

RECLAMATION

Managing Water in the West

December 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 November were 98% of average. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the forecasted December runoff into Bighorn Lake is estimated to be about 137,500 acre-feet (107% 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
 December 1, 2011

Present Elevations & Storages:

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Average</u>	<u>Percent Full</u>
Boysen	4722.34	690,803	117	93
Buffalo Bill	5368.50	457,421	109	71
Bighorn Lake	3635.62	968,496	104	95

Actual Inflows (1,000 Acre-Feet):

<u>Month</u>	<u>Inflow</u>	<u>Percent of Average</u>
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
August	279.2	177
September	196.8	115
April-July, 2011	2,572.3	226
WY-2011 Total	3,817.0	163
October	213.6	123
November	142.3	98

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Average</u>
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	---
August	-11.6	---
September	8.7	43
April-July, 2011	717.7	460
WY-2011 Total	996.7	207
October	91.7	129
November	64.6	104

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

<u>Agency</u>	<u>Inflows</u>	<u>Percent of Average</u>
USBR	137.5	107

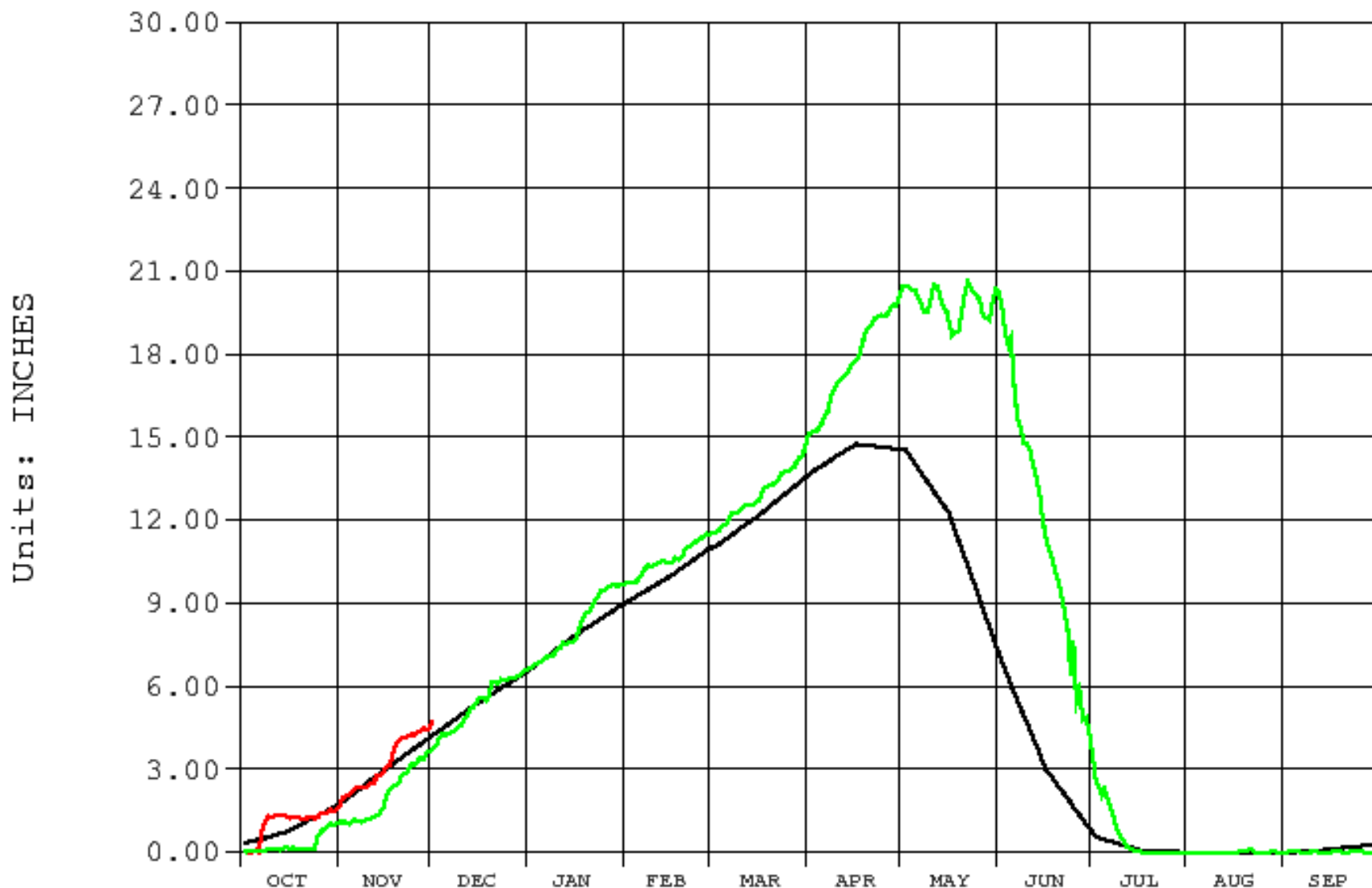
Snowpack Conditions:

