INTRODUCTION

Annual reports on actual operations and operating plans for reservoir regulation activities were initiated in 1953. The Montana Area Office (MTAO), Wyoming Area Office (WYAO), Dakotas Area Office (DKAO) and the Regional Office are all responsible for preparing reports on actual operations and operating plans for reservoirs within the Upper Missouri River Basin above Sioux City, Iowa. This report briefly summarizes weather and streamflow conditions in the Upper Missouri River Basin during water year 2009, which are principal factors governing the pattern of reservoir operations. This report also describes operations during water year 2009 for reservoirs constructed by the Bureau of Reclamation (Reclamation) for providing flood control and water supplies for power generation, irrigation, municipal and industrial uses, and to enhance recreation, fish, and wildlife benefits.

This report includes operating plans to show estimated ranges of operation for water year 2010, with a graphical presentation on a monthly basis. The operating plans for the reservoirs are presented only to show possible operations under a wide range of inflows, most of which cannot be reliably forecasted at the time operating plans are prepared; therefore, plans are at best only probabilities. The plans are updated monthly as the season progresses as more reliable estimates of inflow become available.

A report section devoted to Energy Generation is included at the end of this report. The energy generation and water used for power at Reclamation and Corps of Engineers (Corps) plants are discussed, and the energy generated in 2009 is compared graphically with that of previous years. Energy produced at the Reclamation and Corps mainstem plants is marketed by the Department of Energy. Table CET6, entitled "Total Reservoir Storage Contents at the End of Water Years 2008 and 2009," compares the water storage available at the beginning of water year 2010 to that available at the beginning of water year 2009. Table CET7 is a summary of the end of month storage contents for each reservoir during water year 2009. The MTAO also assists in the preparation of plans for operation of the Corps reservoir on the mainstem of the Missouri River by furnishing depletion estimates based upon the operating plans presented in this report.

All references to a year in this report will mean the water year extending from October 1 through September 30, unless specifically stated otherwise.

SUMMARY OF HYDROLOGIC CONDITIONS AND FLOOD CONTROL OPERATIONS DURING 2009

Antecedent Conditions:

The conditions that existed following the 2008 water year indicated that the drought conditions remained prominent in southeast Montana. Temperatures finished the year below average, while the average annual precipitation varied widely, providing mixed feelings for the upcoming year. Conditions for the Upper Missouri River Basin showed moderate improvement overall. The mountain and valley precipitation for most basins in Montana east of the Continental Divide and the Bighorn River Basin in Wyoming were near to above normal during early fall through March except for the Sun River, Marias River, Milk River and St. Mary River Basins in northwest Montana where valley precipitation was below average. During May the precipitation reached levels much above average in the mountains and valleys, before dropping off to low levels to finish out the end of the year in all the basins except the Milk River and St. Mary River Basins which received good precipitation in June as well. Near normal temperatures and precipitation throughout September in most of the basins brought a glimmer of light to the situation as most basins finished out the year with precipitation levels between 80 and 123 percent of normal. The exception was the Beaverhead River Basin where valley precipitation was only 67 percent of average for water year 2008.

According to the Natural Resources Conservation Service (NRCS), the snowpack on April 1, 2008, was near to above normal in all the river basins in Montana and Wyoming. It ranged from 96 percent of normal in the Wind River Basin above Boysen Reservoir in Wyoming to 109 percent of normal in the Milk River and St. Mary River Basins. Precipitation improved during April from that experienced in March in all of the basins in Montana, but was significantly less in Wyoming above the Bighorn River Basin.

Water year 2008 ended with varying storage levels. Clark Canyon Reservoir was only 52 percent of average while Sherburne Reservoir was 421 percent of average. The Reclamation reservoirs with the least amount of carryover storage were Clark Canyon and Gibson Reservoirs at 37 and 23 percent of full capacity.

October through December:

Precipitation for the 2009 water year began with precipitation totals varying considerably. Mountain precipitation during October ranged between 53 percent of average in the Marias River Basin to 117 percent of normal in the Beaverhead River Basin, while the valley precipitation varied from only 16 percent of average in the Marias River Basin to 158 percent of average in the Bighorn River Basin. The valley and mountain precipitation in November ranged from 37 and 50 percent of average respectively, in the St. Mary River Basin to 106 and 128 percent of average in the Gallatin River Basin. During December weather conditions improved as frequent storms brought moderate precipitation to many areas of the mountains and valley regions in Montana and Wyoming. The valley precipitation values in December ranged from 118 percent of average in the Gallatin River Basin to 266 percent in the Marias River Basin.

The mountain precipitation ranged from 144 percent above Lima Reservoir in the Beaverhead River Basin to 76 percent of average above Lake Sherburne in Glacier National Park. For some basins, the early precipitation patterns indicated drought conditions may continue. However, by December hydrologic and climatic conditions showed signs of improvement around the state with the exception of the St. Mary River Basin, Tables MTT1A and MTT1B.

January through March:

The mountain precipitation during January varied from 54 percent of average in the Beaverhead River Basin to 140 percent of average in the Bighorn River Basin. The valley precipitation varied from only 26 percent of average in the Gallatin River Basin to 128 percent of average in the Milk River Basin. On January 1, the NRCS reported mountain snowpack in Montana east of the Continental Divide ranging from 58 percent of normal in the St. Mary River Basin to 109 percent of normal in the Jefferson River Basin, Table MTT2. The mountain snowpack was 89 percent of normal in the Bighorn River Basin in Wyoming. Mountain snow water content statewide was 97 percent of average and 120 percent of last year.

Precipitation during February was light. The mountain precipitation varied from 47 percent of average in the Beaverhead River Basin to 86 percent of average above Lake Sherburne. The valley precipitation was slightly better and varied from only 27 percent of average in the Beaverhead River Basin to 126 percent of average in the Marias River Basin. By March 1, about 80 percent of the seasonal snowpack should be on the ground. On March 1, the NRCS reported snowpack conditions statewide was about 87 percent of average and about 81 percent of last year at this time.

Precipitation was much improved during March. During March, the mountain precipitation varied from 110 percent of average in the Bighorn River Basin to 143 percent of average in the Beaverhead River Basin above Clark Canyon Reservoir. The valley precipitation varied from only 28 percent of average in the Milk River Basin to 231 percent of average in the Jefferson River Basin. On April 1, the NRCS reported snowpack conditions statewide was about 100 percent of average and about 91 percent of last year at this time.

April through June:

On April 1, the mountain precipitation varied from 77 percent of average above Sherburne Reservoir to 146 percent of average in the Sun River Basin. The valley precipitation varied from 130 percent of average in the Bighorn River Basin to 227 percent of average in the Gallatin River Basin. The April and May temperatures were near to below average across much of Montana and Wyoming. Numerous spring storms also frequented much of the state. These cooler temperatures delayed the high elevation snowmelt and above normal precipitation resulted in a later snowmelt runoff season and also produced higher snowpack peaks later than normal. According to NRCS records, the May 1 mountain snow water contents statewide for Montana were 102 percent of average and 76 percent of last year.

TABLE MTT1A
PRECIPITATION IN INCHES AND PERCENT OF AVERAGE
2009 VALLEY PRECIPITATION

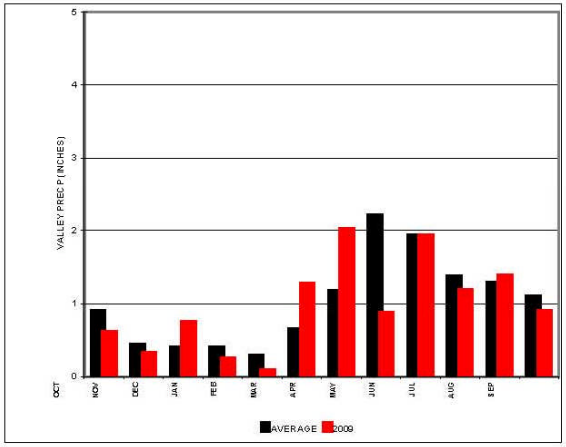
BASIN	OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP	
	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%
Beaverhead River																								
Monthly Precip Average	0.89		0.43		0.39		0.39		0.28		0.65		1.16		2.20		1.92		1.37		1.28		1.09	
Monthly Precip and % of Average	0.61	68	0.31	73	0.74	188	0.24	62	0.08	27	1.26	195	2.01	173	0.87	39	1.92	100	1.18	86	1.37	107	0.89	81
Year-to-Date Precip and % of Average	0.61	68	0.92	70	1.65	97	1.89	90	1.97	83	3.23	107	5.23	125	6.10	96	8.01	97	9.19	95	10.56	97	11.44	95
Jefferson River																								
Monthly Precip Average	0.80		0.58		0.47		0.48		0.35		0.71		1.13		2.14		2.12		1.47		1.36		1.13	
Monthly Precip and % of Average	0.54	68	0.61	106	0.91	194	0.28	58	0.17	48	1.64	231	1.56	138	0.78	36	2.55	120	1.59	108	1.55	114	0.82	73
Year-to-Date Precip and % of Average	0.54	68	1.15	84	2.06	112	2.34	101	2.50	94	4.14	122	5.69	126	6.47	97	9.02	103	10.61	104	12.16	105	12.98	102
Madison River																								
Monthly Precip Average	1.49		1.77		2.04		1.87		1.55		1.88		1.70		2.78		2.71		1.81		1.61		1.67	
Monthly Precip and % of Average	0.77	51	2.20	124	2.76	135	1.87	100	1.44	93	2.48	132	2.54	149	1.17	42	3.10	114	1.69	94	1.63	101	0.57	34
Year-to-Date Precip and % of Average	0.77	51	2.97	91	5.73	108	7.60	106	9.04	104	11.52	109	14.05	114	15.23	101	18.32	103	20.02	102	21.64	102	22.21	97
Gallatin River																								
Monthly Precip Average	1.61		1.10		0.79		0.84		0.70		1.40		2.06		3.22		2.85		1.44		1.48		1.79	
Monthly Precip and % of Average	0.33	20	1.41	128	0.93	118	0.22	26	0.57	81	2.41	172	4.67	227	2.32	72	2.96	104	2.05	142	1.74	118	0.79	44
Year-to-Date Precip and % of Average	0.33	20	1.74	64	2.67	76	2.89	67	3.46	69	5.87	91	10.54	124	12.86	110	15.82	109	17.87	112	19.61	112	20.40	106
Missouri Above Toston River																								
Monthly Precip Average	1.06		1.01		1.02		0.97		0.78		1.16		1.38		2.44		2.37		1.57		1.46		1.37	
Monthly Precip and % of Average	0.57	53	1.26	124	1.48	146	0.79	82	0.63	82	1.96	169	2.11	153	1.08	44	2.86	121	1.68	107	1.54	106	0.74	54
Year-to-Date Precip and % of Average	0.57	53	1.83	88	3.30	107	4.10	101	4.73	98	6.69	112	8.79	119	9.87	101	12.73	105	14.41	105	15.95	105	16.69	101
Sun-Teton River																								
Monthly Precip Average	1.17		1.29		1.22		1.33		1.09		1.12		1.41		2.63		2.55		1.54		1.67		1.43	
Monthly Precip and % of Average	0.47	40	0.92	72	1.89	155	1.12	79	0.71	65	1.49	133	2.32	164	0.94	36	1.40	55	2.19	143	1.77	106	0.56	39
Year-to-Date Precip and % of Average	0.47	40	1.40	57	3.29	89	4.41	88	5.12	84	6.61	92	8.93	104	9.87	88	11.27	82	13.46	88	15.23	90	15.79	86
Marias River																								
Monthly Precip Average	0.57		0.43		0.38		0.39		0.28		0.59		0.93		2.11		2.43		1.41		1.56		1.13	
Monthly Precip and % of Average	0.09	16	0.46	109	1.00	266	0.42	109	0.36	126	0.61	105	1.49	159	0.83	39	1.87	77	1.58	112	0.93	60	0.43	38
Year-to-Date Precip and % of Average	0.09	16	0.55	55	1.56	113	1.98	112	2.34	114	2.95	112	4.44	124	5.26	93	7.13	88	8.71	91	9.64	87	10.07	82
Milk River																								
Monthly Precip Average	0.60		0.43		0.42		0.41		0.30		0.52		0.86		2.01		2.23		1.58		1.18		1.20	
Monthly Precip and % of Average	0.41	67	0.89	208	0.75	177	0.53	128	0.13	43	0.15	28	1.34	156	0.85	42	1.75	79	1.45	92	1.15	97	0.43	36
Year-to-Date Precip and % of Average	0.41	67	1.30	126	2.05	141	2.57	138	2.70	125	2.85	106	4.19	118	5.04	91	6.79	87	8.24	88	9.39	89	9.82	84
St. Mary River																								
Monthly Precip Average	1.47		1.98		1.94		1.86		1.36		1.49		1.52		2.82		2.97		1.86		2.00		1.75	
Monthly Precip and % of Average	0.42	29	0.74	37	2.51	129	2.06	111	1.60	118	1.83	122	3.33	219	0.81	29	1.98	67	5.34	287	1.35	67	0.54	31
Year-to-Date Precip and % of Average	0.42	29	1.16	33	3.66	68	5.72	79	7.32	85	9.14	91	12.47	107	13.27	92	15.25	88	20.59	107	21.93	103	22.47	98
Bighorn Above Yellowtail River																								
Monthly Precip Average	0.82		0.47		0.33		0.34		0.29		0.61		1.17		1.95		1.35		0.97		0.73		1.05	
Monthly Precip and % of Average	1.29	158	0.40	85	0.49	149	0.39	114	0.08	27	0.82	134	1.52	130	0.73	38	2.84	210	1.25	128	0.82	112	0.34	33
Year-to-Date Precip and % of Average	1.29	158	1.69	131	2.18	135	2.57	131	2.65	118	3.47	121	5.00	124	5.73	96	8.57	117	9.82	118	10.64	118	10.98	109

A composite of the following National Weather Service stations was used to determine monthly valley precipitation and percent of average for the drainage basins:

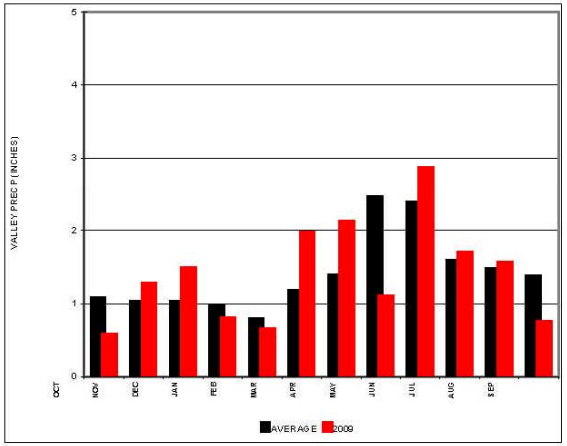
Beaverhead River.....Lima and Dillon
Jefferson River.....Lima, Dillon, Virginia City, and Boulder
Madison River.....Hebgen, West Yellowstone, and Norris Madison
Gallatin River.....Bozeman
Missouri Above Toston River.....Townsend, Lima, Dillon, Virginia City, Boulder, Hebgen, West Yellowstone, Norris Madison, and Bozeman
Sun-Teton River.....Summit, Choteau, Fairfield, Augusta, and Gibson
Marias River.....Cut Bank, Conrad, Valier, Gold Butte, and Chester
Milk River.....Havre, Chinook, Harlem, Malta, and Rudyard
St. Mary River.....Babb and East Glacier
Bighorn Above Yellowtail River....Buffalo Bill, Sunshine, Boysen Dam, Dubois, Gas Hills, Lander, Riverton, Basin, Lovell, Thermopolis, and Worland

TABLE MTT1A-1
AVERAGE VALLEY PRECIPITATION AND 2009 VALLEY PRECIPITATION IN INCHES

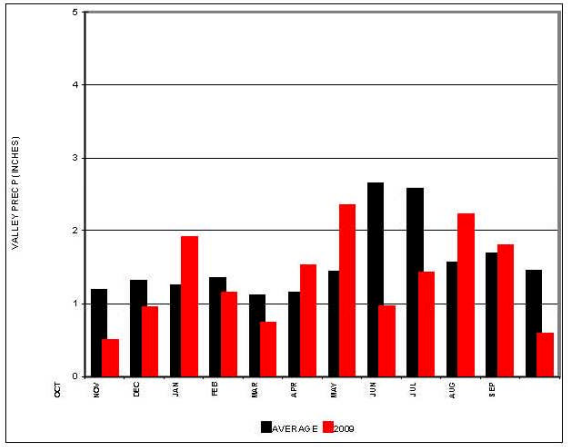
CLARK CANYON RESERVOIR



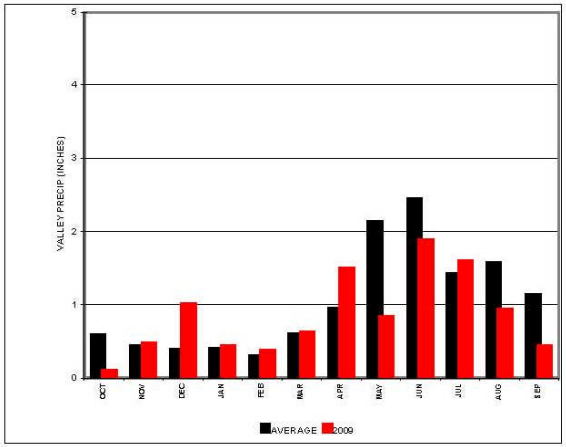
CANYON FERRY RESESRVOIR



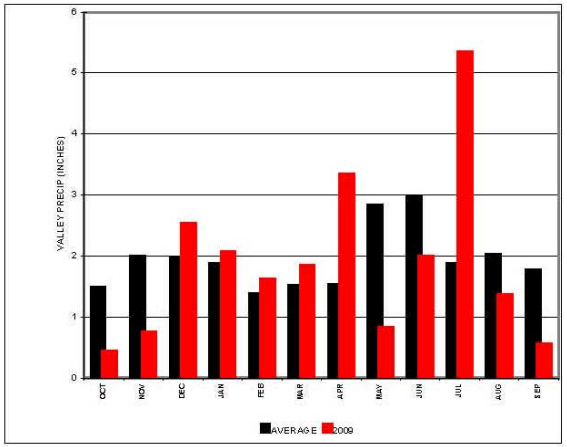
GIBSON RESERVOIR



LAKE ELWELL



LAKE SHERBURNE



BIGHORN LAKE

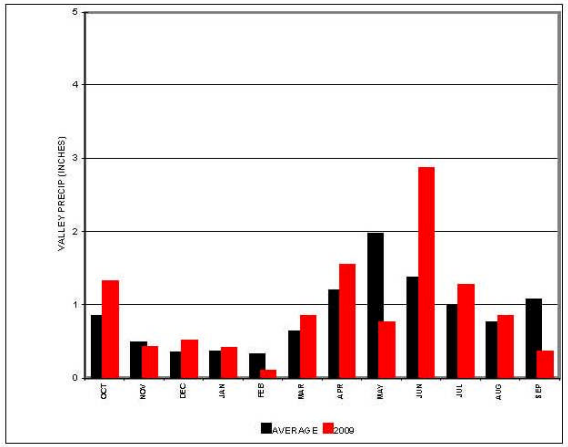


TABLE MTT1B
PRECIPITATION IN INCHES AND PERCENT OF AVERAGE
2009 MOUNTAIN PRECIPITATION

BASIN	OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP	
	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%
Lima Reservoir																								
Monthly Precip Average	8.70		12.60		14.20		14.20		13.10		15.70		13.00		16.00		14.20		8.70		8.40		9.40	
Monthly Precip and % of Average	8.60	99	16.10	128	20.40	144	7.60	54	7.70	59	19.00	121	15.00	115	7.60	48	19.60	138	7.20	83	6.70	80	0.80	9
Year-to-Date Precip and % of Averag	8.60	99	24.70	116	45.10	127	52.70	106	60.40	96	60.40	101	94.40	103	102.00	95	121.60	100	128.80	99	135.50	98	136.30	92
Clark Canyon Reservoir																								
Monthly Precip Average	13.50		20.20		21.40		20.30		17.10		22.00		21.30		27.00		21.20		12.40		11.70		12.90	
Monthly Precip and % of Average	15.80	117	21.90	108	22.50	105	18.70	92	8.10	47	31.40	143	25.70	121	14.40	53	30.70	145	11.20	90	13.00	111	3.00	23
Year-to-Date Precip and % of Averag	15.80	117	37.70	112	60.20	109	78.90	105	87.00	94	118.40	103	144.10	106	158.50	97	189.20	103	200.40	102	213.40	103	216.40	98
Jefferson River Drainage																								
Monthly Precip Average	31.40		45.80		48.90																			
Monthly Precip and % of Average	35.70	114	51.10	112	52.80	108	47.40	100	18.70	48	70.90	149	52.00	107	36.10	62	60.30	131	33.30	119	30.40	114	5.30	18
Year-to-Date Precip and % of Averag	35.70	114	86.80	112	139.60	111	187.00	108	205.70	97	276.60	106	328.60	106	364.70	99	425.00	103	458.30	104	488.70	104	494.00	99
Madison River Drainage																								
Monthly Precip Average	21.30		33.10		35.30		35.90		30.90		36.40		30.20		32.90		26.00		15.90		14.90		17.90	
Monthly Precip and % of Average	20.10	94	31.80	96	39.70	112	39.70	72	21.10	68	48.10	132	39.00	126	22.80	69	29.40	113	18.70	118	14.70	99	1.10	6
Year-to-Date Precip and % of Averag	20.10	94	51.90	95	91.60	102	91.60	94	138.60	89	186.70	97	224.70	101	247.50	97	276.90	98	295.60	99	310.30	99	311.40	94
Gallatin River Drainage																								
Monthly Precip Average	9.40		11.20		11.30		11.40		9.90		14.90		14.40		15.90		13.10		7.20		6.70		8.20	
Monthly Precip and % of Average	8.20	87	11.90	106	14.30	127	9.50	83	7.70	78	18.20	122	17.70	123	12.30	77	11.70	89	11.50	160	6.30	94	0.30	4
Year-to-Date Precip and % of Averag	8.20	87	20.10	98	34.40	108	43.90	101	69.80	97	69.80	102	87.50	106	99.80	101	111.50	100	123.00	104	129.30	103	129.60	97
Canyon Ferry Reservoir																								
Monthly Precip Average	51.80		75.90		80.70		80.40		67.80		82.40		77.60		89.30		70.60		42.20		40.20		45.80	
Monthly Precip and % of Average	52.20	101	79.90	105	90.00	112	71.20	89	39.20	58	113.50	138	88.60	114	61.80	69	85.10	121	50.00	118	43.60	108	6.10	13
Year-to-Date Precip and % of Averag	52.20	101	132.10	107	222.10	107	293.30	102	332.50	93	446.00	102	534.60	103	596.40	98	681.50	101	731.50	102	775.10	102	781.20	97
Gibson Reservoir																								
Monthly Precip Average	9.70		13.60		13.90		13.40		11.00		11.40		11.00		14.80		15.00		7.70		9.10		8.70	
Monthly Precip and % of Average	6.10	63	9.20	68	15.10	109	14.90	111	6.00	55	16.40	144	16.10	146	5.70	39	6.70	45	12.20	158	9.10	100	1.80	21
Year-to-Date Precip and % of Averag	6.10	63	15.30	82	30.40	82	45.30	90	51.30	83	67.70	93	83.80	100	89.50	91	96.20	85	108.40	89	117.50	90	119.30	86
Lake Elwell Reservoir																								
Monthly Precip Average	14.70		22.30		23.70		25.20		19.50		19.80		17.30		20.70		19.80		10.50		12.80		12.80	
Monthly Precip and % of Average	7.80	53	12.90	58	23.60	100	25.10	100	12.50	64	25.70	130	19.20	111	8.60	42	10.20	52	15.70	150	9.20	72	2.70	21
Year-to-Date Precip and % of Averag	7.80	53	20.70	73	44.30	73	69.40	81	81.90	78	107.60	86	126.80	89	135.40	83	145.60	80	161.30	83	170.50	83	173.20	79
Sherburne Reservoir																								
Monthly Precip Average	9.80		16.50		16.20		15.70		12.10		11.20		9.60		10.00		10.30		6.00		5.10		6.80	
Monthly Precip and % of Average	5.20	53	8.30	50	12.30	76	12.30	75	10.40	86	12.40	111	7.40	77	8.30	83	5.80	56	8.40	140	3.80	75	1.80	26
Year-to-Date Precip and % of Averag	5.20	53	13.50	51	25.80	61	37.60	65	48.00	68	60.40	74	67.80	74	76.10	75	81.90	74	90.30	77	94.10	77	95.90	74
Bighorn Lake																								
Monthly Precip Average	42.30		48.80		43.20		42.20		34.80		50.10		63.00		69.70		55.60		37.70		26.10		42.20	
Monthly Precip and % of Average	41.20	97	44.00	90	52.00	120	58.90	140	22.10	64	55.30	110	58.90	93	39.80	57	85.80	154	39.80	106	31.80	122	15.80	37
Year-to-Date Precip and % of Averag	41.20	97	85.20	94	137.20	102	196.10	111	218.20	103	273.50	105	332.40	102	372.20	94	458.00	102	497.80	102	529.60	103	545.40	98

A composite of the following Natural Resources Conservation Service SNOTEL sites was used to determine monthly mountain precipitation and percent of average for the drainage basins:

Lima Reservoir.....Crab Creek, Island Park, Tepee Creek, Divide, and Lakeview Ridge

Clark Canyon Reservoir.....Beagle Springs, Darkhorse Lake, Lemhi Ridge, Tepee Creek, Divide, Bloody Dick, and Lakeview Ridge

Jefferson River Drainage....Beagle Springs, Clover Meadow, Darkhorse Lake, Mule Creek, Lemhi Ridge, Rocker Peak, Tepee Creek, Clavert Creek, Saddle Mountain, Lower Twin, Divide, Bloody Dick, Lakeview Ridge, Short Creek, Frohner Meadow, and Moose Creek

Madison River Drainage.....Carrot Basin, Clover Meadow, Tepee Creek, Black Bear, Lower Twin, Beaver Creek, Madison Plateau, and Whiskey Creek

Gallatin River Drainage.....Carrot Basin, Shower Falls, and Lick Creek

Canyon Ferry Reservoir.....Beagle Springs, Darkhorse Lake, Carrot Basin, Clover Meadow, Shower Falls, Mule Creek, Rocker Peak, Black Bear, Saddle Mountain, Lower Twin, Beaver Creek, Madison Plateau, Short Creek, Lick Creek, Whiskey Creek, Frohner Meadow, Calvert Creek, Moose Creek, Lemhi Ridge, Tepee Creek, Divide, Bloody Dick, and Lakeview Ridge

Gibson Reservoir.....Mount Lockhart, Wood Creek, Dupuyer Creek, and Waldron

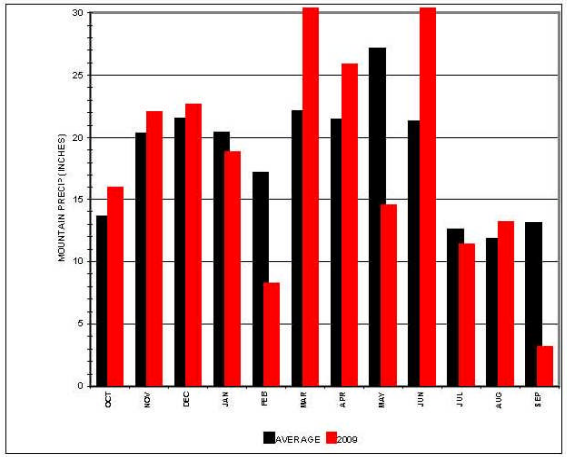
Lake Elwell Reservoir.....Mount Lockhart, Badger Pass, Pike Creek, Dupuyer Creek, and Waldron

Sherburne Reservoir.....Flattop Mountain and Many Glacier

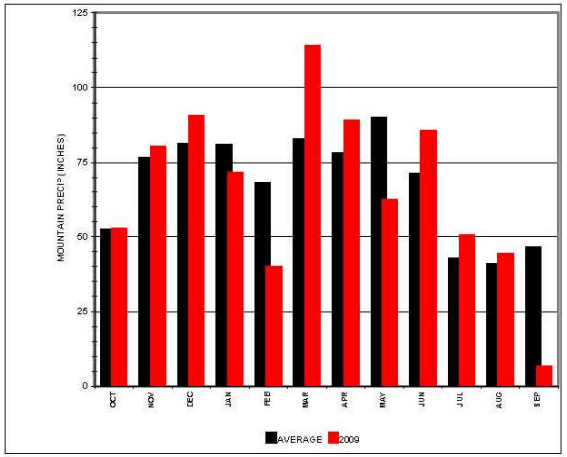
Bighorn Lake.....Kirwin, Blackwater, Evening Star, Shell Creek, Powder River, Bald Mountain, Bone Springs Divide, Owl Creek, Sucker Creek, Dome Lake, Hansen Sawmill, Timber Creek, Bear Trap Meadow, Burgess Junction, Middle Powder, Marquette, Sylvan Lake, Younts Peak, and Sylvan Road

TABLE MTT1B-1
AVERAGE MOUNTAIN PRECIPITATION AND 2009 MOUNTAIN PRECIPITATION IN INCHES

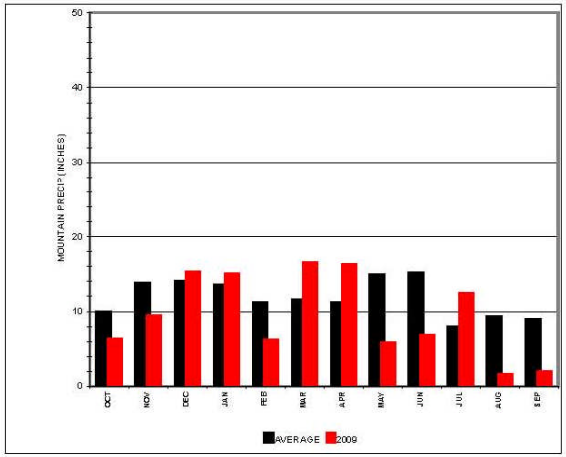
CLARK CANYON RESERVOIR



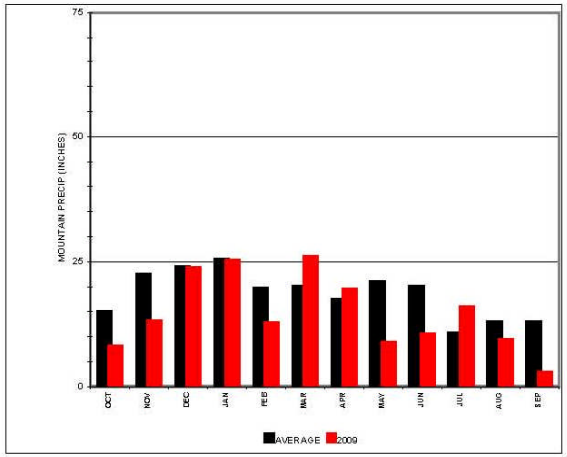
CANYON FERRY RESESRVOIR



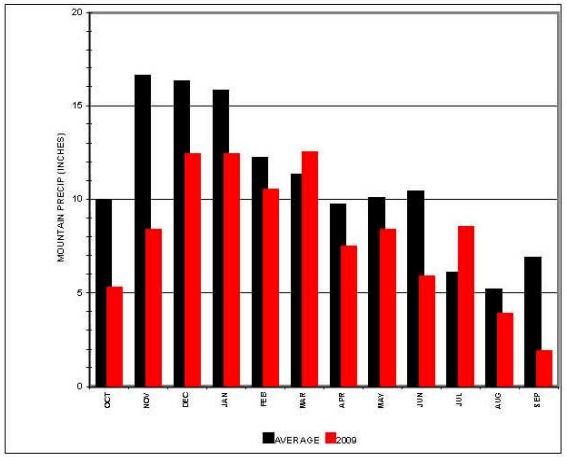
GIBSON RESERVOIR



LAKE ELWELL



LAKE SHERBURNE



BIGHORN LAKE

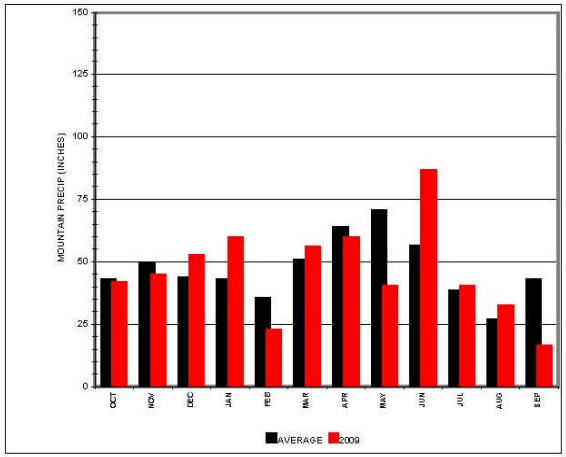


TABLE MTT2
2009 MOUNTAIN SNOW WATER CONTENT
AS A PERCENT OF NORMAL

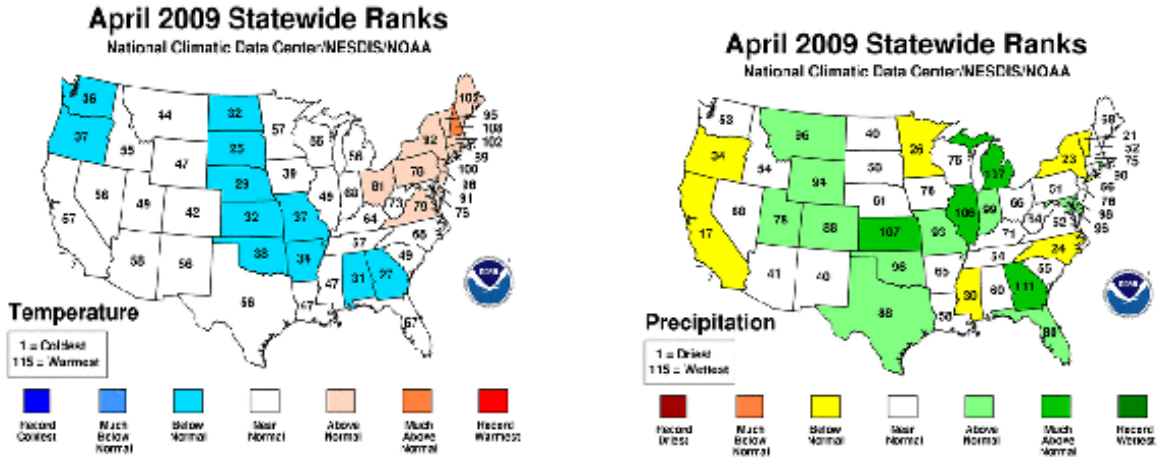
DRAINAGE BASIN	JAN 1	FEB 1	MAR 1	APR 1	MAY 1
Beaverhead	107	103	92	105	122
Jefferson	109	101	91	103	119
Madison	94	88	85	96	113
Gallatin	96	94	91	102	116
Missouri Headwaters above Toston	101	95	89	101	118
Sun	69	87	82	92	107
Marias	55	75	67	91	100
Milk River	105	148	104	118	49
St. Mary	58	65	69	73	80
Wind	95	86	81	86	107
Shoshone	84	97	89	98	97
Bighorn (Boysen-Bighorn)	97	100	94	96	102

TABLE MTT3
2009 WATER SUPPLY FORECASTS

RESERVOIR	JAN 1[1/]		FEB 1[1/]		MAR 1[1/]		APR 1[2/]		MAY 1[3/]		JUN 1[4/]		ACTUAL APRIL-JULY[5/]		% OF APRIL FORE-CAST REC'D
	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	1,000 AC-FT	% OF AVG	
Clark Canyon	75.2	67	66.4	59	52.9	47	78.0	69	76.3	84	42.0	66	104.1	92	133
Canyon Ferry	1,860.0	92	1,894.0	93	1,560.0	77	1,980.0	98	1,808.0	108	1,072.0	97	2,087.6	103	105
Gibson	349.0	73	387.0	81	368.0	77	405.0	85	413.1	94	199.0	75	389.6	82	96
Tiber	273.0	56	332.0	68	299.0	62	318.0	66	298.0	71	130.0	51	306.2	63	96
Sherburne	84.6	81	84.1	81	85.3	82	85.3	82	84.2	89	53.0	84	76.4	73	90
Fresno	54.0	65	61.0	73	63.0	76	50.0	83	36.0	86	16.0	82	71.5	72	143
Yellowtail	948.8	85	1,061.2	95	850.3	76	1,003.1	90	1,143.2	120	645.1	92	1,656.5	149	165

1/ Runoff Forecast for April-July; Fresno Reservoir is March-July.
2/ Runoff Forecast for April-July.
3/ Runoff Forecast for May-July.
4/ Runoff Forecast for June-July.
5/ Actual Runoff for April-July; Fresno Reservoir is March-July.

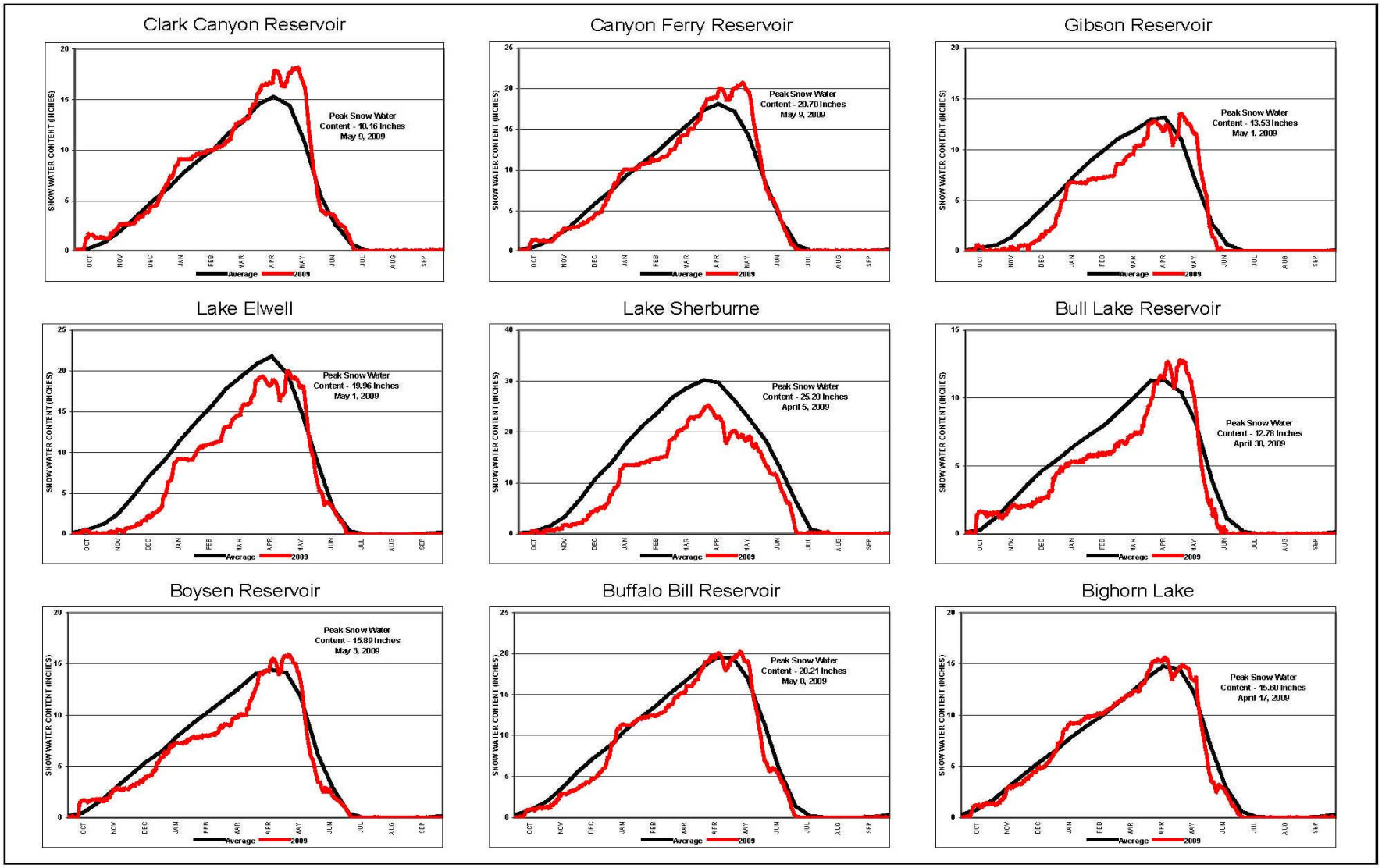
The precipitation across Montana during May declined significantly from the previous month. The mountain precipitation varied from only 39 percent of average in the Sun River Basin to 77 percent of average in the Gallatin River Basin. The valley precipitation ranged from 29 percent in the St. Mary River Basin to 72 percent of average in the Gallatin River Basin. In general, all basins above Reclamation projects in Montana received precipitation rates much below average during May. However; due to temperatures staying cool, the high elevation snowmelt was substantially delayed and had just started to melt. According to NRCS records, the June 1 mountain snow water contents statewide for Montana were 92 percent of average and 62 percent of last year.



The above figures come from NOAA and show how April ranked in terms of 115 years of record from Coldest, and Driest to Warmest and Wettest. In 2009 Temperature ranked at 44 and precipitation was at 96. The colors may help bring things to life better as the actual numbers are hard to read at this size.

Normally the higher elevation snowpack reaches peak accumulations around the middle of April and begins to melt out. However, because of the cooler temperatures experienced in April and May and the frequent spring storms in May, much of the higher elevation snowmelt did not begin to occur until late May or early June. The peak snowpack for many Reclamation reservoirs occurred between April 4 and May 14. The peak generally occurs around April 15 for mountain locations, Figure MTG1.

