

RECLAMATION

Managing Water in the West

September 1, 2011

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans prepared for Yellowtail. Streamflows into Bighorn Lake during August were 177% of average, the 3rd highest August inflow of record. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the forecasted September runoff into Bighorn Lake is estimated to be about 217,400 acre-feet (127% 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
 September 1, 2011

Present Elevations & Storages:

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Average</u>	<u>Percent Full</u>
Boysen	4723.16	706,175	114	95
Buffalo Bill	5383.58	568,556	113	88
Bighorn Lake	3643.20	1,062,720	110	104

Actual Inflows (1,000 Acre-Feet):

<u>Month</u>	<u>Inflow</u>	<u>Percent of Average</u>
<i>April-July, 2010</i>	<i>1,504.4</i>	<i>135</i>
<i>WY-2010 Total</i>	<i>2,573.5</i>	<i>109</i>
October	122.2	70
November	122.6	84
December	122.7	96
January	121.8	96
February	111.9	86
March	167.4	101
April	245.8	153
May	529.4	201
June	1,004.2	235
July	792.9	275
<i>April-July, 2011</i>	<i>2,572.3</i>	<i>226</i>
August	279.2	177

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Average</u>
<i>April-July, 2010</i>	<i>254.2</i>	<i>163</i>
<i>WY-2010 Total</i>	<i>513.9</i>	<i>107</i>
October	28.7	40
November	54.2	89
December	52.1	121
January	50.9	110
February	47.9	90
March	95.6	128
April	47.7	137
May	168.3	280
June	391	369
July	88.4	---
<i>April-July, 2011</i>	<i>717.7</i>	<i>460</i>
August	-11.6	---

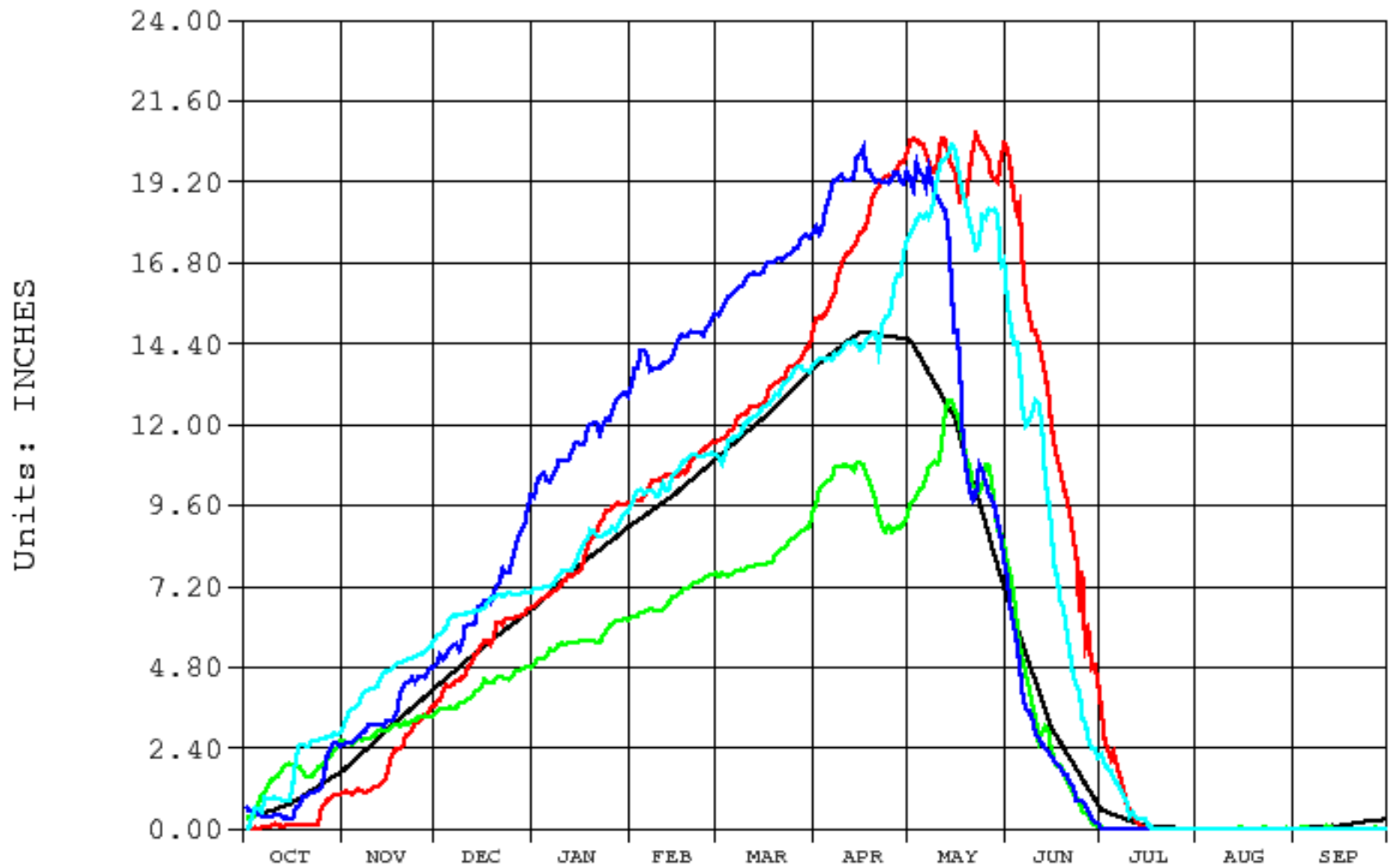
September 1 Runoff Forecast (September Inflows - 1,000 Acre-Feet):