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 THURSDAY: DECEMBER 1 , 2011

BASIN	ELEV.	SNOW WATER EQUIVALENT			TOTAL PRECIPITATION		
Data Site Name	(Ft)	Current	Average	Avg	Current	Average	Avg
		%			%		

UPPER YELLOWSTONE RIVER BASIN							
BEARTOOTH LAKE	9360	7.4	7.0	106	7.8	5.9	132
BOX CANYON	6670	2.0	2.2	91	3.4	3.8	89
BRACKETT CREEK	7320	2.2	4.9	45	5.5	7.3	75
BURNT MTN	5880	2.6	1.3	200	5.4	5.5	98
CANYON	7870	3.1	3.2	97	5.2	4.8	108
COLE CREEK	7850	6.2	5.4	115	5.6	5.9	95
EAST BOULDER MINE	6335	1.8	-M	*	6.4	-M	*
EVENING STAR	9200	8.1	8.5	95	11.1	8.2	135
FISHER CREEK	9100	10.1	9.1	111	11.9	9.8	121
MONUMENT PEAK	8850	3.9	5.8	67	5.8	6.4	91
NORTHEAST ENTRANCE	7350	1.9	2.5	76	4.3	4.0	108
PARKER PEAK	9400	7.3	6.7	109	9.3	5.5	169
PLACER BASIN	8830	4.2	5.6	75	6.7	6.5	103
PORCUPINE	6500	1.3	1.3	100	3.3	4.0	82
SACAJAWEA	6550	1.8	1.9	95	6.2	6.6	94
SHOWER FALLS	8100	6.0	6.3	95	9.5	7.7	123
S FORK SHIELDS	8100	1.9	4.5	42	8.4	6.3	133
SYLVAN LAKE	8420	4.9	6.4	77	9.1	7.1	128
SYLVAN ROAD	7120	3.5	3.5	100	6.2	6.6	94
THUMB DIVIDE	7980	4.3	4.0	108	7.0	5.4	130
TWO OCEAN PLATEAU	9240	11.1	8.3	134	9.8	8.2	120
WHITE MILL	8700	5.6	6.6	85	7.9	7.7	103
WOLVERINE	7650	4.3	3.0	143	6.0	4.5	133
YOUNTS PEAK	8350	4.9	4.7	104	6.2	5.2	119
Basin wide percent of average				96			113
WIND RIVER BASIN (WYOMING)							
BURROUGHS CREEK	8750	3.5	3.8	92	4.5	4.9	92
CASTLE CREEK	8400	1.9	-M	*	3.0	-M	*
COLD SPRINGS	9630	2.8	3.1	90	4.1	4.2	98
DEER PARK	9700	3.1	4.5	69	6.2	7.1	87
HOBBS PARK	10100	5.4	5.3	102	5.3	4.6	115
KIRWIN	9550	5.4	4.2	129	6.7	4.1	163
LITTLE WARM	9370	2.1	3.4	62	4.4	4.6	96
OWL CREEK	8975	1.8	1.9	95	2.9	2.2	132
SOUTH PASS	9040	3.9	4.9	80	5.2	6.0	87
ST. LAWRENCE ALT	8620	1.3	2.7	48	2.9	3.5	83
TOGWOTEE PASS	9580	6.3	7.0	90	8.1	7.3	111
TOWNSEND CREEK	8700	2.3	3.0	77	4.6	4.5	102
YOUNTS PEAK	8350	4.9	4.7	104	6.2	5.2	119
Basin wide percent of average				88			105
SHOSHONE RIVER BASIN (WYOMING)							
BLACKWATER	9780	9.7	7.8	124	9.4	7.2	131
EVENING STAR	9200	8.1	8.5	95	11.1	8.2	135
MARQUETTE	8760	1.6	-M	*	6.0	4.1	146
SYLVAN LAKE	8420	4.9	6.4	77	9.1	7.1	128
SYLVAN ROAD	7120	3.5	3.5	100	6.2	6.6	94
YOUNTS PEAK	8350	4.9	4.7	104	6.2	5.2	119
Basin wide percent of average				101			125
BIGHORN RIVER BASIN (WYOMING)							
BALD MTN.	9380	6.8	5.9	115	6.7	5.3	126
BEAR TRAP MEADOW	8200	1.9	1.6	119	3.8	3.4	112
BLACKWATER	9780	9.7	7.8	124	9.4	7.2	131
BONE SPRINGS DIV	9350	7.3	5.3	138	7.3	4.9	149
EVENING STAR	9200	8.1	8.5	95	11.1	8.2	135
GRAVE SPRINGS	8550	2.4	2.7	89	4.4	3.6	122
KIRWIN	9550	5.4	4.2	129	6.7	4.1	163
MARQUETTE	8760	1.6	-M	*	6.0	4.1	146
MIDDLE POWDER	7760	3.3	3.5	94	6.6	4.9	135
OWL CREEK	8975	1.8	1.9	95	2.9	2.2	132
POWDER RIVER PASS	9480	4.2	3.3	127	5.6	4.1	137
SHELL CREEK	9580	7.3	5.1	143	6.7	4.5	149
SYLVAN LAKE	8420	4.9	6.4	77	9.1	7.1	128
SYLVAN ROAD	7120	3.5	3.5	100	6.2	6.6	94
TIMBER CREEK	7950	2.1	2.3	91	5.5	3.0	183
YOUNTS PEAK	8350	4.9	4.7	104	6.2	5.2	119
Basin wide percent of average				110			133