Figure MTG1
WATER YEAR 2009
SNOW WATER CONTENT



July through September:

During July through September, precipitation was widely scattered across much of Montana and northern Wyoming. August temperatures were significantly less than average while the August precipitation was generally near to above average. Weather conditions changed considerably during September as the warmer temperatures moved in and the precipitation declined. The mountain precipitation varied from only 4 percent of average in the Gallatin River Basin to 37 percent of average in the Bighorn River Basin. The valley precipitation varied from 31 percent of average in the St. Mary River Basin to 73 percent of average in the Jefferson River Basin. During July, temperatures were below average, allowing for reduced irrigation demands and better carryover storage for next season.

Overall, precipitation across Montana during September was at or near a record low. Generally speaking, most of Montana, with the exception of the Beaverhead River Basin, experienced very dry conditions.

Reservoir Storage, Releases and Inflows:

At the beginning of water year 2009, storages in all Reclamation reservoirs were near average, with the exception of Clark Canyon Reservoir located on the Beaverhead River which was at 52 percent of average.

October 1 reservoir storage in the Upper Missouri Basin totaled 2,742,100 acre-feet and was 102 percent of average. Storage for the Milk River Project totaled 156,300 acre-feet and was 149 percent of normal. Storage in Bighorn Lake totaled 1,067,800 acre-feet and was 105 percent of normal. Due to the ongoing drought, and the predictions for the upcoming spring inflows, storage in many reservoirs were allowed to increase through the fall and winter, in hopes of being able to fill to full pool levels by May or June of 2009. By the end of March, storage levels ranged from 83 percent of normal at Gibson Reservoir to 208 percent of normal at Lake Sherburne.

Due to the good spring precipitation received during May, the inflows improved in many basins located in north-central and southwest Montana to above average levels. Therefore, storage conditions improved dramatically in May. With below average temperatures in April and May the snowmelt runoff was delayed until late May and early June. In the Bighorn River Basin in Wyoming dry conditions quickly changed as warm temperatures were able to begin melting the high elevation snowpack. With the high runoff volumes produced by these rains, releases from all reservoirs on the Bighorn system were increased. The peak flow out of Bighorn Lake was just over 12,500 cfs on July 17. The reservoir level was allowed to increase until reaching a peak elevation of 3647.92 on July 6.

All Reclamation reservoirs in Montana filled to near full capacity; Lake Sherburne and Lake Elwell were the only two reservoirs that did not fill to the top of their conservation pools. Three Reclamation reservoirs located in Montana had to utilize part of their exclusive flood pools to reduce the potential for downstream flooding. These were Clark Canyon Reservoir on the Beaverhead River near Dillon, Canyon Ferry Reservoir located on the Missouri River near Helena and Bighorn Lake located on the Bighorn River near Fort Smith.

During June and July, storage was above average at many of Reclamation's Projects, except Pishkun Reservoir, and Lake Sherburne. By the end of August, the reservoirs on the Sun River Project were the only reservoirs with storage below normal levels; all other reservoirs varied between 103 and 145 percent of average. The inflows to Bighorn Lake during June through August were above average due to the combination of higher releases from Boysen and Buffalo Bill Reservoirs and the much delayed high elevation snowmelt. Maintaining conservative releases between 2,900-3,300 cfs during August and September, storage in Bighorn Lake ended water year 2009 at 104 percent of average.

Water year 2009 ended with varying storage levels. Gibson Reservoir was at 20 percent of average while Lake Sherburne was 163 percent of average, and the big surprise for the year was that Clark Canyon Reservoir which had been at extremely low levels for the past eight years finished the year at 112 percent of average storage levels. The Reclamation reservoir with the least amount of carryover storage was Gibson Reservoir at 6 percent of full capacity.

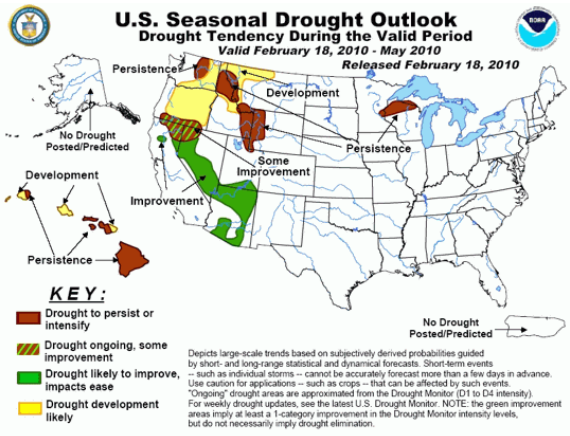
Spillway releases had to be used at Fresno Reservoir, Canyon Ferry Reservoir, and Bighorn Lake to control the large flows from the spring runoff. This was a result of the delayed snowmelt and storm events bringing favorable amounts of precipitation.

The runoff pattern allowed most Reclamation facilities to maintain flows at or above the desired fishery flows through the remainder of the water year. In early October, releases from Gibson Dam were set at approximately 70 cfs, for the winter below the desired fishery flow. Entering water year 2010, releases from all Reclamation facilities in Montana except Gibson Reservoir were near the recommended fishery flow.

There was approximately $8,405,200 in flood damages prevented during water year 2009 by Reclamation facilities in Montana east of the Continental Divide. The total flood damage prevented by these facilities since 1950 is approximately $430,112,600.

Water Supply and Runoff:

The water supply forecasts prepared on January 1, indicated April-July runoff volumes ranged from 65 to 92 percent of average among Reclamation reservoirs east of the Continental Divide, MTT3. Based upon these forecasts, it appeared the drought may be continuing for most of Montana and Northwest Wyoming. All basins showed little improvements in the snowpack levels during January and February, and by March 1, the forecasts ranged from 47 to 82 percent of average. The April 1 snowpack ranged from 73 percent of average in the St. Mary River Basin to 118 percent of average in the Milk River Basin, Table MTT2. The resulting April-July forecasted runoff volumes ranged from 66 percent of average into Tiber Reservoir to 98 percent of average into Canyon Ferry Reservoir. In the end, due to spring precipitation, and improved April snowfall, the actual April-July runoff volumes for water year 2009 ranged from 63 percent of average into Tiber Reservoir to 149 percent of average into Bighorn Lake, Table MTT3. All water users experienced full water supplies.



During water year 2009 the peak release at Clark Canyon was approximately 686 cfs less than peak inflow. Peak release was 800 cfs on July 25, while the inflow peaked at 1,486 cfs on June 22, which was above average. Canyon Ferry's peak inflow was 18,979 cfs on June 1, while the peak release was 11,025 cfs on June 1. In the Sun River Basin, Gibson Reservoir inflow peaked at 5,684 cfs on May 31, while the release peaked at 5,564 cfs on May 31. The peak inflow for Pishkun and Willow Creek Reservoirs were 1,608 cfs on July 14 and 74 cfs on May 10, respectively. Inflow to Lake Elwell peaked at 3,587 cfs on May 30 and releases peaked at 693 cfs on October 8. In the Milk River Basin, Lake Sherburne peak inflow was 990 on May 31 and releases peaked at 573 cfs on August 8. The peak inflow for Fresno Reservoir was 1,110 cfs on April 28 while the release peaked at 1,137 cfs on July 22. Peak inflow at Nelson Reservoir was 432 cfs on July 8 while the release peaked at 490 on July 25. In the Bighorn River Basin, Bighorn Lake peak inflow was 16,760 cfs on June 22 and the peak release was 12,588 cfs on July 17. Inflows to Reclamation facilities in Montana east of the Continental Divide ranged from 63 percent of average at Lake Elwell to 104 percent of average at Bighorn Lake for 2009.

FLOOD BENEFITS

The Corps evaluated the reservoir regulation data pertaining to Reclamation reservoirs within the jurisdiction of the MTAO and indicated that four reservoirs provided flood relief during water year 2009. They were: Clark Canyon Reservoir on the Beaverhead River near Dillon; Canyon Ferry Reservoir on the Missouri River near Helena; Lake Elwell on the Marias River near Chester; and Bighorn Lake on the Bighorn River near Fort Smith. Canyon Ferry Reservoir played the most important role in preventing flood damages during the 2009 runoff season. The most notable examples of peak flows regulated by Reclamation reservoirs during the spring runoff are as follows:

Reservoir	Peak Inflow (cfs)	River Discharge (cfs)	Date
Clark Canyon	1,486	227	06/22/09
Canyon Ferry	18,979	11,025	06/01/09
Lake Elwell	3,587	514	05/30/09
Bighorn Lake	16,760	12,195	06/22/09

The Corps estimated these four Reclamation reservoirs in Montana reduced flood damages by $8,405,200 in 2009. Some of these benefits were derived by reducing local damages and other benefits were derived by storing water which would have contributed to flooding downstream on the main stem of the Missouri River below Fort Peck Reservoir. The flood damages prevented is as listed in Table MTT4. For additional information on the operations of the reservoirs within the jurisdiction of the MTAO, refer to the individual "Summary of Operations for 2009" for each reservoir in this report. Figure MTG2 shows the annual flood damages prevented by MTAO reservoirs since 1950.

TABLE MTT4

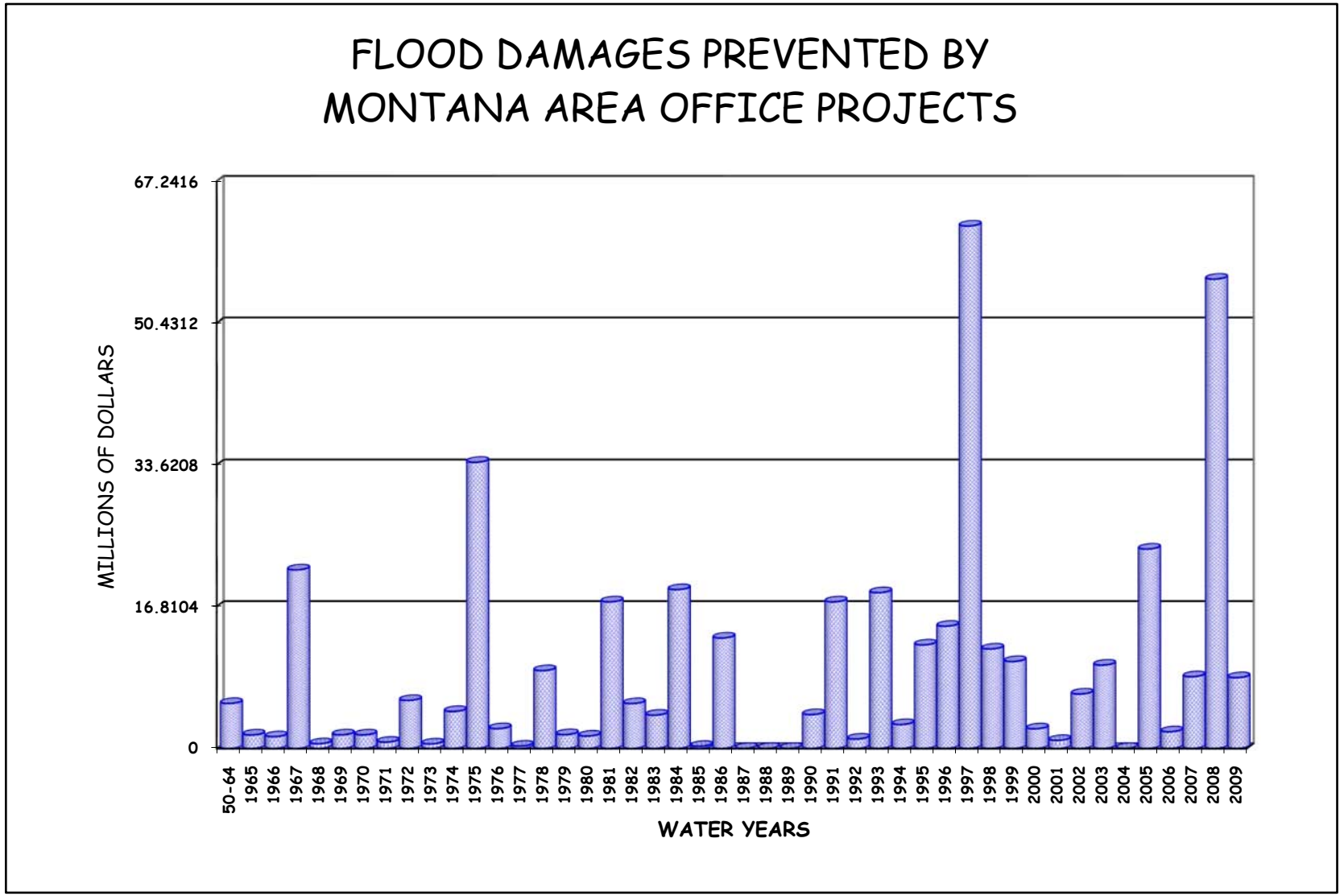
FLOOD DAMAGES PREVENTED
(THOUSANDS OF DOLLARS)

Reservoir	Local	Main Stem	2009 Total	Prev. Accum.	1950-2009 Accum. Total
Clark Canyon	$ 856.5	$ 0.0	$ 856.5	$ 13,251.6	$ 14,108.1
Canyon Ferry	1,165.0	3,179.2	4,344.2	181,583.2	185,927.4
Gibson[1]	0.0	0.0	0.0	3,063.5	3,063.5
Lake Elwell	0.0	727.3	727.3	74,534.2	75,261.5
Lake Sherburne[2]	0.0	0.0	0.0	7,964.5	7,946.5
Fresno	0.0	0.0	0.0	13,126.8	13,126.8
Bighorn Lake	67.0	2,410.2	2,477.2	128,201.6	130,678.8
Total	$2,088.5	$ 6,316.7	$ 8,405.2	$421,707.4	$430,112.6

[1] No space allocated to flood control, but some flood protection provided by operation for other purposes.

2 Now includes historical flood damages prevented by Lake Sherburne since 1950 based on estimates provided by the Corps of Engineers.

FIGURE MTG2


FLOOD DAMAGES PREVENTED BY
MONTANA AREA OFFICE PROJECTS
MILLIONS OF DOLLARS
67.2416
50.4312
33.6208
16.8104
0
50-64
1965
1966
1967
1968
1969
1970
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2006
2007
2008
2009
WATER YEARS

UNIT OPERATIONAL SUMMARIES FOR WATER YEAR 2009

Clark Canyon Reservoir

Clark Canyon Reservoir, a Pick-Sloan Missouri River Basin Program (P-S MBP) project is located on the Beaverhead River approximately 20 miles upstream from Dillon, Montana. It has a total capacity of 257,152 acre-feet (255,643 acre-feet active). The reservoir is the storage facility for the East Bench Unit providing a full water supply for irrigation of 21,800 acres and a supplemental supply for about 28,000 acres. Flood control, recreation, and fish and wildlife are among the other functions served by the reservoir.

In 2000, Reclamation surveyed Clark Canyon Reservoir to develop a topographic map and compute a present storage-elevation relationship (area-capacity tables). The data were used to calculate reservoir capacity lost due to sediment accumulation since dam closure in August of 1964. The 2000 survey determined that Clark Canyon Reservoir has a storage capacity of 174,367 acre-feet and a surface area of 5,151 acres at a reservoir elevation of 5546.10. Since closure in 1964, the reservoir has accumulated a sediment volume of 4,106 acre-feet below elevation 5546.10. This volume represents a 2.3 percent loss in capacity and an average annual loss of 114.7 acre-feet. The revised area-capacity table was put into effect on October 1, 2001, reflecting the new storage levels.

Entering water year 2009 the hydrologic conditions in the Beaverhead River Basin remained dry, showing very few signs of improvements from the previous eight years. Valley precipitation during August and September was below average at 23 and 65 percent of average while the mountain precipitation varied from 36 and 54 percent of average, respectively. Although there was not an overall significant change in the streamflows above Clark Canyon Reservoir, the improved mountain precipitation during September, as well as irrigation return flows, did help to sustain the inflows as the water year came to a close. Inflows to Clark Canyon Reservoir during August and September were 57 and 74 percent of average, respectively. Full allotments during water year 2008 once again placed a heavy demand on storage in Clark Canyon Reservoir. Following the conclusion of the irrigation season, releases from Clark Canyon Reservoir were gradually reduced during September 15-21 to the fall and winter flow rate of about 35 cfs, which is much below the minimum recommended fishery flow of between 100-200 cfs. Beginning in early September, storage in Clark Canyon Reservoir began to steadily increase and ended water year 2008 with a content of 64,488 acre-feet at elevation 5519.34. At 52 percent of average, 2,436 acre-feet or 0.85 feet higher than at the end of water year 2007.

The 2009 water year began with some high elevation storm activity, resulting in October valley precipitation being below average and mountain precipitation being above average. The valley and mountain precipitation during October was 68 and 117 percent of average respectively. Weather conditions remained pretty much the same during November as the valley precipitation increased slightly to 73 percent of average while the mountain precipitation decreased slightly to 112 percent of average. By the end of December the valley precipitation had increased to a year to date average of 97 percent after the valley received 188 percent of average precipitation for the month.

On January 1, the NRCS measured snowpack in the Beaverhead River Basin at 105 percent of average. This was a decrease of 2 percent from the snowpack experienced on January 1, 2008. Snow fell in the Beaverhead River Basin at near average rates and by February 1, the snowpack was measured at 102 percent of average. This was a 12 percent decrease above the snowpack measured on February 1, 2008. Precipitation conditions turned dry during February and on March 1 the measured snowpack in the Beaverhead River Basin had dropped to 91 percent of average. However, during March, mountain and valley precipitation were above average, indicating the wet trend that the water year had to start with may continue. Inflow for October through March was 77,305 acre-feet, or 74 percent of normal. This was 12,815 acre-feet or 20 percent more than the inflows experienced during that period in 2008.

On April 1, the NRCS measured the mountain snowpack to be 106 percent of average. The precipitation continued to fall at above average rates in the Beaverhead valley during April. Valley and mountain precipitation were 173 and 121 percent of average, respectively, contributing to the cumulative valley precipitation being 125 percent of average by the beginning of May. The mountain snowmelt in the Beaverhead River Basin normally begins in late April or early May. By May 1, the snowpack remained above normal at 116 percent of average, due to the cooler spring temperatures and delayed snowmelt in the basin.

March and April were both wet months with valley precipitation averaging 195 and 173 percent of normal and mountain precipitation averaging 121 and 117 percent of normal, respectively. The month of May was fairly dry and precipitation values in the mountains and valleys fell to 53 and 39 percent of average, respectively. Even though both the valley and mountain cumulative precipitation through the end of May was near average, the inflows to Clark Canyon Reservoir totaled approximately 19,500 acre-feet which is 72 percent of average.

Based on the mountain snowpack, the water supply forecast prepared on April 1, indicated the April-July runoff into Clark Canyon Reservoir would be 69 percent of normal, totaling approximately 78,000 acre-feet. This was a decrease of 12,000 acre-feet from the April 1 forecast in 2008. Conference calls were held with the Clark Canyon Joint Board in both March and April to discuss the water supply outlook for the 2009 irrigation season. The Joint Board, which consists of three representatives from each water user entity, set initial allotments in March at 3.5 acre-feet per acre for Clark Canyon Water Supply Company (CCWSC), and 2.7 acre-feet per acre for the East Bench Irrigation District (EBID), but by May it was apparent that the runoff would provide enough water for full allotments.

In June, the water users in the Beaverhead River Basin met once again and agreed to increase the water allotments to full allotments of 4.0 acre-feet per acre for CCWSC and 3.1 acre-feet per acre for EBID.

Snowmelt runoff during April through July was about normal at 92 percent of average. Daily inflows into Clark Canyon Reservoir averaged 336 cfs during April, 317 cfs during May, 735 cfs during June and 315 cfs during July. These resulted in respective monthly total inflows of 20,000 acre-feet, 19,500 acre-feet, 45,200 acre-feet and 19,400 acre-feet. The total April through July inflow increased 51,040 acre-feet from what was experienced in 2008.

Releases during this time averaged 35 cfs during April, 255 cfs during May, 334 cfs during June and 565 cfs during July. As a result, storage slowly increased to a peak for the year of 176,381 acre-feet at elevation 5546.49 on June 30, before irrigation demands in 2009 required storage to begin drafting. This was 106 percent of normal and 101 percent of full capacity. This was also 51,160 acre-feet or 10.55 feet higher than the peak storage which occurred in 2008. The peak inflow for the year was recorded on June 22 at 1,486 cfs. The total April-July inflow to Clark Canyon Reservoir was 92 percent of average totaling 103,565 acre-feet and was the highest runoff total since 1999, and was the 21st highest April-July inflow recorded.

Precipitation during the majority of the summer months remained near average in both valley and mountain areas. The mountain precipitation, which is factored into the snowmelt runoff volume, was 145, 90 and 111 percent of average for June, July, and August respectively. The valley precipitation reflected a similar distribution during the same months with the precipitation totaling 100, 86, and 107 percent of average respectively. During September valley and mountain precipitation declined to 81 and 23 percent of average.

By the end of September the total cumulative valley precipitation for the year was 95 percent of average while the total cumulative mountain precipitation for the Beaverhead Basin was 98 percent of average. Due to the frequent showers and cooler than average temperatures in the basin the storage demands out of Clark Canyon Reservoir were less than average, and the irrigators were able to see bumper crops. Storage in Clark Canyon Reservoir remained high throughout the summer, and finished the water year at a level higher than it has seen for a in almost 10 years. As irrigation demands decreased, releases out of Clark Canyon Reservoir were held at higher than average rates to try to hold the reservoir down. Irrigators were also able to take advantage of the higher releases and put fall water on their fields to help keep the water table high going into water year 2010. Releases for the winter are expected to remain near 175 cfs throughout the winter, which is a big improvement from the flows of less than 40 cfs seen in the past few years.

The majority of the storage water released from Clark Canyon Reservoir during water year 2009 to meet the downstream irrigation demands was released during the period from May 1 through September 21. During this time, releases reached a peak for the year of 800 cfs on July 25 to satisfy the downstream water needs. Beginning in early July, storage in Clark Canyon Reservoir declined from a peak of 176,381 acre-feet at elevation 5546.49 on June 30 to 139,727 acre-feet at elevation 5539.11 on September 30. This was an unprecedented change from what had been experienced in the past several drought years. During September releases averaged 400 cfs out of Clark Canyon Reservoir to try to bring the reservoir down to levels that could help capture the runoff for next year. The Joint Board was able to decide that winter releases would be able to be maintained within the desired levels that Fish Wildlife and Parks(FWP) desires with a flow no less than 175 cfs. The desired levels are between 100-200 cfs.

EBID water users received approximately 71,375 acre-feet and CCWSC received approximately 95,259 acre-feet during water year 2009. The court appointed river commissioner ended the water year in September, while diversions to the East Bench Canal ended the 2009 water season in October. The total diversion recorded by the river commission for the “non-signer” users on the Beaverhead River was approximately 27,659 acre-feet. The total annual inflow to Clark Canyon Reservoir during 2009 was 80 percent of average, totaling 213,217 acre-feet.

By comparison, this was 70,032 acre-feet more than the total annual inflow of water year 2008. The total annual release to the Beaverhead River from Clark Canyon Reservoir was 137,978 acre-feet or 54 percent of normal and was the 10th lowest annual release for the period of 1965 through 2009. This release was low due to the low release to start the water year coming out of 2008, and then remained low because of the low demands from water users because of ample showers and cool temps. This pattern allowed the reservoir to recover and provide good carryover going into water year 2010 as well as a much improved winter release pattern.

Lima Reservoir is a private irrigation facility located upstream of Clark Canyon Reservoir on the Red Rock River, a tributary of the Beaverhead River. Lima Reservoir was unable to fill to the top of the conservation pool in water year 2009 and peaked at 71,850 acre-feet, which was 85 percent of full capacity on May 23. The drainage area above Lima Reservoir accounts for about 25 percent of the total drainage area above Clark Canyon Reservoir. Streamflow of the Beaverhead River at Barretts peaked at 888 cfs on July 25 due to irrigation releases from storage, but the streamflow would have peaked at 2,095 cfs on June 22 if Clark Canyon Reservoir would not have been controlling the releases.

The Corps determined that during 2009, Clark Canyon Reservoir prevented $856,500 in local flood damages, but did not contribute to the reduction of flood damages on the Missouri River below Fort Peck. Since construction of the Clark Canyon Dam in 1965, Clark Canyon Reservoir has reduced flood damages by a total of $14,108,100.

Important Events – 2009

September 19, 2008: Following the 2008 irrigation season, releases from Clark Canyon Reservoir to the Beaverhead River were reduced to approximately 35 cfs to conserve storage and allow Clark Canyon Reservoir to gradually increase throughout the fall and winter.

October 1, 2008: Clark Canyon Reservoir enters the water year with 64,488 acre-feet of storage at elevation 5519.34. The lowest elevation it would see during the year.

May 12, 2009: This marked the beginning of when releases from Clark Canyon Reservoir were increased to meet downstream irrigation demands.

June 22, 2009: Inflow to Clark Canyon Reservoir reached a peak for the year at 1,486 cfs.

June 30, 2009: Clark Canyon Reservoir reached a peak storage content of 176,381 acre-feet at elevation 5546.49. This was 101 percent of full capacity and 2,014 acre-feet or 0.39 feet above the top of the joint-use pool.

July 25, 2009: Releases from Clark Canyon Reservoir reached a peak of 800 cfs to meet downstream water demands from the Beaverhead River.

September 30, 2009: Clark Canyon Reservoir ends the water year with 139,727 acre-feet of storage at elevation 5539.11.

October 23, 2009: East Bench Irrigation District discontinues diversions to the Canal.

Additional hydrologic and statistical information pertaining to the operation of Clark Canyon Reservoir during 2009 can be found in Table MTT5 and Figure MTG3.

TABLE MTT5
HYDROLOGIC DATA FOR 2009
CLARK CANYON - EAST BENCH UNIT
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/1/2001

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	5470.60	1,061	1,061
TOP OF ACTIVE CONSERVATION	5535.70	124,160	123,099
TOP OF JOINT USE	5546.10	174,367	50,207
TOP OF EXCLUSIVE FLOOD CONTROL	5560.40	253,442	79,075

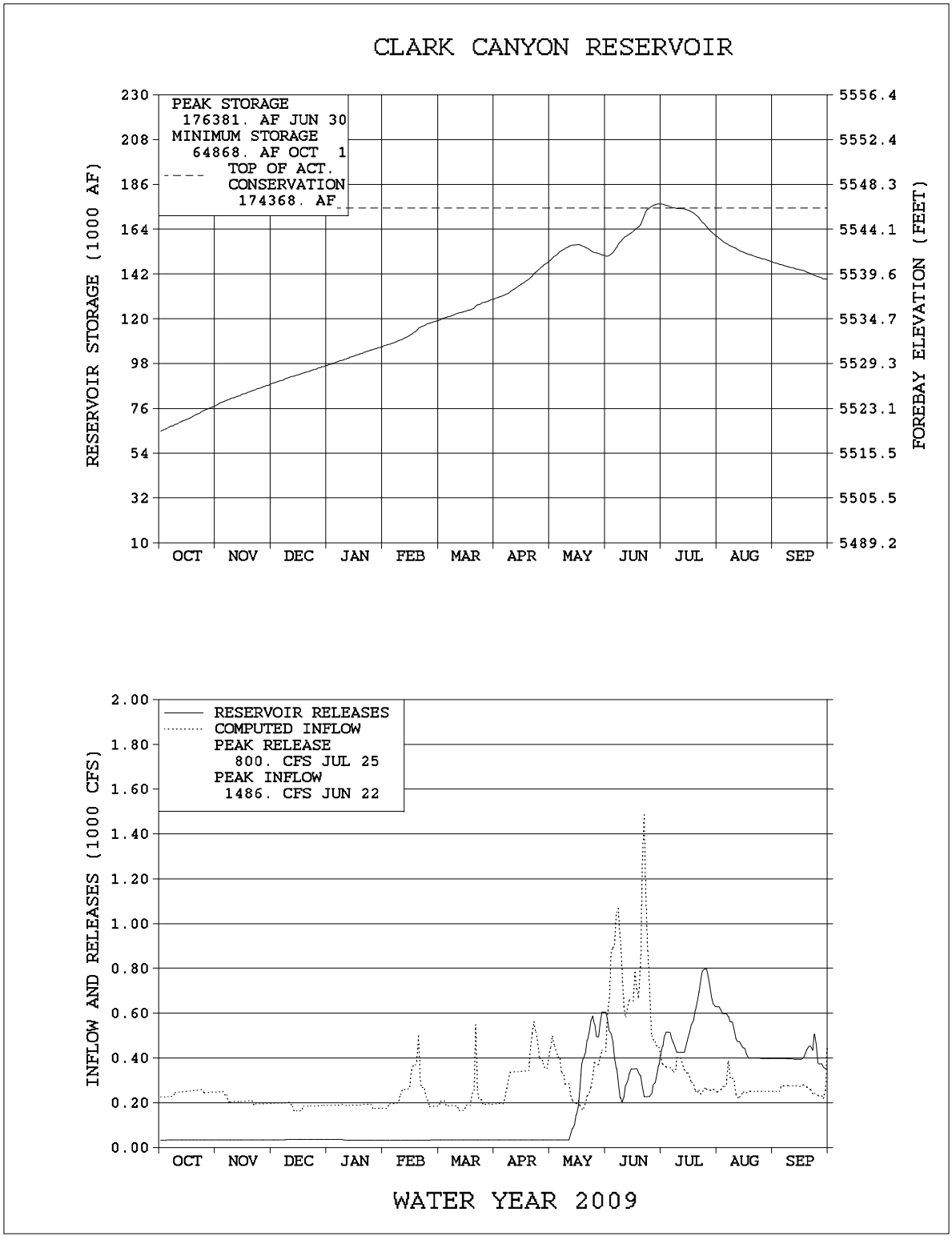
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	5519.34	64,488	OCT 01, 2008
END OF YEAR	5539.11	139,727	SEP 30, 2009
ANNUAL LOW	5519.34	64,488	OCT 01, 2008
ANNUAL HIGH	5546.49	176,381	JUN 30, 2009
HISTORIC HIGH	5564.70	283,073	JUN 25, 1984

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	213,218	OCT 08-SEP 09	137,979	OCT 08-SEP 09
DAILY PEAK (CFS)	1,486	JUNE 22, 2009	800	JUL 25, 2009
DAILY MINIMUM (CFS)	164	DEC 14, 2008	33	JAN 10, 2009
DAILY FLOW AT BARRETTS (CFS)			888	JUL 25, 2009
DAILY FLOW AT BARRETTS W/O CLARK CANYON RESERVOIR (CFS)			2,095	JUN 22, 2009
PEAK SPILL (CFS)			0	NONE
TOTAL SPILL (AF)			0	NONE

MONTH	INFLOW		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	15.0	65	2.1	15	77.4	62
NOVEMBER	12.5	56	2.1	16	87.9	66
DECEMBER	11.5	60	2.2	17	97.2	71
JANUARY	11.5	72	2.1	20	106.6	76
FEBRUARY	14.0	96	1.9	20	118.8	84
MARCH	12.7	68	2.1	21	129.4	87
APRIL	20.0	92	2.1	16	147.3	93
MAY	19.5	72	15.7	54	151.1	91
JUNE	45.2	126	19.9	49	176.4	106
JULY	19.5	71	34.8	74	161.1	107
AUGUST	16.0	82	29.1	77	147.8	116
SEPTEMBER	15.8	79	24.0	120	139.7	112
ANNUAL	213.2	80	138.0	54		
APRIL-JULY	104.1	92				

* Average for the 1965-2009 period.

FIGURE MTG3


CLARK CANYON RESERVOIR
PEAK STORAGE
176381. AF JUN 30
MINIMUM STORAGE
64868. AF OCT 1
TOP OF ACT.
CONSERVATION
174368. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
230
208
186
164
142
120
98
76
54
32
10
5556.4
5552.4
5548.3
5544.1
5539.6
5534.7
5529.3
5523.1
5515.5
5505.5
5489.2
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
800. CFS JUL 25
PEAK INFLOW
1486. CFS JUN 22
INFLOW AND RELEASES (1000 CFS)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Canyon Ferry Lake and Powerplant

Canyon Ferry Lake (P-S MBP), formed by Canyon Ferry Dam, is located on the Missouri River near Helena, Montana. It has a total capacity of 1,992,977 acre-feet. The top 3 feet were allocated to exclusive flood control in February 1966. The next 27 feet are allocated to joint conservation and flood control purposes. The joint use space will be evacuated for flood control purposes only to the extent that refill during the spring runoff are reasonably assured. The conservation space was constructed mainly for power generation and to provide replacement storage for several new irrigation developments located on the Missouri River and its tributaries above Great Falls, Montana. To date, however, the conservation storage has been used primarily for power production. The only new areas under irrigation are 5,000 acres being irrigated on the Crow Creek Unit (P-S MBP), 13,900 acres on the Helena Valley Unit (P-S MBP), and 28,000 acres on the East Bench Unit (P-S MBP). In addition, about 5,200 acres in the Helena Valley Unit that was once irrigated by pumping from Lake Helena and from other streams are now irrigated by pumping from Canyon Ferry Reservoir. About 33,700 acres on the East Bench Unit also receives a supplemental water supply. A small amount of municipal water is also furnished to the city of Helena, Montana, through facilities for the Helena Valley Unit.

In 1997, a hydrographic and a topographic survey were conducted and a new elevation-area-capacity table and curve was developed. The 1997 survey determined that Canyon Ferry Lake has a storage capacity of 1,992,977 acre-feet and a surface area of 34,048 acres at reservoir elevation 3800. Since closure in 1953, the reservoir has accumulated a sediment volume of 59,746 acre-feet below reservoir elevation 3800. This volume represents a 2.91 percent loss in capacity and an average annual loss of 1,345.6 acre-feet. The revised area-capacity table was put into effect on October 1, 1998, reflecting the new storage levels.

With little to no precipitation falling in the Missouri River Basin during July and August, irrigation demands upstream of Canyon Ferry Lake continued to remain high. As a result, the inflow to Canyon Ferry Lake dropped from 127 percent of average in July to only 65 percent of average during August. Inflows increased during September when special operations were required at Hebgen Dam.

On August 31, 2008, a mechanical gate failure occurred at Hebgen Dam, resulting in extremely large uncontrolled releases out of Hebgen Lake. These large uncontrolled releases contributed to inflows into Canyon Ferry Lake to increase from about 1,375 cfs on August 30, to about 4,925 cfs on September 7. During August 31-September 25, the inflows into Canyon Ferry Lake averaged 4,288 cfs, totaling 221,100 acre-feet. The unusual situation at Hebgen Dam did not result in any operation changes at Canyon Ferry Lake. However, the inflows into Canyon Ferry Lake during September did increase to 115 percent of average. With releases out of Canyon Ferry Lake to Missouri River maintained at rates to provide flows downstream of Holter Dam at or above 4,100 cfs, storage in Canyon Ferry Lake slowly increased to 1,772,005 acre-feet at elevation 3793.36 on September 21.

Once repairs to the gates at Hebgen Dam were completed and normal releases out of Hebgen Dam restored, inflows into Canyon Ferry Lake decreased and storage in Canyon Ferry Lake once again began to slowly decline. By the end of water year 2008, storage in Canyon Ferry Lake had declined to 1,756,385 acre-feet at elevation 3792.88. This was 103 percent of average and about 255,749 acre-feet or 8.08 feet higher than at the end of water year 2007.

Precipitation in the Missouri River Basin above Canyon Ferry Lake was generally above average during October through December. The valley and mountain precipitation were both 107 percent of average. Even though the accumulated valley and mountain precipitation during October through December was above normal, the lingering effects of the previous extended drought had a significant impact on the inflows into Canyon Ferry Lake. During this period, the inflow was recorded at only 73 percent of average, about 4 percent higher than in water year 2008. Even with inflows at only 73 percent of average during October through December, because storage in Canyon Ferry Lake was about 8 feet higher at the beginning of the water year than the previous year, plans were made to maintain river flows downstream of Holter Dam near or above 4,100 cfs, the Montana Fish Wildlife and Parks (MFWPs) recommended minimum fishery flow, through the fall and early winter.

On January 1, the NRCS measured the mountain snowpack in the Missouri River Basin above Canyon Ferry Lake to be 101 percent of average, about 5 percent higher than a year ago. Snowpack in the Jefferson, Madison, and Gallatin River Basins, major tributaries of the Missouri River Basin was 109, 94, and 96 percent of normal, respectively.

The storage content in Canyon Ferry Lake on January 1 was 1,656,279 acre-feet at elevation 3789.77. Based on the water supply forecast prepared in January and with storage in Canyon Ferry Lake about average and 6.45 feet higher than in 2008, releases out of Canyon Ferry Dam to the Missouri River were increased to 4,400 cfs on January 9. This was about 300 cfs above MFWPs recommended desired minimum river flow rate of 4,100 cfs required to maintain a healthy river fishery. Later on February 5, the river releases were once again increased to 4,850 cfs based on the February 1 water supply forecast.

According to records maintained by the National Weather Service (NWS) and NRSC, the valley precipitation during January and February was 82 percent of normal, while the mountain precipitation was 89 and 58 percent of average, respectively. The inflow into Canyon Ferry Lake during this period was recorded at 92 percent of average. As the winter progressed, snow in the higher elevations accumulated at less than normal rates during much of January and February. By March 1, mountain snowpack in the Missouri River Basin had decreased to 89 percent of average. This was 18 percent lower than that experienced a year ago. Snowpack in the tributaries of the Jefferson, Madison, and Gallatin River Basins reported 91, 85, and 91 percent of average respectively, as compared to 105, 108, and 109 percent of average a year ago.

Weather conditions improved during March and April. Temperatures were near normal while precipitation was much above average. According to the NWS precipitation recordings, valley precipitation during March and April was 169 and 153 percent of average, respectively, while the mountain precipitation was 138 and 114 percent of average, respectively. Cooler temperatures returned about the middle of April and continued through much of May. These cooler temperatures delayed the beginning of the normal spring snowmelt. Normally the mountain snowpack reaches a peak accumulation around the middle of April. Because of the cooler temperatures and the generous precipitation received during March and April, mountain snowpack in the Missouri River Basin had increased to 118 percent of average by May 1. This was only 3 percent higher than that experienced in 2008. Snowpack in the tributaries of the Jefferson, Madison, and Gallatin River Basins reported 119, 113, and 116 percent of average respectively, as compared to 108, 121, and 118 percent of average a year ago. By now the water supply outlook for Canyon Ferry Lake had greatly improved.

At the annual Upper Missouri River Advisory Group meeting held on April 9, several interest groups remarked how the higher flows released out of Canyon Ferry Lake to the Missouri River in 2008 benefited the fishery and aquatic live in the Missouri River downstream of Canyon Ferry Lake. If possible, many of the same interests expressed concerns these same similar flows would again benefit the river fishery.

The water supply forecast prepared in early April, indicated the April-July runoff into Canyon Ferry Lake would be 98 percent of average, totaling 1,980,000 acre-feet. This was about 100,000 acre-feet more than a year ago. With storage at 105 percent of average, planned operations indicated the release out of Canyon Ferry Lake to the Missouri River would be increased to full powerplant capacity of about 6,000 cfs beginning the second week of April.

The snowmelt runoff in the Missouri River Basin essentially began about the middle of April; however, it was not until about the middle of May when the inflows into Canyon Ferry began to increase dramatically. The inflows increased from about 6,100 cfs in early May to over 11,000 cfs by May 20. As the inflows began to increase, the total release out of Canyon Ferry Lake was also gradually increased to control the runoff. The valley and mountain precipitation during May was only 44 and 69 percent of average. Temperatures were well below normal in early May, thus delaying the normal snowmelt runoff. Finally by late May, the inflows began to increase substantially. On June 1, inflows into Canyon Ferry Lake reached a peak for the year at 18,979 cfs, while the peak release from Canyon Ferry Lake to the Missouri River was also gradually increased to a peak for the year of 11,025 cfs this same day.

By June 1, storage in Canyon Ferry Lake had steadily increased from a low on May 18 of 1,515,354 acre-feet at elevation 3785.28 to storage content of 1,663,620 acre-feet at elevation 3790.00. This was 7 feet below the top of the joint-use pool at elevation 3797.

Precipitation in the Missouri River Basin improved considerably during June through August. The valley and mountain precipitation was 113 and 117 percent of average, respectively. This contributed to the inflow into Canyon Ferry Lake to remain near average during this same period.

After the first of June, the inflows into Canyon Ferry Lake began to recede, thereby allowing for the releases also being gradually reduced assuring successfully filling the remaining 7 feet of storage in Canyon Ferry Lake.

Because of the cooler temperatures experienced during May and June, the normal mountain snowmelt was somewhat delayed. By the middle of July, the mountain snowpack was essentially melted out. However, the inflows into Canyon Ferry Lake remained near average. It was not until after the first week of July that the inflow to Canyon Ferry Lake began to quickly decline.

By June 14, inflows had dropped to near 9,000 cfs, but spring storms with heavy precipitation returned about the middle of June, causing them to once again increase to over 14,000 cfs by June 22. Releases from Canyon Ferry Lake to the Missouri River had to again be increased from about 4,200 cfs to over 10,300 cfs by June 24 to control the increased inflows to Canyon Ferry Lake. Storage in Canyon Ferry Lake had reached the top of the joint-use pool at elevation 3797.00 on June 20 and continued to increase until reaching peak content for the year of 1,955,663 acre-feet at elevation 3798.90 on June 27. This was about 63,775 acre-feet or 1.90 feet above the top of the joint-use pool and 18,879 acre-feet or 0.56 feet higher than the peak reported in water year 2008. Canyon Ferry Lake storage remained in the exclusive flood pool for 36 days from June 20 through July 25.

During July, the inflows into Canyon Ferry Lake decreased from about 8,200 cfs on July 1 to less than 2,700 cfs by the end of July. As the inflows declined, the releases from Canyon Ferry Lake to the Missouri River were also gradually reduced from over 9,200 cfs in early July to less than 3,850 cfs by the end of July. As a result, all storage in the exclusive flood pool was successfully evacuated by July 26.