<u>Agency</u>	<u>Inflows</u>	<u>Percent of Average</u>
USBR	217.4	127

Snowpack Conditions:

SNOW DATA UNAVAILABLE DURING AUGUST-OCTOBER

Archive Data From 1-OCT Through 30-SEP
 Plotted 08/03/2011 15:31



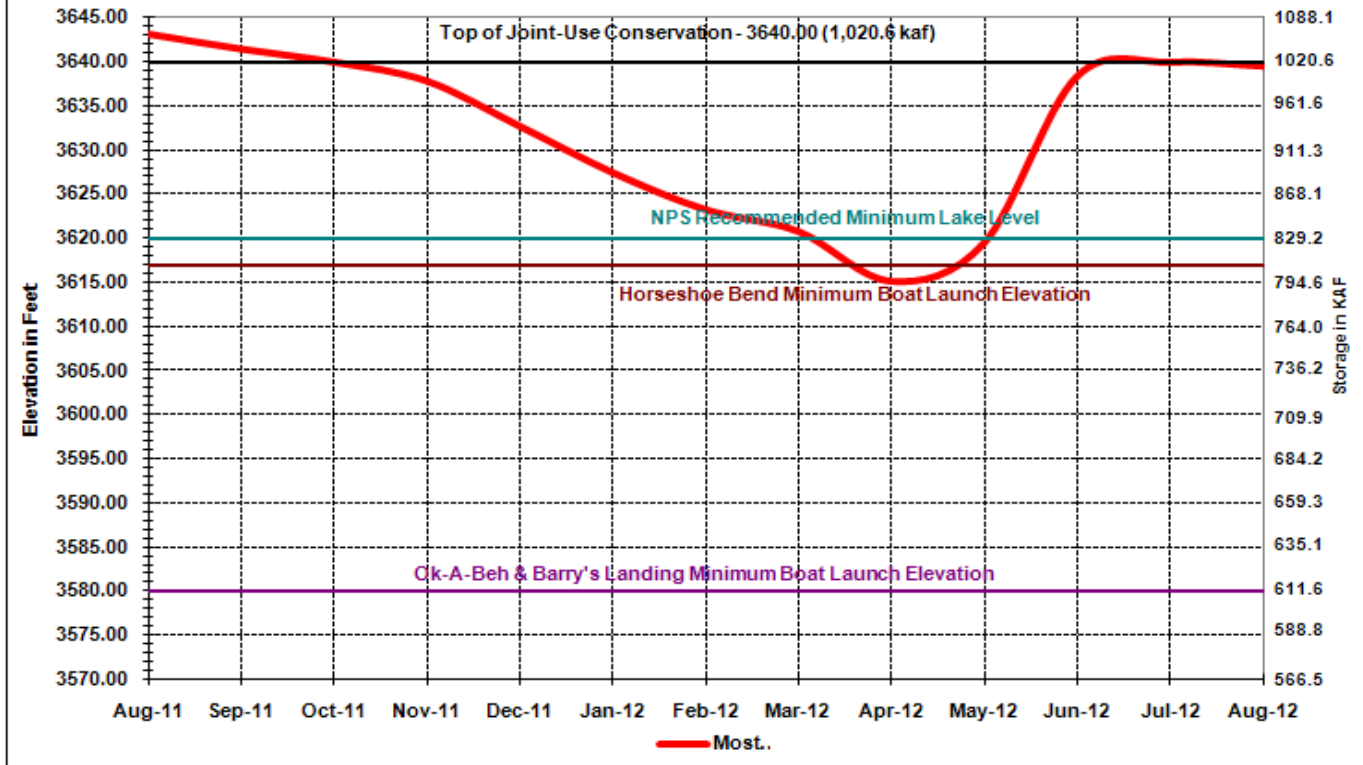
BHR Bighorn Lake (Yellowtail), Bighorn River near Fort Smith, MT
 SE_AVG Snow Water Equivalent Average (inches) 2011
 SE Snow Water Equivalent (inches) 2011 2010 1997
 1995