Archive Data From 1-OCT Through 30-SEP
Plotted 12/01/2011 15:39 (Provisional Data Subject to Revision)



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

SE_AVG Snow Water Equivalent Average (inches)

SE Snow Water Equivalent (inches)

2012

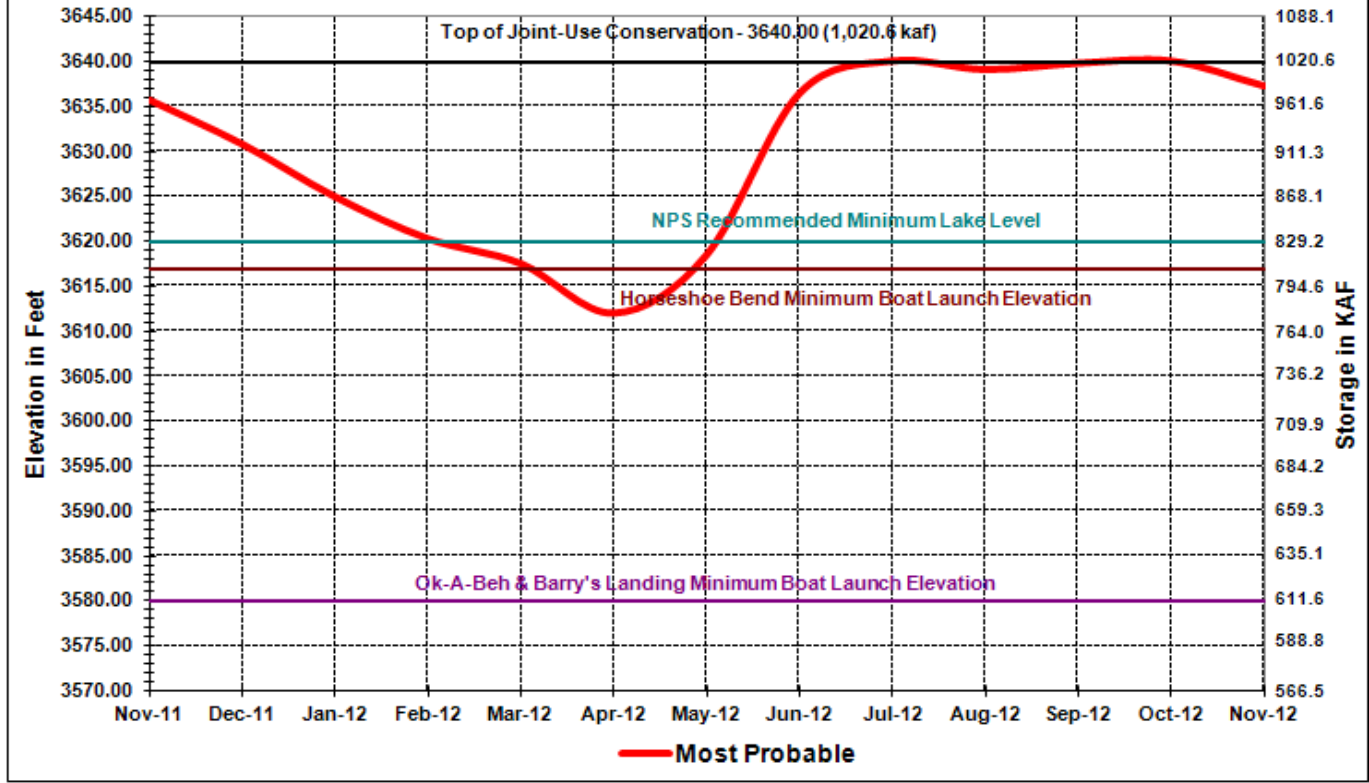
2012 2011

BIGHORN LAKE MONTHLY OPERATIONS

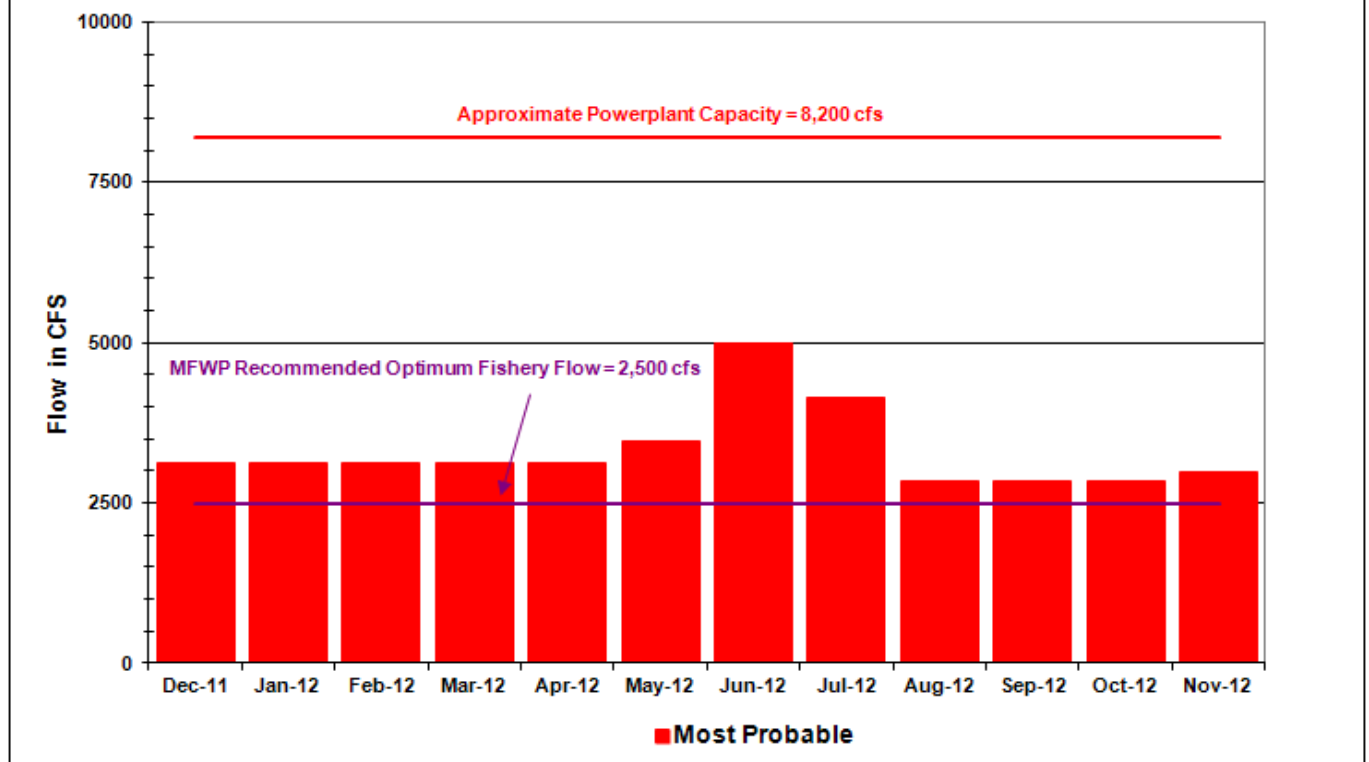
Bighorn Reservoir		Initial Cont 969.4 kaf Elev 3635.70 ft				Maximum Cont 1278.9 kaf Elev 3657.00 ft				Minimum Cont 469.9 kaf Elev 3547.00 ft				Total
	2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Boysen Release	kaf	58.5	58.5	54.7	58.4	67.8	140.3	182.2	130.0	100.3	66.0	58.4	56.5	1031.6
Boysen Release	cfs	951	951	951	950	1139	2282	3062	2114	1631	1109	950	950	
Buffalo Bill Riv Flo	kaf	21.8	21.8	20.4	21.8	31.7	111.7	166.3	171.4	121.9	102.8	45.5	21.1	858.2
Buffalo Bill Riv Flo	cfs	355	355	355	355	533	1817	2795	2788	1983	1728	740	355	
Station Gain	kaf	57.2	56.9	64.8	88.1	47.8	10.8	125.9	21.1	-36.2	23.6	69.6	62.0	591.6
Monthly Inflow	kaf	137.5	137.2	139.9	168.3	147.3	262.8	474.4	322.5	186.0	192.4	173.5	139.6	2481.4