During September, there was little to no precipitation reported in the Missouri River Basin above Canyon Ferry Lake. Valley precipitation was only 54 percent of average while the mountain precipitation was much worse at only 13 percent of average. With storage in Canyon Ferry Lake near average in September, releases to the Missouri River were maintained near or above 4,100 cfs, allowing storage in Canyon Ferry Lake to slowly decline to 1,679,615 acre-feet at elevation 3790.50. This was 98 percent of average and about 76,770 acre-feet or 2.38 feet lower than at the end of water year 2008.

The April-July runoff into Canyon Ferry Lake was 103 percent of average, totaling 2,087,631 acre-feet. The annual inflow to Canyon Ferry Lake was 92 percent of average, totaling 3,637,455 acre-feet. This was only 9,995 acre-feet greater that the total annual inflow experienced in water year 2008.

During 2009, Canyon Ferry Lake powerplant generated 385,930,000 kilowatt-hours, 100 percent of the long-term average dating back to 1967. This was 156,759,000 kilowatt-hours more than generated during the record low year of 2002 and 66, 665,000 kilowatt-hours more than generated in 2008. The plant used 85 percent of the water released from the dam in 2009 (3,149,078 acre-feet).

The remainder of the water was released to meet the irrigation needs of the Helena Valley Irrigation District (199,119 acre-feet) and spilled through the river outlet gates (172,151 acre-feet) and through the spillway gates (193,877 acre-feet).

The Corps estimated that during 2009, Canyon Ferry Lake prevented $1,165,000 of local flood damages and also prevented $3,179,200 in flood damages downstream on the Missouri River below Fort Peck Reservoir for a total of $4,344,200. Since construction of the Canyon Ferry Dam in 1954, Canyon Ferry Reservoir has reduced flood damages by a total of $185,927,400.

Important Events - Water Year 2009

September 30: All irrigation deliveries to the Helena Valley Unit were discontinued for the 2008 irrigation season. To continue conserving storage in Canyon Ferry Lake, the total release was decreased to 3,700 cfs (≈ 3,700 cfs through the powerplant and 0 cfs for the Helena Valley Project).

October 6-9: A 4-day maintenance outage was scheduled on Unit No. 3 of the Canyon Ferry Lake powerplant. To allow for the annual maintenance and continue evacuating storage from Canyon Ferry Lake as projected, turbine releases were restricted to 2-unit capacity and maintained at 3,500 cfs.

November 11: PPL-MT reported flows below Holter Dam were lower than anticipated and requested an increase in releases out of Canyon Ferry Lake to assist them in maintaining river flows below Holter Dam at or above the desired minimum fishery flow of 4,100 cfs. Turbine releases from Canyon Ferry Lake were increased to 3,950 cfs.

December 8-11: A 4-day maintenance outage was scheduled on Unit No. 2 of the Canyon Ferry powerplant. To allow for the annual maintenance and continue evacuating storage from Canyon Ferry Lake as projected, turbine releases were restricted to 2-unit capacity. The turbine releases from Canyon Ferry Lake were decreased to 3,560 cfs and a release of 400 cfs was initiated through the river outlet gates.

December 12-19: Scheduled maintenance was completed on Unit No. 2 of the Canyon Ferry Lake Powerplant. All releases through the river outlet gates were discontinued and all releases to the Missouri River were released through the powerplant. The NWS forecasted a cold front to move into Montana. At the request of PPL-MT, total release from Canyon Ferry Lake to the Missouri River was increased to 4,800 cfs.

January 9: The January 1 forecast indicates the April-July runoff into Canyon Ferry Lake is expected to be about 92 percent of average. With storage about normal for this time of year, releases from Canyon Ferry Lake to the Missouri River were increased to 4,400 cfs to meet the desired reservoir target levels.

February 5: The February 1 forecast indicates the April-July runoff into Canyon Ferry Lake is expected to be about 93 percent of average. With storage slightly above normal for this time of year, releases from Canyon Ferry Lake to the Missouri River were increased to 4,850 cfs to meet the desired reservoir target levels.

February 11: PPL-MT requested a reduction in releases out of Canyon Ferry Lake to minimize releasing excess water past their downstream powerplants. Turbine releases from Canyon Ferry Lake to the Missouri River were reduced to 4,750 cfs.

February 23-March 19: Triennial maintenance was scheduled on Unit No. 2 of the Canyon Ferry Lake powerplant. To allow for the annual maintenance and continue evacuating storage from Canyon Ferry Lake as projected, turbine releases were restricted to 2-unit capacity and decreased to 4,200 cfs.

March 2-5: Triennial maintenance was scheduled for transformer K2A of the Canyon Ferry Lake powerplant. To allow for the annual maintenance and continue evacuating storage from Canyon Ferry Lake as projected, turbine releases were restricted to 2-unit capacity and decreased to 4,200 cfs.

March 16-26: Annual maintenance scheduled on Unit No. 2 was expected to be completed. In order to replace a fire protection valve, Unit No. 2 needed to be dewatered. The outage on Unit No. 2 was extended to March 26, thereby maintaining turbine releases at 2-unit capacity of 4,200 cfs.

March 27: Maintenance was completed on Unit No. 2. To continue evacuating storage from Canyon Ferry Lake as planned, turbine releases out of Canyon Ferry Lake were increased to 4,700 cfs.

April 7-8: Mountain snowpack in the Missouri River Basin was above normal. Based on the April water supply forecast, releases from Canyon Ferry Lake to the Missouri River were increased to 5,700 cfs to prepare for the anticipated snowmelt runoff.

April 8: Irrigation deliveries to Helena Valley Unit were initiated on April 8 when the first irrigation deliveries for the 2009 irrigation season began and were adjusted periodically throughout the irrigation season to meet the irrigation demands. Total release from Canyon Ferry Lake was increased to 6,000 cfs (≈ 5,700 cfs through the powerplant and 300 cfs for the Helena Valley Project).

April 9: Reclamation attended and participated in the Upper Missouri River Advisory Group meeting held in the Director's Conference Room at MFWPs Building in Helena, Montana. Tim Felchle, Chief of Reservoir and River Operations, presented the water supply outlook for the Upper Missouri River Basin and the proposed operations for Canyon Ferry Lake for 2009.

April 14: Mountain snowpack in the Missouri River Basin continued to remain above normal. To continue evacuating storage from Canyon Ferry Lake as planned, total release from Canyon Ferry Lake was increased to 6,330 cfs (≈ 6,000 cfs through the powerplant and 330 cfs for the Helena Valley Project).

May 5-8: Mountain snowpack in the Missouri River Basin continues to remain above normal and storage in Canyon Ferry Lake is 105 percent of average. To continue evacuating storage from Canyon Ferry Lake as planned, total release from Canyon Ferry Lake was gradually increased to 8,410 cfs (≈ 6,000 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 410 cfs for the Helena Valley Project).

May 19: Helena Valley Irrigation District increased irrigation deliveries. In response, total release from Canyon Ferry Lake was increased to 8,430 cfs (≈ 5,810 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 620 cfs for the Helena Valley Project).

May 21: Helena Valley Irrigation District increased irrigation deliveries. In response, total release from Canyon Ferry Lake was increased to 8,535 cfs (≈ 5,810 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 725 cfs for the Helena Valley Project).

May 26-27: Warm weather has caused the streamflows into Canyon Ferry Lake to increase considerably. To prepare for the snowmelt and control the rate of fill of Canyon Ferry Lake storage, total release from Canyon Ferry Lake was gradually increased to 10,440 cfs (≈ 5,730 cfs through the powerplant, 4,000 cfs through the spillway gates, and 710 cfs for the Helena Valley Project).

May 28: Warm temperatures melting the high elevation snow have caused inflows into Canyon Ferry Lake to remain over 17,000 cfs. In response, to control the rate of fill of storage in Canyon Ferry Lake, total release from Canyon Ferry Lake was increased to 11,280 cfs (≈ 5,500 cfs through the powerplant, 5,000 cfs through the spillway gates, and 780 cfs for the Helena Valley Project).

June 4-7: Cooler temperatures have caused the inflow into Canyon Ferry Lake to slowly decline. To control the rate of fill of storage in Canyon Ferry Lake, total release from Canyon Ferry Lake was gradually decreased to 7,155 cfs (≈ 5,360 cfs through the powerplant, 1,000 cfs through the river outlet gates, and 795 cfs for the Helena Valley Project).

June 6: Inflows into Canyon Ferry Lake continued to remain near 15,000 cfs and steadily increase due to recent precipitation. In response, total release from Canyon Ferry Lake was maintained at 8,155 cfs (≈ 5,360 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 795 cfs for the Helena Valley Project).

June 9-10: Inflows into Canyon Ferry Lake continued to remain near 15,000 cfs and steadily decline. To control the rate of fill and assure the reservoir of filling to the top of the joint-use pool, total release from Canyon Ferry Lake was gradually decreased to 6,090 cfs (≈5,280 through the powerplant and 810 cfs for the Helena Valley project).

June 12-13: It appears the mountain snowmelt runoff is nearly over. To control the rate of fill and assure the reservoir of filling to the top of the joint-use pool, total release from Canyon Ferry Lake was gradually decreased to 5,070 cfs (≈ 4,260 cfs through the powerplant and 810 cfs for the Helena Valley Project).

June 15: With the mountain snowmelt runoff essentially over, inflow into Canyon Ferry Lake continued to steadily decrease. To control the rate of fill and assure the reservoir of filling to the top of the joint-use pool, total release from Canyon Ferry Lake was decreased to 4,570 cfs (≈ 3,760 cfs through the powerplant and 810 cfs for the Helena Valley Project).

June 18-20: Recent precipitation and the remaining high elevation snowmelt caused inflows into Canyon Ferry Reservoir to continue increasing and remain above 10,200 cfs. To control the rate of fill and assure the reservoir of filling to the top of the joint-use pool, total release from Canyon Ferry Reservoir to the Missouri River was gradually increased to 6,075 cfs (≈ 5,300 cfs through the powerplant and 775 cfs for the Helena Valley Project).

June 21-22: Recent precipitation and the remaining high elevation snowmelt caused inflows into Canyon Ferry Reservoir to continue increasing and remain above 12,500 cfs. To control the rate of fill, total release from Canyon Ferry Reservoir to the Missouri River was gradually increased to 7,875 cfs (≈ 5,200 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 675 cfs for the Helena Valley Project).

June 22-23: Recent precipitation and the remaining high elevation snowmelt caused inflows into Canyon Ferry Reservoir to increase to nearly 15,000 cfs. To control the rate of fill, total release from Canyon Ferry Reservoir to the Missouri River was gradually increased to 10,875 cfs (≈ 5,200 cfs through the powerplant, 5,000 cfs through the spillway gates, and 675 cfs for the Helena Valley Project).

July 1-2: High elevation snowmelt is essentially over and inflows into Canyon Ferry Reservoir declined to near 9,800 cfs and continued declining. In response, to control the rate at which storage in the exclusive flood pool is evacuated, the total release from Canyon Ferry Reservoir was gradually decreased to 7,585 cfs (≈ 4,900 cfs through the powerplant, 2,000 cfs through the river outlet gates, and 685 cfs for the Helena Valley Project).

July 15-16: To assist the climb team with inspection of the spillway of Canyon Ferry Reservoir and continue evacuating storage from the exclusive flood pool, total release from Canyon Ferry Reservoir was decreased to 5,475 cfs (≈ 4,900 cfs through the powerplant and 575 cfs for the Helena Valley Project).

July 16: Inspection of the spillway of Canyon Ferry Reservoir was completed. To control the evacuation rate of storage from the exclusive flood pool, total release from Canyon Ferry Reservoir was increased to 6.475 cfs (≈ 4,900 cfs through the powerplant, 1,000 cfs through the river outlet gates, and 575 cfs for the Helena Valley Project.

July 18: Inflows into Canyon Ferry Reservoir continued to slowly decrease. To control the evacuation rate of storage from the exclusive flood pool, total release from Canyon Ferry Reservoir was decreased to 5,475 cfs (≈ 4,900 cfs through the powerplant and 575cfs to the Helena Valley Project).

July 21-22: With high elevation snowmelt essentially over, inflows into Canyon Ferry Reservoir continued to slowly decrease. To control the evacuation rate of storage from the exclusive flood pool, total release from Canyon Ferry Reservoir was decreased to 4,575 cfs (≈ 4,000 cfs through the powerplant and 575 cfs to the Helena Valley Project).

July 22: Helena Valley Irrigation District increased irrigation deliveries. Total release from Canyon Ferry Reservoir was increased to 4,675 cfs (≈ 4,000 cfs through the powerplant and 675 cfs to the Helena Valley Project).

July 27: Streamflows into Canyon Ferry Reservoir continued to decrease. To control and slow the evacuation rate of storage in Canyon Ferry Reservoir, total release from Canyon Ferry Reservoir was decreased to 4,175 cfs (≈ 3,500 cfs through the powerplant and 675 cfs to the Helena Valley Project).

September 8: Helena Valley Irrigation District decreased irrigation deliveries. Total release from Canyon Ferry Reservoir was decreased to 4,040 cfs (≈ 3,500 cfs through the powerplant and 540 cfs to the Helena Valley Project).

September 9: Helena Valley Irrigation District decreased irrigation deliveries. Total release from Canyon Ferry Reservoir was decreased to 3,840 cfs (≈ 3,500 cfs through the powerplant and 340 cfs to the Helena Valley Project).

September 14: Helena Valley Irrigation District decreased irrigation deliveries. Total release from Canyon Ferry Reservoir was decreased to 3,815 cfs (≈ 3,525 cfs through the powerplant and 290 cfs to the Helena Valley Project).

September 23: Helena Valley Irrigation District increased irrigation deliveries. Total release from Canyon Ferry Reservoir was increased to 3,860 cfs (≈ 3,450 cfs through the powerplant and 410 cfs to the Helena Valley Project).

October 1: All irrigation deliveries to the Helena Valley Unit were discontinued for the 2009 irrigation season. To continue conserving storage in Canyon Ferry Reservoir, total release was decreased to 3,450 cfs (≈ 3,450 cfs through the powerplant and 0 cfs for the Helena Valley Project).

Additional statistical information of Canyon Ferry Reservoir and its operations during 2009 can be found on Table MTT6 and Figure MTG4.

TABLE MTT6
HYDROLOGIC DATA FOR 2009
CANYON FERRY RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	3728.00	396,031	396,031
TOP OF ACTIVE CONSERVATION	3770.00	1,097,599	701,568
TOP OF JOINT USE	3797.00	1,891,888	794,289
TOP OF EXCLUSIVE FLOOD CONTROL	3800.00	1,992,977	101,089

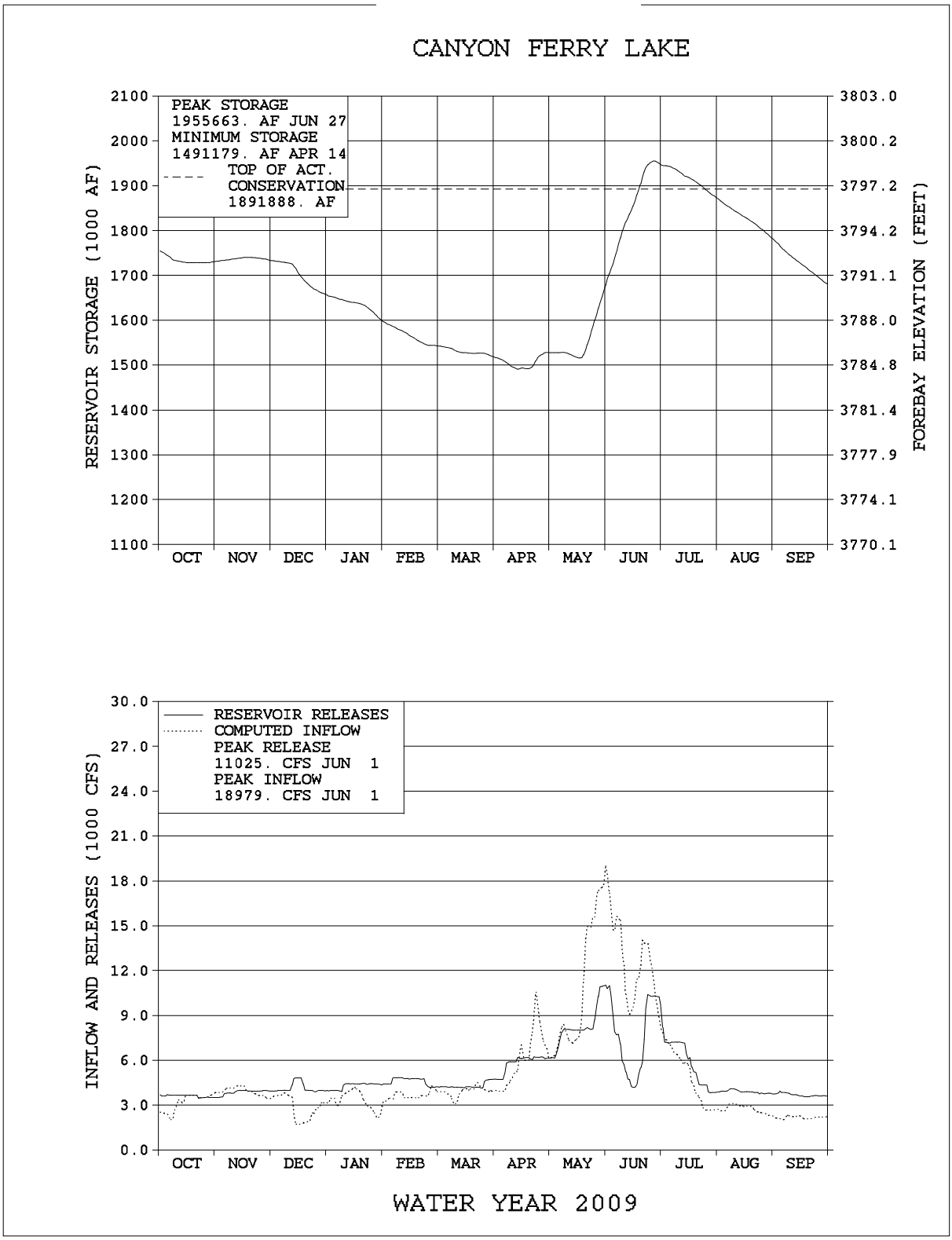
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	3792.88	1,756,385	OCT 01, 2008
END OF YEAR	3790.50	1,679,615	SEP 30, 2009
ANNUAL LOW	3784.49	1,491,179	APR 14, 2009
ANNUAL HIGH	3798.90	1,955,663	JUN 27, 2009
HISTORIC HIGH	3800.00	2,050,900	JUN 23, 1964

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	3,637,451	OCT 08-SEP 09	3,614,831	OCT 08-SEP 09
DAILY PEAK (CFS)	18,979	JUN 01, 2009	11,025	JUN 01, 2009
DAILY MINIMUM (CFS)	1,721	DEC 14, 2008	3,472	OCT 22, 2008
PEAK SPILL (CFS)			5,652	JUN 02, 2009
TOTAL SPILL (AF)			366,028	12/08-11/08
				02/23-03/27/09
				05/05-06/10/09
				06/21-07/18/09

MONTH	INFLOW		OUTFLOW*				CONTENT	
	KAF	% OF AVG	PUMPED TO HELENA VALLEY (KAF)	% OF AVG	RIVER KAF	% OF AVG	KAF	% OF AVG
OCTOBER	195.8	68	0.0	---	221.7	85	1,730.5	100
NOVEMBER	233.3	79	0.0	---	230.1	85	1,733.7	99
DECEMBER	176.0	73	0.0	---	253.4	86	1,656.3	99
JANUARY	204.1	92	0.0	---	263.7	89	1,596.6	101
FEBRUARY	203.2	92	0.0	---	256.1	96	1,543.8	102
MARCH	239.8	89	0.0	---	263.6	89	1,520.0	105
APRIL	359.2	103	7.3	128	343.6	113	1,528.3	105
MAY	650.0	113	15.8	122	498.8	138	1,663.6	102
JUNE	766.9	100	21.9	141	458.6	96	1,949.9	103
JULY	311.6	92	20.7	122	366.5	103	1,874.2	102
AUGUST	168.0	98	20.9	132	239.6	95	1,781.8	103
SEPTEMBER	129.7	61	12.7	159	219.1	95	1,679.6	98
ANNUAL	3,637.5	92	99.4	130	3,614.8	99		
APRIL-JULY	2,087.7	103						

Average for the 1955-2009 period.

FIGURE MTG4


CANYON FERRY LAKE
PEAK STORAGE
1955663. AF JUN 27
MINIMUM STORAGE
1491179. AF APR 14
TOP OF ACT.
CONSERVATION
1891888. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
3803.0
3800.2
3797.2
3794.2
3791.1
3788.0
3784.8
3781.4
3777.9
3774.1
3770.1
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
11025. CFS JUN 1
PEAK INFLOW
18979. CFS JUN 1
INFLOW AND RELEASES (1000 CFS)
30.0
27.0
24.0
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Helena Valley Reservoir

Helena Valley Reservoir is a regulating offstream reservoir for Helena Valley Unit (P-S MBP), located west of Canyon Ferry Reservoir. It has a total capacity of 10,451 acre-feet, which is used for irrigation and for furnishing a supplemental municipal supply to the city of Helena, Montana. Helena Valley Reservoir receives its entire water supply by pumping from Canyon Ferry Reservoir. When fully developed, Helena Valley Unit will irrigate about 14,100 acres of full-service land plus 3,500 acres of supplemental service lands. Present development is about 13,867 full-service acres, including 5,200 acres previously irrigated by pumping from Helena Valley Reservoir or from other streams.

At the beginning of the year, storage in Helena Valley Reservoir was 7,419 acre-feet at an elevation of 3813.50 feet. Helena Valley Reservoir reached a low for the year of 5,835 acre-feet at an elevation of 3809.17 feet on April 7, 2009. With new operating criteria in place, goals were to fill Helena Valley Reservoir by May 1 and maintain it nearly full through June. In response, diversions to the Helena Valley Unit from Canyon Ferry Reservoir were started on April 8. Storage in Helena Valley Reservoir then steadily increased to a spring peak of 10,036 acre-feet at an elevation of 3819.26 feet on May 14, 2009. Normal irrigation and municipal demands slowly drafted storage to 8,372 acre-feet at an elevation of 3817.75 on June 8, 2009, before filling to a peak for the year of 10,342 acre-feet at an elevation of 3819.86 on July 16, 2009. By the end of water year 2009, Helena Valley Reservoir ended with a storage content of 6,868 acre-feet at elevation 3812.09. During 2009, 99,390 acre-feet of water was pumped to Helena Valley Reservoir from Canyon Ferry Reservoir. Helena Valley Irrigation District released 71,426 acre-feet for irrigation. All irrigation deliveries were discontinued for the 2009 season on October 1.

The reservoir provided an adequate water supply to satisfy all irrigation requirements for the Helena Valley Unit in 2009 and supplement the city of Helena's municipal water supply.

Statistical information pertaining to Helena Valley Reservoir is shown on Table MTT7 below.

TABLE MTT7
HYDROLOGIC DATA FOR 2009

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
Top of Inactive Storage	3805.00	4,554	4,554
Top of Active Conservation Storage	3820.07	10,451	5,897
STORAGE ELEVATION DATA	**ELEVATION (FEET)**	**STORAGE (AF)**	**DATE**
Beginning of Year	3813.50	7,419	10/01/08
End of Year	3812.09	6,868	09/30/09
Annual Low	3809.17	5,835	04/07/09
Annual High	3819.86	10,342	07/16/09
Historic High	3820.60	10,738	6/02/75
INFLOW-OUTFLOW DATA			**ANNUAL**
Pumped from Canyon Ferry to Helena Valley Unit			99,390 AC-FT
Inflow to Helena Valley Reservoir			72,515 AC-FT
Released from reservoir for irrigation			71,426 AC-FT
Delivered to the City of Helena for municipal use			1,638 AC-FT

MONTH	RESERVOIR		
	FOREBAY ELEVATION (FEET)	STORAGE CONTENT (KAF)	PUMPED TO HELENA VALLEY (KAF)
OCTOBER	3812.51	7.0	0
NOVEMBER	3811.84	6.8	0
DECEMBER	3811.16	6.5	0
JANUARY	3810.46	6.3	0
FEBRUARY	3809.85	6.1	0
MARCH	3809.32	5.9	0
APRIL	3818.55	9.7	7.3
MAY	3817.08	9.0	15.8
JUNE	3817.96	9.4	21.9
JULY	3814.33	7.8	20.7
AUGUST	3817.18	9.0	20.9
SEPTEMBER	3812.09	6.7	12.7
ANNUAL			99.4

Sun River Project

Storage for the Sun River Project is provided by Gibson, Willow Creek, and Pishkun Reservoirs, which are all single purpose irrigation structures. The project serves 95,000 acres on the Greenfields and Fort Shaw Irrigation Districts. A diversion dam is located on the Sun River about 3 miles below Gibson Reservoir to allow flows to be diverted down the Pishkun Supply Canal to Pishkun Reservoir, or down the Willow Creek Feeder Canal to Willow Creek Reservoir. Releases are made from Pishkun Reservoir to supply the canals of the Greenfields Irrigation District. Releases from Willow Creek Reservoir re-enter the Sun River where they can be diverted at the Fort Shaw Diversion Dam to supply the canals of the Fort Shaw Irrigation District.

Gibson Reservoir is located on the Sun River above Augusta, Montana, and has a total capacity of 96,477 acre-feet. In 1996, a hydrographic and topographic survey was conducted to measure the reservoir volume lost due to sediment accumulations that occurred in the drainage basin since the major forest fires that occurred in 1988. As a result of the survey, a new elevation-area-capacity table and curve was developed.

The 1996 survey determined that Gibson Reservoir has a storage capacity of 96,477 acre-feet and a surface area of 1,296 acres at reservoir elevation 4724. Since closure in 1929, the reservoir has accumulated a sediment volume of 8,383 acre-feet below reservoir elevation 4724. This volume represents a 7.99 percent loss in capacity and an average annual loss of 125.7 acre-feet. The 1996 survey also showed the average annual rate of sediment deposition since 1973 was 113.1 acre-feet per year and that most of the sediment contribution came after the 1988 fires. The revised area-capacity table was developed and put into effect on October 1, 1997, reflecting the new storage levels. A new survey was conducted this year to see what has happened in the 13 years since the last survey.

The spillway crest is at elevation 4712.0 (81,255 acre-feet). Depending on the runoff conditions and reservoir levels, the spillway gates remain open during the spring until the inflows and remaining snow cover indicate that the runoff is receding. Once it is apparent that the runoff has peaked and begun to recede, the spillway gates are progressively closed to allow the reservoir to fill to the top of the conservation pool at elevation 4724.0 (96,477 acre-feet).

The near average conditions in 2008 provided some relief to the water users, and the cool spring runoff conditions helped boost the late fall inflows as stream flows in the Sun River were above average for Gibson Reservoir heading into water year 2009. The August through September inflow to Gibson Reservoir was 104 percent of average, totaling 45,300 acre-feet at the end of water year 2008.

With the inflows averaging 332 cfs and releases averaging 445 cfs during September, storage in Gibson Reservoir decreased slowly and entered water year 2009 with a storage content of 21,980 acre-feet at elevation 4645.56. This was 79 percent of average and only 23 percent of full capacity. This was also 74,497 acre-feet or 78.44 feet below the top of the conservation pool and was 15,747 acre-feet or 32.79 feet more than at the beginning of water year 2008.

At the conclusion of the 2008 irrigation season, fall and winter releases from Gibson Reservoir to the Sun River were reduced in mid-September and maintained between 140-160 cfs with the expectation that with normal snowpack they could be increased later. In November the reservoir gradually filled, and by the end of November storage had increased to approximately 39,600 acre-feet. With storage and snowpack at average, releases were increased to 300 cfs to slow the rate of fill of the reservoir. Storage in Gibson Reservoir leveled off, and by the end of December storage in Gibson Reservoir was at 39,000 AF.

Precipitation in the Sun River Basin varied from much above average too much below average during water year 2009. Cumulative precipitation for October through December was near below average for mountain and valley areas in the Sun River Basin. By January 1, the NRCS measured the mountain snowpack in the Sun River Basin at 82 percent of average, which was a 2 percent decrease from a year ago. During January, precipitation was above average in the mountain areas and below average in the valley areas helping snowpack to increase to 90 percent of average by February 1.

During February, precipitation was below average in the valley, and mountain regions of the basin. By March 1, snowpack had dropped to 83 percent of average. March precipitation was above average in both the mountain and valley areas. The cumulative precipitation through the end of March was 144 and 133 percent of average for the mountain and valley areas, respectively.

On April 1, the NRCS measured the snowpack at 93 percent of average. In 2009, the snowpack in the Sun River basin reached its peak accumulation in early May and was 100 percent of the average peak. Snowmelt runoff began entering Gibson Reservoir in mid-April, and then really started in early may. Releases to Pishkun Reservoir were initiated on May 11 and Gibson Reservoir storage drafted until May 14 when inflows increased above releases. On May 1, storage in Gibson Reservoir was at 71,455 acre-feet at elevation 4703, 25,022 acre-feet or 21 feet below the top of the conservation pool. The combination of cooler temperatures, and spring rain showers produced a peak inflow for the year of 5,684 cfs on May31.

During April, precipitation in both the valley and mountain areas was above average but during May precipitation was below average. Precipitation conditions in June were again below normal in the valley and mountain regions. Valley and mountain precipitation during June was 55 and 45 percent of average, respectively. The near average snowpack and the below average spring precipitation produced a runoff season that was about 82 percent of average for the basin. However; due to the cooler temperatures early on more of the water was able to be stored and used as irrigation was in full swing before a lot of the runoff made its way out of the mountains. The cooler temperatures really helped save the irrigation season as we were able to use the snowpack as storage later into the year than in past years. The inflows during April, May, and June were 111, 92, and 71 percent of average, respectively.

In early May, with the snowpack still in the mountains, releases were increased gradually to control the rate of fill. As Gibson Reservoir began filling, releases during late April were started to move water to Pishkun Reservoir. During late May and early June, the spillway was utilized to pass some of the flow in a controlled fashion. On June 3, the spillway gates were closed as the peak inflows had passed and it would take pretty much all the leftover snowpack to finish filling Gibson Reservoir. On June 13, Gibson Reservoir reached the full pool (96,477 acre-feet at elevation 4724), and remained within a 1 foot of full pool elevation until June 30.

The peak discharge to the Sun River over the Sun River Diversion Dam was recorded on June 1 at 4,891 cfs, while the peak discharge from Gibson Reservoir was also recorded on May 31 at 5,564 cfs. The snowmelt runoff peaked at the end of May with the inflow reaching 5,684 cfs. The cool temperatures and delayed snowmelt runoff resulted in inflows to Gibson Reservoir holding high through August and September. The actual April-July inflow totaled 389,713 acre-feet, approximately 82 percent of average and 141,000 acre-feet or 27 percent less than the previous year.

Weather conditions remained fairly mild in July when precipitations in both the valley and mountain areas were above average at 143 and 158 percent of average, respectively. The mild conditions continued through August, resulting in the cumulative water year precipitation through August for valley and mountain areas totaling 90 and 90 percent of average, respectively. Concluding the water year conditions decreased dramatically during September when valley and mountain precipitation were 39 and 21 percent of average, respectively. The August-September inflow to Gibson Reservoir totaled about 43,060 acre-feet, 94 percent of average. During September the average inflow was approximately 310 cfs, while releases to the Sun River had some unique operations as the rope team conducted an inspection of the downstream face of the Diversion Dam and flows had to be diverted through the sluiceway. Gibson Reservoir ended the water year with a content of 5,600 acre-feet of storage at elevation 4610.93 on September 30. This was 20 percent of average and 6 percent of normal full capacity or 90,877 acre-feet or 113.07 feet below the top of the conservation pool. This was 16,400 acre-feet or 34.63 feet less than at the end of water year 2008.

Total annual inflow for water year 2009 was 83 percent of average, totaling 509,800 acre-feet. This was 117,800 acre-feet or 23 percent less than the inflow experienced during water year 2008.

Diversions to the Pishkun Supply Canal were started on April 21 for Willow Creek Reservoir and May 11 for Pishkun Reservoir. During late April and early May, storage was moved from Gibson Reservoir to refill Pishkun and Willow Creek Reservoirs. The total net inflow to Pishkun Reservoir during water year 2009 was 267,800 acre-feet, 113 percent of average. Spring diversions to Willow Creek Reservoir were discontinued on May 31. Pishkun Reservoir reached its spring runoff peak elevation on May 26. Willow Creek Reservoir elevations increase until May 31 when the reservoir reached peak content. Diversions to Willow Creek Reservoir were discontinued in mid May as the natural flows in the river were enough to meet irrigation demands, and the storage was near full capacity. The net inflow for the water year to Willow Creek Reservoir was 7,460 acre-feet, 57 percent of average.

Greenfields Irrigation District discontinued water delivery on October 16. Supplemental water contracts served by Greenfields were satisfied while Gibson Reservoir releases were in excess of senior irrigation demands. Based on average diversions to Pishkun Reservoir and supplemental water delivered, Greenfields delivered full allotments to all of its water users in 2009. The total diversion for Fort Shaw Irrigation District was above average during 2009. The total water diverted during May 1 through October 17 was approximately 46,862 acre-feet, which is 110 percent of average.

Even though there is no space allocated to flood control in Gibson Reservoir, the Corps still estimates flood damages prevented by Gibson Reservoir. During 2009, Gibson Reservoir did not contribute to the reduction of flood damages locally or downstream on the Missouri River below Fort Peck Reservoir. Since 1950 Gibson Reservoir has prevented $3,063,500 in flood damages.

Pishkun Reservoir, near Augusta, Montana, is an off-stream reservoir supplied by a feeder canal which diverts water from the Sun River below Gibson Reservoir. The reservoir serves the 81,000 acre Greenfields Division. The total capacity of the reservoir is 46,670 acre-feet at elevation 4370.0.

All canal diversions from the Sun River to Pishkun Reservoir during the 2008 irrigation season were discontinued on October 5, 2008. Reservoir content in Pishkun Reservoir at the beginning of water year 2009 was 36,428 acre-feet at elevation 4362.86. This was 111 percent of average and 78 percent of normal full capacity and was about 20,400 acre-feet more than it was at the start of the 2008 water year.

Storage during the fall and winter of 2009 was held slightly above average at about 8 feet from the top of the active conservation pool. Diversion to refill the reservoir began in mid-May and by the end of May storage had reached the top of active conservation pool. Once irrigation releases began, storage fluctuated based on meeting irrigation demands. Due to the precipitation in late May, demands decreased allowing storage to increase to a spring peak content of 47,755 acre-feet at elevation 4370.69 on May 26.

Irrigation releases from Pishkun Reservoir were started on May 20 with a maximum release of 1,721 cfs recorded on June 16. The maximum inflow was 1,608 cfs on July 14, 2009. All diversions from the Sun River to Pishkun Reservoir were discontinued on September 24, 2009. All irrigation releases from Pishkun Reservoir were discontinued on September 30, 2009, which is the same day as it was in 2008.

Approximately 279,900 acre-feet of water, 118 percent of average, was released from Pishkun Reservoir during May 20 through October 1 to help meet the irrigation demands on the Sun River Project. By the end of the water year, the reservoir storage was 23,900 acre-feet at elevation 4351.68. This was 73 percent of average and 51 percent of full capacity. This is 11.18 feet or 12,528 acre-feet less than in 2008.

Additional hydrologic and statistical data pertaining to Pishkun Reservoir can be found in Table MTT8-B and Figure MTG6.

Willow Creek Reservoir obtains its water supply from Willow Creek and the Sun River via the Willow Creek Feeder Canal. The total reservoir capacity is 32,300 acre-feet at elevation 4142.0 feet. Releases from Willow Creek Reservoir enter the Sun River and can be diverted for irrigation at the Fort Shaw Diversion Dam, the Floweree Canal of the Broken O Ranch, and other downstream senior water users.

All diversions from the Sun River to Willow Creek Reservoir during the 2008 irrigation season were discontinued on May 28, 2008. Reservoir content in Willow Creek at the beginning of water year 2009 was 27,745 acre-feet at elevation 4139.13. This was 145 percent of average and 87 percent of full capacity and 13,527 acre-feet or 11.16 feet more than at the beginning of water year 2008.

Storage in Willow Creek Reservoir increased gradually throughout the winter. Diversions from the Sun River to Willow Creek Reservoir during 2009 were initiated on April 21 at a rate of approximately 25 cfs. The diversions began to reach Willow Creek Reservoir on April 26 and storage increased through April and May to a peak storage content for the year of 32,727 acre-feet at elevation 4142.6 on May 31. This storage level was 118 percent of average and was at 103 percent of full capacity. Due to the good carryover from water year 2008 diversions to Willow Creek Reservoir were continued until May 13. The peak inflow during this time period was 74 cfs.

To help meet irrigation demands within the Sun River Irrigation Project, releases were made during three periods: June 1-14, July 14 through August 12, and from September 17 through October 8. Releases were then discontinued as the irrigation season for Fort Shaw was discontinued. Approximately 7,400 acre-feet of storage was released from Willow Creek Reservoir to help meet the irrigation demands in 2009. As a result, storage was maintained at near full pool through the irrigation season. No fall diversions were needed to refill Willow Creek Reservoir this year. Willow Creek Reservoir ended the water year with a storage content of 25,186 acre-feet at elevation 4137.27. This was 145 percent of average and 79 percent of normal full capacity. This was also 2,559 acre-feet or 1.86 feet lower than at the end of water year 2008.

Additional hydrologic and statistical data pertaining to Willow Creek Reservoir can be found in Table MTT8-C and Figure MTG7.

Important Events – 2009

April 21, 2009: Diversions to Willow Creek Feeder Canal were started to move water to Willow Creek Reservoir.

May 10, 2009: Willow Creek Reservoir has a peak inflow of the year of 74 cfs.

May 11, 2009: Diversions to Pishkun Reservoir were initiated.

May 13, 2009: Diversions to Willow Creek Feeder Canal were discontinued for the year.

May 20, 2009: Diversions from Pishkun Reservoir were initiated to water up the canals for irrigation.

May 26, 2009: Pishkun Reservoir reaches peak elevation for year at 4370.69.

May 31: Willow Creek Reservoir reaches peak elevation for year at 4142.60.

May 31, 2009: Peak Inflow to Gibson Reservoir is 5,684 cfs

May 31, 2009: Peak Release from Gibson Reservoir is 5,564 cfs

June 3, 2009: Spillway Gates are closed at Gibson Reservoir to finish filling conservation pool.

June 6, 2009: Willow Creek Reservoir has its peak release of 99 cfs.

June 13, 2009: Gibson Reservoir Reaches Full Pool Elevation of 4624.0

June 15, 2009: Sediment Survey Conducted this week by TSC.

June 16, 2009: Peak Release from Pishkun Reservoir is 1,721 cfs.

June 22, 2009: Gibson Reservoir reaches peak for year at elevation 4724.33.

June 27, 2009: Gibson Reservoir drops below full conservation pool of 4724.0.

July 14, 2009: Inflows into Pishkun Reservoir peak at approximately 1,608 cfs.

July 14, 2009: Gate Actuators failed at Pishkun Reservoir causing stems to bend, and 2 gates to fail. Believed to be caused by a lightning storm in the area.

August 15, 2009: Pishkun Reservoir reaches peak for year at elevation 4370.21.

August 18-19, 2009: Rope team inspects downstream face of Gibson Dam.

September 22-24, 2009: Rope team conducted an inspection of the downstream face of the Diversion Dam.

September 24, 2009: Diversions to Pishkun Reservoir discontinued for the year.

September 30, 2009: Releases from Pishkun Reservoir were discontinued for the season.

TABLE MTT8-A
HYDROLOGIC DATA FOR 2009
GIBSON RESERVOIR (SUN RIVER PROJECT)

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4557.50	0	0
TOP OF ACTIVE CONSERVATION	4724.00	96,477	96,477

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4645.56	21,980	OCT 01, 2008
END OF YEAR	4610.93	5,600	SEP 30, 2009
ANNUAL LOW	4645.08	21,701	OCT 02, 2008
ANNUAL HIGH	4724.33	96,905	JUN 22, 2009
HISTORIC HIGH	4732.23	116,400	JUN 08, 1964

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	509,800	OCT 08-SEP 09	526,200	OCT 08-SEP 09
DAILY PEAK (CFS)	5,684	MAY 31, 2009	5,564	MAY 31, 2009
DAILY MINIMUM (CFS)	156	FEB 09, 2009	80	OCT 04, 2008

MONTH	INFLOW		OUTFLOW*				CONTENT	
	KAF	% OF AVG	TOTAL CANAL KAF	% OF AVG	RIVER KAF	% OF AVG	KAF	% OF AVG
OCTOBER	14.5	77	0.1	28	9.7	98	29.0	97
NOVEMBER	17.5	102	0.0	---	10.6	96	39.6	115
DECEMBER	13.4	85	0.0	---	19.4	173	39.0	102
JANUARY	12.4	90	0.0	---	20.3	205	37.2	89
FEBRUARY	9.1	74	0.0	---	13.6	166	38.0	84
MARCH	10.4	71	0.1	10	15.6	159	39.7	83
APRIL	44.5	111	0.8	10	18.4	84	72.0	135
MAY	157.2	92	32.4	82	133.2	136	84.4	99
JUNE	140.1	71	74.3	130	67.4	51	95.4	107
JULY	47.9	70	82.6	114	17.2	65	46.7	80
AUGUST	24.6	93	35.4	89	10.0	76	29.8	89
SEPTEMBER	18.4	96	33.5	89	11.5	114	5.6	20
ANNUAL	509.8	83	259.2	111	346.9	96		
APRIL-JULY	389.7	82						

* Average for the 1931-2009 period.