BIGHORN LAKE MONTHLY OPERATIONS

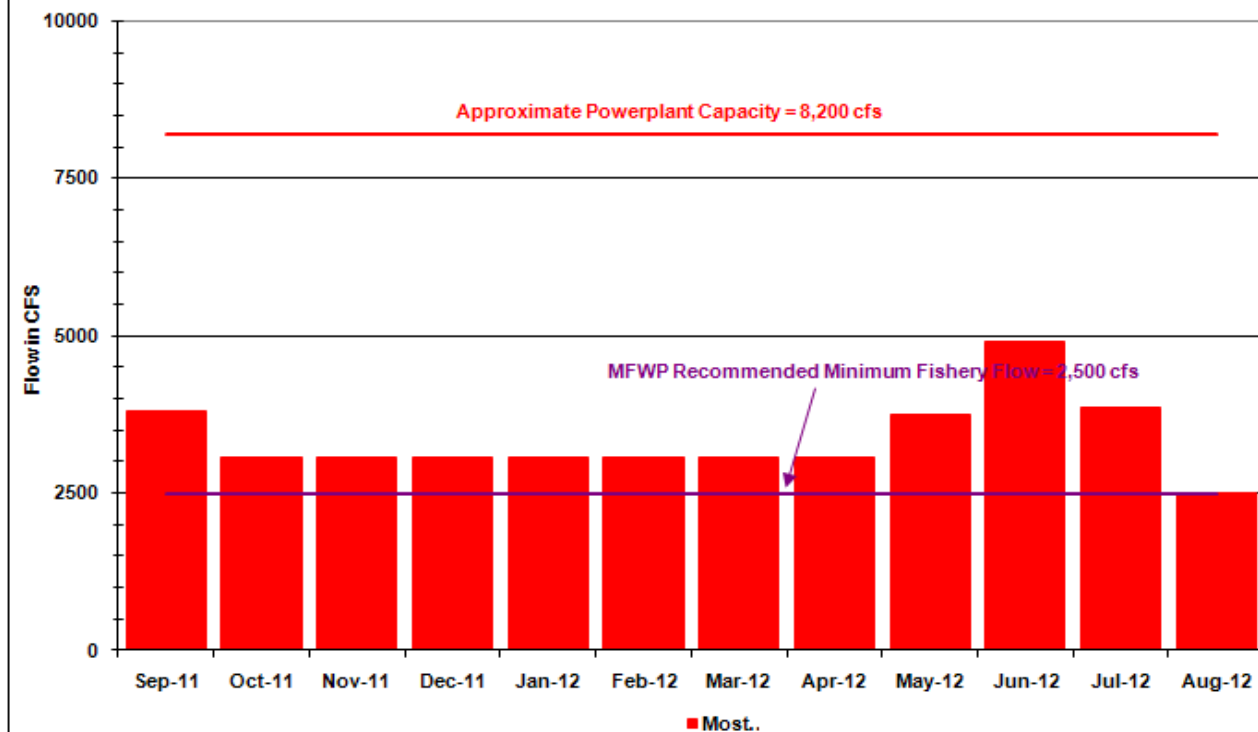
Bighorn Reservoir		Initial Cont Elev 1062.7 kaf 3643.20 ft				Maximum Cont Elev 1278.9 kaf 3657.00 ft				Minimum Cont Elev 469.9 kaf 3547.00 ft				Total
	2011	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
Boysen Release	kaf	68.8	58.4	56.5	58.4	58.4	54.6	58.4	69.6	136.1	132.2	123.7	98.3	973.4
Boysen Release	cfs	1156	950	950	950	950	949	950	1170	2213	2222	2012	1599	
Buffalo Bill Release	kaf	121.1	44.4	23.4	21.8	21.8	20.4	21.8	61.0	108.9	147.3	169.7	110.6	872.2
Buffalo Bill Release	cfs	2035	722	393	355	355	355	355	1025	1771	2475	2760	1799	
Station Gain	kaf	27.5	62.0	71.8	47.3	54.9	62.4	84.9	8.8	22.9	206.6	-11.7	-37.7	599.7
Monthly Inflow	kaf	217.4	164.8	151.7	127.5	135.1	137.4	165.1	139.4	267.9	486.1	281.7	171.2	2445.3
Monthly Inflow	cfs	3654	2680	2549	2074	2197	2389	2685	2343	4357	8169	4581	2784	
Turbine Release	kaf	240.2	184.1	178.1	184.1	184.1	172.2	184.1	179.1	237.8	310.4	262.0	176.8	2493.0
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	240.2	184.1	178.1	184.1	184.1	172.2	184.1	179.1	237.8	310.4	262.0	176.8	2493.0
Total Release	cfs	4037	2994	2993	2994	2994	2994	2994	3010	3867	5216	4261	2875	
Spring Flow	kaf	4.2	4.3	4.2	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	50.9
Irrigation Reqmnt	kaf	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	110.1
Afterbay Rels	kaf	244.4	188.4	182.3	188.4	188.4	176.2	188.4	183.3	242.1	314.6	266.3	181.1	2543.9
