RECLAMATION
Managing Water in the West

October 7, 2014

Dear Customer:

Attached is the Monthly Water Supply Outlook and projected operations for Yellowtail Dam and Powerplant. Streamflows into Bighorn Lake during September continued to remain above average at 135 percent of average. Based on the October 1 water supply forecast and the planned releases out of Boysen and Buffalo Bill Reservoirs, the October runoff into Bighorn Lake is expected to equal 187,600 acre-feet (117 percent of average). If you have any questions or concerns, please feel free to contact Tim Felchle at 406-247-7318 or me at 406-247-7334.

Clayton R. Jordan
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
October 1, 2014

Present Elevations & Storages:

	Elevation (feet)	Storage (acre-feet)	Percent of Average	Percent Full
Boysen	4721.03	666,779	101	90
Buffalo Bill	5375.79	510,193	105 *	79
Bighorn Lake	3640.08	1,021,582	117	100

Actual Inflows (1,000's of Acre-Feet):

Water Year 2013	Inflow		Percent of Average
September	157.0		96
April-July, 2013	***627.9***		***57***
Water Year 2013Total	***1,507.8***		***71***

Water Year 2014	Inflow		Percent of Average
October	185.4		114
November	130.3		105
December	96.2		92
January	97.3		92
February	102.2		106
March	209.5		144
April	316.2	***(3rd highest on record)***	216
May	534.3	***(2nd highest on record)***	203
June	522.7		128
July	351.7		140
August	199.9		135
September	220.0		135
April-July, 2014	***1,724.9***		***161***
Water Year 2014 Total	***2,965.9***		***139***

Actual Gains between Boysen and Buffalo Bill to Yellowtail (1,000's of Acre-Feet):

Water Year 2013	Gains		Percent of Average
September	32.7	(avg. 10.6)	285
April-July, 2013	***-22.9***	***(avg. 115.6)***	***---***
Water Year 2013Total	***272.7***		***69***

Water Year 2014	Gains		Percent of Average
October	116.0	***(2nd highest on record)***	170
November	71.3		127
December	44.5		122
January	46.7		116
February	47.5		118
March	144.5	***(2nd highest on record)***	203
April	93.6	***(highest on record)***	290
May	130.5		258
June	146.4		168
July	-111.9	(avg. -60.6)	-
August	-6.7	(avg. -54.5)	-
September	27.0		235
April-July, 2014	***258.6***		***237***
Water Year 2014 Total	***758.2***		***197***

October 1 Runoff Forecast (October Inflows - 1,000's of Acre-Feet):

Agency	Inflows	Percent of Average
USBR	**187.6**	**117**

Average based on past 30 years

*This does not reflect the 30 year average because in 1992 the capacity of the reservoir was increased to approximately 646,565 acre-feet as a result of raising the dam. The average used here reflects data from 1993 through 2013.

BHXAOP V1.16 Run: 07-Oct-2014 11:13
Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir Initial Cont 1021.6 kaf Maximum Cont 1278.9 kaf Minimum Cont 469.9 kaf
Elev 3640.08 ft Elev 3657.00 ft Elev 3547.00 ft