FIGURE MTG5

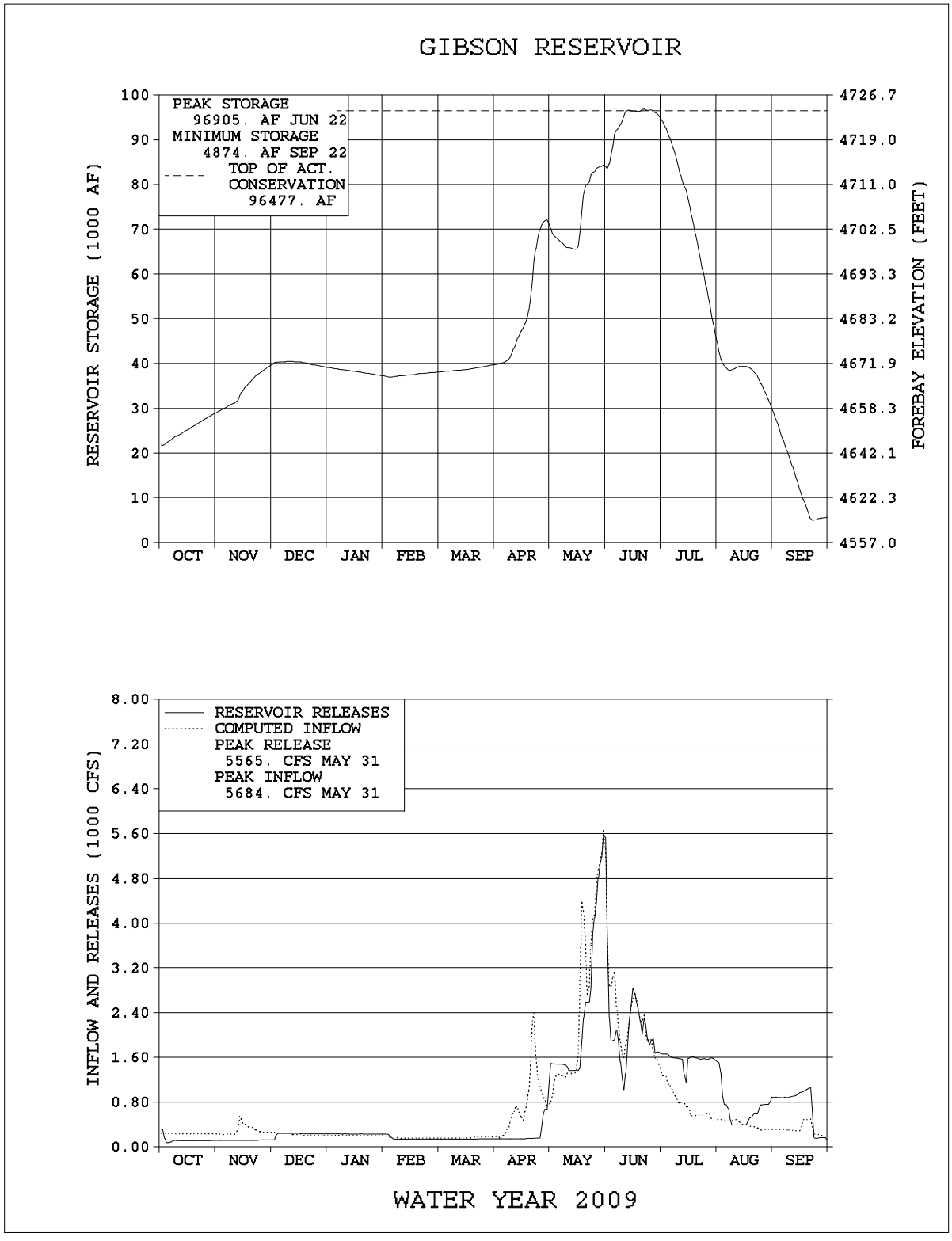

GIBSON RESERVOIR
PEAK STORAGE
96905. AF JUN 22
MINIMUM STORAGE
4874. AF SEP 22
TOP OF ACT.
CONSERVATION
96477. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
100
90
80
70
60
50
40
30
20
10
0
4726.7
4719.0
4711.0
4702.5
4693.3
4683.2
4671.9
4658.3
4642.1
4622.3
4557.0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
5565. CFS MAY 31
PEAK INFLOW
5684. CFS MAY 31
INFLOW AND RELEASES (1000 CFS)
8.00
7.20
6.40
5.60
4.80
4.00
3.20
2.40
1.60
0.80
0.00
WATER YEAR 2009

TABLE MTT8-B
HYDROLOGIC DATA FOR 2009
PISHKUN RESERVOIR (SUN RIVER PROJECT)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/01/2005

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4342.00	16,008	16,008
TOP OF ACTIVE CONSERVATION	4370.00	46,694	30,686

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4362.86	36,428	OCT 01, 2008
END OF YEAR	4351.68	23,900	SEP 30, 2009
ANNUAL LOW	4358.86	31,363	JUL 24, 2009
ANNUAL HIGH	4370.69	47,755	MAY 26, 2009
HISTORIC HIGH	4371.40	48,950	JUL 04, 1953

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	267.4	OCT 08-SEP 09	279.9	OCT 08-SEP 09
DAILY PEAK (CFS)	1,608	JUL 14, 2009	1,721	JUN 16, 2009
DAILY MINIMUM (CFS)	0	*	0	*

* During non-irrigation season

MONTH	INFLOW*		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	0.7	27	0.3	17	36.8	108
NOVEMBER	-0.6	---	0.0	---	36.2	105
DECEMBER	-0.3	---	0.0	---	35.9	105
JANUARY	-0.4	---	0.0	---	35.5	104
FEBRUARY	-0.3	---	0.0	---	35.2	104
MARCH	-0.1	---	0.0	---	35.1	103
APRIL	-0.3	---	0.0	---	34.8	86
MAY	31.0	85	19.0	62	46.8	102
JUNE	74.8	129	84.3	137	37.3	88
JULY	83.3	119	84.8	114	35.8	96
AUGUST	41.2	100	43.6	101	33.5	95
SEPTEMBER	38.4	310	48.0	289	23.9	73
ANNUAL	267.4	113	279.9	118		
APRIL-JULY	188.8	110				

* Average for the 1947-2009 period.

FIGURE MTG6

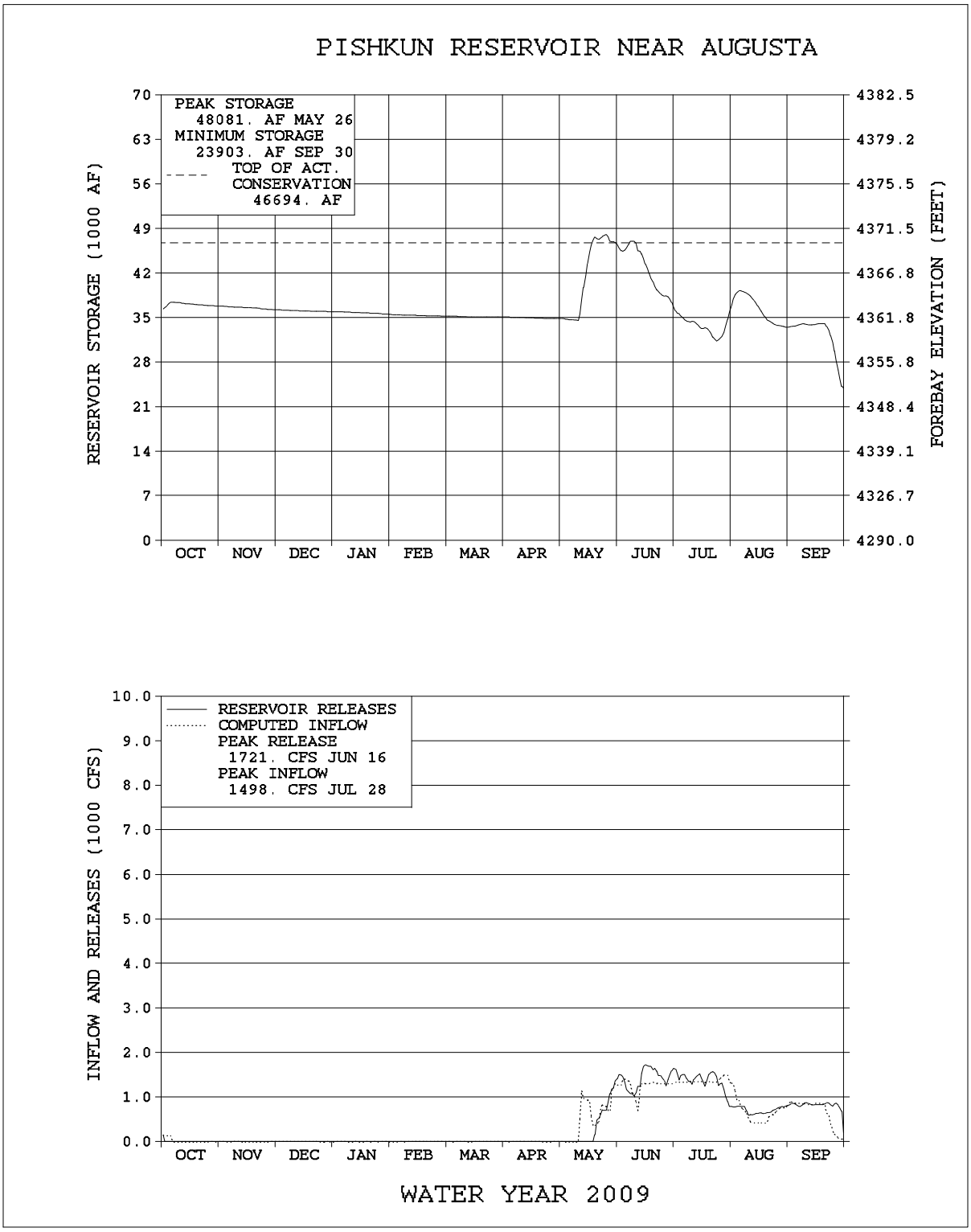

PISHKUN RESERVOIR NEAR AUGUSTA
PEAK STORAGE
48081. AF MAY 26
MINIMUM STORAGE
23903. AF SEP 30
TOP OF ACT.
CONSERVATION
46694. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
70
63
56
49
42
35
28
21
14
7
0
4382.5
4379.2
4375.5
4371.5
4366.8
4361.8
4355.8
4348.4
4339.1
4326.7
4290.0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
1721. CFS JUN 16
PEAK INFLOW
1498. CFS JUL 28
INFLOW AND RELEASES (1000 CFS)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
WATER YEAR 2009

TABLE MTT8-C
HYDROLOGIC DATA FOR 2009
WILLOW CREEK RESERVOIR (SUN RIVER PROJECT)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/01/2005

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4085.28	1	1
TOP OF ACTIVE CONSERVATION	4142.00	31,848	31,847

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4139.13	27,745	OCT 01, 2008
END OF YEAR	4137.27	25,186	SEP 30, 2009
ANNUAL LOW	4137.27	25,186	SEP 30, 2009
ANNUAL HIGH	4142.60	32,729	MAY 31, 2009
HISTORIC HIGH	4144.00	35,300	JUN 22, 1975

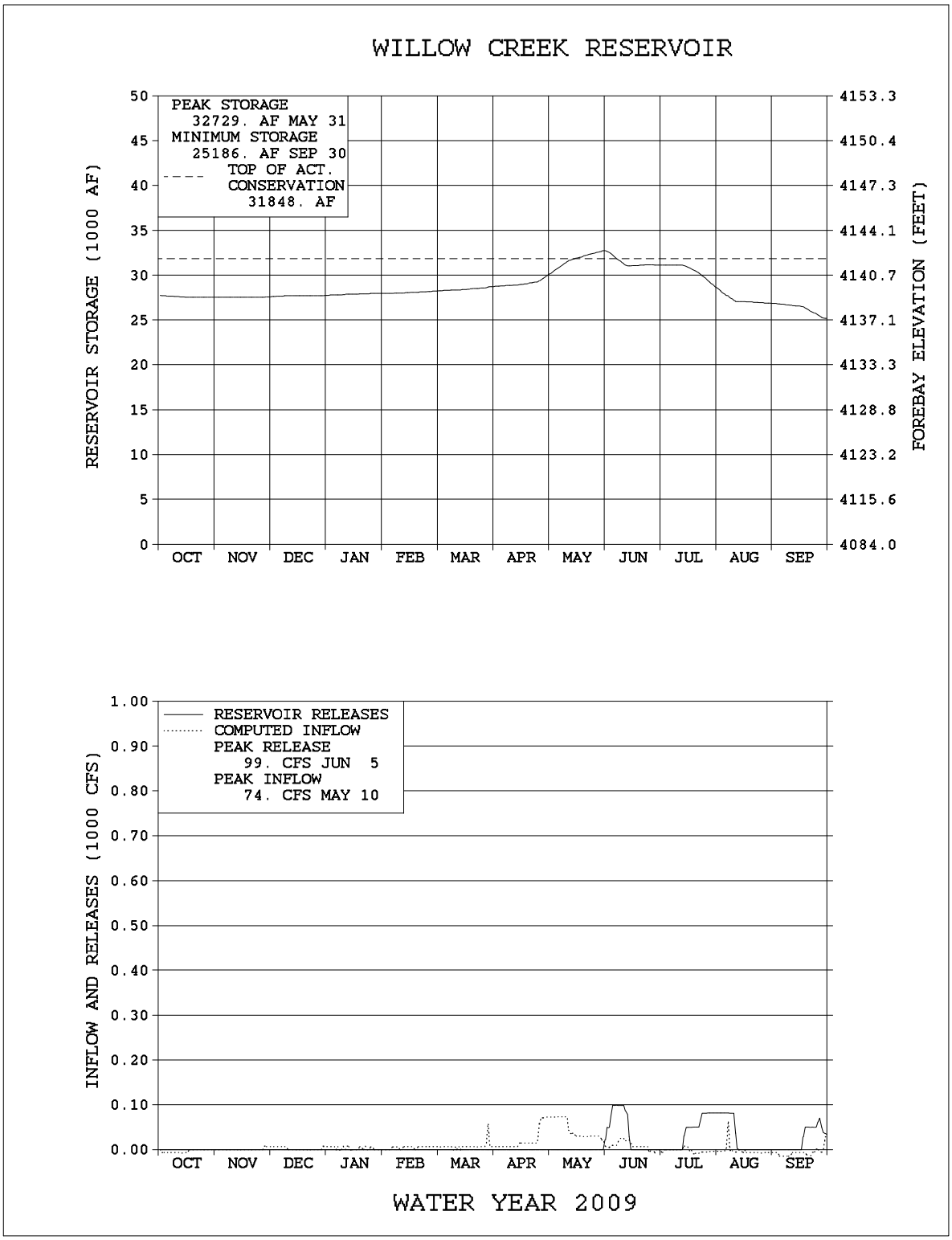
INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	5,000	OCT 08-SEP 09	7,400	OCT 08-SEP 09
DAILY PEAK (CFS)	74	MAY 10, 2009	99	JUN 06, 2009
DAILY MINIMUM (CFS)	0	*	0	*

* During non-irrigation season

MONTH	INFLOW*		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	-0.2	---	0.0	---	27.5	145
NOVEMBER	0.1	7	0.0	---	27.6	141
DECEMBER	0.2	38	0.0	---	27.8	140
JANUARY	0.2	51	0.0	---	27.9	138
FEBRUARY	0.3	63	0.0	---	28.2	137
MARCH	0.5	58	0.0	---	28.7	132
APRIL	1.2	59	0.0	---	29.9	121
MAY	2.8	69	0.0	---	32.7	118
JUNE	0.5	14	2.1	69	31.1	104
JULY	-0.1	---	2.3	43	28.7	122
AUGUST	-0.2	---	1.7	47	26.9	145
SEPTEMBER	-0.3	---	1.3	183	25.2	145
ANNUAL	5.0	35	7.4	99		
APRIL-JULY	4.4	42				

* Average for the 1952-2009 period.

FIGURE MTG7


WILLOW CREEK RESERVOIR
PEAK STORAGE
32729. AF MAY 31
MINIMUM STORAGE
25186. AF SEP 30
TOP OF ACT.
CONSERVATION
31848. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
50
45
40
35
30
25
20
15
10
5
0
4153.3
4150.4
4147.3
4144.1
4140.7
4137.1
4133.3
4128.8
4123.2
4115.6
4084.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
99. CFS JUN 5
PEAK INFLOW
74. CFS MAY 10
INFLOW AND RELEASES (1000 CFS)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Lake Elwell (Tiber Dam)

Lake Elwell (Tiber Dam) (P-S M.B.P.) is located on the Marias River near Chester, Montana. It was built to provide an adequate water supply for 127,000 acres in the Lower Marias Unit and for flood control. The crest section of Tiber Dam spillway began settling in 1956, following initial filling of the reservoir. Restrictions were placed on reservoir operating levels in the late 1950s to safeguard the structure until repairs could be made. The settling continued despite attempts to halt it. The rate of settlement was alarming following the flood of 1964 and the heavy runoff of 1965. This settlement was attributed to a weakness of the underlying shale formation in which small lenses of gypsum were slowly being dissolved as water passed through the shale. Measures to protect the structure were approved by Congress, and construction was initiated in 1967 and completed in 1970. This construction consisted of modifying the canal outlet works for use as an auxiliary outlet works and closing the entrance channel of the spillway by a temporary earthfill cofferdam. To accommodate these changed conditions, the reservoir operating criteria was further revised and the active capacity was eliminated. Work on modification of the spillway to restore active conservation capacity started in 1976 and completed in October 1981. This construction consisted of replacing the upstream section of the spillway and raising the dam 5 feet. Since that time, all restrictions on operating levels were lifted and normal operations were restored at Lake Elwell.

Because the irrigation distribution works have not yet been constructed, the reservoir is operated primarily for flood control and for increased fishery and recreation benefits. However, the reservoir provides irrigation water to several individual operators by water service contracts and provides about 1,500 acre-feet to the Tiber County Water District for municipal, industrial, rural domestic, and livestock use. The city of Chester, Montana, receives a small amount of water from the reservoir annually for municipal use. Approximately 3,000 acres are irrigated by contract from Lake Elwell storage.

In 2002, Reclamation surveyed Lake Elwell to develop a topographic map and compute a present storage-elevation relationship (area-capacity tables). The data was used to calculate reservoir capacity lost due to sediment accumulation since dam closure in October of 1957. The 2002 survey determined that Lake Elwell has a storage capacity of 925,649 acre-feet and a surface area of 18,275 acres at a reservoir elevation of 2993.00. Since closure in 1957, the reservoir has accumulated a sediment volume of 42,179 acre-feet below elevation 2993.00. This volume represents a 4.4 percent change in total capacity at this elevation. The revised area-capacity table was put into effect on October 1, 2005, reflecting the new storage levels.

In September of 2003, construction of a powerplant was permitted by the Federal Energy Regulatory Commission (FERC). The river outlet works underwent extensive modification to incorporate the addition of a 7.5 MW powerplant, privately owned by Tiber Montana, LLC.

A bifurcation pipe was installed in the river outlet works tunnel at the downstream end to divert flow from the existing 72-inch outlet pipe through a bifurcation and 96-inch butterfly valve to the powerplant. Construction of the powerplant was completed and brought on-line in June 2004.

During July and August of 2008, precipitation in the Marias River Basin above Lake Elwell was below normal. Valley precipitation was recorded at 79 and 83 percent of average, respectively, while mountain precipitation was 84 and 78 percent of average, respectively. Inflow to Lake Elwell during July through August totaled 71,143 acre-feet which was 70,075 acre-feet more than experienced in 2007. By year end, both the total annual valley precipitation and the total annual mountain precipitation in the Marias River Basin was 114 percent of average. To conserve storage in Lake Elwell, releases from Lake Elwell to the Marias River were decreased to 670 cfs on August 26, 2008. As a result, Lake Elwell slowly declined and entered water year 2009 with a storage content of 835,102 acre-feet at an elevation of 2987.78 feet. This was 107 percent of normal and 9.87 feet higher than reported on September 30, 2007.

During October of 2008, both valley and mountain precipitation in the Marias River Basin above Lake Elwell was below average. Valley precipitation during October was 16 percent of average while the mountain precipitation was 53 percent of average. During November, the valley precipitation increased to above average at 109 percent of average while the mountain precipitation remained below average at 58 percent of average. Valley precipitation remained above average during December through April. Mountain precipitation increased to near average during December and January, dropped below average during February and then increased to above average during March and April. The valley precipitation amounts during December, January, February, March, and April were 266, 109, 126, 105, and 159 percent of average, respectively, while the mountain precipitation was 100, 100, 64, 130, and 111 percent of average respectively.

At the beginning of water year 2009, with storage 9.87 feet higher than the previous year and inflows to Lake Elwell below normal, releases from Lake Elwell to the Marias River were decreased to 600 cfs on October 9. Maintaining releases at this rate allowed Lake Elwell to slowly decline and by December 31 the level of Lake Elwell was recorded at elevation 2983.21 with storage content of 765,407 acre-feet.

During the winter of 2008-2009, mountain snowpack in the Marias Basin above Lake Elwell began accumulating at lower than normal rates. As the winter progressed, snow fell in the mountains at below normal rates until mid-January. On December 1, the NRCS measured the mountain snowpack in the Marias River Basin above Lake Elwell to be only 19 percent of average. Inflow into Lake Elwell during October-December totaled 38,617 acre-feet and was 61 percent of normal. On January 1, the NRCS reported the mountain snowpack in the Marias River Basin above Lake Elwell had improved but was still only 55 percent of average. The January 1 water supply forecast, based on mountain snowpack, indicated the April-July runoff into Lake Elwell would be 273,000 acre-feet, which was 56 percent of normal. On February 1, the NRCS reported the mountain snowpack in the Marias River Basin above Lake Elwell had only improved to 75 percent of average.

The February 1 water supply forecast, based on mountain snowpack, indicated the April-July runoff into Lake Elwell would be 332,000 acre-feet, which was 68 percent of normal.

On April 1, the NRCS reported the mountain snowpack in the Marias River Basin above Lake Elwell had improved but was still only reported at 91 percent of average. The water supply forecast prepared on April 1 indicated the April-July runoff into Lake Elwell was only expected to be 66 percent of average, totaling 318,000 acre-feet. With storage at 106 percent of average, projected operations indicated the release out of Lake Elwell to the Marias River could be increased and still allow Lake Elwell to fill to within 1.5 feet of the top of the joint-use pool at elevation 2993 near the end of June. Storage in Lake Elwell slowly drafted to a low content for the year of 715,508 acre-feet at elevation 2979.68 on March 21.

Precipitation in the Marias River Basin was much below average during May and June. Valley precipitation above Lake Elwell during May and June was 39 and 77 percent of average, respectively, while the mountain precipitation was 42 and 52 percent of average, respectively.

On May 1, the NRCS reported the mountain snowpack in the Marias River Basin above Lake Elwell was 100 percent of average. With storage at 104 percent of average, the May 1 water supply forecast indicated May-July runoff into Lake Elwell would be 298,000 acre-feet, which was 71 percent of average. It was not until the end of April that the snowmelt runoff actually began to flow into Lake Elwell. Inflows to Lake Elwell gradually increased from about 440 cfs at the middle of April to the peak for the year of 3,587 cfs on May 30. In an effort to continue conserving storage and still meet the increased irrigation demands downstream of Lake Elwell, releases to the Marias River were increased to 625 cfs on June 16. Actual April-July runoff into Lake Elwell totaled 306,178 acre-feet and was 182,443 acre-feet less than in 2008.

Snowmelt runoff during April through July was below normal at 63 percent of average. Daily inflows into Lake Elwell averaged 726 cfs during April, 2,036 cfs during May, 1,803 cfs during June and 496 cfs during July. These resulted in respective monthly total inflows of 43,200 acre-feet, 125,200 acre-feet, 107,300 acre-feet, and 30,500 acre-feet. Releases during this time averaged 506 cfs during April, 511 cfs during May, 578 cfs during June and 638 cfs during July. As a result, storage slowly increased to a peak for the year of 903,893 acre-feet at elevation 2991.80 on July 6. This was 21,756 acre-feet and 1.20 feet below the top of the joint-use pool.

Both valley and mountain precipitation in the Marias River Basin above Lake Elwell was above normal during July but was below average during August and September. Valley precipitation was recorded at 112, 60, and 38 percent of average, respectively, while mountain precipitation was 150, 72 and 21 percent of average, respectively. Inflow to Lake Elwell during July through September totaled 58,010 acre-feet which was 29,475 acre-feet less than experienced in 2008. By year end both the total annual valley precipitation and the total annual mountain precipitation in the Marias River Basin were below average at 82 and 79 percent of average, respectively. The total annual runoff into Lake Elwell during 2009 was 425,754 acre-feet, 63 percent of normal and 157,233 acre-feet less than experienced in 2008.

By the end of the year, normal operations of Lake Elwell drafted storage to 841,617 acre-feet at an elevation of 2988.18 feet. This was 107 percent of normal and 0.40 feet higher than reported on September 30, 2008.

The Corps determined that during 2009, Lake Elwell prevented no local flood damages, but prevented $727,300 in flood damages downstream on the Missouri River below Fort Peck Reservoir. Since closure of Tiber Dam in 1954, Lake Elwell has reduced flood damages by a total of $75,261,500.00.

Important Events – 2009

October 8, 2008: October water supply forecast indicates a decrease in releases to the Marias River is required to conserve storage and meet target objectives. Releases from Lake Elwell to the Marias River were decreased to 600 cfs.

November 12, 2008: To allow Tiber Montana Company, L.L.C., to change oil in the generator bearings, flows were maintained at the current rate of 575 cfs but were switched from the powerplant to the river outlet works for approximately 8 hours.

December 1, 2008: NRCS reported snowpack conditions in the watershed above Lake Elwell were 19 percent of normal.

January 1, 2009: NRCS reported snowpack conditions in the watershed above Lake Elwell had improved to about 55 percent of normal. The January water supply forecast indicates the April-July runoff into Lake Elwell would be 273,000 acre-feet which is 56 percent of normal.

February 1, 2009: NRCS reported snowpack conditions in the water shed above Lake Elwell had improved to about 75 percent of normal. The February water supply forecast indicates the April-July runoff into Lake Elwell would be 332,000 acre-feet which was 68 percent of average.

March 1, 2009: NRCS reported snowpack in the Marias River Basin upstream of Lake Elwell is 67 percent of average. The March water supply forecast indicates the April-July runoff into Lake Elwell would be 299,000 acre-feet which is 62 percent of normal.

March 4, 2009: Snowpack in the Marias River Basin upstream of Lake Elwell is 73 percent of average. In an effort to conserve storage in Lake Elwell, releases to the Marias River were decreased to 500 cfs.

March 21, 2009: Storage in Lake Elwell reaches the minimum elevation for the year of 2979.68.

April 1, 2009: NRCS reported snowpack conditions in the watershed above Lake Elwell were 91 percent of normal. Water supply forecast indicated the April-July runoff into Lake Elwell would be 318,000 acre-feet or 66 percent of normal.

April 8, 2009: Personnel from the Reservoir and River Operations Branch met with the Marias Management Committee to discuss the projected water supply for the Marias River Basin and proposed operations of Lake Elwell.

May 1, 2009: NRCS reported snowpack conditions in the watershed above Lake Elwell were 100 percent of average. The May 1 water supply forecast indicates the May-July runoff into Lake Elwell would be 298,000 acre-feet which is 71 percent of normal.

June 1, 2009: NRCS reported snowpack conditions in the watershed above Lake Elwell were 65 percent of average. The June 1 water supply forecast indicates the June-July runoff into Lake Elwell would be 130,000 acre-feet which is 51 percent of normal.

June 15, 2009: In an effort to continue conserving storage and still meet the increased irrigation demands downstream of Lake Elwell, releases to the Marias River were increased to 625 cfs.

July 6, 2009: Storage in Lake Elwell reaches the maximum elevation for the year of 2991.80.

September 23, 2009: To allow Tiber Montana, L.L.C., to conduct an efficiency test of their turbine unit, releases from Lake Elwell were decreased from 620 cfs to 500 cfs and held for 30 minutes; then increased another 50 cfs every 30 minutes until returning to the current rate of 620 cfs.

Additional hydrologic and statistical information pertaining to the operation of Lake Elwell during 2009 can be found in Table MTT9 and Figure MTG8.

TABLE MTT9
HYDROLOGIC DATA FOR 2009
LAKE ELWELL (TIBER DAM)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/01/2005

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2966.40	554,330	554,330
TOP OF ACTIVE CONSERVATION	2976.00	667,213	112,883
TOP OF JOINT USE	2993.00	925,649	258,436
TOP OF EXCLUSIVE FLOOD CONTROL	3012.50	1,328,723	403,074

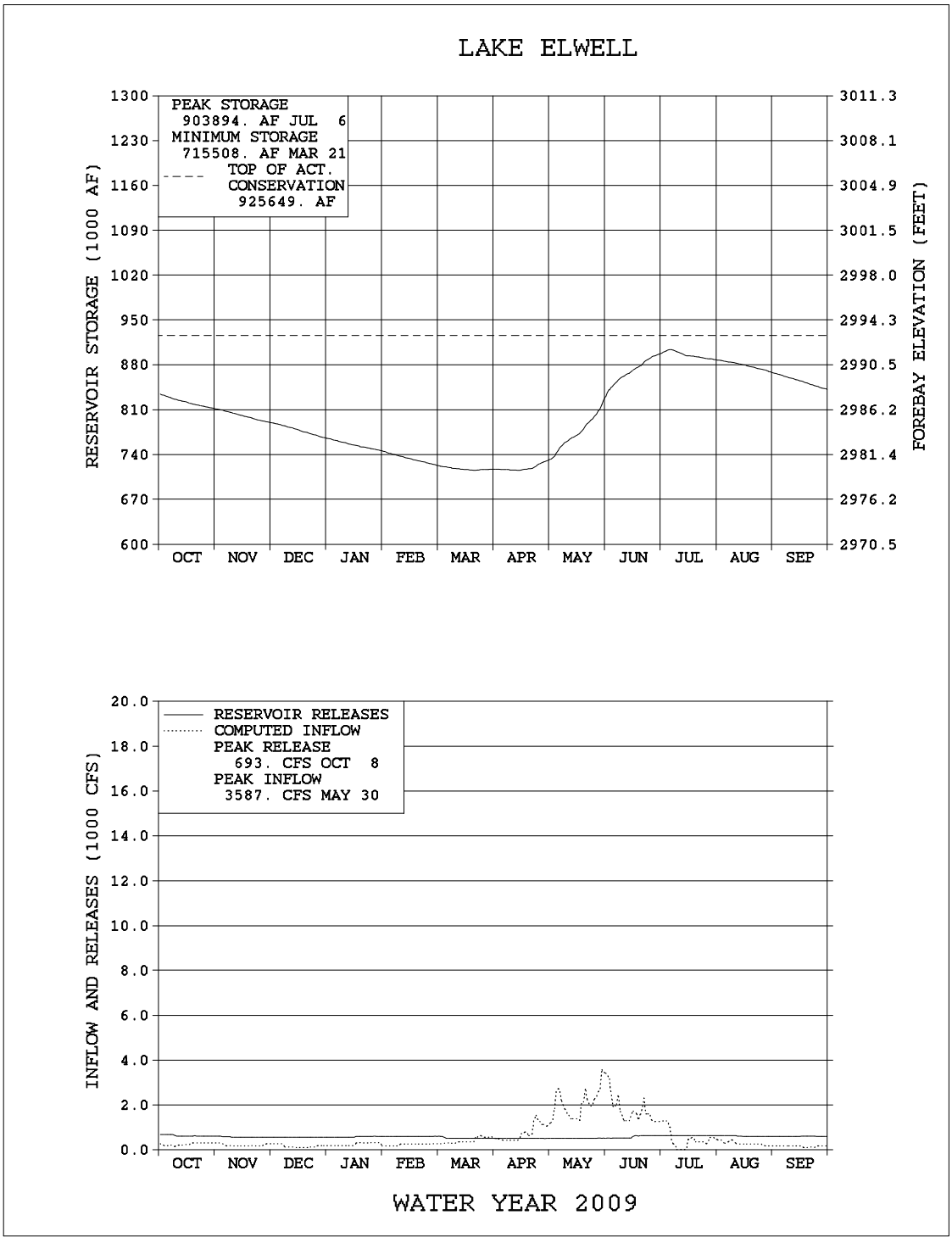
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2987.78	835,102	OCT 01, 2008
END OF YEAR	2988.18	841,617	SEP 30, 2009
ANNUAL LOW	2979.68	715,508	MAR 21, 2009
ANNUAL HIGH	2991.80	903,893	JUL 06, 2009
HISTORIC HIGH	3005.59	1,214,417	JUL 12, 1965

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	425,754	OCT 08-SEP09	419,239	OCT 08-SEP 09
DAILY PEAK (CFS)	3,587	MAY 30, 2009	693	OCT 08, 2008
DAILY MINIMUM (CFS)	3	JUL 11, 2009	500	APR 29, 2009
PEAK SPILL (CFS)			0	NONE
TOTAL SPILL (AF)			0	NONE

MONTH	INFLOW		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	15.9	71	39.5	89	811.5	109
NOVEMBER	12.6	57	34.2	97	789.9	108
DECEMBER	10.1	54	34.6	125	765.4	108
JANUARY	15.4	95	36.0	139	744.8	109
FEBRUARY	12.9	60	33.7	133	724.0	109
MARCH	25.1	50	32.0	91	717.1	106
APRIL	43.2	68	30.1	68	730.3	104
MAY	125.2	75	31.4	47	824.0	103
JUNE	107.3	56	34.4	36	896.9	97
JULY	30.5	49	39.2	52	888.2	98
AUGUST	17.7	91	38.0	65	867.9	103
SEPTEMBER	9.8	61	36.1	71	841.6	107
ANNUAL	425.8	63	419.2	72		
APRIL-JULY	306.2	63				

* Average for the 1957-2009 period

FIGURE MTG8


LAKE ELWELL
PEAK STORAGE
903894. AF JUL 6
MINIMUM STORAGE
715508. AF MAR 21
TOP OF ACT.
CONSERVATION
925649. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
1300
1230
1160
1090
1020
950
880
810
740
670
600
3011.3
3008.1
3004.9
3001.5
2998.0
2994.3
2990.5
2986.2
2981.4
2976.2
2970.5
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
693. CFS OCT 8
PEAK INFLOW
3587. CFS MAY 30
INFLOW AND RELEASES (1000 CFS)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Milk River Project

The 117,000-acre Milk River Project, located in north-central Montana, is served by Sherburne, Fresno, and Nelson Reservoirs. Sherburne and Nelson Reservoirs are single-purpose irrigation structures. Fresno Reservoir has joint-use flood control space, provides a municipal water supply to several municipalities on or near the project, and serves as the primary irrigation storage structure for the Milk River Project. Approximately 101,500 acres are presently served by irrigation districts, 9,500 acres are served by private facilities; and between 5,000 and 6,000 acres are served supplemental water by the Fort Belknap Indian Irrigation Project.

Lake Sherburne is located in Glacier National Park on Swiftcurrent Creek, a tributary of the St. Mary River in the Hudson Bay Drainage Basin. Lake Sherburne has a total capacity of 66,147 acre-feet at elevation 4788.0. The use of boundary waters of the St. Mary and Milk Rivers are divided between Canada and the United States by the 1909 Boundary Waters Treaty. The United States utilizes its entitlement to St. Mary River water by regulating flows through storage in Lake Sherburne and diverting St. Mary River flows through the St. Mary Canal to the Milk River Basin. The river outlet works has a capacity of 2,100 cfs at elevation 4788.0 feet. The maximum combined discharge of the spillway and river outlet works is 4,000 cfs at a maximum water surface elevation of 4810.0 feet.

In 2002, Reclamation surveyed Lake Sherburne to develop a topographic map and compute a present storage-elevation relationship (area-capacity tables). The data was used to calculate reservoir capacity lost due to sediment accumulation since dam closure in 1919. The 2002 survey determined that Lake Sherburne has a storage capacity of 66,147 acre-feet and a surface area of 1,719 acres at a reservoir elevation of 4788.00. Since Lake Sherburne closure in 1919, the measured total volume change at reservoir elevation 4788.00 was estimated to be 343 acre-feet between the 1948 and 2002 surveys and 1,707 acre-feet between the 1983 and 2002 surveys. It is assumed the volume differences between the surveys are due to survey methods and the vertical datum. The revised area-capacity table was put into effect on October 1, 2005, reflecting the new storage levels.

Water year 2008 provided near average mountain precipitation and above average precipitation in the valley areas of the St. Mary River Basin. The latter part of the water year produced below average conditions in both the mountain and valley areas, with August mountain precipitation being the only exception. Valley areas for August and September were 95 and 81 percent of average respectively, while mountain areas were 149 and 75 percent of average respectively. Even though precipitation was below average the inflow to Lake Sherburne was 6,000 acre-feet, 94 percent of average during September.

With the inflow holding near average, the storage in Lake Sherburne did increase slightly after releases were discontinued on September 11, to 35,249 acre-feet, 421 percent of average and 53 percent of normal full capacity, at elevation 4767.05 by the beginning of water year 2009. Both releases from Lake Sherburne and diversions to the St. Mary Canal were discontinued on September 11, 2008, until spring of 2009.

The new water year began with below average precipitation in October and November in both valley and mountain areas. Cumulative valley precipitation from October to the end of December was 68 percent of average. During the same period, cumulative mountain precipitation was only 61 percent of average. Inflows during October through December followed the same trend, and were below average. The inflows were 69, 78, and 62 percent of average, respectively. This resulted in storage at the end of December of 46,200 acre-feet, 264 percent of average.

On January 1, the NRCS reported that mountain snowpack in the St. Mary Basin was 64 percent of normal. With the below normal snowpack, the prospect of continued drought in the St. Mary and Milk River Basins was once again relayed to the water users. Precipitation in the valley was above average and in the mountains was below average during January, but still resulted in the February 1 snowpack for the St. Mary Basin improving to 78 percent of average. Storm patterns improved during February with normal precipitation in the valleys, and slightly better precipitation in the mountains. By March 1, snowpack for the St. Mary Basin was reported to remain at 78 percent of average. Total inflow during January through March was approximately 4,393 acre-feet, 57 percent of average.

Generally, diversions into the St. Mary Canal in the spring begin as soon as weather permits, which in mild years can be as early as March. In 2009, the above average storage in Fresno Reservoir and near average storage in Nelson Reservoir indicated that irrigation water would possibly not be needed very early in the season. Storage in Lake Sherburne was near 200 percent of average, and diversions to the St. Mary Canal were initiated on March 19. Releases from Lake Sherburne preceded the canal diversion on March 17. Due to all of the snow in the canal, flows were held at lower rates until April 5 when they were brought above 200 cfs by about 50 cfs per day as we worked toward filling Fresno Reservoir, and making room for the runoff in Lake Sherburne.

The recorded valley and mountain precipitation during March was above average; however, snowpack accumulated at near average rates. The result of April 1 mountain snow water content improved only slightly to 84 percent of average. The snow pack peaked on April 5, slightly earlier than normal at 84 percent of average, and 30 percent less than in 2008. The April 1 water supply forecast for April through July runoff indicated that the runoff would be 85,300 acre-feet, 86 percent of normal.

Once releases were started, storage decreased until May 17 when the cool spring conditions gave way to warm weather and streamflows started increasing. This signaled the beginning of the snowmelt runoff season for 2009.

Diversion to the St. Mary Canal averaged 481 cfs during April and 568 cfs during May. Releases from Lake Sherburne were adjusted during April and late May to maintain diversion rates for the St. Mary Canal and satisfy Treaty obligations to Canada. On May 24, releases were increased quickly to try to control the rate of fill as a large damaged section of riprap was identified on the upstream face of Sherburne Dam. After the damage was repaired, releases were then reduced to between 30-45 cfs on May 30 in order to minimize excess United States water flowing into Canada, and to try to finish filling the Sherburne Reservoir. In addition, diversions into the St. Mary Canal were maintained at or above 600 cfs to also utilize the United States portion of the natural St. Mary flow. Once Fresno Reservoir was at full capacity and making spillway releases, canal diversions were decreased slightly, while Lake Sherburne releases were kept at reduced rates to try to maximize the apportionment. Flows in excess of the United States storage and diversion capacity were delivered to Canada and continued for several weeks through mid June. Overall mountain precipitation for April was below average; conversely, the valleys received above average precipitation. Precipitation in both areas was below average during May. Cooler temperatures during these months allowed the snowpack to melt out at a slower rate and therefore extend the runoff season.

The snowmelt runoff was essentially melted out by the end of June, which is slightly ahead of the long term average, but is what has been experienced during the previous few years. Lake Sherburne storage peaked on July 6 at 62,275 acre-feet, at elevation 4785.72, which was 3,872 acre-feet and 2.28 feet below the top of normal full capacity. The peak inflow for the year was 990 cfs which occurred on May 31. The actual April through July runoff was 73 percent of average, totaling 76,400 acre-feet.

Precipitation during June continued to be below average for both valley and mountain areas of the basin. July storms brought above average precipitation to the mountain and valley regions. When August and September arrived, precipitation decreased to below normal rates. The cumulative precipitation through the end of September for valley and mountain areas was 98 and 74 percent of average, respectively. Inflows during June, July, August, and September were 64, 72, 89 and 64 percent of average, respectively. Inflow for the water year totaled 104,200 acre-feet, 72 percent of average. This was 47,000 acre-feet or 45 percent less than the inflow experienced during water year 2008. Storage on September 30, 2008, was 13,668 acre-feet, 163 percent of normal.

According to preliminary data, diversions from the St. Mary River to the Milk River totaled 196,576 acre-feet, 130 percent of the long-term average. The long-term average annual diversion is 150,500 acre-feet and the 1972-2002 average is 168,900 acre-feet. The largest diversion previously recorded was 277,500 acre-feet during 1989. Canal diversions as well as releases from Lake Sherburne were discontinued for water year 2008 on September 30.

During the 2009 irrigation season, there were three conference calls held with the International Joint Commission Field Representatives to discuss accumulated deficits by the United States and Alberta, Canada on the St. Mary and Milk Rivers, respectively.