Afterbay Rels	cfs	4107	3064	3064	3064	3064	3063	3064	3080	3937	5287	4331	2945	
River Release	kaf	225.6	188.4	182.3	188.4	188.4	176.2	188.4	182.4	230.5	291.4	238.1	153.7	2433.8
River Release	cfs	3791	3064	3064	3064	3064	3063	3064	3065	3749	4897	3872	2500	
Min Release	kaf	148.8	153.7	148.8	153.7	153.7	143.8	153.7	148.8	153.7	148.8	153.7	153.7	1814.9
End-Month Targets	kaf		1020.6					834.8				1020.6		
End-Month Content	kaf	1039.9	1020.6	994.2	937.6	888.6	853.8	834.8	795.1	825.2	1000.9	1020.6	1015.0	
End-Month Elevation	ft	3641.50	3640.00	3637.85	3632.72	3627.44	3623.22	3620.75	3615.07	3619.45	3638.40	3640.00	3639.55	
Net Change Content	kaf	-22.8	-19.3	-26.4	-56.6	-49.0	-34.8	-19.0	-39.7	30.1	175.7	19.7	-5.6	-47.7
Yellowtail Power	2011	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
Turbine Release	kaf	240.2	184.1	178.1	184.1	184.1	172.2	184.1	179.1	237.8	310.4	262.0	176.8	2493.0
Generation	gwh	97.947	74.598	71.662	73.108	71.835	66.212	70.097	67.443	89.382	121.114	105.531	71.368	980.297
End-Month Power Cap	mw	285.0	283.4	281.0	275.4	270.0	265.8	263.3	257.8	262.1	281.6	283.4	282.9	
% Max Gen		47	35	35	34	34	33	33	33	42	58	49	33	
Ave kwh/af		408	405	402	397	390	385	381	377	376	390	403	404	393
Upstream Generation	gwh	28.567	11.215	6.241	5.772	5.758	5.359	5.722	21.497	32.268	34.061	34.444	30.586	221.490
Total Generation	gwh	126.514	85.813	77.903	78.880	77.593	71.571	75.819	88.940	121.650	155.175	139.975	101.954	1201.787

