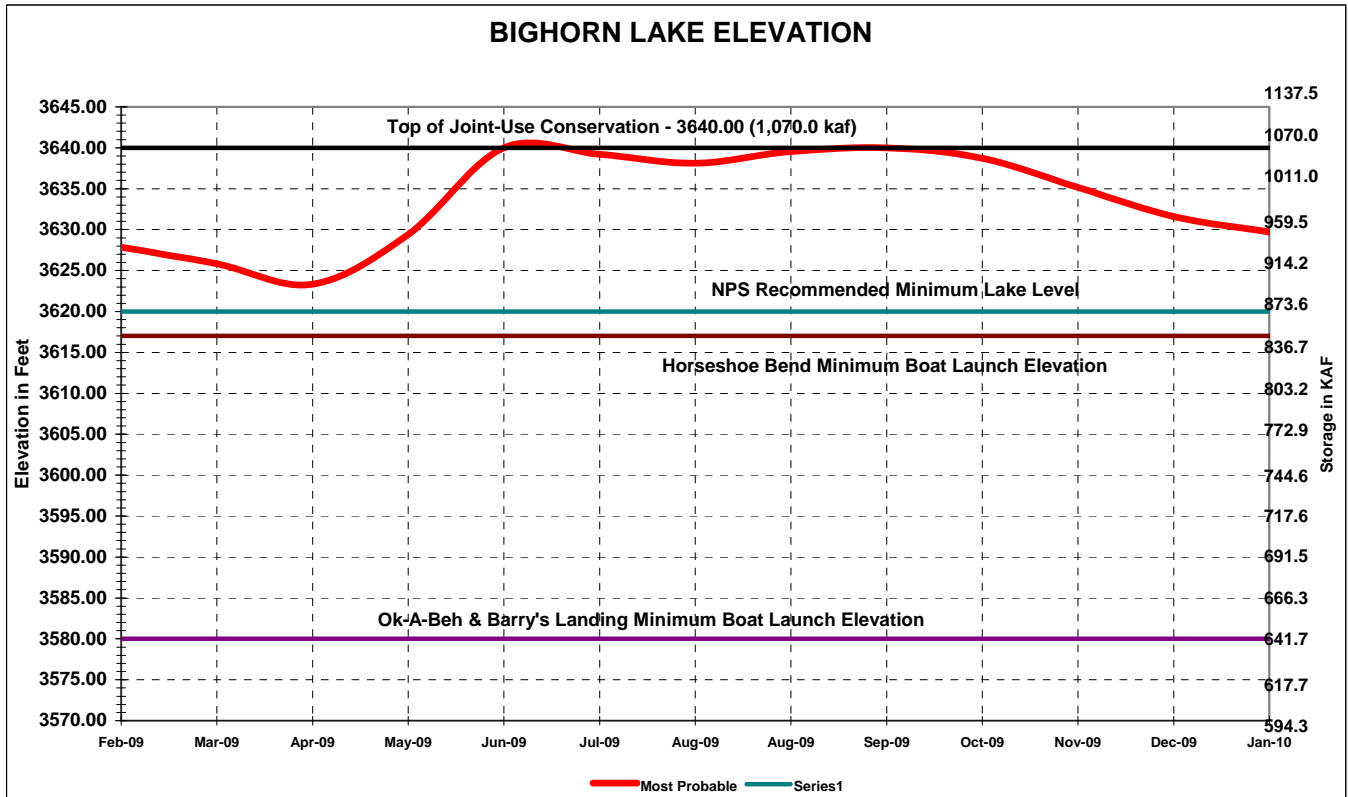
2009 2008

BHXAOP V1.12 Run: 04-Mar-2009 13:13  
 Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 939.5 kaf Elev 3627.86 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
2009		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
Boysen Release	kaf	49.8	47.6	70.7	72.9	83.0	69.5	56.5	55.4	53.6	55.4	55.4	50.0	719.8
Boysen Release	cfs	810	800	1150	1225	1350	1130	950	901	901	901	901	900	
Buffalo Bill Riv Flo	kaf	21.5	24.4	72.7	106.6	110.2	85.2	78.9	26.2	25.4	21.5	21.5	19.4	613.5
Buffalo Bill Riv Flo	cfs	350	410	1182	1791	1792	1386	1326	426	427	350	350	349	
Station Gain	kaf	56.8	49.1	81.1	131.5	0.5	8.3	45.6	77.5	63.5	45.7	49.1	60.2	668.9
Monthly Inflow	kaf	128.1	121.1	224.5	311.0	193.7	163.0	181.0	159.1	142.5	122.6	126.0	129.6	2002.2
Monthly Inflow	cfs	2083	2035	3651	5227	3150	2651	3042	2588	2395	1994	2049	2334	
Turbine Release	kaf	146.3	142.2	170.9	194.8	203.7	176.2	163.4	153.5	158.4	163.8	163.8	147.9	1984.9
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	146.3	142.2	170.9	194.8	203.7	176.2	163.4	153.5	158.4	163.8	163.8	147.9	1984.9
Total Release	cfs	2379	2390	2779	3274	3313	2866	2746	2496	2662	2664	2664	2663	
Spring Flow	kaf	4.3	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	50.8
Irrigation Reqmnt	kaf	0.0	0.6	24.6	26.8	27.7	26.8	18.8	4.1	0.0	0.0	0.0	0.0	129.4
Afterbay Rels	kaf	150.6	146.4	175.2	199.0	208.0	180.5	167.6	157.8	162.6	168.1	168.1	151.8	2035.7