2014		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	51.3	53.6	55.3	55.4	50.0	55.3	73.5	132.6	132.3	128.7	109.9	77.3	975.2
Boysen Release	cfs	834	901	899	901	900	899	1235	2157	2223	2093	1787	1299	
Buffalo Bill Release	kaf	71.1	21.1	21.8	21.8	19.7	21.8	41.7	121.2	162.2	158.4	127.8	100.6	889.2
Buffalo Bill Release	cfs	1156	355	355	355	355	355	701	1971	2726	2576	2078	1691	
Station Gain	kaf	65.2	60.0	40.8	46.0	54.0	71.6	39.9	62.2	119.0	-61.3	-45.3	16.4	468.5
Monthly Inflow	kaf	187.6	134.7	117.9	123.2	123.7	148.7	155.1	316.0	413.5	225.8	192.4	194.3	2332.9
Monthly Inflow	cfs	3051	2264	1917	2004	2227	2418	2607	5139	6949	3672	3129	3265	
Turbine Release	kaf	198.6	166.2	171.8	171.8	155.2	171.9	166.3	295.4	238.4	211.6	207.6	196.5	2351.3
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	198.6	166.2	171.8	171.8	155.2	171.9	166.3	295.4	238.4	211.6	207.6	196.5	2351.3
Total Release	cfs	3230	2793	2794	2794	2795	2796	2795	4804	4006	3441	3376	3302	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	28.6	30.7	27.4	22.2	119.9
Afterbay Rels	kaf	202.9	170.4	176.1	176.1	159.1	176.2	170.5	299.7	242.6	215.9	211.9	200.7	2402.1
Afterbay Rels	cfs	3300	2864	2864	2864	2865	2866	2865	4874	4077	3511	3446	3373	
River Release	kaf	202.9	170.4	176.1	176.1	159.1	176.2	170.5	288.7	214.0	185.2	184.5	178.5	2282.2
River Release	cfs	3300	2864	2864	2864	2865	2866	2865	4695	3596	3012	3001	3000	
Min Release	kaf	202.9	148.8	153.7	153.7	138.8	153.7	170.5	153.7	178.5	153.7	184.5	178.5	1971.0
End-Month Content	kaf	1010.6	979.1	925.2	876.6	845.1	821.9	810.7	831.3	1006.4	1020.6	1005.4	1003.2	
End-Month Elevation	ft	3639.20	3636.55	3631.47	3626.03	3622.10	3618.99	3617.40	3620.28	3638.86	3640.00	3638.77	3638.59	
Net Change Content	kaf	-11.0	-31.5	-53.9	-48.6	-31.5	-23.2	-11.2	20.6	175.1	14.2	-15.2	-2.2	-18.4

Yellowtail Power 2014		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	198.6	166.2	171.8	171.8	155.2	171.9	166.3	295.4	238.4	211.6	207.6	196.5	2351.3
Generation	gwh	79.969	64.855	66.642	65.834	57.960	64.832	62.162	116.693	97.595	85.965	83.943	78.914	925.364
End-Month Power Cap	mw	286.8	284.2	279.4	274.3	270.5	267.6	266.1	268.8	286.4	287.5	286.4	286.2	
% Max Gen		37	31	31	31	30	30	30	54	47	40	39	38	
Ave kwh/af		403	390	388	383	373	377	374	395	409	406	404	402	394
Upstream Generation	gwh	23.046	7.143	7.090	7.045	4.521	10.459	16.727	33.815	33.789	34.911	32.580	27.662	238.788
Total Generation	gwh	103.015	71.998	73.732	72.879	62.481	75.291	78.889	150.508	131.384	120.876	116.523	106.576	1164.152

BHXAOP V1.16 Run: 07-Oct-2014 11:13
Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir Initial Cont 1021.6 kaf Maximum Cont 1278.9 kaf Minimum Cont 469.9 kaf
Elev 3640.08 ft Elev 3657.00 ft Elev 3547.00 ft

2014		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	51.3	53.6	55.4	55.4	50.0	55.3	41.7	63.0	71.4	70.7	63.0	44.6	675.4
Boysen Release	cfs	834	901	901	901	900	899	701	1025	1200	1150	1025	750	
Buffalo Bill Release	kaf	70.7	21.1	21.8	21.8	19.7	21.8	31.7	101.2	105.0	118.7	104.3	82.3	720.1
Buffalo Bill Release	cfs	1150	355	355	355	355	355	533	1646	1765	1930	1696	1383	
Station Gain	kaf	46.2	52.6	34.4	38.9	45.2	63.4	27.7	29.6	45.4	-70.0	-52.3	-0.8	260.3
Monthly Inflow	kaf	168.2	127.3	111.6	116.1	114.9	140.5	101.1	193.8	221.8	119.4	115.0	126.1	1655.8
Monthly Inflow	cfs	2736	2139	1815	1888	2069	2285	1699	3152	3727	1942	1870	2119	
Turbine Release	kaf	186.3	164.2	169.7	169.7	153.3	149.4	117.8	129.7	143.4	149.4	146.1	137.0	1816.0
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	186.3	164.2	169.7	169.7	153.3	149.4	117.8	129.7	143.4	149.4	146.1	137.0	1816.0
Total Release	cfs	3030	2759	2760	2760	2760	2430	1980	2109	2410	2430	2376	2302	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.0	0.0	3.0	11.0	28.6	30.7	27.4	22.2	122.9
Afterbay Rels	kaf	190.6	168.4	174.0	174.0	157.2	153.7	122.0	134.0	147.6	153.7	150.4	141.2	1866.8
Afterbay Rels	cfs	3100	2830	2830	2830	2831	2500	2050	2179	2481	2500	2446	2373	
River Release	kaf	190.6	168.4	174.0	174.0	157.2	153.7	119.0	123.0	119.0	123.0	123.0	119.0	1743.9
River Release	cfs	3100	2830	2830	2830	2831	2500	2000	2000	2000	2000	2000	2000	
Min Release	kaf	190.6	168.4	174.0	174.0	157.2	153.7	119.0	123.0	119.0	123.0	123.0	119.0	1743.9
End-Month Content	kaf	1003.5	966.6	908.5	854.9	816.5	807.6	790.9	855.0	933.4	903.4	872.3	861.4	
End-Month Elevation	ft	3638.62	3635.45	3629.69	3623.36	3618.23	3616.95	3614.42	3623.37	3632.30	3629.12	3625.51	3624.17	
Net Change Content	kaf	-18.1	-36.9	-58.1	-53.6	-38.4	-8.9	-16.7	64.1	78.4	-30.0	-31.1	-10.9	-160.2