Monthly Inflow	cfs	2236	2231	2432	2737	2475	4274	7973	5245	3025	3233	2822	2346	
Turbine Release	kaf	188.2	188.2	176.0	188.2	182.9	220.5	315.3	279.4	197.8	183.7	170.4	173.1	2463.7
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	188.2	188.2	176.0	188.2	182.9	220.5	315.3	279.4	197.8	183.7	170.4	173.1	2463.7
Total Release	cfs	3061	3061	3060	3061	3074	3586	5299	4544	3217	3087	2771	2909	
Spring Flow	kaf	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	50.9
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	18.8	0.0	0.0	110.1
Afterbay Rels	kaf	192.5	192.5	180.0	192.5	187.1	224.8	319.5	283.7	202.1	187.9	174.7	177.3	2514.6
Afterbay Rels	cfs	3131	3131	3129	3131	3144	3656	5369	4614	3287	3158	2841	2980	
River Release	kaf	192.5	192.5	180.0	192.5	186.2	213.2	296.3	255.5	174.7	169.1	174.7	177.3	2404.5
River Release	cfs	3131	3131	3129	3131	3129	3467	4979	4155	2841	2842	2841	2980	
Min Release	kaf	192.5	192.5	180.0	192.5	148.8	153.7	148.8	153.7	153.7	148.8	153.7	148.8	1967.5
End-Month Targets	kaf				822.0				1020.6			1020.6		