During the first call held on July 9, it was agreed upon to allow the United States to continue to pay back flows until the end of July. The next call was on August 18 when it was agreed to reduce the United States deficit on the St. Mary River to 1,047 cfs-days due to a gage height shift that was put in place in error which caused the deficit to go from 2000 cfs-days to 2,958 cfs-days. The final call was on September 16 and the 1921 Letter of Intent deficit had less than 100 cfs left, that deficit would be made up in the next accounting period to finish off the balance.

During 2009, Lake Sherburne did not contribute to the reduction of flood damages locally or downstream on the Missouri River below Fort Peck Reservoir. Since 1950 Lake Sherburne has prevented $7,946,500 in flood damages.

Additional hydrologic and statistical information pertaining to the operation of Sherburne Reservoir during 2009 can be found in Table MTT10-A and Figure MTG9.

Fresno Reservoir is located above all project lands on the Milk River near Havre, Montana. A sediment re-survey done during 1999 and finalized during 2000 determined the normal full pool capacity was 92,880 acre-feet, a loss of 10,517 acre-feet from the previous capacity. The new revised elevation-area-capacity data was used beginning in water year 2001. The top 32,534 acre-feet is used jointly for flood control and conservation and is not filled until the start of the spring runoff. Fresno Reservoir stores the natural flow of the Milk River along with water diverted into the Milk River from the St. Mary River and Lake Sherburne. Stored water is used principally for irrigation, but Havre and Chinook, Montana, have contracted for a minimum flow in the river of 25 cfs during the winter to maintain suitable water for municipal use. The city of Harlem and the Hill County Water District have also contracted for municipal use.

During water year 2008, there was some relief to the drought conditions in the Milk River Basin. Cumulative precipitation was 100 percent of normal at the end of September. Inflow into Fresno Reservoir during September was 23,100 acre-feet, 88 percent of average. As irrigation wound down for the year, Fresno Reservoir gained a little storage as the water year concluded ending with storage of 57,590 acre-feet, 144 percent of normal and 62 percent of full capacity to begin water year 2009. On September 21, releases for irrigation for the Milk River Project users were discontinued, but releases for the Fort Belknap Indian Irrigation Project (FBIIP) were still needed. Therefore, Fresno Reservoir releases were maintained at approximately 100 cfs to satisfy the FBIIP demand. Releases from Fresno Reservoir were reduced to winter levels of between 35-45 cfs on September 30 at the end of water year 2008. Precipitation during the start of water year 2009 was below average; however, as the winter progressed, precipitation patterns changed and rates were above average until February. The accumulated precipitation from October through December was 141 percent of normal.

Reservoir inflows were much below average from October until December, which resulted in storage decreasing by the end of December. The end of December storage was 54,400 acre-feet, 145 percent of average and 59 percent of normal full capacity.

By January 1, the NRCS reported the snowpack in the Milk River Basin was 64 percent of average, coinciding with the below average fall precipitation in the mountains. These same precipitation trends continued during January with a monthly total of only 75 percent of average. This resulted in a snowpack on February 1 measuring 71 percent of average thus producing a March through July runoff forecast for Fresno Reservoir of 61,000 acre-feet, 64 percent of average.

Storage at the end of February was 48,600 acre-feet, 136 percent of average. In the Milk River Basin, the spring runoff season generally occurs from March through June. Therefore, the peak snowpack and most reliable water supply runoff forecast for the Milk River Basin is generally at the beginning of March. During 2009, the precipitation in February was below average consequently, the snowpack in the Milk River Basin remained below average. On March 1, the snowpack was reported at 74 percent of average. The March 1 water supply forecast indicated that 63,000 acre-feet of runoff could be expected, which was 76 percent of normal. Based upon this forecast, Fresno Reservoir was expected to fill to the top of the conservation pool. Also in March, Reclamation and the Milk River irrigation districts began to discuss water supply, but no allotments were set.

When the runoff below Fresno Reservoir began in mid March, diversions to Nelson Reservoir were initiated. Diversion into Nelson Reservoir began on April 9. Due to the good carryover storage in Fresno Reservoir, and Lake Sherburne, as well as above average precipitation in April, Nelson Reservoir was filled and excess water was delivered to Bowdoin National Wildlife Refuge (Bowdoin) in April and May. Other excess water was used to flush canals, and help wet canal perimeters before demands took hold. This time period was before releases were adjusted from Fresno Reservoir for significant irrigation demands.

The initial meeting with the Milk River Joint Board of Control (MRJBC) regarding water supply was on May 5. Potential irrigation allotments were discussed and the initial allotment was set at 2.0 acre-feet per acre. Then in September, there was a meeting with MRJBC to reassess allotments. Based on storage conditions the MRJBC elected to increase the irrigation allotment to 2.5 acre-feet per acre. At this meeting, it was decided that this would be the final allotment for the season.

By May 1, cumulative valley precipitation was 118 percent of normal. Below average precipitation in March was offset by the significant rain events in April. This resulted in the near average natural inflow to Fresno Reservoir, even though the snowpack was below average. The natural inflow during these months allowed storage to reach an apparent peak in late-May. However, during May and June, precipitation patterns dropped off and inflows to Fresno were predominately coming from the St. Mary Canal.

Therefore, Fresno Reservoir storage once again was able to remain at good levels through the summer months. During much of this time, spillway releases from Fresno Reservoir were being utilized to fill Nelson Reservoir and position the reservoir storage well for the summer irrigation demands. The storage in Fresno Reservoir peaked at 93,860 acre-feet at elevation 2575.20 or 0.20 feet above the spillway crest on May 26.

The average releases for June and July were 791 cfs and 964 cfs, which were 99 and 106 percent of average, respectively. Releases from Fresno Reservoir peaked at 1,137 cfs on July 22. The actual March through July inflow for Fresno Reservoir, excluding St. Mary Canal water was approximately 61,859 acre-feet, 62 percent of average based on the United States Geological Survey (USGS) computation for natural flow at the Milk River at Eastern Crossing gaging station. Inflow to Fresno Reservoir peaked during this time at 1,110 cfs, on April 28.

The cumulative precipitation through the end of June was 87 percent of average, however, as the summer continued the precipitation patterns improved slightly. July and August valley precipitation were 92 and 97 percent of average, respectively. Total inflow for the year was 221,000 acre-feet, 82 percent of average. This was 14,300 acre-feet or 6 percent less than the inflow experienced during water year 2008. Diversions from the St. Mary River Basin to the Milk River Basin accounted for about 89 percent of the inflow to Fresno Reservoir during 2009. Storage on September 30, 2009, was 41,100 acre-feet, 103 percent of average and 44 percent of normal full capacity.

During 2009, Fresno Reservoir did not contribute to the reduction of flood damages locally or downstream on the Missouri River below Fort Peck Reservoir. Since 1950 Fresno Dam and Reservoir has reduced flood damages by a total of $13,126,800.

Additional hydrologic and statistical information pertaining to the operation of Fresno Reservoir during 2009 can be found in Table MTT10-B and Figure MTG10.

Nelson Reservoir, located near Malta, Montana, is an off-stream reservoir which receives its water supply from the Milk River by diversion through the Dodson South Canal. Nelson Reservoir is the only source of supply for the lower portion of the Malta Irrigation District. Nelson Reservoir can also serve the Glasgow Irrigation District when water is not available from Fresno Reservoir. In 1999 a sediment re-survey was performed and then finalized during 2000-01. Since Nelson Reservoir operation began in 1916, the measured total volume loss due to sedimentation was 446 acre-feet. The new revised elevation-area capacity data was implemented at the beginning of water year 2002. Nelson Reservoir now has a total capacity of 78,950 acre-feet and an active capacity of 60,810 acre-feet.

At the end of water year 2008, releases from Fresno Reservoir to satisfy the FBIIP irrigation demand were made during September. This allowed diversions to Nelson Reservoir to continue until the end of September. Therefore, storage increased during September and Nelson Reservoir began the 2009 water year with a storage content of 63,445 acre-feet, at elevation 2217.78, 112 percent of average and 80 percent of normal full capacity. Storage slowly increased until October 16 when diversions were discontinued. This resulted in storage decreasing through the winter until mid March.

Diversions to Nelson Reservoir began in mid March. The total inflow prior to irrigation season, March 19 through May 11, was approximately 23,000 acre-feet. Irrigation releases from Nelson Reservoir began on May 11 through the Nelson South Canal and continued though September 17. Since much of the demand from Malta Irrigation District is for early irrigation, releases are generally discontinued in mid-June for harvest. This was the case once again when releases from Nelson South Canal were discontinued from June 28 – July 11.

From mid-March, storage steadily increased until mid-May when releases exceeded inflows. Storage in Nelson Reservoir peaked for the summer at 78,648 acre-feet at elevation 2221.53 on May 14, which was approximately 302 acre-feet or 0.07 ft below normal full pool. Storage was then drafted until late June when the releases were turned off for the first round of harvests, and de-mossing of the canals. Storage then increased until July 13 when irrigation releases again exceeded inflows.

During 2009, piping plovers were not observed nesting on the shores of Nelson Reservoir. Biologists did multiple surveys looking for nests, but due to the high reservoir levels throughout the summer little desired nesting habitat was available for the birds.

Inflows to Nelson Reservoir during June through July totaled approximately 15,919 acre-feet. Releases to the Milk River were made for use by Glasgow Irrigation District during May through August. The total storage released for Glasgow was approximately 12,089 acre-feet. In September, irrigation releases were discontinued and inflows to the reservoir increased thus allowing some storage to be captured through the end of the water year. Water that was diverted into Nelson Reservoir during August through October totaled approximately 20,682 acre-feet. Total net inflow to Nelson Reservoir during water year 2009 was 7,843 acre-feet. Storage on September 30, 2009 was 71,288 acre-feet at elevation 2219.77, 126 percent of average and 90 percent of normal full capacity.

Additional hydrologic and statistical information pertaining to the operation of Nelson Reservoir during 2009 can be found in Table MTT10-C and Figure MTG11.

Important Events - 2009

March 1, 2009: Milk River runoff forecast indicates 76 percent of normal runoff.

March 17, 2009: Releases begin from Lake Sherburne.

March 19, 2009: St. Mary Canal begins to divert.

April 1, 2009: Lake Sherburne runoff forecast indicates 86 percent of normal runoff.

April 9, 2009: Releases from Fresno Reservoir were increased to transfer water to Nelson Reservoir and satisfy early irrigation demand.

April 21, 2009: MRJBC sets the irrigation allotment to 2.0 acre-feet per acre.

April 28, 2009: Inflow to Fresno Reservoir peaked at 1,110 cfs.

May 11, 2009: Irrigation releases are initiated from Nelson Reservoir.

May 14, 2009: Storage in Nelson Reservoir peaked for the summer at 78,648 acre-feet at elevation 2221.53 on, which was approximately 302 acre-feet or 0.07 ft below normal full pool.

May 26, 2009: Fresno Reservoir storage peaks for the year at 93,860 acre-feet at elevation 2575.20, 0.20 feet above normal full pool.

May 31, 2009: Inflow to Lake Sherburne peaked at 990 cfs.

July 6, 2009: Lake Sherburne storage peaks for the year at 62,275 acre-feet, at elevation 4785.72, which is 2.28 feet below normal full pool.

July 9, 2009: A conference call was held with the IJC Field Representatives to discuss St. Mary and Milk River deficit repayments. It was agreed upon to allow the U.S. to continue to pay back flows until the end of July.

August: The MRJBC increases the irrigation allotment to 2.5 acre-feet per acre and designates that as the final allotment for season.

August 18, 2009: A conference call was held with the IJC Field Representatives to discuss St. Mary and Milk River deficit repayments. It was agreed to reduce the US deficit on the St. Mary to 1,047 cfs-days due to a gage height shift that was put in place in error which caused the deficit to go from 2000 cfs-days to 2,958 cfs-days.

September 17, 2009: Releases from Nelson Reservoir are discontinued.

September 22, 2009: A conference call was held with the IJC Field Representatives to discuss St. Mary and Milk River deficit repayments. Since the deficit had less than 100 cfs left, it was determined that deficit would be made up in the next accounting period to finish off the balance.

September 23, 2009: St. Mary Canal diversions are discontinued.

September 29, 2009: Lake Sherburne releases are discontinued.

October 22, 2009: Releases from Fresno Reservoir are set at approximately 40-45 cfs for the duration of the winter.

TABLE MTT10-A
HYDROLOGIC DATA FOR 2009
SHERBURNE RESERVOIR (MILK RIVER PROJECT)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/01/2005

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4729.30	1,899	1,899
TOP OF ACTIVE CONSERVATION	4788.00	66,147	64,248

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4767.05	35,092	OCT 01, 2008
END OF YEAR	4746.44	13,668	SEP 30, 2009
ANNUAL LOW	4746.44	13,668	SEP 30, 2009
ANNUAL HIGH	4785.72	62,275	JUL 06, 2009
HISTORIC HIGH	4788.30	68,371	JUN 30, 1986

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	104,193	OCT 08-SEP 09	125,774	OCT 08-SEP 09
DAILY PEAK (CFS)	990	MAY 31, 2009	573	AUG 08, 2009
DAILY MINIMUM (CFS)	0	MAR 19, 2009	0	*

* During non-irrigation season

MONTH	INFLOW		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	4.2	69	0.0	---	39.5	420
NOVEMBER	4.3	78	0.0	---	43.8	322
DECEMBER	2.3	62	0.0	---	46.2	264
JANUARY	1.9	67	0.0	---	48.0	238
FEBRUARY	1.2	51	0.0	---	49.3	218
MARCH	1.3	43	3.7	83	46.8	208
APRIL	8.4	93	23.5	161	31.7	18
MAY	26.0	81	18.5	93	39.2	134
JUNE	26.8	64	4.4	24	61.6	117
JULY	15.2	72	24.0	96	52.8	110
AUGUST	8.4	89	30.9	95	30.3	129
SEPTEMBER	4.1	64	20.7	90	13.7	163
ANNUAL	104.2	72	125.8	86		
APRIL-JULY	76.4	73				

* Average for the 1955-2009 period

FIGURE MTG9

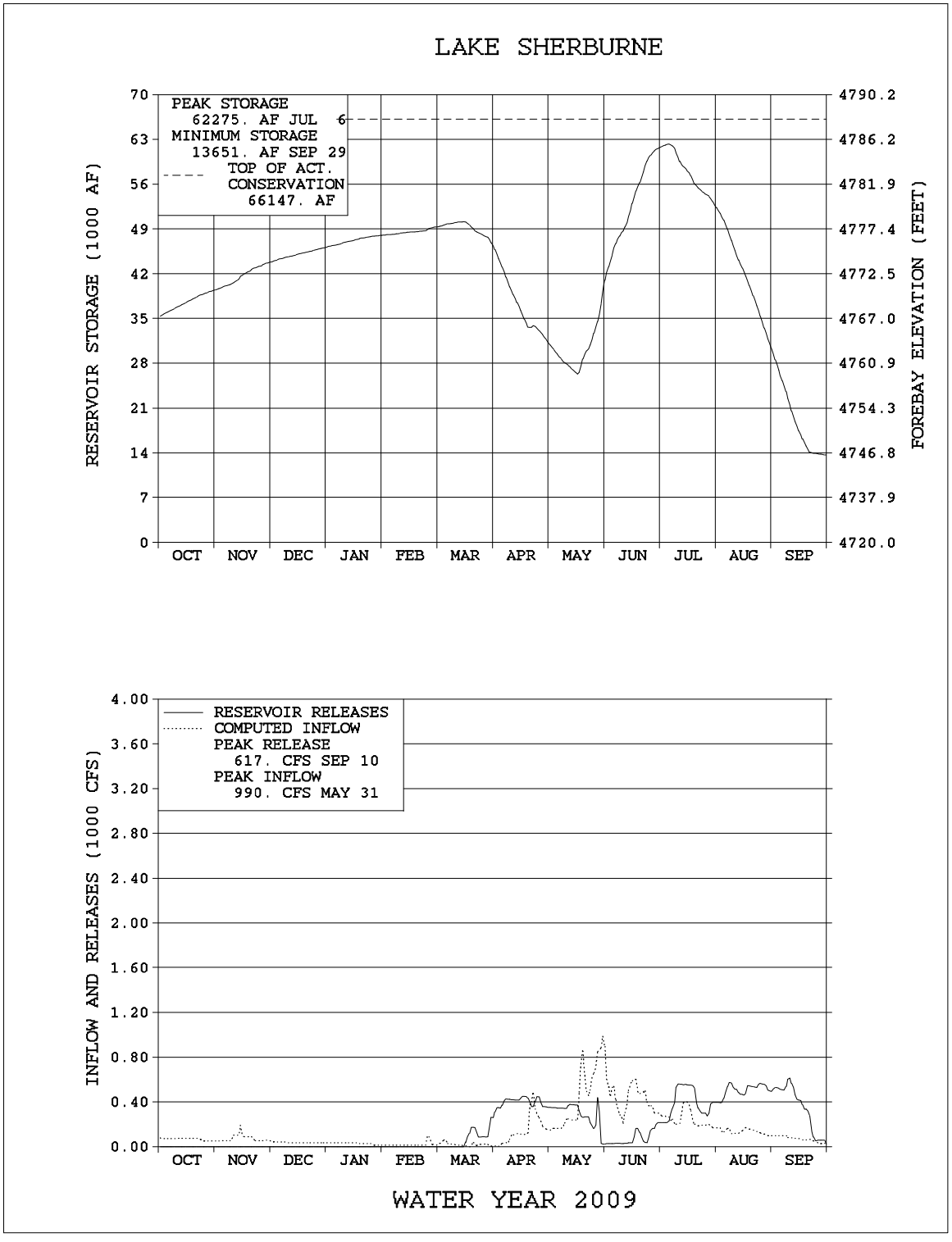

LAKE SHERBURNE
PEAK STORAGE
62275. AF JUL 6
MINIMUM STORAGE
13651. AF SEP 29
TOP OF ACT.
CONSERVATION
66147. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
70
63
56
49
42
35
28
21
14
7
0
4790.2
4786.2
4781.9
4777.4
4772.5
4767.0
4760.9
4754.3
4746.8
4737.9
4720.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
617. CFS SEP 10
PEAK INFLOW
990. CFS MAY 31
INFLOW AND RELEASES (1000 CFS)
4.00
3.60
3.20
2.80
2.40
2.00
1.60
1.20
0.80
0.40
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

TABLE MTT10-B
HYDROLOGIC DATA FOR 2009
FRESNO RESERVOIR (MILK RIVER PROJECT)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/1/2000

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2530.00	448	448
TOP OF ACTIVE CONSERVATION	2567.00	60,346	59,898
TOP OF JOINT USE	2575.00	92,880	32,534

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2566.13	57,590	OCT 01, 2008
END OF YEAR	2559.94	41,119	SEP 30, 2009
ANNUAL LOW	2556.70	33,903	SEP 14, 2009
ANNUAL HIGH	2575.20	93,860	MAY 26, 2009
HISTORIC HIGH	2579.35	154,023	APR 03, 1952

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	221	OCT 08-SEP 09	237,473	OCT 08-SEP 09
DAILY PEAK (CFS)	1,110	APR 28, 2009	1,137	JUL 22, 2009
DAILY MINIMUM (CFS)	0	*	45	FEB 27, 2009

* During non-irrigation season

MONTH	INFLOW		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	1.5	21	2.8	38	56.2	144
NOVEMBER	3.1	146	2.9	95	56.4	146
DECEMBER	0.8	83	2.9	110	54.4	145
JANUARY	0.1	11	3.0	117	51.4	143
FEBRUARY	-0.3	---	2.5	104	48.6	136
MARCH	13.5	44	3.0	47	59.1	112
APRIL	37.6	95	11.1	55	85.6	121
MAY	43.3	99	37.0	78	91.8	140
JUNE	36.4	80	47.1	99	81.1	131
JULY	30.1	85	59.3	106	51.9	117
AUGUST	30.2	92	43.6	96	38.4	103
SEPTEMBER	24.7	95	22.0	100	41.1	103
ANNUAL	221.0	82	237.5	91		
APRIL-JULY	147.4	90				

* Average for the 1949-2009 period.

FIGURE MTG10

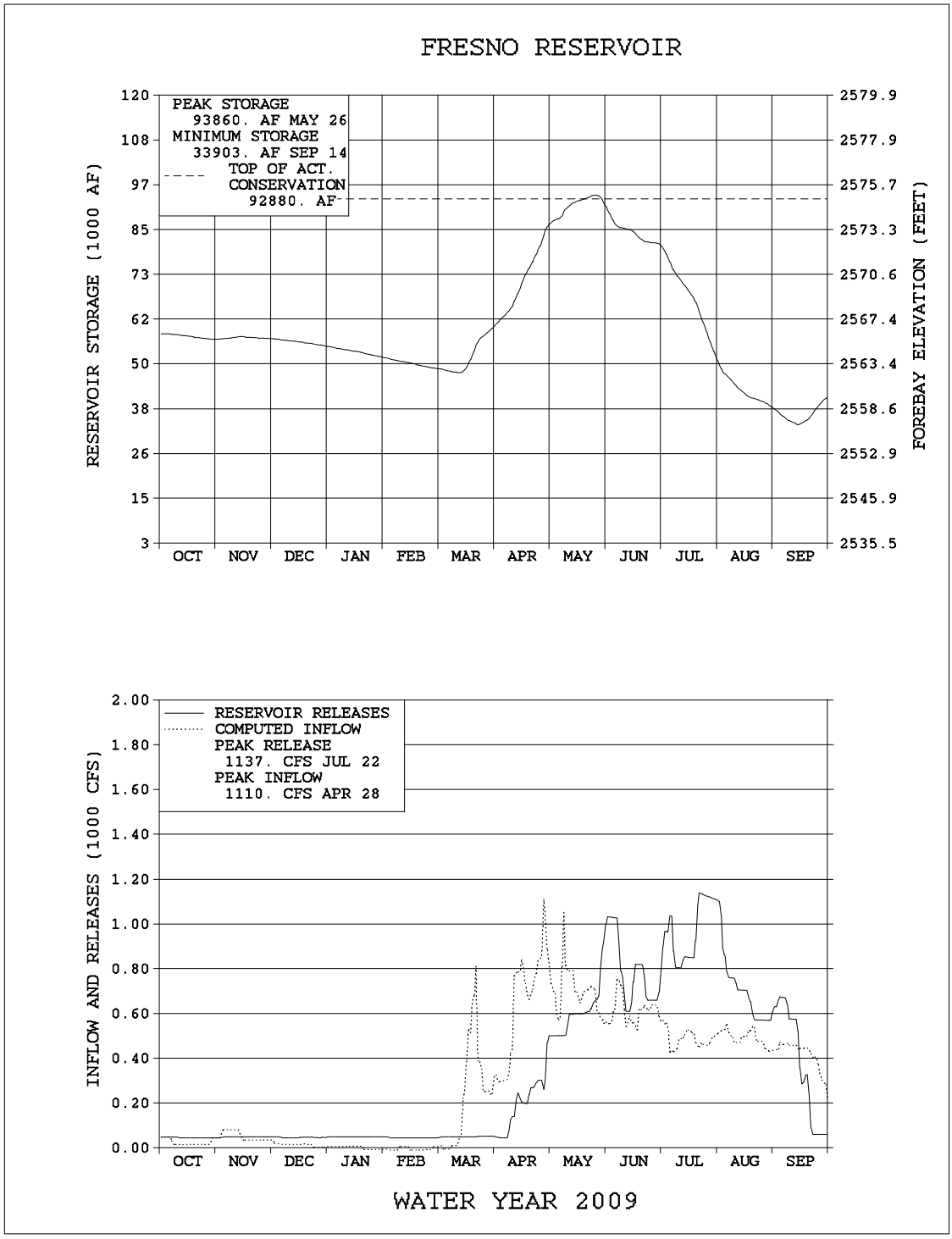


TABLE MTT10-C
HYDROLOGIC DATA FOR 2009
NELSON RESERVOIR (MILK RIVER PROJECT)
NEW SEDIMENT SURVEY DATA EFFECTIVE 10/1/2001

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2200.00	18,140	18,140
TOP OF ACTIVE CONSERVATION	2221.60	78,950	60,810

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2217.78	63,445	OCT 01, 2008
END OF YEAR	2219.74	71,166	SEP 30, 2009
ANNUAL LOW	2215.57	55,274	MAR 18, 2009
ANNUAL HIGH	2221.53	78,648	MAY 13, 2009
HISTORIC HIGH	2221.68	79,297	JUN 01, 2007

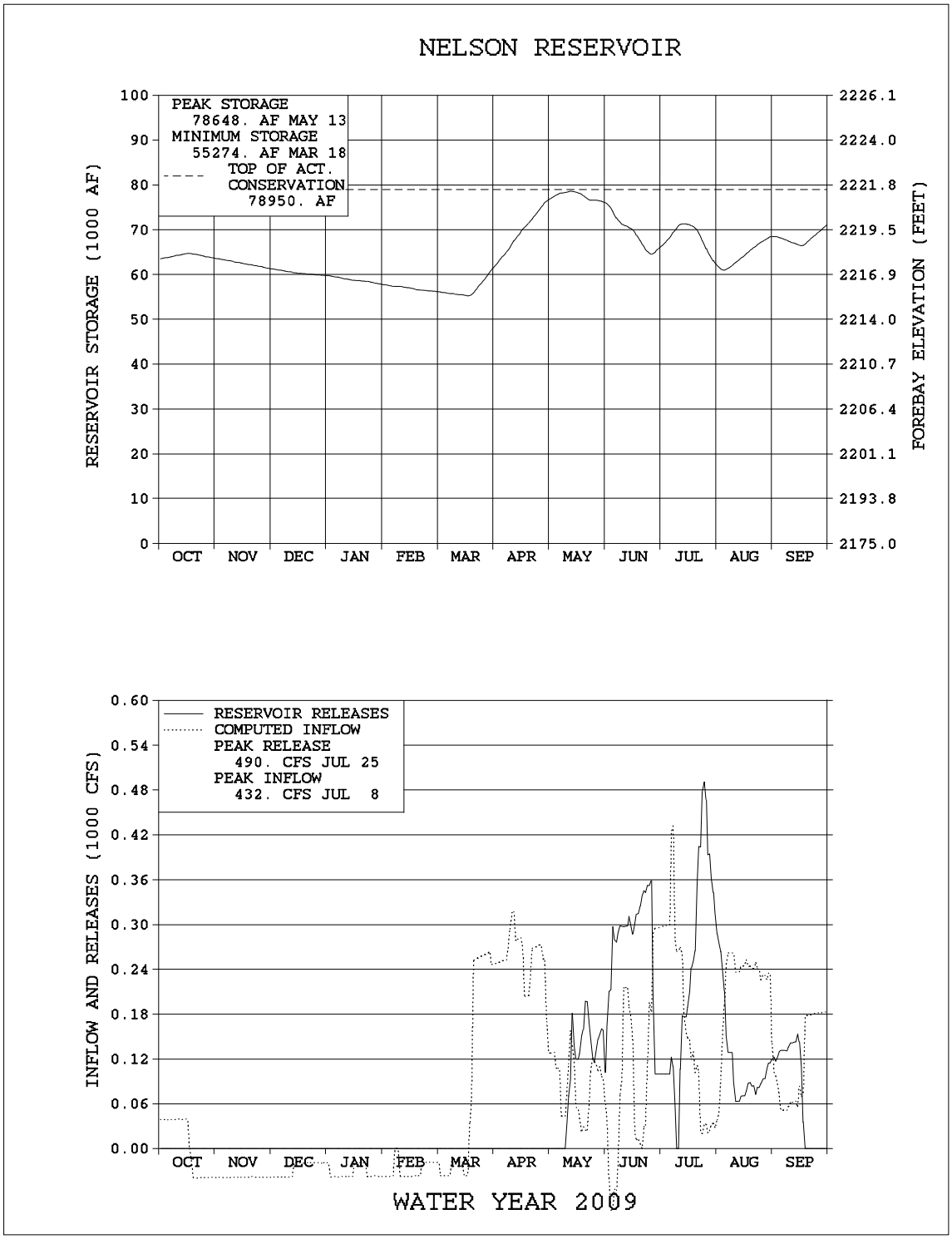
INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	55,155	OCT 08-SEP 09	47,434	OCT 08-SEP 09
DAILY PEAK (CFS)	432	JUL 08, 2009	490	JUL 25, 2009
DAILY MINIMUM (CFS)	0	*	0	*

* During non-irrigation season

MONTH	INFLOW*		OUTFLOW*		CONTENT	
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG
OCTOBER	0.2	1	0.0	---	63.6	107
NOVEMBER	-2.3	---	0.0	---	61.4	105
DECEMBER	-1.6	---	0.0	---	59.7	105
JANUARY	-2.0	---	0.0	---	57.8	105
FEBRUARY	-1.5	---	0.0	---	56.2	104
MARCH	4.9	328	0.0	---	61.1	112
APRIL	15.3	206	0.0	---	76.4	127
MAY	5.4	81	5.7	76	76.1	126
JUNE	5.7	73	16.0	216	65.8	110
JULY	10.8	216	14.1	135	62.5	114
AUGUST	13.4	187	7.3	92	68.5	126
SEPTEMBER	6.9	113	4.3	120	71.2	125
ANNUAL	55.1	135	47.4	119		
APRIL-JULY	37.2	129				

* Average for the 1947-2009 period.

FIGURE MTG11



Bighorn Lake and Yellowtail Powerplant

Bighorn Lake (P-S, MBP) is located on the Bighorn River about 45 miles southwest of Hardin, Montana. It has a total capacity of 1,328,360 acre-feet. The dam and reservoir were built for power generation, irrigation, flood control, fish and wildlife and recreation. The nameplate capacity of Yellowtail Powerplant is 250,000 kilowatts. Provisions have been made for gravity diversions from the reservoir to the proposed Hardin Unit which contains 42,600 acres of irrigable lands needing a full water supply and 950 acres to receive a supplemental supply. Stored water can also be used to irrigate additional lands along the Yellowstone River. Reclamation has negotiated an industrial water service contract with Pennsylvania Power & Light, MT (PPL-MT), formerly known as Montana Power Company (MPC) for 6,000 acre-feet. All other industrial water service contracts with different entities expired as of May 1982, and none were renewed. Bull Lake, Boysen, and Buffalo Bill Reservoirs are three major tributary reservoirs located in Wyoming upstream of Bighorn Lake. Because these reservoirs are operated and managed by the WYAO, all reservoir and river operations in the Bighorn River Basin are closely coordinated between the MTAO and WYAO.

In 1982, a hydrographic and a topographic survey were conducted and a new elevation-area-capacity table and curve was developed. The 1982 survey determined that Bighorn Lake has a storage capacity of 1,328,360 acre-feet and a surface area of 17,279 acres at reservoir elevation 3657.0 (the top of the spillway gates). Since closure in 1965, the reservoir has accumulated a sediment volume of 53,950 acre-feet below reservoir elevation 3657. This volume represents a 3.9 percent loss in capacity and an average annual loss of 3,224 acre-feet from November 1965 through July 1982. Sediment was deposited at the annual rate of 0.314 acre-feet per square mile during that period. The revised area-capacity table was put into effect on August 1, 1986, reflecting the new storage levels.

During the summer of 2008, precipitation in the Bighorn Basin was well below average but improved to above average during September. With irrigation demands in the basin unseasonably high, runoff into Bighorn Lake was only 81 percent of average during August before improving to 107 percent of average during September. The total August-September inflow was 95 percent of average. Releases to the Bighorn River were maintained at or above 2,500 cfs throughout the summer and into the fall. By the end of water year 2008, storage in Bighorn Lake had slowly declined to 1,067,768 acre-feet at elevation 3639.82. This was 105 percent of average and 2,261 acre-feet or 0.18 feet below the top of the joint-use pool. This was also 111,025 acre-feet or 10.11 feet higher than the level experienced at the end of water year 2007.

Water year 2009 started out good with precipitation in the Bighorn Basin upstream of Bighorn Lake being well above average during October. However, by November climatic conditions quickly changed. Valley precipitation was 158 percent of average and dropped to only 85 percent of average in November while the mountain precipitation was 97 percent of average in October, dropping to only 90 percent of average in November. However, with the lingering effects of the dry summer conditions and the heavy irrigation demands continuing into October, inflows into Bighorn Lake remained at 83 percent of average during October. With releases to the Bighorn River maintained at between 2,500-2,700 cfs during October, storage slowly declined to 1,060,300 acre-feet at elevation 3639.22 by October 30.

With storage in Bighorn Lake at the beginning of water year 2009 at 105 percent of average or essentially full, the operation plans prepared in early October, indicated the fall and winter releases to the Bighorn River could be maintained at 2,450 cfs and still reasonably assure storage in Bighorn Lake of reaching a target elevation near 3618-3620 by the end of March or early April. On October 31, the releases to the Bighorn River were decreased to 2,450 cfs and maintained near this rate into early April.

At the end of water year 2008, storages in Boysen and Buffalo Bill Reservoirs located on the Wind and Shoshone Rivers were moderately drafted to 104 and 111 percent of average, respectively, to meet irrigation demands. With the carry-over storages in Boysen and Buffalo Bill Reservoirs much improved from a year ago, the WYAO established the minimum winter releases out of these reservoirs at flow rates of 700 and 350 cfs.

The precipitation in the Bighorn Basin was somewhat variable during December through February. Valley precipitation varied from 131 percent of average during December and January but then dropped to only 27 percent of average during February. The mountain precipitation was similar, averaging about 130 percent of average during December and January before declining to about 64 percent of average during February.

With the exception of late December and early January, snow accumulated in the higher elevations at near normal rates during October through the middle of March. During late December and early January, winter storms frequented the Bighorn Basin, dropping large amounts of snow in the higher elevations. On January 1, the NRCS measured mountain snowpack in the Bighorn Basin at about 99 percent of average. The Wind and Shoshone River Basins, major tributaries of the Bighorn River, were both measured at 95 and 84 percent of average, respectively. But by February 1, snowpack in the Wind River Basin had declined to 86 percent of average while the Shoshone River Basin improved to 97 percent of average, thereby increasing the overall snowpack in Bighorn River Basin above Bighorn Lake to 108 percent of average.

It was not until late March and early April, that snow began to fall in the mountains above Bighorn Lake at above normal rates. During March the valley precipitation in the Bighorn Basin was recorded at 134 percent of average while the mountain precipitation was recorded at only 93 percent of average. By April 1, the NRCS reported snowpack in the Wind and Shoshone River Basins at 86 and 98 percent of average respectively while the overall snowpack in the

Bighorn River Basin above Bighorn Lake was reported at 104 percent of average. On April 17, the snowpack in the Bighorn River Basin reached a peak snow water content of around 15.60 inches. After that time, the snowmelt runoff began and the streamflows began to slowly increase. Temperatures remained cool during April through the first half of May, delaying the beginning of the normal snowmelt runoff about 1-2 weeks later than normal. Valley precipitation in the Bighorn Basin was only 38 percent of average while the mountain precipitation was only 57 percent of average during May. It was not until late May when more normal spring weather returned with warmer temperatures.

By late April, inflows into Bighorn Lake had increased to over 2,800 cfs and continued to slowly increase to nearly 8,000 cfs by the end of May. On May 1, Bighorn Lake recorded a storage content of 901,305 acre-feet at elevation 3623.47. Releases to the Bighorn River during May were maintained between 3,500-4,400 cfs. The cool temperatures were delaying the high elevation snowmelt; inflows into Bighorn Lake were averaging 1,930 cfs during May 1-20. In response, storage in Bighorn Lake continued to slowly decline to a low content for the year of 869,753 acre-feet at elevation 3619.50 on May 20.

It was not until the last week of May, when streamflows began to increase considerably reaching nearly 8,000 cfs by May 26 and remained near this level through early June. About the middle of June, a large spring storm system moved across much of Wyoming and southern Montana, producing heavy amounts of snow in the higher elevations and rain in the valleys. Valley precipitation increased to 210 percent of average while the mountain precipitation increased to 154 percent of average during June. This storm system was increasing streamflows within the Bighorn River Basin dramatically. To control the runoff into Boysen and Buffalo Bill Reservoirs, the WYAO increased releases out of these projects as quickly as possible. The increased releases out of Boysen and Buffalo Bill Reservoirs combined with the snowmelt runoff and the heavy precipitation, resulted in a peak inflow of 16,760 cfs into Bighorn Lake on June 22. The inflow to Bighorn Lake during June totaled 771,605 acre-feet, making it the 5th highest June inflow of record since the construction of Yellowtail Dam.

During the last 10 days of May and through much of June, storage in Bighorn Lake was increasing dramatically. To control the high runoff into Bighorn Lake and the rate of fill of storage in the Bighorn Lake, the releases to the Bighorn River out of Yellowtail Dam were gradually increased to 12,500 cfs on June 22. This release combined with the diversions to the Bighorn Canal, resulted in a total release of 12,850 cfs. The actual total peak release for the year was recorded on July 7 at 12,941 cfs when diversions to the Bighorn Canal were increased to meet the irrigation demands. The peak release to the Bighorn River for the year was recorded at 12,587 cfs on July 7.

From when storage was recorded at the low for the year on May 20 until when storage reached a peak level for the year on July 6, the storage level of Bighorn Lake increased 310,932 acre-feet or 28.42 feet. On July 6, the peak storage in Bighorn Lake was recorded at 1,180,685 acre-feet at elevation 3647.92. This was 114 percent of average and was recorded as the 4th highest level recorded for this time of year since construction of the dam in 1967.

During late June and early July, streamflows in the Bighorn River Basin were slowly declining. Storage levels in Buffalo Bill and Boysen Reservoirs reached peak storages in late June and early July, respectively. After these reservoirs reached their peak storage levels for the year and the inflows into each of these reservoirs continued to decrease, releases from each of these reservoirs were slowly decreased. As the releases were decreased and the snowmelt continued to slowly decline, inflows into Bighorn Lake also slowly declined. The inflow to Bighorn Lake during July totaled 474,082 acre-feet, making it the 7th highest July inflow of record since the construction of Yellowtail Dam. The combined June-July inflow totaled 1,245,687 acre-feet, making it the 4th highest June-July inflow of record. The April-July inflows were 149 percent of average, totaling 1,656,534 acre-feet. This was about 358,215 acre-feet more than experienced in water year 2008 and was recorded as the 9th highest April-July inflow of record, as compared to the April-July inflow a year ago being the 16th highest of record.

On July 9, it was now possible to begin gradually reducing the releases out of Yellowtail Dam. By July 14, all releases through the Yellowtail Dam spillway gates were discontinued and a release of approximately 1,355 cfs was initiated through the Yellowtail Dam evacuation outlet gates, resulting in a total release from Yellowtail Afterbay Dam of 8,250 cfs (7,750 cfs to the Bighorn River and 500 cfs to the Bighorn Canal).

By July 17, all releases through the Yellowtail Dam evacuation outlet gates were discontinued and the turbine releases were gradually reduced, resulting in a total release from Yellowtail Afterbay Dam of 6,800 cfs (6,300 cfs to the Bighorn River and 500 cfs to the Bighorn Canal).

With the snowmelt runoff essentially over and the releases out of Boysen and Buffalo Bill Reservoirs continuing to be gradually reduced, the total release out of Bighorn Lake was also gradually reduced in an effort to conserve storage in Bighorn Lake but also continue slowly evacuating storage out of the exclusive flood control pool. By August 6, the total release out of the Afterbay Dam was reduced to 3,540 cfs (3,050 cfs to the Bighorn River and 490 cfs to the Bighorn Canal). Storage in Bighorn Lake remained 3.73 feet into the exclusive flood control pool.

Valley precipitation in the Bighorn River Basin was respectively 128 percent and 112 percent of average during July and August while the mountain precipitation was respectively 106 and 122 percent of average. This precipitation essentially made it possible to maintain releases out of Bighorn Lake to the Bighorn River near or above 3,000 cfs during August and September. It was not until September 22, that all storage in the exclusive flood pool was successfully evacuated. During September the valley and mountain precipitation had dropped to 33 and 37 percent of average respectively. Storage in Bighorn Lake continued to slowly decline and ended the water year at 1,060,795 acre-feet at elevation 3639.26. This was 104 percent of average and only 9,234 acre-feet or 0.74 feet below the top of the joint-use pool. This was also 6,973 acre-feet or 0.56 feet lower than the level experienced at the end of water year 2008 and the 3rd highest level ever recorded for this time of year since construction of Bighorn Lake in 1967.

The annual runoff into Bighorn Lake totaled 2,729,709 acre-feet. This was 116 percent of average and 25 percent or 596,482 acre-feet more than the total runoff experienced during water year 2008.

The total amount of water released to the Bighorn River during 2009 was 2,678,953 acre-feet or 117 percent of average. This was about 30 percent or 704,912 acre-feet more than was experienced in 2008.

With conservative measures implemented early in the year, it was possible to provide good opportunities for lake recreation on Bighorn Lake, protect the lake fishery interests, and provide limited habitat for the renowned trout fishery downstream of Yellowtail Afterbay Dam. Throughout the fall, winter, and early spring, releases to the Bighorn River were increased and maintained at 2,450 cfs, about 50 cfs lower than the desired minimum flow required by MFWPs to support a healthy river fishery. With the increased storage levels and improved mountain snowpack conditions in 2009, it was possible to increase the river releases to higher than 2,500 cfs during late May and maintain them at or above this rate throughout the remainder of the year. Eventually, a peak release of 12,500 was reached and maintained in the Bighorn River for approximately 17 days during late June and early July in an effort to control the runoff into Bighorn Lake. The good water levels of Bighorn Lake during 2009 also allowed for full service recreation at all marinas around Bighorn Lake during the recreation season from Memorial Day Weekend through Labor Day Weekend.

Total generation produced at Yellowtail Powerplant during 2009 was 886,041,000 kilowatt-hours, 103 percent of the long term average since construction of the powerplant in 1967. This was 572,314 kilowatt-hours more than generated during the record low year of 2003 and 187,734 kilowatt-hours more than generated in 2008. Approximately 89 percent of all the water released from Yellowtail Dam during 2009 was released through the powerplant. The remainder of the water (307,976 acre-feet) was released either through the evacuation outlet gates or the spillway gates during the spring snowmelt runoff season to control the rate of fill of storage in Bighorn Lake.