Afterbay Rels	cfs	2449	2460	2849	3344	3383	2936	2817	2566	2733	2734	2734	2733	
River Release	kaf	150.6	145.8	150.6	172.2	180.3	153.7	148.8	153.7	162.6	168.1	168.1	151.8	1906.3
River Release	cfs	2449	2450	2449	2894	2932	2500	2501	2500	2733	2734	2734	2733	
Min Release	kaf	150.6	145.8	150.6	148.8	153.7	153.7	148.8	153.7	154.7	153.7	150.6	136.1	1800.8
End-Month Targets	kaf				1070.0				1070.0					
End-Month Content	kaf	921.3	900.2	953.8	1070.0	1060.0	1046.8	1064.4	1070.0	1054.1	1012.9	975.1	956.8	
End-Month Elevation	ft	3625.83	3623.33	3629.40	3640.00	3639.19	3638.11	3639.55	3640.00	3638.71	3635.17	3631.58	3629.71	
Net Change Content	kaf	-18.2	-21.1	53.6	116.2	-10.0	-13.2	17.6	5.6	-15.9	-41.2	-37.8	-18.3	17.3
Yellowtail Power	2009	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
Turbine Release	kaf	146.3	142.2	170.9	194.8	203.7	176.2	163.4	153.5	158.4	163.8	163.8	147.9	1984.9
Generation	gwh	57.421	55.441	67.000	78.491	83.400	71.894	66.715	62.888	64.797	66.438	65.633	58.734	798.852
End-Month Power Cap	mw	273.7	271.3	277.1	287.5	286.7	285.6	287.1	287.5	286.2	282.7	279.2	277.4	
% Max Gen		27	27	31	38	39	34	32	29	31	31	31	30	
Ave kwh/af		392	390	392	403	409	408	408	410	409	406	401	397	402
Upstream Generation	gwh	9.292	11.452	27.098	28.782	30.862	29.641	27.480	13.178	11.659	10.662	10.605	9.517	220.228
Total Generation	gwh	66.713	66.893	94.098	107.273	114.262	101.535	94.195	76.066	76.456	77.100	76.238	68.251	1019.080

# BIGHORN LAKE



## WATER YEAR 2009