End-Month Content	kaf	918.7	867.7	831.6	811.7	776.1	818.4	977.5	1020.6	1008.8	1017.5	1020.6	987.1	
End-Month Elevation	ft	3630.79	3624.95	3620.32	3617.55	3612.05	3618.50	3636.41	3640.00	3639.05	3639.75	3640.00	3637.24	
Net Change Content	kaf	-50.7	-51.0	-36.1	-19.9	-35.6	42.3	159.1	43.1	-11.8	8.7	3.1	-33.5	17.7
Yellowtail Power	2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total
Turbine Release	kaf	188.2	188.2	176.0	188.2	182.9	220.5	315.3	279.4	197.8	183.7	170.4	173.1	2463.7
Generation	gwh	74.204	72.930	67.145	71.051	68.312	82.464	122.386	112.130	79.769	74.047	68.811	69.574	962.823
End-Month Power Cap	mw	273.4	267.5	262.9	260.2	255.0	261.1	279.4	283.4	282.3	283.1	283.4	280.3	
% Max Gen		35	34	33	33	33	38	59	52	37	36	32	34	
Ave kwh/af		394	388	382	378	373	374	388	401	403	403	404	402	391
Upstream Generation	gwh	3.895	5.728	4.394	10.765	13.232	33.468	33.841	35.021	32.362	27.191	15.061	10.599	225.557
Total Generation	gwh	78.099	78.658	71.539	81.816	81.544	115.932	156.227	147.151	112.131	101.238	83.872	80.173	1188.380