The Corps estimated that during 2009, Bighorn Lake prevented $67,000 in local flood damages and also prevented $2,410,200 in flood damages downstream on the Missouri River below Fort Peck Reservoir for a total of $2,477,200. Since construction of Yellowtail Dam in 1965, Bighorn Lake has reduced flood damages by a total of $130,678,800.

Important Events - Water Year 2009

September 17-18: With the 2008 irrigation season essentially over, the Bureau of Indian Affairs (BIA) requested all diversions to the Bighorn Canal be gradually discontinued for the year. In response, the total release was gradually reduced to 2,720 cfs (2,720 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

October 21: Streamflow measurements indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,500 cfs (2,500 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

October 23: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,500 cfs (2,500 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

October 27-30: The Afterbay level was maintained no lower than elevation 3182.50 feet to allow for a 4-day maintenance outage on the Afterbay sluice gates.

October 28: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,500 cfs (2,500 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

October 31: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

November 4: The Afterbay level was maintained no higher than elevation 3179 feet to allow for resetting the new radial gate position indicators.

November 12: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

November 18: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

November 24: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

December 1: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

December 11: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

December 22: Power generation indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

December 30-31: The Afterbay level was maintained no higher than elevation 3187.50 feet to allow for annual maintenance of the government camp sewage lagoon.

January 12: Streamflow measurements indicated actual flows in the Bighorn River were higher than anticipated. Turbine releases were adjusted to maintain total release at 2,450 cfs (2,450 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

February 23-26: The Afterbay level was maintained no lower than elevation 3182 feet to allow for a 4-day maintenance outage on the gate actuator of Afterbay sluice gate #3.

March 24: Reclamation hosted the annual Bighorn Interagency Coordination Meeting at the MSU-B downtown conference center in Billings, Montana to discuss the operations of Bighorn Lake and Bighorn River. Dan Jewell, Area Manager of the MTAO and Tim Felchle, Chief of Reservoir and River Operations, presented the water supply outlook and the proposed operations of Bighorn Lake and Bighorn River for the spring and summer 2009 irrigation season.

April 8-9: Based on April water supply forecast, turbine releases were gradually increased to 3,000 cfs to prepare for and control the anticipated spring runoff.

April 20: The level of the tailwater was maintained no higher than elevation 3183 during 0800-1400 hour to allow for inspection of Yellowtail Dam's spillway tunnel.

April 21-22: The high elevation snowpack in the Bighorn River Basin continues to remain above normal. In preparation for the anticipated snowmelt runoff into Bighorn Lake, the turbine releases were gradually increased to 3,500 cfs.

May 5-7: To facilitate testing of new gate automation equipment installed at the Yellowtail Afterbay Dam, river flows to the Bighorn River were fluctuated between 1,500 cfs and 4,500 cfs for brief periods of time.

May 6-7: The BIA requested irrigation diversions to the Bighorn Canal be initiated and gradually increased to 100 cfs. The high elevation snowpack in the Bighorn River Basin also continues to remain above normal. Based on the May water supply forecast, total release was gradually increased to 3,600 cfs (3,500 cfs to the Bighorn River and 100 cfs to the Bighorn Canal).

May 13: The high elevation snowpack in the Bighorn River Basin continues to remain above normal. In preparation for the anticipated snowmelt runoff into Bighorn Lake, the turbine releases were gradually increased to 4,100 cfs (4,000 cfs to the Bighorn River and 100 cfs to the Bighorn Canal).

May 14-18: The BIA requested an increase in diversions to the Bighorn Canal. In response, the total release was increase to 4,275 cfs (4,000 cfs to the Bighorn River and 275 cfs to the Bighorn Canal).

May 26: Warm weather has caused streamflows within the Bighorn River Basin to increase substantially. In preparation for the snowmelt runoff into Bighorn Lake, total release from Bighorn Lake was increased to 4,775 cfs (4,500 cfs to the Bighorn River and 275 cfs to the Bighorn Canal).

May 27-June 3: The BIA requested increases in diversions to the Bighorn Canal. In response, the total release was maintained at 4,775 cfs (4,275 cfs to the Bighorn River and 500 cfs to the Bighorn Canal).

June 5-10: Inflows to Bighorn Lake were gradually increasing to over 12,000 cfs with the weather forecasts calling for additional precipitation. Due to the precipitation, irrigation demands gradually decreased to 350 cfs. However, to control the rate of fill of storage in Bighorn Lake, the total release from Bighorn Lake was gradually increased to 7,500 cfs (7,150 cfs to the Bighorn River and 350 cfs to the Bighorn Canal). To provide Western Area Power Administration (WAPA) with greater flexibility in power operations at Yellowtail powerplant, turbine releases were limited to approximately 6,930 cfs. To maintain a total release of 7,500 cfs out of Bighorn Lake, releases through the evacuation outlets were initiated and increased to near 500 cfs on June 9.

June 15: Widespread precipitation in the Bighorn River Basin prompted WYAO to make additional increases in releases out of Boysen and Buffalo Bill Reservoirs to control the runoff into these facilities. This resulted in increasing the total release out of Bighorn Lake to 8,850 cfs (8,500 cfs to the Bighorn River and 350 cfs to the Bighorn Canal).

June 16-22: Widespread precipitation in the Bighorn River Basin and increased releases out of Boysen and Buffalo Bill Reservoirs prompted increased releases out of Bighorn Lake. To control the runoff into Bighorn Lake, the total release out of Bighorn Lake was gradually increased to 12,850 cfs (12,500 cfs to the Bighorn River and 350 cfs to the Bighorn Canal). As the total release out of Yellowtail Dam was gradually increased, the releases out of the evacuation gates were discontinued on June 16 and releases through the spillway gates were gradually increased to 5,755 cfs by June 22.

June 29-July 2: The BIA requested a 200 cfs reduction in diversions to the Bighorn Canal to assist them in chemically treating the heavy algae growth in the canal. After the algae treatment, canal diversions would be increased to the previous flow rate. In response, to maintain the total release out of Bighorn Lake near 12,850 cfs, the river flows were adjusted by the proportional amounts.

July 9-14: With the high elevation snowmelt essentially over and precipitation returning to more normal, total release out of Bighorn Lake was gradually reduced to 8,000 cfs (7,500 cfs to the Bighorn River and 500 cfs to the Bighorn Canal). Turbine releases were maintained at 6,825 cfs while the spills through the evacuation outlet gates were gradually reduced to 1,105 cfs.

July 17-19: Releases from Boysen and Buffalo Bill Reservoirs were gradually reduced as the high elevation snowmelt declined. To slow the evacuation rate of storage in Bighorn Lake, all spills through the evacuation outlet gates were discontinued and the total release out of Bighorn Lake was gradually reduced to 4,950 cfs (4,500 cfs to the Bighorn River and 450 cfs to the Bighorn Canal).

July 21: Releases out of Boysen Reservoir were reduced. In response, to slow the evacuation rate of storage in Bighorn Lake, the total release out of Bighorn Lake was reduced to 4,490 cfs (4,000 cfs to the Bighorn River and 490 cfs to the Bighorn Canal).

July 30: Streamflows into Bighorn Lake continues to decline. To slow the evacuation rate of storage in Bighorn Lake, the total release out of Bighorn Lake was reduced to 3,990 cfs (3,500 cfs to the Bighorn River and 490 cfs to the Bighorn Canal).

August 4: The tailwater level was maintained below elevation 3183 for approximately 10 hours to allow for inspection of the spillway tunnel.

August 6: Streamflows into Bighorn Lake continues to decline. Power generation also indicated releases to the Bighorn River were lower than anticipated. To slow the evacuation rate of storage in Bighorn Lake, the total release out of Bighorn Lake was reduced to 3,540 cfs (3,050 cfs to the Bighorn River and 490 cfs to the Bighorn Canal).

August 11: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,540 cfs (3,050 cfs to the Bighorn River and 490 cfs to the Bighorn Canal).

August 17-28: The level of the Afterbay was maintained above elevation 3182 to allow for a 12-day maintenance outage on the Afterbay sluiceway gates.

September 1: The level of the Afterbay was maintained below elevation 3179 for approximately 5 hours to allow for inspection and maintenance of the spillway gates on the Afterbay.

August 13: Streamflow measurements indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,415 cfs (3,050 cfs to the Bighorn River and 365 cfs to the Bighorn).

August 17: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,415 cfs (3,050 cfs to the Bighorn River and 365 cfs to the Bighorn Canal).

August 20: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,450 cfs (3,050 cfs to the Bighorn River and 400 cfs to the Bighorn Canal).

August 25: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,450 cfs (3,050 cfs to the Bighorn River and 400 cfs to the Bighorn Canal).

September 1: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,450 cfs (3,050 cfs to the Bighorn River and 400 cfs to the Bighorn Canal).

September 3: Power generation indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,450 cfs (3,050 cfs to the Bighorn River and 400 cfs to the Bighorn Canal).

September 14-17: Turbine releases were restricted to 2-unit capacity to allow for scheduled maintenance on transformers KCA & KCC.

September 21-24: Turbine releases were restricted to 2-unit capacity to allow for scheduled maintenance on transformers KCB & KCD. Power generation also indicated actual flows in the Bighorn River were lower than anticipated. Turbine releases were adjusted to maintain total release at 3,180 cfs (2,950 cfs to the Bighorn River and 230 cfs to the Bighorn Canal).

October 6-7: With the 2009 irrigation season essentially over, the BIA requested all diversions to the Bighorn Canal be gradually discontinued for the year. In response, the total release was gradually reduced to 2,800 cfs (2,800 cfs to the Bighorn River and 0 cfs to the Bighorn Canal).

October 8: Reclamation hosted the annual Bighorn Basin Fall Water Supply Meeting at the new Hampton Inn in west Billings to discuss operations of Bighorn Lake and Bighorn River. Dan Jewell, Area Manager of the MTAO and Tim Felchle, Chief of Reservoir and River Operations, presented the water supply outlook and the proposed operations of Bighorn Lake and Bighorn River for the fall and winter season of 2009-2010.

Additional hydrologic and statistical information pertaining to the operations of Bighorn Lake during 2009 can be found on Table MTT11 and MTG12.

For more detailed information on the operations of Boysen and Buffalo Bill Reservoirs during 2009, refer to the narratives for Boysen Reservoir and Powerplant and Shoshone Project under the responsibility of the WYAO.

TABLE MTT11
HYDROLOGIC DATA FOR 2009
BIGHORN LAKE (YELLOWTAIL DAM)

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	3547.00	493,584	493,584
TOP OF ACTIVE CONSERVATION	3614.00	829,687	336,103
TOP OF JOINT USE	3640.00	1,070,029	240,342
TOP OF EXCLUSIVE FLOOD CONTROL	3657.00	1,328,360	258,331

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	3639.82	1,067,768	OCT 01, 2008
END OF YEAR	3639.25	1,060,671	SEP 30, 2009
ANNUAL LOW	3619.50	869,753	MAY 20, 2009
ANNUAL HIGH	3647.92	1,180,685	JUL 06, 2009
HISTORIC HIGH	3656.43	1,365,198	JUL 06, 1967

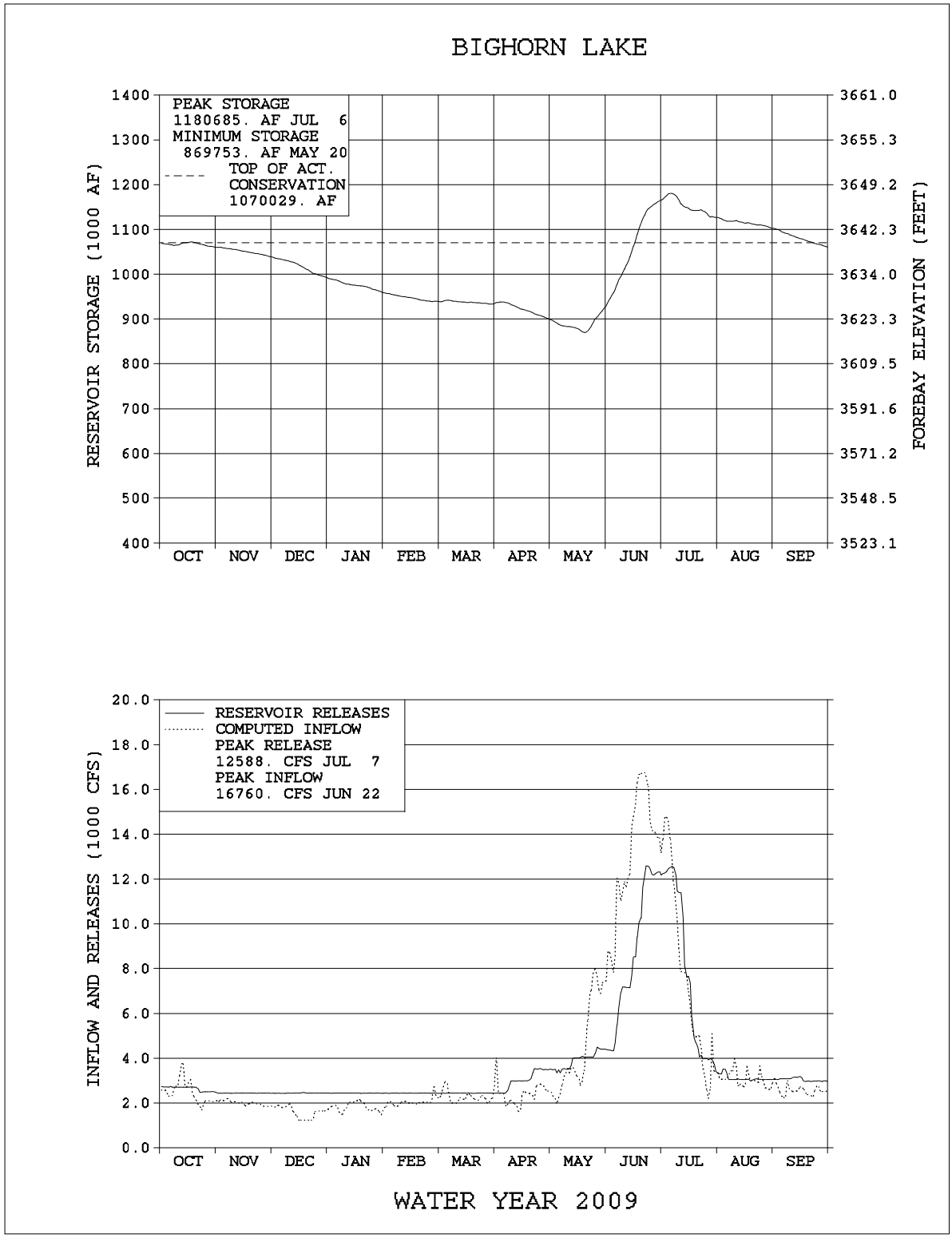
INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW*	DATE
ANNUAL TOTAL (AF)	2,729,584	OCT 08-SEP 09	2,678,952	OCT 08-SEP 09
DAILY PEAK (CFS)	16,760	JUN 22, 2009	12,588	JUL 17, 2009
DAILY MINIMUM (CFS)	1,200	DEC 17, 2008	2,415	DEC 05, 2008
PEAK SPILL (CFS)			6,297	JUL 08,2009
TOTAL SPILL (AF)			307.3	06/09-07/17/09

*Discharge to the Bighorn River

MONTH	INFLOW		OUTFLOW*				CONTENT	
	KAF	% OF AVG	CANAL KAF	% OF AVG	RIVER KAF	% OF AVG	KAF	% OF AVG
OCTOBER	151.4	83	0.0	---	162.0	95	1,060.3	105
NOVEMBER	118.9	78	0.0	---	144.8	82	1,038.9	106
DECEMBER	98.0	71	0.0	---	149.8	83	991.2	108
JANUARY	112.0	84	0.0	---	149.7	84	957.8	111
FEBRUARY	113.0	84	0.0	---	135.1	83	939.5	112
MARCH	138.6	82	0.0	---	149.6	82	933.0	112
APRIL	142.6	87	0.0	---	178.0	100	901.3	110
MAY	268.3	109	11.5	103	238.7	129	923.7	105
JUNE	771.6	187	23.8	111	511.7	191	1,163.7	113
JULY	474.1	163	28.6	103	487.2	176	1,126.5	109
AUGUST	188.9	118	26.0	98	191.5	112	1,102.5	109
SEPTEMBER	152.2	89	17.1	92	180.9	120	1,060.7	104
ANNUAL	2,729.6	116	107.0	97	2,679.0	117		
APRIL-JULY	1,656.6	149						

* Average for the 1967-2009 period.

FIGURE MTG12



CLIMATE SUMMARY

For the second consecutive year, the snowpack in the mountains of the Bighorn Basin was near normal in 2009. Below average temperatures combined with above average precipitation during the spring to keep snow falling in the mountains. The summer months were much cooler than what has been experienced since the 1990's with above average precipitation in June and July finally bringing an end to the extended drought in Wyoming.

In July of 2009, Wyoming was considered to be completely free of drought for the first time since the summer of 2000. Abnormally dry conditions began to expand across Wyoming during the early spring of 2000 with drought conditions intensifying through the spring and summer. The drought peaked in severity in January of 2003 when 99 percent of the state was in extreme or exceptional drought, with 36 percent of the state in the exceptional drought category. The wet spring of 2005 eliminated the areas of exceptional drought but it took back to back years of above average precipitation in 2008 and 2009 to completely free the state from the grip of 9 years of drought. In the Bighorn Basin in Wyoming, extreme drought conditions existed in some part of the basin from August 2001 to May 2005, with the northern portion of the basin reaching the exceptional drought category from February 2005 through April 2005.

The water year got off to a great start in the Boysen watershed, when a storm from October 10 through October 12 brought heavy snow to a large part of central and western Wyoming. The official total snowfall from the storm in Lander was 29.7 inches, which ranks as the greatest storm to hit Lander during October and the seventh heaviest snowfall in any month since recordkeeping began in 1891. Precipitation at low elevation stations was 160 percent of average while the mountains above Boysen Reservoir got 119 percent of normal October precipitation. The Shoshone drainage missed the brunt of the storm and came in with less than average precipitation for the month. As is normally the case with early season snowstorms, warm temperatures return and melt the snow. That was definitely true following the October storm with Lander registering the fourth warmest November of record. Dry conditions prevailed along with the warm temperatures and the Boysen watershed snowpack slipped to 73 percent of average on December 1. In the Buffalo Bill watershed, the December 1 snowpack was 64 percent of average. Frequent storms brought snow to Wyoming during December, beginning with a strong Pacific system that dropped significant snowfall December 12 through 14. Immediately following, an Arctic cold front moved in to the state driving temperatures into the -20 degree range. Another moisture rich Pacific storm added to the snowpack as it moved from south to north on December 21-23. A third powerful storm that began on Christmas Day brought heavy snow to much of western Wyoming as it tracked through the state. All three storms were beneficial to both the Boysen and Buffalo Bill watersheds, but the most significant total snowfall occurred in the southern end of the Wind River Range where the Deer Park Snotel received over 50 inches of snow. December temperatures were near normal in the Wind River Basin but about 3 degrees colder than normal in the Shoshone drainage. On January 1, the snowpack in the Boysen and Buffalo Bill drainages was 90 and 86 percent of average, respectively. A shift in the storm track during January favored northern Wyoming as snowfall on January 8, 11, and 24 continued to move the snowpack closer to average in the Shoshone watershed while the Wind River Basin lost ground.

Extreme cold moved in behind the storm on January 24, with Cody reporting a low of -32 degrees and numerous stations reporting lows in the 20 to 30 degree below zero range. During January, the snowpack in the Buffalo Bill watershed increased 12 percent to 98 percent of average on February 1 while the Boysen watershed snowpack lost 7 percent to 83 percent of average. The month of February saw very little precipitation in the area above Boysen watershed, where Burris Diversion Dam, Lander, and Riverton, Wyoming only received a trace, bringing the average for the month at the low elevation stations down to 11 percent of average. The mountains above Boysen reservoir didn't fare well either, receiving only a little more than half of normal February precipitation. Precipitation in the Buffalo Bill drainage was better, but still below average. The only two noteworthy storms in February were the 16-18 and 26 through the 27, with neither of the storms producing much snowfall in the Wind or Shoshone Basins. February temperatures were slightly above average in the Shoshone Basin but over 5 degrees warmer than normal in the Wind River Basin. While warmer and drier than normal conditions prevailed during February, the snowpack only lost 5 percent to average in the Boysen drainage and 7 percent in the Shoshone Basin above Buffalo Bill drainage. On March 1, snowpack in the mountains above Boysen and Buffalo Bill drainages stood at 78 and 91 percent of average, respectively.

March came in like a lamb as unseasonably mild southwest flow over Wyoming on March 2 resulted in several Bighorn Basin locations reporting record high temperatures with Cody and Worland each reaching 66 degrees, Lander at 64 degrees, and Riverton at 63 degrees. Near record temperatures remained in the basin on March 3, but a snowstorm moved through northwestern Wyoming on March 4 with the Absaroka Mountains above Buffalo Bill Reservoir getting well over a foot of snow. A more widespread storm on March 8 through the 10 brought snow to western and central Wyoming with the heaviest snowfall occurring along the southern end of the Wind River Range. A series of fronts stacked up to the west of Wyoming all brought snow in varying degrees to the Wind and Shoshone Basins. On March 15-16, the Absaroka Mountains received close to a foot of new snow while the Wind River Range got the most benefit from snow on March 22 and 23. Snotel sites in both basins reported over a foot of snow as a powerful storm moved southeastwardly through Wyoming on March 28-30. Another fast moving storm brought additional snow to western Wyoming on the evening of the March 31 and on into April 1. Temperatures were about 2 degrees below average for March with unusually cold late winter temperatures in the -10 degree range occurring from March 9 through the 11. The total precipitation for March was well above average and was reflected in the snowpack increasing to 89 percent of average in the Boysen watershed and 99 percent of average in the Buffalo Bill drainage on April 1. The snow continued to pile up in the mountains during April as one storm after another moved through the state. Moist Pacific air brought from 10 to 16 inches of snow to the area of Yellowstone Park drained by the Shoshone River on April 2 and 3. A separate storm on April 3 and 4 dumped close to 2 feet of snow on the east side of the continental divide in the Wind River Mountains. Rain and snow fell as a slow moving low pressure system tracked across southwestern and central Wyoming on April 8 and 9, with over 1 foot of snow reported north of Riverton. Significant snowfall continued as a large low pressure system brought moderate to heavy snow to western and central Wyoming on April 14 through the 17. Low elevation snowfall ranged from 6 to 12 inches with the mountains above Boysen and Buffalo Bill Reservoirs getting from 12 to 18 inches of heavy wet snow. Following this storm, temperatures rose into the 70's with clear skies and dry conditions prevailing for over a week.

On April 26 another moisture-laden system moved into the state and once again, the heaviest snow fell in the Wind River Range with 2 feet or more of accumulation.

The storm didn't reach into the mountains above Buffalo Bill Reservoir and with the warmer temperatures some runoff was starting to occur during the last week of the month. At the end of the month, the low elevation weather stations in the Boysen drainage had received 167 percent of average precipitation and Buffalo Bill Reservoir precipitation was 145 percent of average. The stations in the mountains above Boysen and Buffalo Bill Reservoirs received 146 and 124 percent of average, respectively. In Lander, the 33.1 inches of snow that fell during April made 2009 the 17th snowiest April since 1891 and Riverton recorded the 12th greatest April snowfall in 92 years of record. The May 1 snowpack in the Boysen watershed increased 23 percent during April to 112 percent of average on May 1 but only a 1 percent increase was noted during April in the Buffalo Bill drainage. The cycle of one storm after another came to an abrupt halt in May as dry air persisted in the basin for most of the month. It wasn't until Memorial Day weekend when scattered thunderstorms brought over a ½ an inch of rain to locations within the Bighorn Basin that any appreciable rainfall was recorded. For the month, the Buffalo Bill drainage received 52 percent of normal rainfall and Boysen drainage received only 33 percent of average. The temperature in both the Shoshone and Wind River Basins was about 2 degrees above average for the month of May. Inflow to Buffalo Bill Reservoir from snowmelt runoff began to increase in late April but was slowed as a storm front brought colder temperatures to the region. Inflow slowly came up during the first half of May and then jumped quickly in response to warmer weather around May 18. Inflow to Buffalo Bill Reservoir peaked at 10,022 cfs on May 31 but the sustained runoff during 2009 resulted in flows above 6,000 cfs every day from May 19 through July 4. Precipitation during June was well above average in both the Shoshone and Wind River Basins at 174 and 237 percent of average, respectively, which greatly extended the runoff period in both basins. Boysen Reservoir inflow began to increase around May 20 and gradually rose through the remainder of the month. Inflow during June exceeded 6,000 cfs on all but five days of the month with the peak of 9,169 cfs occurring on June 22. Precipitation was 151 percent of average during July and snowmelt runoff into Boysen Reservoir continued well into the month. July precipitation in the Buffalo Bill watershed was slightly below normal but August precipitation was above average in both basins. Temperatures during July and August were below normal but September turned warmer and drier than normal.

The 2009 mountain snow water content for the drainage basins in Wyoming is shown on Table WYT1. The 2009 water supply forecasts are shown on Table WYT2 and the 2009 precipitation in inches and the percent of average is shown on Table WYT3.

TABLE WYT1
2009 MOUNTAIN SNOW WATER CONTENT [1]
AS A PERCENT OF THE 1971-2000 AVERAGE

DRAINAGE BASIN	JAN 1		FEB 1		MAR 1		APR 1		MAY 1	
	INCHES	%	INCHES	%	INCHES	%	INCHES	%	INCHES	%
BULL LAKE	4.50	81	5.70	78	6.62	73	9.73	86	12.67	122
BOYSEN	5.92	90	7.77	83	8.93	78	12.51	89	15.77	112
BUFFALO BILL	7.56	86	12.06	98	13.73	91	18.19	99	19.40	100

[1] A composite of the following Natural Resources Conservation Service SNOTEL sites was used to determine snow water content and percent of average for the basins:
Bull Lake.....Cold Springs, Elkhart Park, Hobbs Park, and St. Lawrence Alt;
Boysen..... Burroughs Creek, Cold Springs, Deer Park, Hobbs Park, Little Warm, St. Lawrence Alt, South Pass, Togwotee Pass, and Townsend Creek;
Buffalo Bill... Blackwater, Evening Star, Kirwin, Marquette, Sylvan Lake, Sylvan Road, and Younts Peak

TABLE WYT2
2009 WATER SUPPLY FORECASTS OF APRIL - JULY SNOWMELT RUNOFF

	JAN 1		FEB 1		MAR 1		APR 1		MAY 1		JUN 1		ACTUAL	APR-JULY	% OF APRIL
	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG	KAF	% OF AVG	FORECAST RECEIVED
BULL LAKE	130	94	130	94	125	90	130	94	150	108	130	94	159.4	115	123
BOYSEN	500	92	500	92	400	74	475	88	700	129	480	89	803.0	148	169
BUFFALO BILL	630	97	700	108	650	101	700	108	750	116	720	111	954.2	148	136

Averages are based on the 1979-2008 period

TABLE WYT3

PRECIPITATION IN INCHES AND PERCENT OF AVERAGE

BASIN	OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP	
	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%	IN.	%
VALLEY PRECIPITATION [1]																								
BUFFALO BILL																								
MONTHLY PRECIP AND % OF AVERAGE	0.55	49	1.10	99	1.44	140	1.20	109	0.64	73	2.04	183	1.89	145	1.07	52	3.57	174	1.40	96	1.37	108	0.18	14
YEAR-TO-DATE PRECIP AND % OF AVERAGE	0.55	49	1.65	74	3.09	94	4.29	98	4.93	94	6.97	110	8.86	116	9.93	102	13.50	115	14.90	113	16.27	112	16.45	104
BOYSEN																								
MONTHLY PRECIP AND % OF AVERAGE	1.26	160	0.17	32	0.38	120	0.26	98	0.04	11	0.99	170	1.89	167	0.61	33	2.77	237	1.30	151	0.77	123	0.25	26
YEAR-TO-DATE PRECIP AND % OF AVERAGE	1.26	160	1.43	110	1.81	112	2.07	110	2.11	95	3.10	110	4.99	127	5.60	97	8.37	120	9.67	124	10.44	124	10.69	113
BULL LAKE																								
MONTHLY PRECIP AND % OF AVERAGE	1.20	180	0.18	42	0.37	152	0.29	145	0.07	26	0.70	157	1.53	145	0.54	30	3.43	291	1.13	118	0.55	77	0.11	10
YEAR-TO-DATE PRECIP AND % OF AVERAGE	1.20	180	1.38	124	1.75	130	2.04	132	2.11	116	2.81	124	4.34	131	4.88	95	8.31	132	9.44	130	9.99	125	10.10	112
MOUNTAIN PRECIPITATION [2]																								
BUFFALO BILL																								
MONTHLY PRECIP AND % OF AVERAGE	1.90	79	2.70	73	3.80	123	4.70	157	1.60	64	4.00	143	4.20	124	3.00	79	4.80	160	1.60	73	1.80	113	0.60	27
YEAR-TO-DATE PRECIP AND % OF AVERAGE	1.90	79	4.60	75	8.40	91	13.10	107	14.70	100	18.70	107	22.90	110	25.90	105	30.70	111	32.30	108	34.10	108	34.70	103
BOYSEN																								
MONTHLY PRECIP AND % OF AVERAGE	2.50	119	1.90	63	3.10	124	2.60	104	1.20	55	3.40	117	5.10	146	1.90	56	5.20	217	1.30	76	1.00	71	0.70	35
YEAR-TO-DATE PRECIP AND % OF AVERAGE	2.50	119	4.40	86	7.50	99	10.10	100	11.30	92	14.70	97	19.80	106	21.70	98	26.90	110	28.20	108	29.20	106	29.90	101
BULL LAKE																								
MONTHLY PRECIP AND % OF AVERAGE	2.30	115	1.20	55	2.40	141	1.30	81	0.80	50	3.20	133	5.40	169	1.60	47	4.60	200	0.90	60	0.90	64	0.80	42
YEAR-TO-DATE PRECIP AND % OF AVERAGE	2.30	115	3.50	83	5.90	100	7.20	96	8.00	88	11.20	97	16.60	113	18.20	101	22.80	112	23.70	108	24.60	106	25.40	101

[1] A composite of the following National Weather Service stations was used to determine monthly valley precipitation and percent of average for the drainage basins:

Bull Lake.....Burris, Diversion Dam, and Dubois;

Boysen.....Boysen Dam, Burris, Diversion Dam, Dubois, Lander, and Riverton;

Buffalo Bill.....Buffalo Bill Dam, Lake Yellowstone, and Tower Falls

[2] A composite of the following Natural Resources Conservation Service SNOTEL sites was used to determine monthly mountain precipitation and percent of average for the drainage basins:

Bull Lake.....Cold Springs, Elkhart Park, Hobbs Park, and St. Lawrence Alt;

Boysen.....Burroughs Creek, Cold Springs, Deer Park, Hobbs Park, Little Warm, St. Lawrence Alt, South Pass, Togwotee Pass, and Townsend Creek;

Buffalo Bill.....Blackwater, Evening Star, Kirwin, Marquette, Sylvan Lake, Sylvan Road, and Younts Peak

Averages for Valley Precipitation are based on the 1979-2008 period

Averages for Mountain Precipitation are based on the 1971-2000 period

FLOOD BENEFITS

Flood Damage Prevented in the Wind/Bighorn and Shoshone River Systems[1]					
Reservoir	**Local**	**Main Stem**	**2009 Total**	**Previous Accumulation[3]**	**1950 - 2009 Accumulation Total**
Bull Lake[2]	$ 0	$ 0	$ 0	$ 2,690,700	$ 2,690,700
Boysen	$ 34,800	$ 1,870,200	$ 1,905,000	$97,087,700	$98,992,700
Buffalo Bill[2]	$ 211,100	$ 0	$ 211,100	$12,239,700	$12,450,800

1/ This data is received from the Army Corps of Engineers Omaha District Office and is revised every October. The period of assessment is 1950 through 2009.
2/ No space is allocated to flood control, but some flood protection is provided by operation for other purposes.
3/ Adjusted in 2006 by 0.1 to 0.5 to account for previous rounding of cumulative total to nearest 1.0.

UNIT OPERATIONAL SUMMARIES FOR WATER YEAR 2009

Riverton Unit

The Riverton Project was reauthorized as the Riverton Unit Pick-Sloan Missouri Basin Program (P-S MBP) on September 25, 1970. Major facilities of this unit are Bull Lake Reservoir, Wind River Diversion Dam, Wyoming Canal, Pilot Butte Powerplant, Pilot Butte Reservoir, and Pilot Butte Canal. The major facilities provide water for irrigation of about 76,000 acres on the Midvale Irrigation District (Midvale). The water supply comes partly from the natural flow of the Wind River and partly from water stored in Bull Lake and Pilot Butte Reservoirs.

Bull Lake Reservoir is located on Bull Lake Creek, a tributary of the Wind River near Crowheart, Wyoming. Bull Lake has an active capacity of 151,737 acre-feet (AF), and is above all unit land. It is the principal storage facility for the unit and is operated by Midvale under contract with Reclamation. A small amount of incidental flood control benefit is provided by normal operation for other purposes. Bull Lake also provides a water resource for enhancing fish, wildlife, and recreation.

Bull Lake held 84,533 AF of water at the start of water year 2009, which was 112 percent of the normal end of September content and 55 percent of capacity. Irrigation on the Riverton Unit ended on October 1 and the release from Bull Lake was reduced at that time to conserve the remaining storage in Bull Lake.

During water year 2008, Midvale entered into an agreement with Reclamation that allowed the storage of Boysen Reservoir water in Bull Lake by exchange. Because of this agreement, Bull Lake ended the water year at a higher content. Once the irrigation season ended, the Boysen Reservoir water in Bull Lake was transferred back to Boysen Reservoir at a rate of approximately 20 cfs to provide a winter flow in Bull Lake Creek. Inflow during October, November, and December exceeded the release and the content of Bull Lake began to increase as soon as irrigation releases ended. By the end of December, storage in Bull Lake had increased to 89,924 AF, which was 118 percent of average. On January 1, snowpack in the basin above Bull Lake was 81 percent of average. Water supply forecasts of the April-July snowmelt runoff were prepared each month, beginning in January and continuing through June. The January forecast indicated the April-July snowmelt runoff would be approximately 130,000 AF, which was 94 percent of average. Precipitation in the mountains above Bull Lake was below average during January and the snowpack decreased to 78 percent of average on February 1, but the February 1 snowmelt runoff forecast remained at 130,000 AF. Inflow during January, February, and March barely exceeded outflow and at the end of March the reservoir held 90,865 AF. February precipitation was well below average and the snowpack dropped 5 percent compared to average during the month but substantial gains were made during March when the area received about 150 percent of normal precipitation. The wet month brought the snowpack up to 86 percent of average on April 1 and the forecast prepared on April 1 indicated that 130,000 AF of runoff could still be expected.

Midvale began diverting water into the Wyoming Canal on April 18 to fill the remaining space in Pilot Butte Reservoir and flush the canal system. Above average snowfall in the mountains and rain on the district lands carried on into April and irrigation water was not necessary until May 4 when irrigation deliveries began, utilizing natural flow in the Wind River.

Precipitation during April was near 150 percent of average for the second consecutive month and snowpack in the Bull Lake drainage stood at 122 percent of average on May 1. The May 1 forecast of April-July snowmelt runoff was increased to 150,000 AF, with about 2,700 AF of the expected runoff coming in to Bull Lake during April. Releases from Bull Lake were maintained at 20 cfs until May 11 when they were increased to supplement the natural flow. As Wind River flows increased due to snowmelt, the Bull Lake release was reduced to about 50 cfs on May 19 and the inflows to Bull Lake were stored. Little precipitation fell in May and temperatures were about 2 degrees above normal. With drier conditions moving into the area, irrigation demands increased and diversions into the Wyoming Canal climbed to over 1,500 cfs by the end of the month. By June 1 the snowpack had dropped to 37 percent of average and the snowmelt was well under way. Bull Lake content was 115,498 AF at 5792.71 feet and rising. June was cool and wet, with temperatures about 5 degrees below average for the month and almost three times the normal precipitation falling in the watershed.

The 50 cfs release was maintained until June 8 when increased releases were initiated to control the rate at which Bull Lake was filling. The maximum release for the year of 1,738 cfs was on June 27. Bull Lake inflow was above 1,000 cfs almost every day of the month, with the peak inflow of 1,707 cfs also occurring on June 27. Inflow to the reservoir was closely monitored during the runoff and releases were adjusted as necessary to slowly fill Bull Lake. By the end of June, Bull Lake was within 3 feet of being full and held 143,341 AF of water. Above average inflow to Bull Lake continued during July and releases were adjusted to follow the inflow, keeping the reservoir level fairly stable. Once inflows to Bull Lake began to recede, the release from the dam was also reduced and the reservoir level rose to its maximum elevation for the year of 5802.70 feet on July 28. At its maximum, Bull Lake was 2.3 feet below the top of the active conservation pool and 95 percent full with 145,262 AF of water stored behind the dam. Irrigation demands increased in August and as flows in the Wind River diminished, Bull Lake storage was called on to supplement the natural flow.

The release from Bull Lake averaged about 610 cfs during August and at the end of the month, Bull Lake storage had been drawn down to 125,667 AF. September turned hot and dry, which pushed the demand for irrigation water higher. Precipitation in the mountains above Bull Lake was only 42 percent of average during September and rainfall on the irrigated lands of the Riverton Unit was closer to 10 percent of normal. To meet the irrigators' need, steady increases to the Bull Lake release were made through the month. Bull Lake release averaged 939 cfs for September, which was 157 percent of average and the reservoir level fell to 5779.36 feet with 79,758 AF of water in storage on September 30.

Actual April-July inflows totaled 159,408 AF, 115 percent of average. Total inflow to Bull Lake for the water year was 201,969 AF, which was 109 percent of average. The flow of the Wind River above the mouth of Bull Lake Creek during the April-July period was estimated to be 135 percent of average, totaling 537,980 AF. The total diversion into the Wyoming Canal for the April-September period was 357,640 AF, 106 percent of average.

Additional hydrologic and statistical information pertaining to Bull Lake operations during 2009 can be found in Table WYT4 and Figure WYG1.

Pilot Butte Reservoir, an off-stream reservoir near Kinnear, Wyoming, receives its water supply from the Wind River through the Wyoming Canal. Pilot Butte Reservoir has a total capacity of 33,721 AF. Of this amount, 3,803 AF is allocated for inactive and dead storage and 29,918 AF for active conservation storage. Pilot Butte Dam and the Wyoming Canal which supplies the reservoir are operated by Midvale under contract with Reclamation.

Pilot Butte Reservoir began water year 2009 with a total storage content of approximately 11,565 AF at elevation 5429.54 feet. Releases from Pilot Canal for the 2008 irrigation season ended on October 1, 2008, but Midvale continued diverting water into the Wyoming Canal in order to refill Pilot Butte. Diversions continued until October 20, when Pilot Butte reached 28,744 AF at 5454.28 feet. Once diversions into Pilot Butte were discontinued, the reservoir level began to slowly fall through the winter due to evaporation. By the end of March, evaporation had reduced the content of the reservoir to 27,828 AF. Diversion into Wyoming Canal resumed on April 18 to continue filling Pilot Butte and flush the canal system. Wet weather in April delayed the need for irrigation water and deliveries weren't called for until May 4. Storage in Pilot Butte at the end of April was 31,319 AF at 5457.29 feet. Flows in the Wind River were adequate to meet the needs of Riverton Unit irrigators and Pilot Butte remained essentially full well into July. As demand in August and September exceeded the natural flow available to Midvale, Pilot Butte storage was used to help meet the demand on Pilot Canal through the remainder of the irrigation season. Storage in Pilot Butte on September 30 was 19,101 AF at 5441.73 feet. Irrigation deliveries on the Riverton Unit ended on October 6, 2009.

Pilot Butte Powerplant was unavailable for service during water year 2009 and did not generate any electricity. In June of 2009, both units at Pilot Butte Powerplant were placed in "Mothballed" status and a determination of whether the units will be returned to service is pending.

Additional hydrologic and statistical information pertaining to Pilot Butte Reservoir during 2009 can be found in Table WYT5 and Figure WYG2.

TABLE WYT4
HYDROLOGIC DATA FOR WATER YEAR 2009
BULL LAKE RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	5739.00	722	722
TOP OF ACTIVE CONSERVATION	5805.00	152,459	151,737

STORAGE-ELEVATION DATA	ELEVATION (FEET)	STORAGE (AF)	DATE
BEGINNING OF YEAR	5781.25	84,533	OCT 01, 2008
END OF YEAR	5779.36	79,758	SEP 30, 2009
ANNUAL LOW	5779.36	79,758	SEP 30, 2009
HISTORIC LOW*	5743.03	6,228	MAR 31, 1950
ANNUAL HIGH	5802.70	145,262	JUL 28, 2009
HISTORIC HIGH	5805.70	154,677	AUG 10, 1965

* Prior to 1952 daily records are not available. End of month data was used to determine the historic low.