Yellowtail Power	2014	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	186.3	164.2	169.7	169.7	153.3	149.4	117.8	129.7	143.4	149.4	146.1	137.0	1816.0
Generation	gwh	74.300	63.793	65.439	64.512	56.623	54.768	40.996	46.973	54.018	56.303	54.392	50.239	682.356
End-Month Power Cap	mw	286.2	283.2	277.7	271.7	266.8	265.6	263.2	271.7	280.2	277.2	273.8	272.5	
% Max Gen		35	31	31	30	29	26	20	22	26	26	25	24	
Ave kwh/af		399	389	386	380	369	367	348	362	377	377	372	367	376
Upstream Generation	gwh	22.231	7.121	7.060	6.991	4.464	10.353	10.938	24.929	25.442	27.171	24.408	19.445	190.553
Total Generation	gwh	96.531	70.914	72.499	71.503	61.087	65.121	51.934	71.902	79.460	83.474	78.800	69.684	872.909

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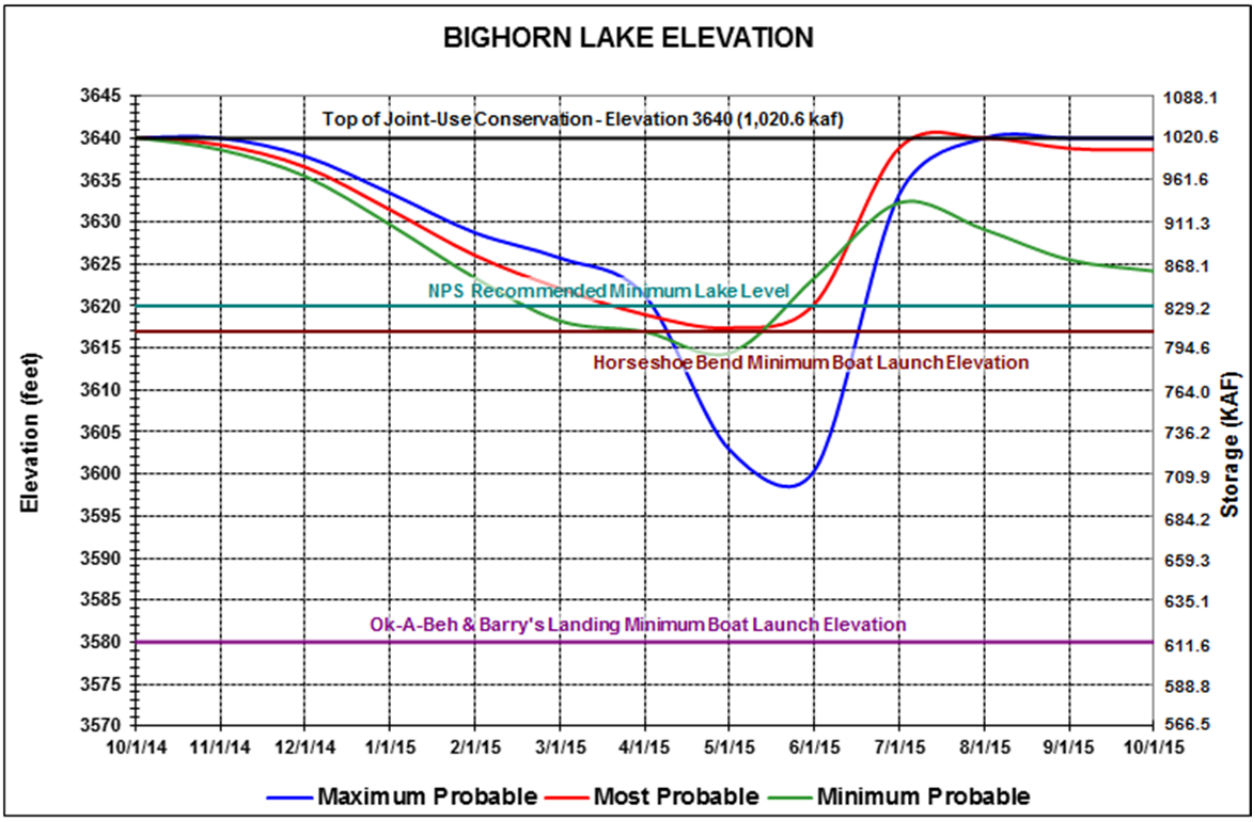
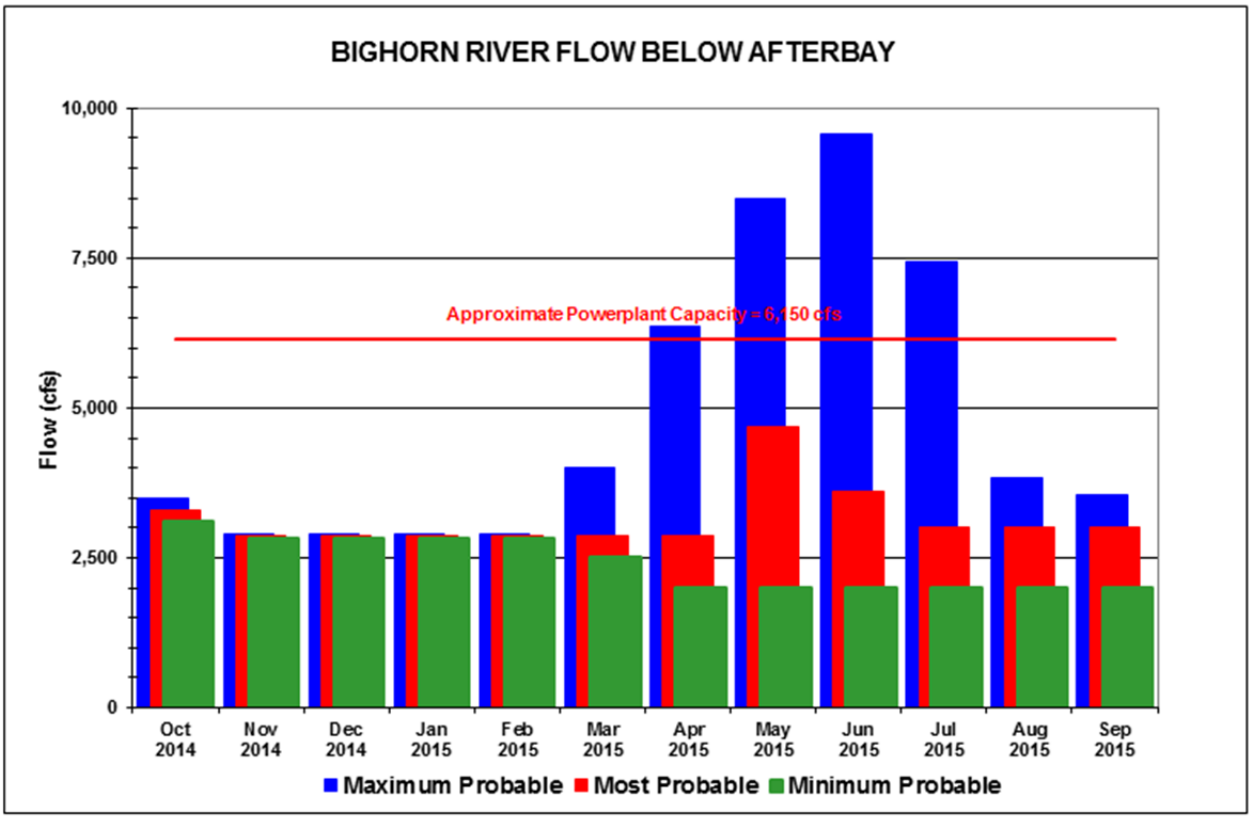
2014		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	51.3	53.6	55.4	55.4	50.0	103.8	136.5	200.8	267.6	276.5	133.5	86.0	1470.4
Boysen Release	cfs	834	901	901	901	900	1688	2294	3266	4497	4497	2171	1445	
Buffalo Bill Release	kaf	74.8	21.1	21.8	21.8	19.7	21.8	76.5	185.8	292.4	282.6	153.9	102.8	1275.0