BIGHORN LAKE

BIGHORN LAKE ELEVATION



BIGHORN RIVER FLOW BELOW AFTERBAY



WATER YEAR 2011

Supplemental Information

BHXAOP V1.12 Run: 09-Sep-2011 14:25
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 1062.7 kaf Elev 3643.20 ft				Maximum Cont 1278.9 kaf Elev 3657.00 ft				Minimum Cont 469.9 kaf Elev 3547.00 ft				Total
2011		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
Boysen Release	kaf	68.8	58.4	56.5	58.4	58.4	54.7	58.4	56.6	67.6	69.9	76.9	69.2	753.8
Boysen Release	cfs	1156	950	950	950	950	951	950	951	1099	1175	1251	1125	
Buffalo Bill Release	kaf	116.1	42.6	22.3	21.8	21.8	20.4	21.8	31.7	101.2	90.8	121.3	104.3	716.1
Buffalo Bill Release	cfs	1951	693	375	355	355	355	355	533	1646	1526	1973	1696	
Station Gain	kaf	23.4	52.7	61.0	40.2	46.7	53.0	72.2	25.7	25.0	49.0	-85.4	-20.5	343.0
Monthly Inflow	kaf	208.3	153.7	139.8	120.4	126.9	128.1	152.4	114.0	193.8	209.7	112.8	153.0	1812.9
Monthly Inflow	cfs	3501	2500	2349	1958	2064	2227	2479	1916	3152	3524	1835	2488	
Turbine Release	kaf	226.1	178.0	168.4	174.1	174.0	162.8	174.1	115.7	130.3	138.0	146.9	146.1	1934.5
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	226.1	178.0	168.4	174.1	174.0	162.8	174.1	115.7	130.3	138.0	146.9	146.1	1934.5
Total Release	cfs	3800	2895	2830	2831	2830	2830	2831	1944	2119	2319	2389	2376	
Spring Flow	kaf	4.2	4.3	4.2	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	50.9
Irrigation Reqmnt	kaf	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	110.1
Afterbay Rels	kaf	230.3	182.3	172.6	178.4	178.3	166.8	178.4	119.9	134.6	142.2	151.2	150.4	1985.4
Afterbay Rels	cfs	3870	2965	2901	2901	2900	2900	2901	2015	2189	2390	2459	2446	
River Release	kaf	211.5	182.3	172.6	178.4	178.3	166.8	178.4	119.0	123.0	119.0	123.0	123.0	1875.3
River Release	cfs	3554	2965	2901	2901	2900	2900	2901	2000	2000	2000	2000	2000	
Min Release	kaf	148.8	153.7	148.8	153.7	153.7	143.8	153.7	119.0	123.0	119.0	123.0	123.0	1663.2
End-Month Targets	kaf		1020.6					834.8				1020.6		
End-Month Content	kaf	1044.9	1020.6	992.0	938.3	891.2	856.5	834.8	833.1	896.6	968.3	934.2	941.1	
End-Month Elevation	ft	3641.88	3640.00	3637.66	3632.79	3627.74	3623.56	3620.75	3620.52	3628.36	3635.60	3632.38	3633.07	
Net Change Content	kaf	-17.8	-24.3	-28.6	-53.7	-47.1	-34.7	-21.7	-1.7	63.5	71.7	-34.1	6.9	-121.6
Yellowtail Power	2011	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
Turbine Release	kaf	226.1	178.0	168.4	174.1	174.0	162.8	174.1	115.7	130.3	138.0	146.9	146.1	1934.5
Generation	gwh	92.266	72.181	67.736	69.121	67.932	62.657	66.322	43.884	49.987	54.201	58.058	57.482	761.827
End-Month Power Cap	mw	285.4	283.4	280.8	275.5	270.3	266.1	263.3	263.1	270.9	278.5	275.0	275.8	
% Max Gen		44	34	33	32	32	31	31	21	23	26	27	27	
Ave kwh/af		408	406	402	397	390	385	381	379	384	393	395	393	394
Upstream Generation	gwh	28.566	10.570	5.927	5.768	5.745	5.341	5.700	12.141	25.246	25.757	27.397	25.060	183.218
Total Generation	gwh	120.832	82.751	73.663	74.889	73.677	67.998	72.022	56.025	75.233	79.958	85.455	82.542	945.045