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	201,969	OCT 08-SEP 09	203,145	OCT 08-SEP 09
DAILY PEAK (cfs)	1,707	JUN 27, 2009	1,738	JUN 27, 2009
DAILY MINIMUM (cfs)	3	DEC 5, 2008	16	NOV 11, 2008
PEAK SPILLWAY FLOW (cfs)			0	
TOTAL SPILLWAY FLOW (AF)			0	

	INFLOW		OUTFLOW		CONTENT	
MONTH	KAF	% of Avg*	KAF	% of Avg*	KAF	% of Avg*
OCTOBER	5.0	92	1.6	25	87.9	117
NOVEMBER	2.8	89	1.0	41	89.6	118
DECEMBER	1.3	53	1.0	50	89.9	118
JANUARY	1.6	74	1.2	64	90.3	118
FEBRUARY	1.4	88	1.1	72	90.6	118
MARCH	1.5	85	1.3	75	90.9	119
APRIL	2.7	72	1.2	33	88.7	116
MAY	30.9	108	4.2	27	115.5	129
JUNE	70.1	116	42.2	175	143.3	114
JULY	55.7	122	54.8	123	144.3	113
AUGUST	19.0	90	37.6	81	125.7	123
SEPTEMBER	10.0	106	55.9	157	79.8	105
ANNUAL	202.0	109	203.1	109		

APRIL - JULY INFLOW (AF)

ACTUAL	AVERAGE
159,408	138,600

* Average for the 1979-2008 period

FIGURE WYG1

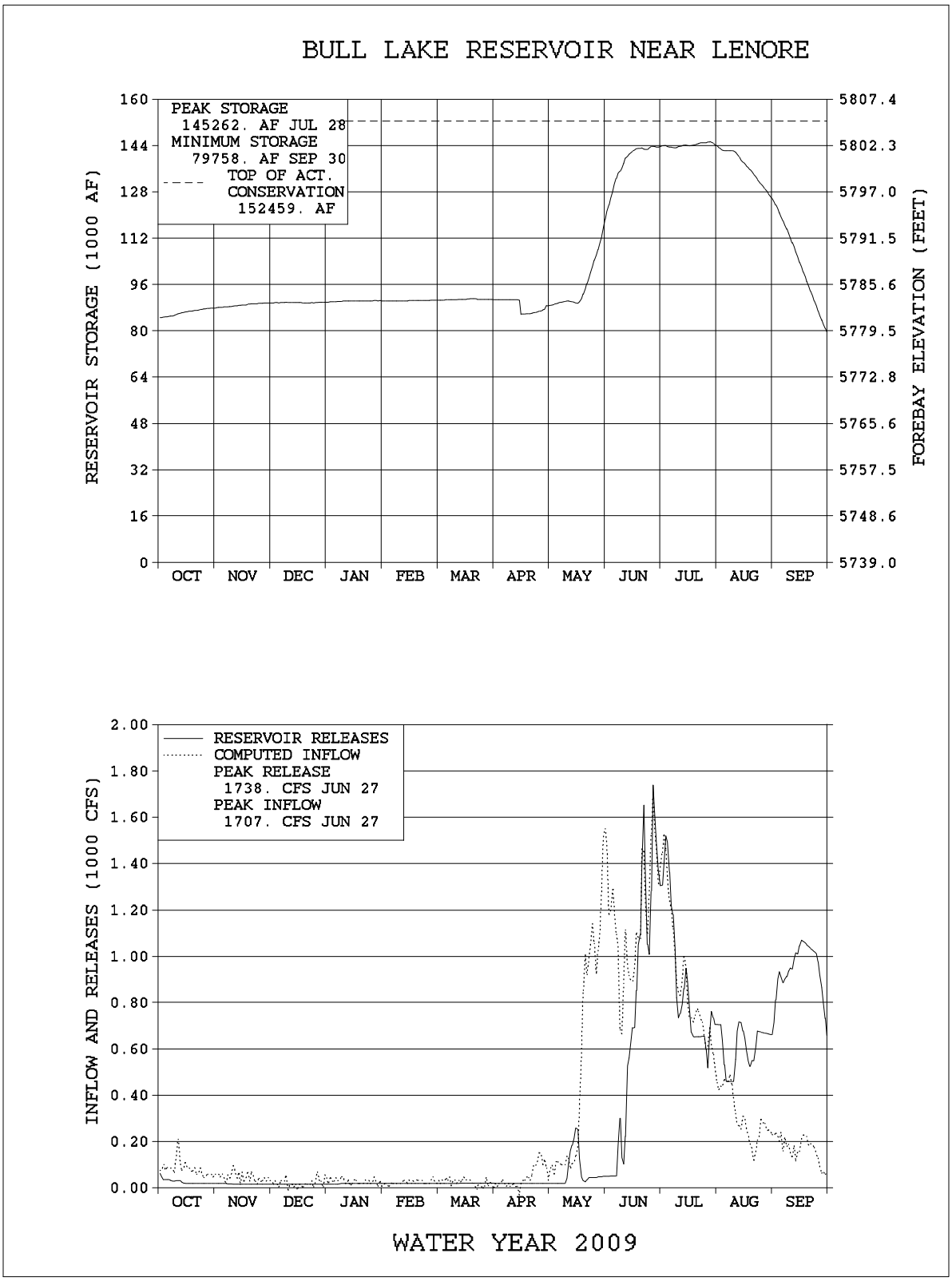

BULL LAKE RESERVOIR NEAR LENORE
PEAK STORAGE
145262. AF JUL 28
MINIMUM STORAGE
79758. AF SEP 30
TOP OF ACT.
CONSERVATION
152459. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
160
144
128
112
96
80
64
48
32
16
0
5807.4
5802.3
5797.0
5791.5
5785.6
5779.5
5772.8
5765.6
5757.5
5748.6
5739.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
1738. CFS JUN 27
PEAK INFLOW
1707. CFS JUN 27
INFLOW AND RELEASES (1000 CFS)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

TABLE WYT5
HYDROLOGIC DATA FOR WATER YEAR 2009
PILOT BUTTE RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	5410.00	3,803	3,803
TOP OF ACTIVE CONSERVATION	5460.00	33,721	29,918

STORAGE-ELEVATION DATA	ELEVATION (FEET)	STORAGE (AF)	DATE
BEGINNING OF YEAR	5429.54	11,565	OCT 01, 2008
END OF YEAR	5441.73	19,101	SEP 30, 2009
ANNUAL LOW	5429.54	11,565	OCT 01, 2008
HISTORIC LOW	5409.80	3,748	DEC 01, 2006
ANNUAL HIGH	5458.52	32,399	JUL 05, 2009
HISTORIC HIGH	5460.60	37,465	APR 20, 1988

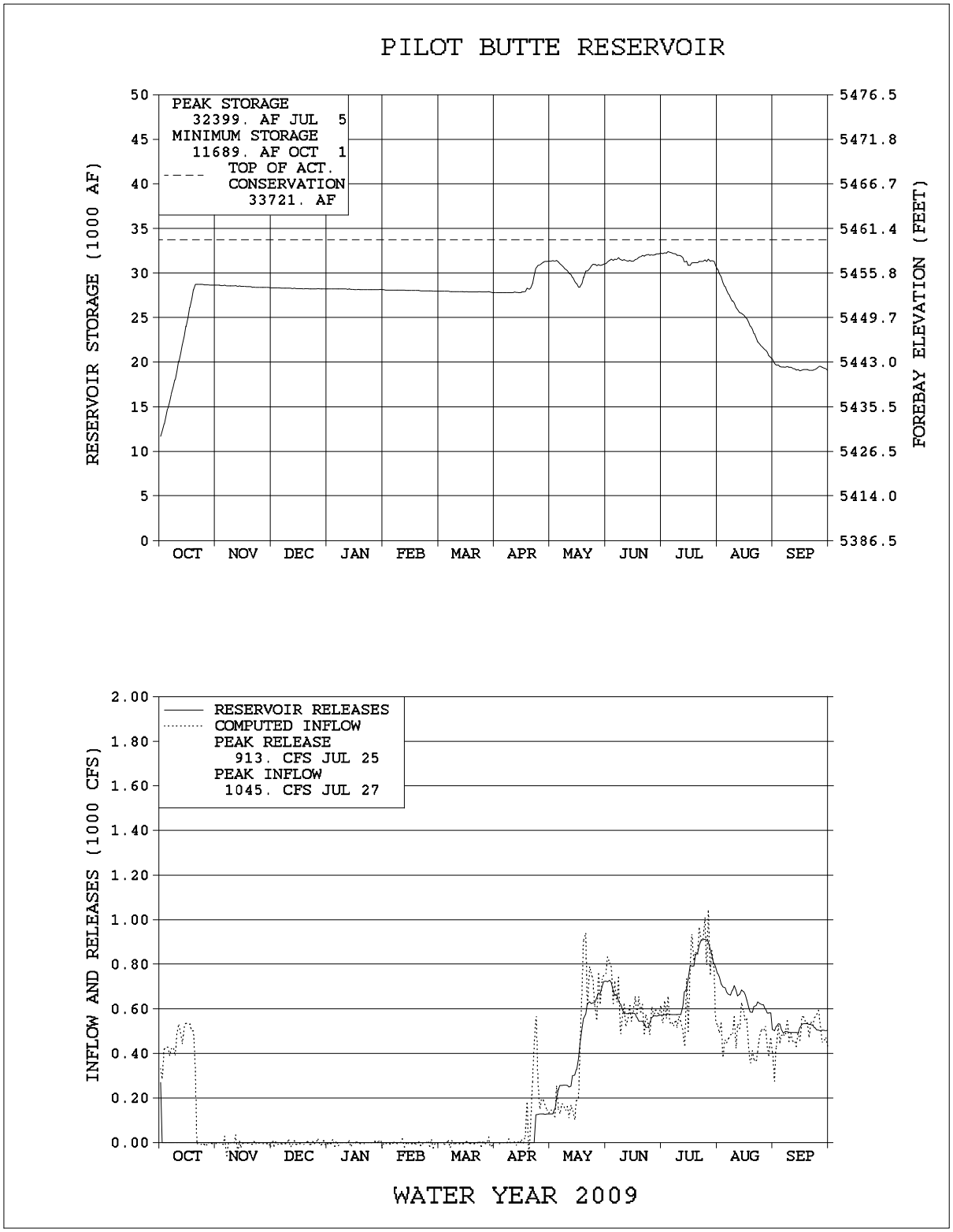
INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	185,145	OCT 08-SEP 09	177,609	OCT 08-SEP 09
DAILY PEAK (cfs)	1,045	JUL 27, 2009	913	JUL 25, 2009
DAILY MINIMUM (cfs)	0	WINTER MONTHS	0	WINTER MONTHS
PEAK SPILLWAY FLOW (cfs)			0	
TOTAL SPILLWAY FLOW (AF)			0	

	INFLOW*		OUTFLOW		CONTENT	
MONTH	KAF	% of Avg**	KAF	% of Avg**	KAF	% of Avg**
OCTOBER	17.6	174	0.5	25	28.6	110
NOVEMBER	-0.3	N/A	0.0	N/A	28.4	105
DECEMBER	-0.1	N/A	0.0	N/A	28.2	104
JANUARY	-0.1	N/A	0.0	N/A	28.1	103
FEBRUARY	-0.2	N/A	0.0	N/A	28.0	102
MARCH	-0.1	N/A	0.0	N/A	27.8	96
APRIL	5.3	72	1.8	31	31.3	103
MAY	24.9	105	25.2	93	31.0	115
JUNE	36.7	97	35.6	101	32.1	108
JULY	43.2	103	44.4	96	30.9	122
AUGUST	29.1	89	39.7	109	20.3	94
SEPTEMBER	29.2	127	30.4	114	19.1	106
ANNUAL	185.1	103	177.6	99		

* Negative values are the result of calculated inflow based on reservoir release and change in reservoir content.

** Average for the 1979-2008 period.

FIGURE WYG2


PILOT BUTTE RESERVOIR
PEAK STORAGE
32399. AF JUL 5
MINIMUM STORAGE
11689. AF OCT 1
TOP OF ACT.
CONSERVATION
33721. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
0
5
10
15
20
25
30
35
40
45
50
5386.5
5414.0
5426.5
5435.5
5443.0
5449.7
5455.8
5461.4
5466.7
5471.8
5476.5
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
913. CFS JUL 25
PEAK INFLOW
1045. CFS JUL 27
INFLOW AND RELEASES (1000 CFS)
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
2.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Boysen Reservoir and Powerplant

Boysen Reservoir (P-S MBP) is located on the Wind River above Thermopolis, Wyoming. The dam and reservoir were built for flood control, power generation, irrigation, recreation, and fish and wildlife. Boysen Reservoir has a total capacity of 892,226 acre-feet (AF). Of this amount, 219,181 AF is allocated for inactive and dead storage, 522,413 AF for active conservation storage, and 150,632 AF for exclusive flood control storage. Of the amount allocated for active conservation, 144,229 AF is specifically allocated for joint-use flood control storage. All of the joint-use space is located between elevation 4717.00 feet and elevation 4725.00 feet, which is the top of the spillway gates when closed. The exclusive flood control space is located between elevation 4725.00 feet and elevation 4732.20 feet. When the reservoir rises above elevation 4724.50 feet, the spillway gates must be partially opened to maintain ½ foot of the gates above the water to prevent over-topping of the gates. When all flood control space is filled, releases cannot be controlled to less than 14,000 cfs.

Irrigation water is provided from the reservoir for several units, both upstream and downstream of Boysen Dam. Water is furnished downstream to about 7,500 acres in the Hanover-Bluff Unit (P-S MBP) and 3,400 acres on the Lucerne Canal in the Owl Creek Unit (P-S MBP). Supplemental water is also furnished to other irrigation districts and to a number of individual water users below the dam. The Bighorn Canal Irrigation District and Hanover Irrigation District receive water under long term contracts with Reclamation. Depending on availability, water is also provided to Bluff Irrigation District, Kirby Ditch Company, Lower Hanover Canal Association, Bighorn Canal Irrigation District, and Hanover Irrigation District utilizing temporary water service contracts.

Water year 2009 began with 628,830 AF of water stored in Boysen Reservoir, which was 105 percent of the 30 year average. The corresponding reservoir elevation of 4718.88 feet was 6.12 feet below the top of the joint use pool. The winter release was set on September 11, 2008, when irrigation demands fell below the planned fall and winter release of 700 cfs. Precipitation in the Boysen watershed was above the 30 year average during the October through December period while inflow to the reservoir was below average during each of those months. Releases were maintained at 700 cfs and the reservoir level dropped 0.94 feet to 4717.94 feet at the end of December, with corresponding reservoir storage of 612,893 AF. A record-breaking snowstorm on October 10 through October 12 got the snowpack off to a great start, but conditions deteriorated in November as warm temperatures combined with below average precipitation. A string of storms moved through the basin during the last half of December and the snowpack climbed back toward average.

Forecasts of April-July snowmelt runoff were prepared at the beginning of each month beginning in January and continuing through June. On January 1 the snowpack in the mountains above Boysen Reservoir was 90 percent of average and the forecast indicated approximately 500,000 AF of water, 92 percent of average, would enter Boysen Reservoir during the April-July snowmelt runoff period. Precipitation during January was close to average with well above average temperatures. The snowpack decreased about 7 percent during the month to 83 percent of average on February 1.

While the decline in the snowpack was noted, the February 1 snowmelt runoff forecast was still expected to provide 500,000 AF of runoff into Boysen Reservoir. Reservoir inflow during January and February continued to be below average and with releases at 700 cfs the reservoir level slowly fell. At the end of February, Boysen Reservoir held 597,524 AF of water at elevation 4717.01 feet. February precipitation was about 70 percent of average with temperatures in the Wind River Basin averaging about 5 degrees higher than normal. The snowpack lost another 5 percent during February, when compared to average and the March 1 forecast of April-July snowmelt runoff was reduced to 400,000 AF. Based on the March forecast, Boysen Reservoir was projected to fill to less than 1 foot below the top of the joint use pool at the end of July. March precipitation was well above average in the Wind River valley and the mountains also received above average precipitation. With above average storage in the reservoir and improving snowpack, the Wyoming Game and Fish Department requested a flushing flow release from Boysen Reservoir during March. Flushing flows are designed to simulate high runoff events that occurred in the river prior to flows being controlled by the dam. The rapidly increasing flows flush the fine sediment from the spawning gravels in the river, improving the spawning habitat for trout. After evaluating the request, Reclamation determined that based on reservoir conditions and anticipated inflow to Boysen Reservoir, a flushing flow could be provided. The flushing flow began early on the morning of March 31 when releases were increased from 700 cfs to 3,000 cfs, with another increase to 5,000 cfs occurring 5 hours later. The 5,000 cfs release was maintained for 10 hours and then gradually reduced back to 700 cfs. During the flushing flow, approximately 6,500 AF of water was released above the 700 cfs winter release. At the end of March, Boysen Reservoir held 591,362 AF of water at elevation 4716.63 feet and the snowpack increased 11 percent through the month to 89 percent of average on April 1. With improving snow conditions going into April, the forecast prepared on April 1 was increased to 475,000 AF, which was 88 percent of average. April precipitation was well above average in the Wind River Basin and temperatures were slightly below normal.

Precipitation below Boysen Reservoir was also well above average and increases above 700 cfs were not required for irrigation during April. However, releases were increased to 800 cfs on April 28 to control the reservoir level in anticipation of spring runoff. April inflow averaged almost 900 cfs and the reservoir level rose 0.63 feet over the month to elevation 4717.26 feet.

The snowpack on May 1 was 112 percent of average, a 23 percent gain during April, and the May forecast of April-July snowmelt runoff increased to 700,000 AF. In light of the increased forecast, releases from the dam were stepped up to 2,200 cfs by the 8 of May. The snowpack peaked in early May but inflow didn't exceed outflow until May 21 and the reservoir level fell to a low of 4715.52 feet before turning around to end the month at 4718.23 feet. Boysen Reservoir inflow rose above 5,000 cfs on May 31 and remained above 5,000 cfs on all but two days during June. The discharge from the dam was increased accordingly to control how fast the reservoir filled and releases in excess of powerplant capacity began on June 8. As inflows continued to increase, the Boysen spillway gates were opened on June 12 to allow for higher releases.

By June 16 releases from the dam exceeded 5,000 cfs but the reservoir continued to rise and on June 23 the reservoir level rose into the flood pool. The Boysen Reservoir continued to climb higher into the flood pool during the remainder of June and ended the month with 768,592 AF in storage at elevation 4726.36 feet. The total inflow during June of 407,160 AF was 169 percent of average and by the end of June releases from Boysen Reservoir had been increased to 6,500 cfs. Temperatures during June were well below normal with above average precipitation, extending the runoff period well into July. Boysen Reservoir storage peaked on July 6 with 778,285 AF of water in storage.

The corresponding water surface elevation of 4726.84 feet was 1.84 feet into the exclusive flood pool. Releases were maintained at 6,500 cfs until July 9 when it appeared that runoff had peaked and inflows were beginning to show a steady drop. As inflows receded, the reservoir level began to fall and spillway releases were gradually reduced. On July 21 the spillway gates were closed and the release from Boysen Reservoir was cut to 3,000 cfs. As runoff ended and irrigation demands above Boysen Reservoir increased, the inflow to the reservoir dropped rapidly. As inflow declined, releases were also reduced and by July 24, Boysen Reservoir outflow was down to 1,400 cfs. Releases were gradually reduced during August and September, reaching the planned winter release of 900 cfs on September 25.

Actual inflow for the April-July period totaled 802,982 AF, which was 148 percent of average. Total inflow to Boysen Reservoir during water year 2009 was 1,119,050 AF, 121 percent of average. The reservoir ended the water year at 4720.63 feet with a content of 659,577 AF. This was 110 percent of the average end of September content and 1.75 feet higher than at the end of September of 2008. The peak inflow for the year of 8,829 cfs occurred on July 5 with the maximum release of 6,600 cfs being made on July 7.

During water year 2009, Boysen Powerplant generated 67,408,000 kWh of electricity, about 100 percent of average and 26,603,000 kWh more than was generated in 2008. Of the 1,088,303 AF of water released from Boysen Reservoir in water year 2009, 782,472 AF was discharged through the powerplant and 305,831 AF bypassed the powerplant.

Important Events - 2009

September 11, 2008: Release was set at 700 cfs as irrigation demand fell below the planned winter release of 700 cfs.

November 18, 2008: Boysen Reservoir fall water information meeting was held in Worland to discuss water year 2008 operations, expected 2009 operation, and the winter release.

March 31, 2009: Boysen Reservoir spring water information meeting was held in Worland to discuss the water supply and proposed operation of Boysen Reservoir in 2009.

March 31-April 1, 2009: Boysen Reservoir releases were adjusted as requested by Wyoming Game and Fish to provide a flushing flow in the river below Boysen Dam.

April 28, 2009: The release from the Boysen Dam was increased to begin evacuating storage in anticipation of spring runoff.

June 12-July 21, 2009: Releases through the spillway were made to control the reservoir level.

June 23-July 17, 2009: Boysen Reservoir held water in the exclusive flood pool.

July 6, 2009: Boysen Reservoir reached a maximum elevation for the water year of 4726.84 feet.

September 25, 2009: Release was set at 900 cfs as irrigation demand fell below the planned winter release of 900 cfs.

Additional hydrologic and statistical information pertaining to the operation of Boysen Reservoir can be found in Table WYT6 and Figure WYG3.

TABLE WYT6
HYDROLOGIC DATA FOR WATER YEAR 2009
BOYSEN RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4685.00	219,181	219,181
TOP OF ACTIVE CONSERVATION	4717.00	597,365	378,184
TOP OF JOINT USE	4725.00	741,594	144,229
TOP OF EXCLUSIVE FLOOD CONTROL	4732.20	892,226	150,632

STORAGE-ELEVATION DATA	ELEVATION (FEET)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4718.88	628,830	OCT 01, 2008
END OF YEAR	4720.63	659,577	SEP 30, 2009
ANNUAL LOW	4715.52	573,744	MAY 19, 2009
HISTORIC LOW ELEVATION *	4684.18		MAR 18, 1956
HISTORIC LOW CONTENT *		235,737	SEP 24, 2002
ANNUAL HIGH	4726.84	778,285	JUL 06, 2009
HISTORIC HIGH	4730.83	922,406	JUL 06, 1967

* Because storage space in a reservoir is lost as sediment is trapped behind the dam, reservoirs are resurveyed periodically to determine actual capacity. Based on the 1994 resurvey of Boysen Reservoir, the historic low content of 235,737 AF occurred at an elevation that was 2.69 feet higher than the historic low elevation.

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	1,119,050	OCT 08-SEP 09	1,088,303*	OCT 08-SEP 09
DAILY PEAK (cfs)	9,169	JUN 22, 2009	6,600	JUL 07, 2009
DAILY MINIMUM (cfs)	17	DEC 06, 2008	680	NOV 21, 2008
PEAK SPILLWAY FLOW (cfs)				
TOTAL SPILLWAY FLOW (AF)				

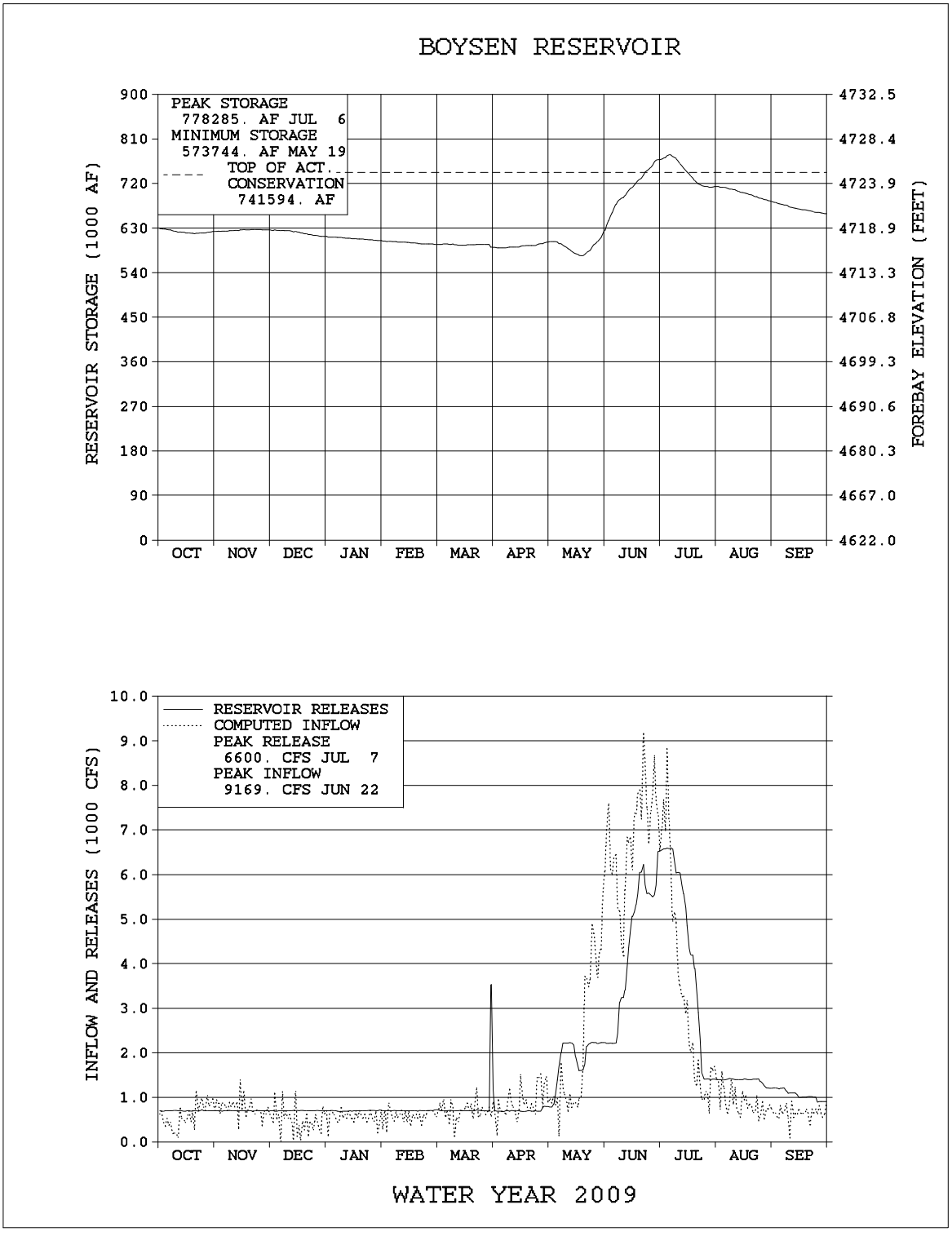
* Of the 1,088,303 AF of water released from Boysen Reservoir, 305,831 AF bypassed the powerplant.

	INFLOW		OUTFLOW		CONTENT	
MONTH	KAF	% of Avg*	KAF	% of Avg*	KAF	% of Avg*
OCTOBER	37.0	62	43.3	69	622.5	104
NOVEMBER	45.6	94	42.0	75	626.1	106
DECEMBER	30.2	79	43.4	77	612.9	107
JANUARY	34.0	93	43.3	82	603.6	109
FEBRUARY	33.2	88	39.2	81	597.5	110
MARCH	42.9	81	49.0	82	591.4	110
APRIL	53.3	110	43.0	65	601.6	116
MAY	129.7	104	113.6	122	617.8	112
JUNE	407.2	169	256.3	186	768.6	117
JULY	212.8	166	267.8	200	713.6	110
AUGUST	54.6	93	84.4	95	683.8	111
SEPTEMBER	38.6	72	62.8	87	659.6	110
ANNUAL	1,119.1	121	1,088.3	117		

APRIL - JULY INFLOW (AF)	
ACTUAL	AVERAGE
802,982	541,600

* Average for the 1979-2008 period

FIGURE WYG3


BOYSEN RESERVOIR
PEAK STORAGE
778285. AF JUL 6
MINIMUM STORAGE
573744. AF MAY 19
TOP OF ACT. CONSERVATION
741594. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
900
810
720
630
540
450
360
270
180
90
0
4732.5
4728.4
4723.9
4718.9
4713.3
4706.8
4699.3
4690.6
4680.3
4667.0
4622.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
6600. CFS JUL 7
PEAK INFLOW
9169. CFS JUN 22
INFLOW AND RELEASES (1000 CFS)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Anchor Reservoir

Anchor Reservoir (P-S MBP) is located on the South Fork of Owl Creek, a tributary of the Bighorn River near Thermopolis, Wyoming. It has a total storage capacity of 17,228 AF, of which 17,160 AF is active storage. It was constructed to furnish a supplemental irrigation supply for the Owl Creek Unit (P-S MBP). The dam was completed in November 1960. However, several major sinkholes developed in the lower portion of the reservoir after it began to fill, and corrective work to plug the sinkholes has not been successful. Two dikes, in service since 1979, partition off the portions of the reservoir with high seepage losses. The top of the dikes are at elevation 6415.00 feet, however, when the reservoir rises above elevation 6412.80 feet, water flows through a notch in one of the dikes into the sinkhole area. The reservoir is operated not to exceed elevation 6412.80 feet. Operation and maintenance of Anchor Dam is performed by contract with Owl Creek Irrigation District. Reclamation requires notification from the irrigation district any time the reservoir level is expected to exceed elevation 6400.00 feet. Operation above 6400.00 feet will be directed by WYAO staff to avoid overtopping of the dikes.

Storage in Anchor Reservoir at the beginning of water year 2009 was 346 AF at elevation 6358.04 feet. The reservoir level remained fairly stable through the early winter but began to rise in mid-January and by the end of March held 580 AF at elevation 6364.00 feet. Inflows began to increase for a period in the last half of April but colder weather slowed things down until mid-May when the snowmelt began in earnest. Once the snowmelt began inflow to Anchor Reservoir rose quickly and the peak for the year of 250 cfs occurred on May 20. Inflow remained near or above 100 cfs for the rest of May and the reservoir held 3,363 AF of water at the end of the month. Precipitation was above average in June and inflows exceed the release through the month, with the reservoir elevation reaching 6400.00 feet by June 18 and continuing to fill to 6409.13 feet at the end of the month. As the Anchor Reservoir filled, Bureau of Reclamation and Owl Creek Irrigation District staffs closely monitored the inflows and were in communication to discuss releases from the dam in order to store as much water as possible without exceeding elevation 6412.80 feet. The Anchor Reservoir reached its maximum content for the year of 7,245 AF on July 7 at elevation 6411.81 feet. This was 1 foot below the elevation where water would begin to flow into the sinkhole area. Inflow dropped off quickly in July and with increasing demands, storage in the reservoir fell to 4,177 AF by the end of the month.

Precipitation during August was below average and September was very warm with well below average precipitation. Releases for irrigation drafted Anchor Reservoir steadily during August and September and by the end of the water year the reservoir had been lowered to 6357.34 feet with 325 AF of storage. The maximum daily inflow for the year of 250 cfs occurred on May 20 and the maximum release of 188 cfs was on June 22.

Hydrologic and statistical data pertaining to Anchor Reservoir operations during 2009 can be found in Table WYT7 and Figure WYG4. The negative inflows displayed in Figure WYG4 are the result of calculated inflow based on reservoir release and change in reservoir content. During some periods, evaporation and seepage from the reservoir could exceed inflow.

TABLE WYT7
HYDROLOGIC DATA FOR WATER YEAR 2009
ANCHOR RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	6343.75	68	68
TOP OF ACTIVE CONSERVATION*	6441.00	17,228	17,160

* District operation has been restricted to elevation 6400.00 feet or less to prevent damage to the dikes and to minimize the chance of creating new sinkholes. Operations above elevation 6400.00 feet are directed by Reclamation.

STORAGE-ELEVATION DATA	ELEVATION (FEET)	STORAGE (AF)	DATE
BEGINNING OF YEAR	6358.04	346	OCT 01,2008
END OF YEAR	6357.34	325	SEP 30, 2009
ANNUAL LOW	6356.88	310	OCT 11, 2008
HISTORIC LOW			
ANNUAL HIGH	6411.81	7,245	JUL 07, 2009
HISTORIC HIGH	6418.52	9,252	JUL 03, 1967

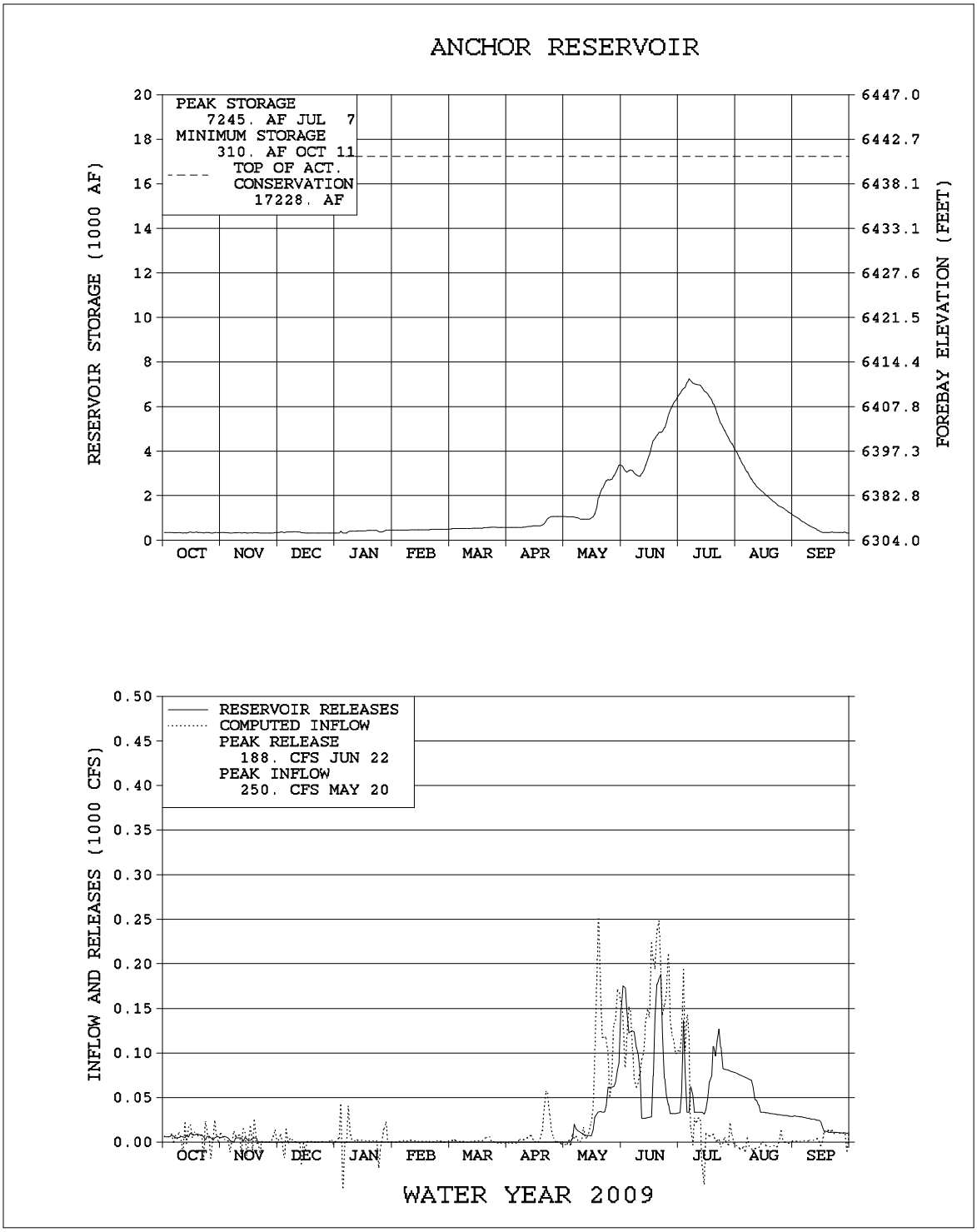
INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW*	DATE
ANNUAL TOTAL (AF)	15,691	OCT 08-SEP 09	15,712	OCT 08-SEP 09
DAILY PEAK (cfs)	250	MAY 20, 2009	188	JUN 22, 2009
DAILY MINIMUM (cfs)	0	WINTER MONTHS	0	WINTER MONTHS
PEAK SPILLWAY FLOW (cfs)			0	
TOTAL SPILLWAY FLOW (AF)			0	

* Outflow is water released from the Dam to Owl Creek. When the reservoir level rises above approximately 6412.80 feet, water flows through a notch in one of the dikes into the sinkhole area. This water is neither measured nor accounted for. In 2009, no water flowed over the notch in the dike.

	INFLOW		OUTFLOW*		CONTENT	
MONTH	KAF	% of Avg*	KAF	% of Avg*	KAF	% of Avg*
OCTOBER	0.4	64	0.4	59	0.4	132
NOVEMBER	0.1	44	0.1	39	0.3	159
DECEMBER	0.0	0	0.0	0	0.3	149
JANUARY	0.1	192	0.0	0	0.5	234
FEBRUARY	0.0	35	0.0	0	0.5	223
MARCH	0.1	24	0.0	0	0.6	184
APRIL	0.5	74	0.0	0	1.1	213
MAY	4.0	99	1.7	56	3.4	224
JUNE	8.4	129	5.5	112	6.3	197
JULY	2.0	94	4.1	124	4.2	220
AUGUST	-0.2	N/A	2.8	181	1.1	187
SEPTEMBER	0.3	53	1.1	141	0.3	101
ANNUAL	15.7	99	15.7	100		

* Average is for the 1991-2008 period. This period was used because of the availability of data at Anchor Reservoir.

FIGURE WYG4


ANCHOR RESERVOIR
PEAK STORAGE
7245. AF JUL 7
MINIMUM STORAGE
310. AF OCT 11
TOP OF ACT.
CONSERVATION
17228. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
0
2
4
6
8
10
12
14
16
18
20
6304.0
6382.8
6397.3
6407.8
6414.4
6421.5
6427.6
6433.1
6438.1
6442.7
6447.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
188. CFS JUN 22
PEAK INFLOW
250. CFS MAY 20
INFLOW AND RELEASES (1000 CFS)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

UNIT OPERATIONAL SUMMARIES FOR WATER YEAR 2009

Shoshone Project & Buffalo Bill Unit

The primary features of the original Shoshone Project included Buffalo Bill Dam and Reservoir, Shoshone and Heart Mountain Powerplants, and the canal and lateral systems for the Willwood, Frannie, Garland, and Heart Mountain Divisions. In 1982, the Buffalo Bill Dam and Reservoir Modifications, Shoshone Project, Wyoming, was authorized as the Buffalo Bill Unit (P-S MBP). The principal modifications to Buffalo Bill Dam included raising the height of the dam by 25 feet, reconstructing the Shoshone Powerplant, construction of the Buffalo Bill Powerplant, construction of the Spirit Mountain Energy Dissipation Structure, pressurizing a portion of the Shoshone Canyon Conduit, enlarging and gating the spillway, constructing a visitor's center, and constructing the North Fork, South Fork, and Diamond Creek Dikes. The North and South Fork dust abatement dikes were designed to impound water in areas of the enlarged reservoir that would be dry during periods when the reservoir elevation is low, thereby reducing the dust producing area of the reservoir. The Diamond Creek protective dike prevents the enlarged reservoir from inundating Irma Flats.

Controlled releases are made from Buffalo Bill Reservoir at four points: (1) Shoshone Canyon Conduit, (2) Shoshone Powerplant, (3) the gated spillway, and (4) two river outlets, (jetflow valve and 4X5 high pressure gates). Water for the Willwood, Frannie, and Garland Divisions of the Shoshone Project is diverted from the Shoshone River below Buffalo Bill Reservoir. The Heart Mountain Division is irrigated by water released at the dam through a high-level outlet to the Shoshone Canyon Conduit and Heart Mountain Canal. Irrigation releases for the project land along the Shoshone River are made through the Shoshone Powerplant, the river outlets, or through the Shoshone Canyon Conduit and Buffalo Bill or Heart Mountain Powerplants. Project works presently serve about 93,000 acres in the four divisions.

The Heart Mountain Powerplant, Shoshone Project, with a nameplate capability of 6,000 kilowatts (kW) and maximum discharge capacity of 360 cfs, is located at the end of the Shoshone Canyon Conduit, which obtains its water from a high-level outlet, elevation 5233.00 feet, at Buffalo Bill Dam. The powerplant is located 3.5 miles below the dam and discharges into the Shoshone River. During the summer months, the water released through the powerplant is used to satisfy a portion of the irrigation demand of lands diverting directly from the river.

The Shoshone Powerplant, reconstructed as part of the Buffalo Bill Unit (P-S MBP), is located on the left bank of the Shoshone River at the toe of Buffalo Bill Dam and releases water directly into the Shoshone River. After 56 years of continuous use, the Shoshone Powerplant became obsolete because of safety problems beyond economical repair. On March 21, 1980, the original plant was taken out of service. In 1992 one of the three generating units was replaced with a new unit having a nameplate capability of 3,000 kW. In accordance with the Buffalo Bill Reservoir Enlargement Winter Release Operation Agreement, a flow of at least 100 cfs is released to the Shoshone River at the base of the dam at all times. This is normally achieved by the use of the Shoshone Powerplant. A maximum release of approximately 200 cfs can be made through the Shoshone Powerplant.

The Buffalo Bill Powerplant, Buffalo Bill Unit (P-S MBP), with a nameplate capability of 18,000 kW, is located about one mile downstream of Buffalo Bill Dam on the right bank of the Shoshone River. Water for generation at this powerplant is supplied through a portion of the Shoshone Canyon Conduit, which was pressurized as part of the Buffalo Bill modification. The maximum discharge capacity of the three units at the Buffalo Bill Powerplant is 930 cfs. The powerplant first generated power on July 15, 1992.

Spirit Mountain Powerplant, Buffalo Bill Unit (P-S MBP), with a nameplate capability of 4,500 kW and discharge capacity of 560 cfs, is a newly constructed energy dissipator powerplant located about one mile downstream of Buffalo Bill Dam on the right side of the Shoshone River. Water released through the Shoshone Canyon Conduit for Heart Mountain Canal or Heart Mountain Powerplant must be routed through the Spirit Mountain Powerplant or through associated sleeve valves to dissipate energy in the transition from the pressurized portion of the Shoshone Canyon Conduit to the free flow portion of the conduit. The discharge from the powerplant must be carried away from the plant by use of the free-flow conduit and operation of the powerplant depends on the availability of the conduit to carry discharged water.

Buffalo Bill Dam and Reservoir, located on the Shoshone River above Cody, Wyoming, is a multipurpose facility that provides water for domestic, irrigation, municipal, fish and wildlife, power, and recreational use. It also provides a small amount of incidental flood control, although no storage space is specifically reserved for this purpose. The total storage capacity of the reservoir is 646,565 AF at elevation 5393.50 feet, the top of the active conservation pool.