BIGHORN LAKE

BIGHORN LAKE ELEVATION



BIGHORN RIVER FLOW BELOW AFTERBAY



WATER YEAR 2012

Supplemental Information

BHXAOP V1.12 Run: 06-Dec-2011 10:39
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3635.70 ft					Maximum Cont Elev 3657.00 ft					Minimum Cont Elev 3547.00 ft					Total
		2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Boysen Release	kaf	58.4	58.5	54.7	58.4	44.6	67.6	69.9	76.9	69.2	59.5	46.1	29.8	693.6			
Boysen Release	cfs	950	951	951	950	750	1099	1175	1251	1125	1000	750	501				
Buffalo Bill Riv Flo	kaf	21.8	21.8	20.4	21.8	31.7	101.2	105.0	118.7	104.3	82.3	33.7	9.2	671.9			
Buffalo Bill Riv Flo	cfs	355	355	355	355	533	1646	1765	1930	1696	1383	548	155				
Station Gain	kaf	48.5	48.3	55.0	74.9	41.8	18.6	48.4	-55.1	-45.6	3.7	47.8	56.5	342.8			
Monthly Inflow	kaf	128.7	128.6	130.1	155.1	118.1	187.4	223.3	140.5	127.9	145.5	127.6	95.5	1708.3			
Monthly Inflow	cfs	2093	2091	2262	2522	1985	3048	3753	2285	2080	2445	2075	1605				
Turbine Release	kaf	188.2	188.2	157.1	156.4	115.7	130.3	138.0	146.9	146.1	133.6	118.7	143.1	1762.3			
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	188.2	188.2	157.1	156.4	115.7	130.3	138.0	146.9	146.1	133.6	118.7	143.1	1762.3			
Total Release	cfs	3061	3061	2731	2544	1944	2119	2319	2389	2376	2245	1930	2405				
Spring Flow	kaf	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	50.9			
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	18.8	0.0	0.0	110.1			
Afterbay Rels	kaf	192.5	192.5	161.1	160.7	119.9	134.6	142.2	151.2	150.4	137.8	123.0	147.3	1813.2			
Afterbay Rels	cfs	3131	3131	2801	2614	2015	2189	2390	2459	2446	2316	2000	2475				
River Release	kaf	192.5	192.5	161.1	160.7	119.0	123.0	119.0	123.0	123.0	119.0	123.0	147.3	1703.1			
River Release	cfs	3131	3131	2801	2614	2000	2000	2000	2000	2000	2000	2000	2475				
Min Release	kaf	192.5	192.5	161.1	123.0	119.0	123.0	119.0	123.0	123.0	119.0	123.0	119.0	1637.1			
End-Month Targets	kaf				822.0				1020.6			1020.6					
End-Month Content	kaf	909.9	850.3	823.3	822.0	824.4	881.5	966.8	960.4	942.2	954.1	963.0	915.4				
End-Month Elevation	ft	3629.84	3622.77	3619.19	3619.01	3619.34	3626.61	3635.46	3634.89	3633.17	3634.30	3635.12	3630.44				
Net Change Content	kaf	-59.5	-59.6	-27.0	-1.3	2.4	57.1	85.3	-6.4	-18.2	11.9	8.9	-47.6	-54.0			
Yellowtail Power	2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total			
Turbine Release	kaf	188.2	188.2	157.1	156.4	115.7	130.3	138.0	146.9	146.1	133.6	118.7	143.1	1762.3			
Generation	gwh	74.096	72.594	59.650	59.068	43.706	49.770	54.050	58.292	57.743	52.747	47.025	56.331	685.072			
End-Month Power Cap	mw	272.4	265.3	261.8	261.6	261.9	269.2	278.4	277.7	275.9	277.1	278.0	273.0				
% Max Gen		35	34	30	28	21	23	26	27	27	25	22	27				
Ave kwh/af		394	386	380	378	378	382	392	397	395	395	396	394	389			
Upstream Generation	gwh	3.893	5.718	4.382	10.686	11.203	25.281	25.315	27.687	25.007	20.533	9.843	4.258	173.806			
Total Generation	gwh	77.989	78.312	64.032	69.754	54.909	75.051	79.365	85.979	82.750	73.280	56.868	60.589	858.878			