Buffalo Bill Release	cfs	1217	355	355	355	355	355	1286	3022	4914	4596	2503	1728	
Station Gain	kaf	84.2	67.0	48.0	51.6	61.6	80.5	51.0	128.9	266.4	0.1	-28.7	36.7	847.3
Monthly Inflow	kaf	210.3	141.7	125.2	128.8	131.3	206.1	264.0	515.5	826.4	559.2	258.7	225.5	3592.7
Monthly Inflow	cfs	3420	2381	2036	2095	2364	3352	4437	8384	13888	9095	4207	3790	
Turbine Release	kaf	211.3	168.4	174.0	174.0	157.2	241.7	377.5	368.9	357.0	368.9	258.7	225.5	3083.1
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	159.2	237.4	114.0	0.0	0.0	510.6
Total Release	kaf	211.3	168.4	174.0	174.0	157.2	241.7	377.5	528.1	594.4	482.9	258.7	225.5	3593.7
Total Release	cfs	3436	2830	2830	2830	2831	3931	6344	8589	9989	7854	4207	3790	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.0	0.0	3.0	11.0	28.6	30.7	27.4	18.6	119.3
Afterbay Rels	kaf	215.6	172.6	178.3	178.3	161.1	246.0	381.7	532.4	598.6	487.2	263.0	229.7	3644.5
Afterbay Rels	cfs	3506	2901	2900	2900	2901	4001	6415	8659	10060	7924	4277	3860	
River Release	kaf	215.6	172.6	178.3	178.3	161.1	246.0	378.7	521.4	570.0	456.5	235.6	211.1	3525.2
River Release	cfs	3506	2901	2900	2900	2901	4001	6364	8480	9579	7424	3832	3548	