BHXAOP V1.12 Run: 09-Sep-2011 14:26
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3643.20 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total	
		2011	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
Boysen Release	kaf	68.8	58.4	56.5	58.4	58.4	54.6	58.4	126.9	240.7	300.7	270.3	117.8	1469.9	
Boysen Release	cfs	1156	950	950	950	950	949	950	2133	3915	5053	4396	1916		
Buffalo Bill Release	kaf	126.1	46.4	24.6	21.8	21.8	20.4	21.8	91.7	198.7	261.8	257.2	131.4	1223.7	
Buffalo Bill Release	cfs	2119	755	413	355	355	355	355	1541	3232	4400	4183	2137		
Station Gain	kaf	33.0	74.4	86.2	56.8	65.9	74.9	101.9	19.9	-44.9	205.8	-8.6	23.4	688.7	
Monthly Inflow	kaf	227.9	179.2	167.3	137.0	146.1	149.9	182.1	238.5	394.5	768.3	518.9	272.6	3382.3	
Monthly Inflow	cfs	3830	2914	2812	2228	2376	2606	2962	4008	6416	12912	8439	4433		
Turbine Release	kaf	251.8	197.4	191.1	197.5	197.4	184.7	197.5	300.9	427.3	501.2	478.4	273.0	3398.2	
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.6	0.0	0.0	26.6	
Total Release	kaf	251.8	197.4	191.1	197.5	197.4	184.7	197.5	300.9	427.3	527.8	478.4	273.0	3424.8	
Total Release	cfs	4232	3210	3212	3212	3210	3211	3212	5057	6949	8870	7780	4440		
Spring Flow	kaf	4.2	4.3	4.2	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	50.9	
Irrigation Reqmnt	kaf	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	110.1	
Afterbay Rels	kaf	256.0	201.7	195.3	201.8	201.7	188.7	201.8	305.1	431.6	532.0	482.7	277.3	3475.7	
Afterbay Rels	cfs	4302	3280	3282	3282	3280	3281	3282	5127	7019	8941	7850	4510		
River Release	kaf	237.2	201.7	195.3	201.8	201.7	188.7	201.8	304.2	420.0	508.8	454.5	249.9	3365.6	
River Release	cfs	3986	3280	3282	3282	3280	3281	3282	5112	6831	8551	7392	4064		
Min Release	kaf	148.8	153.7	148.8	153.7	153.7	136.3	151.0	148.8	153.7	148.8	153.7	153.7	1804.7	
End-Month Targets	kaf		1020.6					834.8				1020.6			
End-Month Content	kaf	1038.8	1020.6	996.8	936.3	885.0	850.2	834.8	772.4	739.6	980.1	1020.6	1020.2		
End-Month Elevation	ft	3641.42	3640.00	3638.06	3632.59	3627.02	3622.76	3620.75	3611.43	3605.63	3636.64	3640.00	3639.97		
Net Change Content	kaf	-23.9	-18.2	-23.8	-60.5	-51.3	-34.8	-15.4	-62.4	-32.8	240.5	40.5	-0.4	-42.5	
Yellowtail Power	2011	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	
Turbine Release	kaf	251.8	197.4	191.1	197.5	197.4	184.7	197.5	300.9	427.3	501.2	478.4	273.0	3398.2	
Generation	gwh	102.660	79.974	76.924	78.446	76.960	70.926	75.149	112.812	157.172	191.909	192.072	110.288	1325.292	
End-Month Power Cap	mw	284.9	283.4	281.2	275.3	269.6	265.3	263.3	254.5	249.2	279.6	283.4	283.3		
% Max Gen		50	37	37	37	36	35	35	54	73	93	90	51		
Ave kwh/af		408	405	403	397	390	384	381	375	368	383	401	404	390	
Upstream Generation	gwh	28.567	11.761	6.582	5.769	5.765	5.369	5.740	29.506	33.877	33.947	29.464	33.936	230.283	
Total Generation	gwh	131.227	91.735	83.506	84.215	82.725	76.295	80.889	142.318	191.049	225.856	221.536	144.224	1555.575	