BHXAOP V1.12 Run: 06-Dec-2011 10:39
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 969.4 kaf Elev 3635.70 ft					Maximum Cont 1278.9 kaf Elev 3657.00 ft					Minimum Cont 469.9 kaf Elev 3547.00 ft			Total
	2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov		
Boysen Release	kaf	58.4	58.4	54.7	91.2	137.4	228.7	266.8	275.7	120.0	84.0	58.5	56.6	1490.4	
Boysen Release	cfs	950	950	951	1483	2309	3719	4484	4484	1952	1412	951	951		
Buffalo Bill Riv Flo	kaf	21.8	21.8	20.4	21.8	74.9	180.4	292.7	273.7	151.3	102.7	49.9	21.1	1232.5	
Buffalo Bill Riv Flo	cfs	355	355	355	355	1259	2934	4919	4451	2461	1726	812	355		
Station Gain	kaf	60.3	60.1	68.4	93.1	14.0	-8.1	249.3	143.0	-23.6	40.5	84.4	76.2	857.6	
Monthly Inflow	kaf	140.5	140.3	143.5	206.1	226.3	401.0	808.8	692.4	247.7	227.2	192.8	153.9	3580.5	
Monthly Inflow	cfs	2285	2282	2495	3352	3803	6522	13592	11261	4028	3818	3136	2586		
Turbine Release	kaf	188.2	188.2	176.0	225.4	321.7	413.1	499.4	521.6	247.7	227.4	192.6	182.0	3383.3	
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	79.5	94.6	0.0	0.0	0.0	0.0	174.1	
Total Release	kaf	188.2	188.2	176.0	225.4	321.7	413.1	578.9	616.2	247.7	227.4	192.6	182.0	3557.4	
Total Release	cfs	3061	3061	3060	3666	5406	6718	9729	10022	4028	3822	3132	3059		
Spring Flow	kaf	4.3	4.3	4.0	4.3	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	50.9	
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.9	11.6	23.2	28.2	27.4	18.8	0.0	0.0	110.1	
Afterbay Rels	kaf	192.5	192.5	180.0	229.7	325.9	417.4	583.1	620.5	252.0	231.6	196.9	186.2	3608.3	
Afterbay Rels	cfs	3131	3131	3129	3736	5477	6788	9799	10091	4098	3892	3202	3129		
River Release	kaf	192.5	192.5	180.0	229.7	325.0	405.8	559.9	592.3	224.6	212.8	196.9	186.2	3498.2	
River Release	cfs	3131	3131	3129	3736	5462	6600	9409	9633	3653	3576	3202	3129		
Min Release	kaf	192.5	192.5	180.0	192.5	148.8	153.7	148.8	153.7	153.7	148.8	153.7	186.2	2004.9	
End-Month Targets	kaf				822.0				1020.6				1020.6		
End-Month Content	kaf	921.7	873.8	841.3	822.0	726.6	714.5	944.4	1020.6	1020.6	1020.4	1020.6	992.5		
End-Month Elevation	ft	3631.11	3625.69	3621.61	3619.01	3603.18	3600.88	3633.38	3640.00	3640.00	3639.99	3640.00	3637.70		
Net Change Content	kaf	-47.7	-47.9	-32.5	-19.3	-95.4	-12.1	229.9	76.2	0.0	-0.2	0.2	-28.1	23.1	
Yellowtail Power	2011	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Turbine Release	kaf	188.2	188.2	176.0	225.4	321.7	413.1	499.4	521.6	247.7	227.4	192.6	182.0	3383.3	
Generation	gwh	74.241	73.046	67.340	85.418	119.218	149.684	189.091	208.223	100.074	91.869	77.810	73.212	1309.226	
End-Month Power Cap	mw	273.7	268.2	264.2	261.6	247.0	244.8	276.1	283.4	283.4	283.3	283.4	280.8		
% Max Gen		35	34	34	40	57	70	91	97	47	44	36	35		
Ave kwh/af		394	388	383	379	371	362	379	399	404	404	404	402	387	
Upstream Generation	gwh	3.898	5.739	4.405	13.560	30.053	33.212	33.443	35.228	34.104	28.719	16.278	10.641	249.280	
Total Generation	gwh	78.139	78.785	71.745	98.978	149.271	182.896	222.534	243.451	134.178	120.588	94.088	83.853	1558.506	