Min Release	kaf	196.8	172.6	178.3	178.3	161.1	246.0	148.8	153.7	148.8	153.7	178.3	190.4	2106.8
End-Month Content	kaf	1020.6	993.9	945.1	899.9	874.0	838.4	724.9	712.3	944.3	1020.6	1020.6	1020.6	
End-Month Elevation	ft	3640.00	3637.82	3633.45	3628.73	3625.72	3621.23	3602.86	3600.46	3633.37	3640.00	3640.00	3640.00	
Net Change Content	kaf	-1.0	-26.7	-48.8	-45.2	-25.9	-35.6	-113.5	-12.6	232.0	76.3	0.0	0.0	-1.0

Yellowtail Power	2014	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	211.3	168.4	174.0	174.0	157.2	241.7	377.5	368.9	357.0	368.9	258.7	225.5	3083.1
Generation	gwh	85.831	66.038	67.927	67.215	59.322	95.201	141.826	150.660	145.800	150.660	106.615	92.161	1229.256
End-Month Power Cap	mw	287.5	285.5	281.3	276.8	274.0	269.7	252.2	250.0	281.2	287.5	287.5	287.5	
% Max Gen		40	32	32	31	31	44	68	70	70	70	50	44	
Ave kwh/af		406	392	390	386	377	394	376	408	408	408	412	409	399
Upstream Generation	gwh	23.895	7.192	7.141	7.122	4.603	14.609	29.914	33.407	33.646	35.247	35.222	28.848	260.846
Total Generation	gwh	109.726	73.230	75.068	74.337	63.925	109.810	171.740	184.067	179.446	185.907	141.837	121.009	1490.102

BIGHORN LAKE