Storage in Buffalo Bill Reservoir at the beginning of water year 2009 was 484,411 AF of water at elevation 5372.30 feet. The reservoir level continued to slowly fall during the first half of October as releases for irrigation exceeded inflow. By October 15 a release to the Shoshone River for irrigation was no longer required and the release to the Shoshone River was reduced to 350 cfs in accordance with the Buffalo Bill Reservoir Enlargement Winter Release Operation Agreement. Irrigation deliveries to the Heart Mountain Canal were discontinued on October 12. Once releases to the canal and river for irrigation ended, storage in the reservoir began to increase and at the end of October there was 461,285 AF of water in storage at elevation 5369.06 feet. The release from the dam was increased to 450 cfs from November 4 to November 25 to lower the reservoir elevation to facilitate work in the North Fork of the Shoshone River in the area of the North Fork Dike inlet structure and to provide a lower reservoir level going into the winter. By maintaining the reservoir elevation below 5370 feet during the winter months, problems associated with ice jams on the South Fork during the winter are reduced significantly. Inflows during the October through December period were near average but by the end of December storage in the reservoir had decreased to 452,816 AF. Precipitation was 94 percent of average during the period and the snowpack in the Buffalo Bill watershed stood at 86 percent of average on January 1.

Forecasts of the April-July snowmelt runoff are made each month beginning in January and continuing through June for Buffalo Bill Reservoir. Conditions on January 1 indicated that 630,000 AF of runoff could be expected to flow into Buffalo Bill Reservoir during the April through July period, which was 97 percent of the 30 year average. January inflow to Buffalo Bill Reservoir was below average and at the end of the month storage in the reservoir stood at 443,663 AF of water.

Precipitation in the mountains of the Buffalo Bill watershed was well above average and the snowpack increased to 98 percent of average on February 1. As a result of the improved conditions, the February 1 snowmelt runoff forecast was increased to 700,000 AF.

The snowpack remained fairly close to average during February and March, standing at 99 percent of average on April 1. Inflow during February and March was slightly below average while the outflow was maintained at 350 cfs. Storage in Buffalo Bill Reservoir at the end of March was 432,923 AF at elevation 5365.04 feet. The April 1 forecast was 700,000 AF and the prospect of a good runoff season was increasing.

As inflow began to increase during the second week of April, releases from Buffalo Bill Reservoir were increased beginning on April 15 to control the level of the reservoir. By April 21, the release to the Shoshone River had been increased to the capacity of the powerplants, where it remained until May 18 when additional increases were required. Following the annual inspection of the Shoshone Canyon Conduit on April 20, diversion into the Heart Mountain Canal was initiated. Precipitation in the Buffalo Bill watershed was about 145 percent of average during April and inflow during the month was 127 percent of average. The lake level remained fairly constant through the month, ending April at 5365.46 feet with 436,096 AF of water in Buffalo Bill Reservoir.

On May 1 the snowpack in the mountains above Buffalo Bill Reservoir was 100 percent of average and the May 1 forecast of April-July snowmelt runoff was increased by 50,000AF to 750,000 AF, 116 percent of average. Buffalo Bill Reservoir inflow began to increase around the middle of May and a release through the 4X5 gates was initiated on May 18, which resulted in a total release to the river of approximately 2,450 cfs for the remainder of the month. As warm temperatures moved into the area during the last week of May, inflows increased to a peak average daily inflow of 10,022 cfs on May 31. The total Buffalo Bill Reservoir inflow for May was 246,101 AF, which was 155 percent of average, and the reservoir level rose to 5379.30 feet by the end of the month.

By June 1 the snowpack in the basin had fallen to 61 percent of average and the June 1 forecast was lowered to 720,000 AF for the April through July period. Precipitation during June was 174 percent of average in the lower elevations of the watershed and 160 percent of average in the mountains. Soil moisture conditions in the watershed were much improved over past years and more of the precipitation that fell in the basin made it to the river, rather than soaking into the ground. Inflow for June was 150 percent of average, with the maximum daily inflow of 9,787 cfs occurring on June 1 and inflows in excess of 6,000 cfs recorded every day of the month.

The wet June weather also resulted in lower demand for irrigation water as Heart Mountain Canal diversions were about 7,000 AF less than normal. As the reservoir rose, the spillway gates were opened on June 8 and releases were steadily increased to control the rate at which the reservoir was filling.

Releases to the Shoshone River were above 6,000 cfs from June 10 through the end of the month, with the peak release to the river of 6,921 cfs on June 23. By the end of June, the reservoir had filled to elevation 5387.28 feet with 596,981 AF of water in storage. Provisional data from the USGS shows that the inflow on the North Fork of the Shoshone River peaked at 6,630 cfs on May 31 and the peak on the South Fork of 3,420 cfs occurred on June 26.

The high mountain snowpack sustained the runoff well into July and the reservoir inflow for July was 141 percent of average. Spillway releases continued until July 9 and releases above the capacity of the powerplants were made through July 22. Storage in Buffalo Bill Reservoir peaked for the year on July 24 at 625,477 AF, which was 21,088 AF below the top of the conservation pool. The maximum water surface elevation of 5390.89 feet was 2.61 feet below the full level.

Inflow during August remained above average but September inflow dropped to 80 percent of average. Releases began to exceed inflow on July 25 and the reservoir level fell over 18 feet by the end of September. At the end of the water year Buffalo Bill Reservoir held 486,016 AF of water at elevation 5372.51 feet. The end of September content was 111 percent of the 1994-2008 average for the enlarged reservoir. The total inflow to Buffalo Bill Reservoir during the April through July runoff period was 954,229 AF, which was 148 percent of average. The total water year inflow of 1,133,874 AF was 137 percent of average.

Total energy generated at all powerplants that directly receive water out of Buffalo Bill Reservoir totaled 142,262,000 kWh in 2009. Of this total amount, Heart Mountain Powerplant generated 18,710,000 kWh, Buffalo Bill Powerplant generated 84,268,000 kWh, Shoshone Powerplant generated 22,595,000 kWh and Spirit Mountain Powerplant generated 16,689,000 kWh. The powerplants used 713,478 AF of water to generate this amount of energy and 56 percent of the total water released from Buffalo Bill Reservoir during water year 2009 was used for generation. About 19 percent, or 218,771 AF of the total water released from Buffalo Bill Reservoir, was released to the Heart Mountain Canal for irrigation purposes.

Important Events - 2009

October 12, 2008: Irrigation diversions to the Heart Mountain Canal were discontinued for the 2008 irrigation season.

October 15, 2008: Releases to the Shoshone River were reduced to the winter release of 350 cfs.

April 1, 2009: Buffalo Bill Reservoir Public Information Meeting was held in Powell to discuss water year 2008 operation and expected 2009 operation.

April 15, 2009: Releases from Buffalo Bill Reservoir were increased to meet downstream irrigation demand and control the level of Buffalo Bill Reservoir.

April 20, 2009: Irrigation releases to the Heart Mountain Canal were initiated for the 2009 irrigation season.

June 8, 2009 – July 9, 2009: Releases were made through the Buffalo Bill spillway to control the reservoir level.

July 24, 2009: Buffalo Bill Reservoir reached a maximum elevation for the water year of 5390.89 feet.

Additional hydrologic and statistical information pertaining to the operations of Buffalo Bill Reservoir during water year 2009 can be found in Table WYT8 and Figure WYG5.

TABLE WYT8
HYDROLOGIC DATA FOR WATER YEAR 2009
BUFFALO BILL RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	5259.60	41,748	41,748
TOP OF ACTIVE CONSERVATION	5393.50	646,565	604,817

STORAGE-ELEVATION DATA	ELEVATION (FEET)	STORAGE (AF)	DATE
BEGINNING OF YEAR	5372.30	484,411	OCT 01,2008
END OF YEAR	5372.51	486,016	SEP 30, 2009
ANNUAL LOW	5362.11	413,680	MAY 16, 2009
HISTORIC LOW*		19,080	JAN 31, 1941
ANNUAL HIGH	5390.89	625,477	JUL 24, 2009
HISTORIC HIGH	5393.51	646,647	JUL 30, 1996

* Prior to 1952 daily records are not available. End of month data was used to determine the historic low.

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW*	DATE
ANNUAL TOTAL (AF)	1,133,874	OCT 08-SEP 09	1,132,270	OCT 08-SEP 09
DAILY PEAK (cfs)	10,022	MAY 31, 2009	6,921	JUN 23, 2009
DAILY MINIMUM (cfs)	44	JAN 27, 2009	344	OCT 25, 2008
PEAK SPILLWAY FLOW (cfs)			4,075	JUN 15, 2009
TOTAL SPILLWAY FLOW (AF)			204,570	JUN 8-JUL 9, 2009

*Daily peak and minimum are releases to the river

	INFLOW		OUTFLOW		CONTENT	
MONTH	KAF	% of Avg*	KAF	% of Avg*	KAF	% of Avg*
OCTOBER	24.3	97	47.4	135	461.3	111
NOVEMBER	23.7	113	26.0	143	459.1	110
DECEMBER	15.8	100	22.0	123	452.8	108
JANUARY	12.6	85	21.7	129	443.7	106
FEBRUARY	12.7	97	19.7	123	436.7	106
MARCH	18.3	96	22.0	106	432.9	106
APRIL	52.2	127	49.1	92	436.1	112
MAY	246.1	155	146.2	132	536.0	122
JUNE	436.0	150	375.0	220	597.0	106
JULY	219.9	141	194.8	114	622.1	110
AUGUST	51.3	115	112.9	102	560.5	112
SEPTEMBER	20.9	80	95.4	120	486.0	111
ANNUAL	1,133.9	137	1,132.3	138		

APRIL - JULY INFLOW (AF)	
ACTUAL	AVERAGE
954,229	646,300

* Average for inflow and outflow is the 1979-2008 period. Because of the enlargement of Buffalo Bill Reservoir in 1992, the period of record on which average content is based is 1993-2008.

FIGURE WYG5

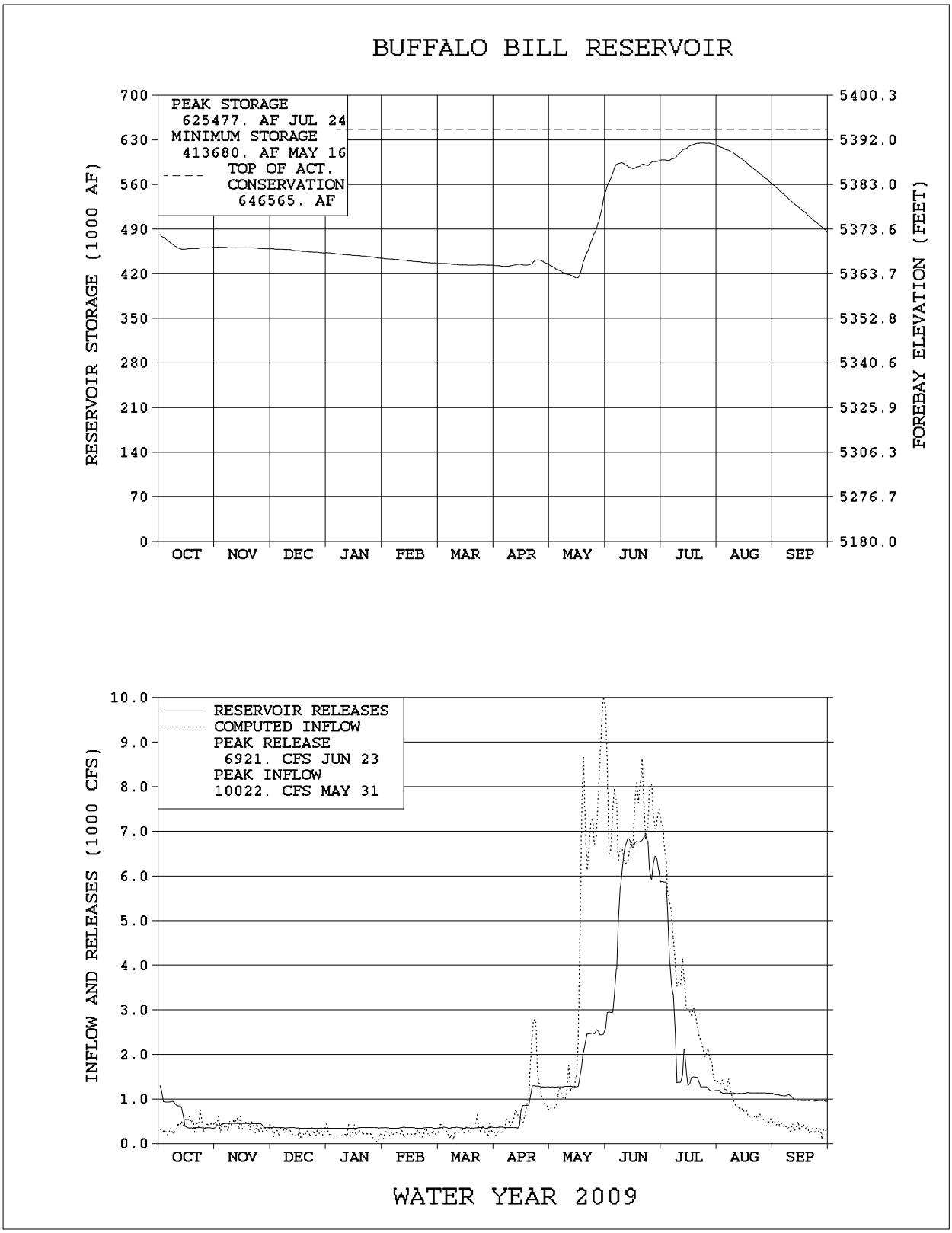

BUFFALO BILL RESERVOIR
PEAK STORAGE
625477. AF JUL 24
MINIMUM STORAGE
413680. AF MAY 16
TOP OF ACT.
CONSERVATION
646565. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
700
630
560
490
420
350
280
210
140
70
0
5400.3
5392.0
5383.0
5373.6
5363.7
5352.8
5340.6
5325.9
5306.3
5276.7
5180.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
6921. CFS JUN 23
PEAK INFLOW
10022. CFS MAY 31
INFLOW AND RELEASES (1000 CFS)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Table WYT9
WATER YEAR 2009 ACTUAL OUTAGES FOR WYOMING POWERPLANTS

Facilities	Description of Work	Outage Dates
BOYSEN		
Unit 1	K1A Maintenance and Annual Maintenance	10/20/08 - 12/01/08
Unit 1	K1A Maintenance	04/06/09 - 04/08/09
Unit 1	PMG Demagnetized	04/13/09 - 04/20/09
Unit 2	Annual Maintenance	01/06/09 - 02/04/09
Unit 2	K1A Maintenance	04/06/09 - 04/08/09
PILOT BUTTE		
Unit 1	Evaluation	04/01/09 - 05/31/09
Unit 1	Unit in “Mothballed” status	06/01/09 - 09/30/09
Unit 2	Evaluation	04/01/09 - 05/31/09
Unit 2	Unit in “Mothballed” status	06/01/09 - 09/30/09
BUFFALO BILL		
Buffalo Bill Powerplant		
Unit 1	Annual Maintenance	11/10/08 - 11/21/08
Unit 2	Annual Maintenance	12/01/08 - 01/13/09
Unit 3	Annual Maintenance	01/20/09 - 01/29/09
Shoshone Powerplant		
Unit 3	Annual Maintenance	02/09/09 - 03/11/09
Heart Mountain Powerplant		
Unit 1	HM155/KZ1A Maintenance	10/20/08 - 10/23/08
Unit 1	Annual Maintenance	03/24/09 - 04/02/09
Spirit Mountain Powerplant		
Unit 1	Annual Maintenance	10/20/08 - 10/30/08

SUMMARY OF RESERVOIR OPERATIONS FOR BENEFIT OF FISH AND WILDLIFE, ENVIRONMENT AND RECREATION

Bull Lake Reservoir

During the past several years, Midvale and Reclamation have entered into an annual agreement whereby Reclamation could store Boysen water in Bull Lake under any combination of four conditions set forth in the agreement. A similar agreement was approved for 2009. The Boysen water stored in Bull Lake allows Bull Lake to be maintained at a higher content and also provides a flow of 20 to 25 cfs in Bull Lake Creek below the dam as the Boysen Reservoir water is released from Bull Lake through the winter months. On October 1, 2008, Bull Lake Reservoir held 84,533 AF of water. Of the 84,533 AF held in Bull Lake, 10,970 AF was Boysen water in Bull Lake. Inflow to Bull Lake was slightly greater than the release and the reservoir slowly rose through the winter. Inflow from snowmelt runoff began in mid-May and during the April-July period the inflow to Bull Lake was 115 percent of average. The reservoir reached a maximum elevation for the year of 5802.70 feet on July 28, which was 23 feet higher than the minimum elevation for the year of 5779.36 feet that occurred on September 30. At the end of water year 2009, the content of Bull Lake was 79,758 AF. At the beginning of water year 2010, there was 10,915 AF of Boysen storage water in Bull Lake. This water will be transferred back to Boysen Reservoir during the winter months of water year 2010 to provide a winter flow in Bull Lake Creek.

Boysen Reservoir

Boysen Reservoir storage at the beginning of water year 2009 was 104 percent of average and 85 percent of capacity. Following the 2008 irrigation season, the release from Boysen Dam was set at approximately 700 cfs and that flow was maintained through the winter. At the request of the Wyoming Game and Fish Department (WGF), a flushing flow release from Boysen Dam was made beginning on March 31. Flushing flows are designed to simulate high runoff events that occurred in the river prior to flows being controlled by the dam. The rapidly increasing flows flush the fine sediment from the spawning gravels in the river, improving the spawning habitat for trout. The flushing flow began early on the morning of March 31 when releases were increased from 700 cfs to 3,000 cfs, with another increase to 5,000 cfs occurring 5 hours later. The 5,000 cfs release was maintained for 10 hours and then gradually reduced back to 700 cfs. During the flushing flow, approximately 6,500 AF of water was released above the 700 cfs winter release. The month of April is normally when many species of fish spawn in the upper few feet of the reservoir. To insure a successful spawn, it is important to limit the amount of drawdown on the reservoir during April. In April of 2009, the inflow to Boysen Reservoir exceeded the outflow by about 10,000 AF and the reservoir rose 0.63 feet during the month. The reservoir continued to rise during the first few days of May but as releases were made to make room for the expected runoff the lake level dropped 1.80 feet before it began filling again on May 21. The reservoir level was at 4715.96 feet going into the Memorial Day weekend, which was 8.05 feet higher than at the beginning of the holiday weekend in 2008.

Buffalo Bill Reservoir

Following the 2008 irrigation season the release from Buffalo Bill Reservoir was set at approximately 350 cfs, based on winter release criteria contained in the Buffalo Bill Reservoir Enlargement Winter Release Operation Agreement. A winter release of 100 cfs, 150 cfs, 200 cfs, or 350 cfs, will be provided below Buffalo Bill Powerplant based on the total inflow to Buffalo Bill Reservoir during the previous water year and the amount of storage in the reservoir and in the state account on September 30. A release of 100 cfs will be maintained in the river below the dam at all times.

Reclamation continues to support the WGF Reservoir Research Branch in its efforts to assess fish population and species distribution in the enlarged reservoir through the use of hydro-acoustic technology and by providing WGF river access and an aluminum tube for planting fish in the Shoshone River off the deck of Buffalo Bill Powerplant.

At Buffalo Bill Reservoir, as the reservoir is drawn down, the lake bed is exposed to wind erosion which creates dust in the reservoir area and in the town of Cody, Wyoming. As a part of the enlargement of Buffalo Bill Reservoir, dust abatement dikes were built on the upper ends of the North and South Fork arms of the reservoir to hold water in areas that would become dry as the reservoir level decreased, thus reducing the area of dry lake bed. During the periods from October 8, 2008, through May 23, 2009, the water surface elevation of Buffalo Bill Reservoir was below the top of the North Fork Dike (elevation 5370.00 feet). The maximum elevation of the pool behind the South Fork Dike of 5393.45 feet occurred on October 24, 2008, and the minimum elevation of 5391.24 feet occurred on April 1, 2009. At the maximum elevation, the pool behind the South Fork Dike covered 201 surface acres. On May 16, 2009, when the water surface elevation of Buffalo Bill Reservoir was at its low for the year of 5362.11 feet, the water surface elevation of the pool behind the North Fork Dike was approximately the same as the main reservoir and the water surface elevation of the pool behind the South Fork Dike was 5392.40 feet. At the minimum reported elevation of Buffalo Bill Reservoir, 189 more acres of land would have been exposed without the ability to store water behind the South Fork Dike.

The number of stop-logs at the outlet control structure on the South Fork Dike has been set to maintain the static water level of the pond behind the dike at approximately 5392.00 feet at the end of the water year. The increased elevation provides a larger impoundment behind the dike, benefiting waterfowl as well as the fishery.

The Diamond Creek Dike was constructed to prevent Diamond Creek and the Irma Flats area from being inundated by the enlarged reservoir. Inflows from the Diamond Creek drainage enter Diamond Creek Reservoir which lies at the base of the dike. This water is then pumped into Buffalo Bill Reservoir in order to maintain the elevation of Diamond Creek Reservoir between a maximum of 5340.40 feet and a minimum of 5339.50 feet with the normal water surface elevation being 5340.00 feet. In water year 2009, 11,637 AF of water was pumped from Diamond Creek Reservoir into Buffalo Bill Reservoir. Reservoir levels during all of water year 2009 were adequate for recreational activities on Buffalo Bill Reservoir.

WEATHER SUMMARY FOR NORTH AND SOUTH DAKOTA

October precipitation was above normal at Shadehill Reservoir, below normal at Deerfield Reservoir and normal at the remaining reservoirs.

November precipitation was very much above normal at Dickinson and Jamestown Reservoirs, above normal at Heart Butte, Belle Fourche, Keyhole, and Shadehill Reservoirs, and below normal at the remaining reservoirs.

December precipitation was very much above normal at Heart Butte Reservoir, above normal at Pactola Reservoir, normal at Jamestown Reservoir and was below to much below normal at the remaining reservoirs.

January precipitation was above too much above normal at Angostura, Deerfield, Heart Butte, Keyhole and Pactola Reservoirs, and below to very much below normal at the remaining reservoirs.

February precipitation was below normal at Angostura, Belle Fourche, Deerfield, and Keyhole Reservoirs, and above too much above normal at the remaining reservoirs.

March precipitation was above to very much above normal at Angostura, Belle Fourche, Dickinson, Heart Butte, Jamestown, Shadehill and Pactola Reservoirs, and was below normal at the remaining reservoirs.

April precipitation was normal to above normal at Angostura, Belle Fourche, Jamestown, Keyhole, and Pactola Reservoirs, and below to very much below normal at the remaining reservoirs.

May precipitation was normal at Heart Butte Reservoir, very much below normal at Jamestown Reservoir, and below normal at the remaining reservoirs.

June precipitation was above normal at Angostura, Dickinson, Pactola, and Shadehill Reservoirs, normal at Heart Butte Reservoir, and below normal at the remaining reservoirs.

July precipitation was above normal at Belle Fourche, Deerfield, Keyhole, Pactola, and Shadehill Reservoirs, normal at Dickinson, and Heart Butte Reservoirs, and below to very much below normal at the remaining reservoirs.

August precipitation was above too much above normal at Angostura, Belle Fourche, Keyhole, and Pactola Reservoirs, and below to much below normal at the remaining reservoirs.

September precipitation was above too much above normal at Deerfield, Jamestown, and Pactola Reservoirs, normal at Dickinson Reservoir, and below normal for the remaining reservoirs.

Total annual precipitation for Reclamation facilities in North Dakota, South Dakota, and northeastern Wyoming is shown on Table DKT1.

TABLE DKT1
Total Annual Precipitation for Reclamation Reservoirs in North Dakota, South Dakota, and Northeastern Wyoming in Inches

Reservoir	2009 Total	Average Total	Percent
Angostura 1/	62.59	66.10	95
Belle Fourche 2/	60.33	55.92	108
Deerfield	12.12	20.87	58
Keyhole 3/	33.59	35.92	94
Pactola	21.40	21.10	101
Shadehill 4/	36.74	32.61	113
Dickinson	15.77	16.35	96
Heart Butte	15.85	15.75	101
Jamestown	15.53	18.49	84

1/ Angostura Reservoir's annual precipitation includes data from Oelrichs, SD, Hot Springs, SD, Newcastle, WY, and Red Bird, WY climate stations.

2/ Belle Fourche Reservoir's annual precipitation includes data from Newell, SD, Spearfish, SD, and Sundance, WY climate stations.

3/ Keyhole Reservoir's annual precipitation includes data from Gillette and Sundance, WY climate stations.

4/ Shadehill Reservoir's annual precipitation includes data from Camp Crook and Lemmon, SD climate stations.

Table DKT2 displays the changes in storage content between September 30, 2008, and September 30, 2009, at reservoirs in North and South Dakota and eastern Wyoming.

TABLE DKT2
Comparison of End-of-Month Storage Content for Reservoirs in North Dakota, South Dakota, and Northeastern Wyoming in Acre-Feet

Reservoir	Storage September 30, 2008	Storage September 30, 2009	Change in Storage
Angostura	69,361	74,443	5,082
Belle Fourche	98,330	117,891	19,561
Deerfield	14,510	14,845	335
Keyhole	87,601	100,679	13,078
Pactola	50,103	54,651	4,548
Shadehill	78,853	104,205	25,352
Dickinson	3,043	1,751	-1,292
Heart Butte	41,949	59,752	17,803
Jamestown	29,073	29,217	144

FLOOD BENEFITS FOR RESERVOIRS IN NORTH AND SOUTH DAKOTA AND NORTHEASTERN WYOMING

Several Bureau of Reclamation reservoirs in northeastern Wyoming, South Dakota, and North Dakota provided flood relief during Water Year (WY) 2009. They are: Heart Butte Reservoir on the Heart River near Glen Ullin, North Dakota; Shadehill Reservoir on the Grand River near Shadehill, South Dakota; Angostura Reservoir on the Cheyenne River near Hot Springs, South Dakota; Pactola Reservoir on Rapid Creek near Rapid City, South Dakota; Keyhole Reservoir on the Belle Fourche River near Moorcroft, Wyoming; and Jamestown Reservoir on the James River near Jamestown, North Dakota.

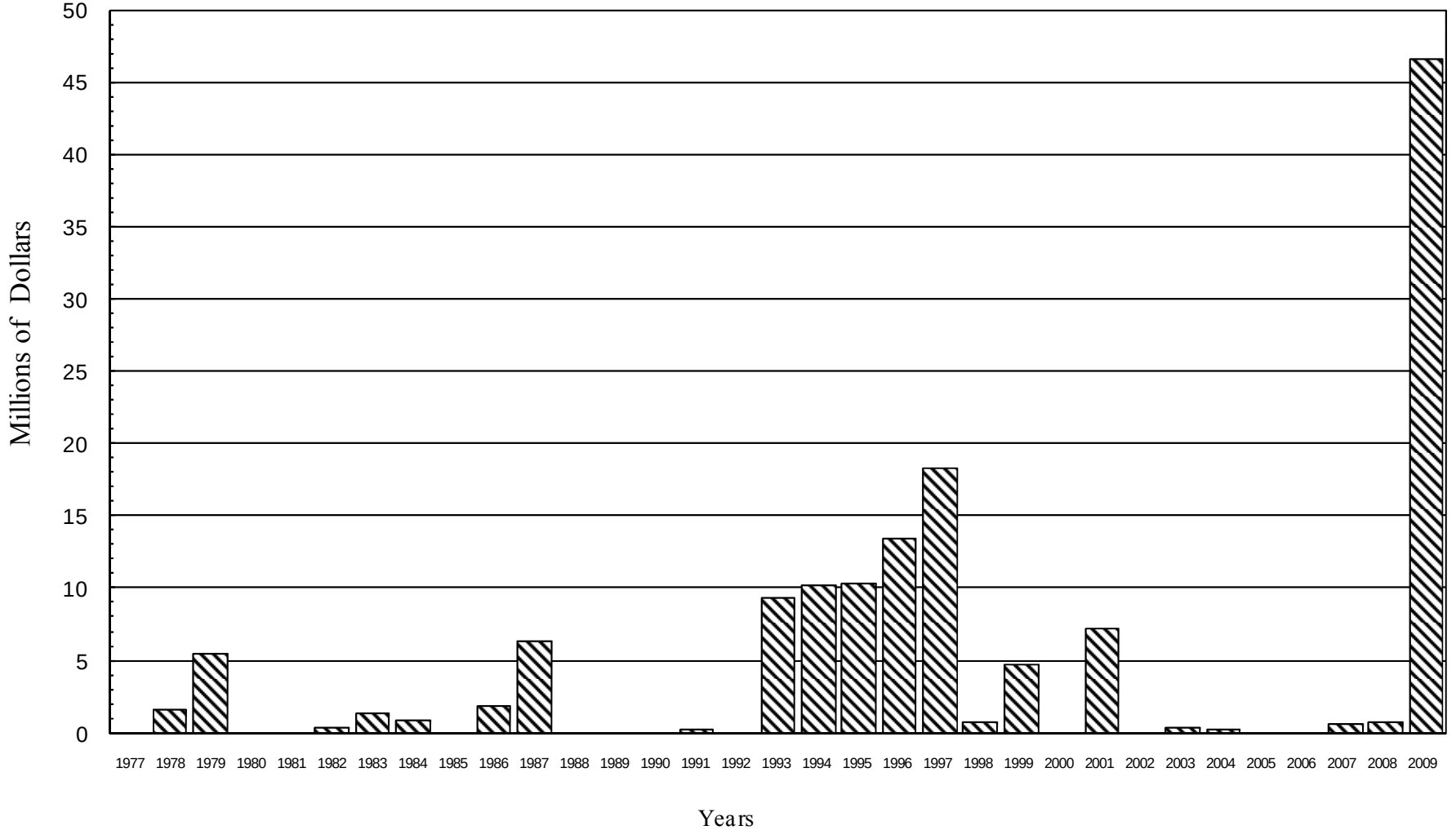
The information on the distribution of flood damages prevented is provided by the Corps. The distributions of flood damages prevented for each reservoir are as follows:

FLOOD DAMAGE PREVENTED IN 2009
ACCUMULATED TOTAL 1950-2009

	Local	Main-Stem	2009 Total	Previous Accumulations	1950-2009 Accum Totals
Heart Butte	$1,640,800	$0	$1,640,800	$13,405,300	$15,091,100
Shadehill	$1,586,600	$0	$1,586,600	$9,417,200	$11,003,800
Angostura	$0	$0	$0	$22,600	$22,600
Pactola	$0	$0	$0	$3,317,900	$3,371,900
Keyhole	$10,300	$0	$10,300	$4,145,100	$4,155,400
Jamestown	$43,279,400	$0	$43,279,400	$86,807,300	$130,086,700
Total	$46,517,100	$0	$46,517,100	$117,214,400	$163,731,500

Flood damages prevented by Dakotas Area Office reservoirs between Garrison and Gavins Point Dams are shown on Figure DKG1

FIGURE DKG1
FLOOD DAMAGES PREVENTED
By Dakota Area Projects Between Garrison and Gavins Point Dams



UNIT OPERATIONAL SUMMARIES FOR WATER YEAR 2009

Dickinson Reservoir

Background

Dickinson Dam and Edward Arthur Patterson Lake (also known as Dickinson Reservoir) is located on the Heart River near Dickinson, North Dakota. The reservoir has a dead capacity of 356 acre-feet, an inactive capacity of 100 acre-feet and an active conservation capacity of 8,156 acre-feet (for a total storage capacity of 8,612 acre-feet at the top of conservation elevation 2420.00). Reservoir water is utilized for irrigating approximately 194 acres along the Heart River downstream of the dam and for municipal use by the Dickinson Parks and Recreation District.

Water Year 2009 Operations Summary

Dickinson Reservoir started WY 2009 at elevation 2413.60 and storage of 3,043 acre-feet, which is 6.40 feet, and 5,569 acre-feet below the top of the conservation pool (elevation 2420.00 and storage 8,612 acre-feet). Dickinson Reservoir peaked at elevation 2420.77 on April 13 with 9,563 acre-feet of storage. The reservoir elevation on September 30, 2009, was 2410.87 with storage of 1,751 acre-feet, which is 9.13 feet, and 6,861 acre-feet below the top of conservation pool.

The maximum discharge of 2,340 cfs occurred on April 14. Reservoir net inflows for water year 2009 totaled 50,099 acre-feet, 271 percent of average. Precipitation for the water year totaled 15.77 inches, which is 96 percent of average.

No water was specifically released for irrigation purposes.

An Emergency Management/Security orientation was conducted on March 11, 2009.

The Annual Site Inspection (ASI) was done on August 25, 2009, by personnel from the DKAO.

Monthly Statistics For WY 2009

Record and near record monthly inflows in 58 years of record keeping were recorded in the following months: November has its 4th highest inflow, December had its 8th highest inflow, February had its 10th lowest inflow, March had its 6th highest inflow, April had its 4th highest inflow, July had its 4th highest inflow, August had its 5th highest inflow, and September had its 4th highest inflow.

Record or near record monthly end of month content in 58 years of record keeping were recorded in the following months: October has its 4th lowest storage, November, December, January, and February had its 3rd lowest storage, April had its 11th highest storage, May and June had its 10th highest storage, August had its 4th lowest storage, and September had its lowest storage ever.

Additional statistical information on Dickinson Reservoir and its operations during 2009 can be found on Table DKT3 and Figure DKG2

TABLE DKT3
HYDROLOGIC DATA FOR 2009
DICKINSON RESERVOIR (ALSO KNOWN AS E. A. PATTERSON LAKE)

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE	2,405.00	456	456
TOP OF ACTIVE CONSERVATION	2,420.00	8,612	8,156
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL			

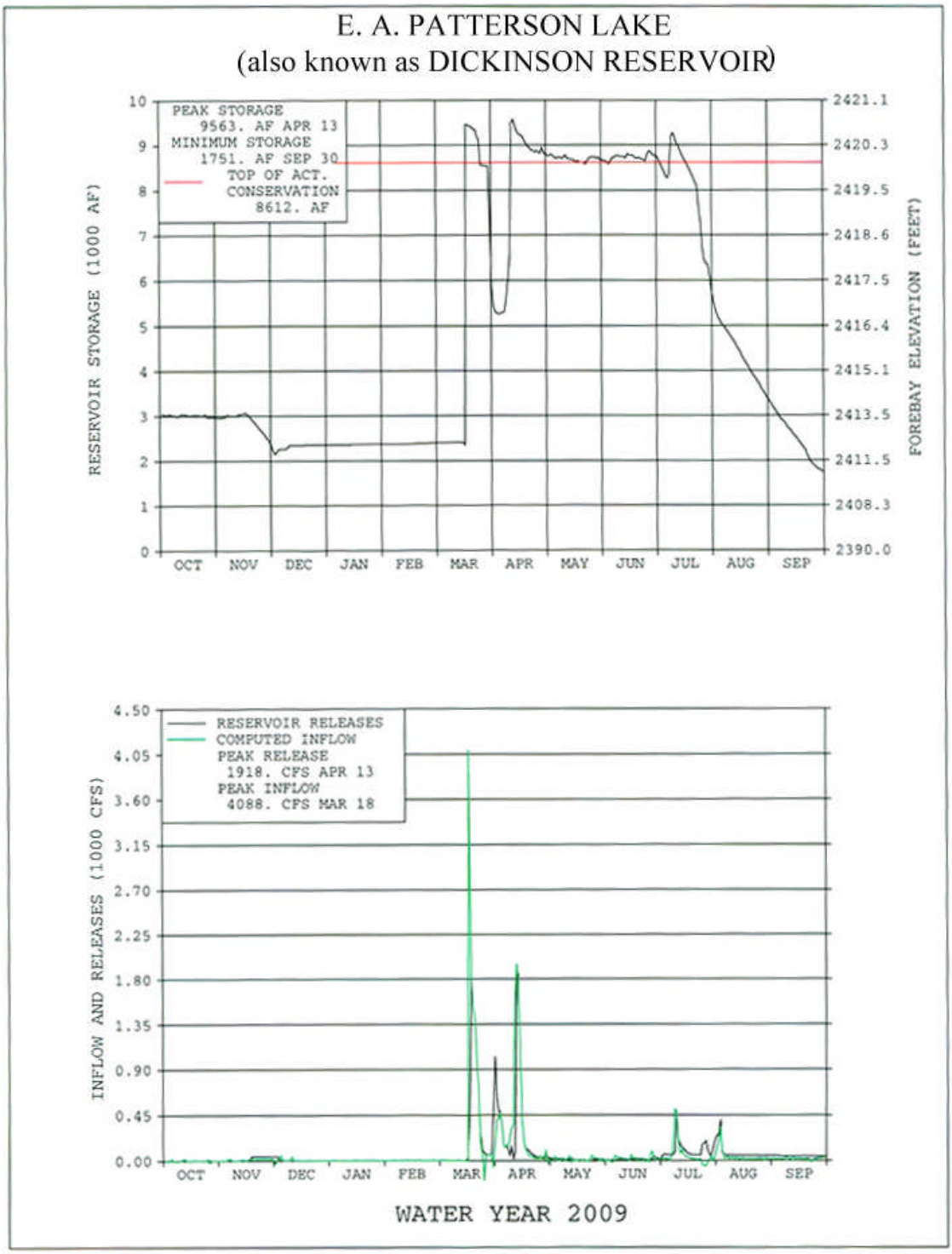
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2,413.60	3,043	OCT 01, 2008
END OF YEAR	2,410.87	1,751	SEP 30, 2009
ANNUAL LOW	2,410.87	1,751	SEP 30, 2009
ANNUAL HIGH	2,420.72	9,563	APR 13, 2009
HISTORIC HIGH	2,422.19	**9,348	MAR 21, 1997

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	50,099	OCT 08-SEP 09	51,266	OCT 08-SEP 09
DAILY PEAK (CFS)	4,088	MAR 18, 2009	2,340	APR 14,2009
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	-80	-31	0	NA	2,963	54
NOVEMBER	554	426	1,153	623	2,364	43
DECEMBER	175	150	185	139	2,354	43
JANUARY	15	8	0	NA	2,369	43
FEBRUARY	19	2	0	NA	2,388	41
MARCH	21,249	311	16,111	275	7,526	111
APRIL	20,509	509	19,219	497	8,816	127
MAY	391	18	535	23	8,872	125
JUNE	727	30	643	26	8,756	126
JULY	3,285	366	6,263	470	5,778	89
AUGUST	2,270	901	4,584	651	3,339	56
SEPTEMBER	984	2,659	2,572	784	1,751	31
ANNUAL	50,099	271	51,266	278		
APRIL-JULY	24,912	260				

* Frequently observed during fall and winter months
** Due to new area-capacity table, the capacity that corresponds to the new historic high elevation is less than a previous historic high capacity amount (11,520 AF @ Elevation 2421.08 on June 9, 1982)

DKG2


E. A. PATTERSON LAKE
(also known as DICKINSON RESERVOIR)
PEAK STORAGE
9563. AF APR 13
MINIMUM STORAGE
1751. AF SEP 30
TOP OF ACT.
CONSERVATION
8612. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
10
9
8
7
6
5
4
3
2
1
0
2421.1
2420.3
2419.5
2418.6
2417.5
2416.4
2415.1
2413.5
2411.5
2408.3
2390.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
1918. CFS APR 13
PEAK INFLOW
4088. CFS MAR 18
INFLOW AND RELEASES (1000 CFS)
4.50
4.05
3.60
3.15
2.70
2.25
1.80
1.35
0.90
0.45
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Heart Butte Reservoir

Background

Heart Butte Dam and Lake Tschida (also known as Heart Butte Reservoir) is located on the Heart River near Glen Ullin, North Dakota. The reservoir has a dead storage capacity of 5,227 acre-feet, an active conservation capacity of 61,915 acre-feet (for a total storage capacity of 67,142 acre-feet at the top of active conservation elevation 2064.50), and an exclusive flood control space of 147,027 acre-feet. Flood control storage is located above the crest of an un-gated glory-hole spillway. Heart Butte Reservoir is primarily used for flood control and the authorized irrigation of up to 13,100 acres of which about 7,320 acres are now being irrigated.

Water Year 2009 Operations Summary

Heart Butte Reservoir started WY 2009 at elevation 2055.84 and storage of 41,949 acre-feet, which is 8.66 feet, and 25,193 acre-feet below the top of conservation pool (elevation 2064.50 and storage 67,142 acre-feet). Heart Butte Reservoir peaked at elevation 2082.73 on April 16 with 144,268 acre-feet of storage. The reservoir elevation on September 30, 2009, was 2062.19 with storage of 59,752 acre-feet, which is 2.31 feet and 7,390 acre-feet below the top of conservation pool.

The maximum discharge of 3,950 cfs occurred from April 17. Reservoir net inflows for water year 2009 totaled 273,689 acre-feet, 334 percent of average. Precipitation for the water year totaled 15.85 inches, which is 101 percent of average.

Monthly Statistics For WY 2009

Record and near record monthly inflows in 60 years of record keeping were recorded in the following months: November had its 10th highest inflow, March had its 4th highest inflow, April had its 3rd highest inflow, July and August had its 10th highest inflow, and September has its 7th highest inflow.

Record and near record monthly end of month content in 60 years of record keeping were recorded in the following months: October had its 4th lowest storage, November, December, and January had its 5th lowest storage, March had its 5th highest storage, May had its 6th highest storage, and June had its 2nd highest storage.

Additional statistical information on Heart Butte Reservoir and its operations during 2009 can be found on Table DKT4 and Figure DKG3.

TABLE DKT4
HYDROLOGIC DATA FOR 2009
HEART BUTTE RESERVOIR (ALSO KNOWN AS LAKE TSCHIDA)

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2,030.00	5,227	5,227
TOP OF ACTIVE CONSERVATION	2,064.50	67,142	61,915
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL	2,094.50	214,169	147,027

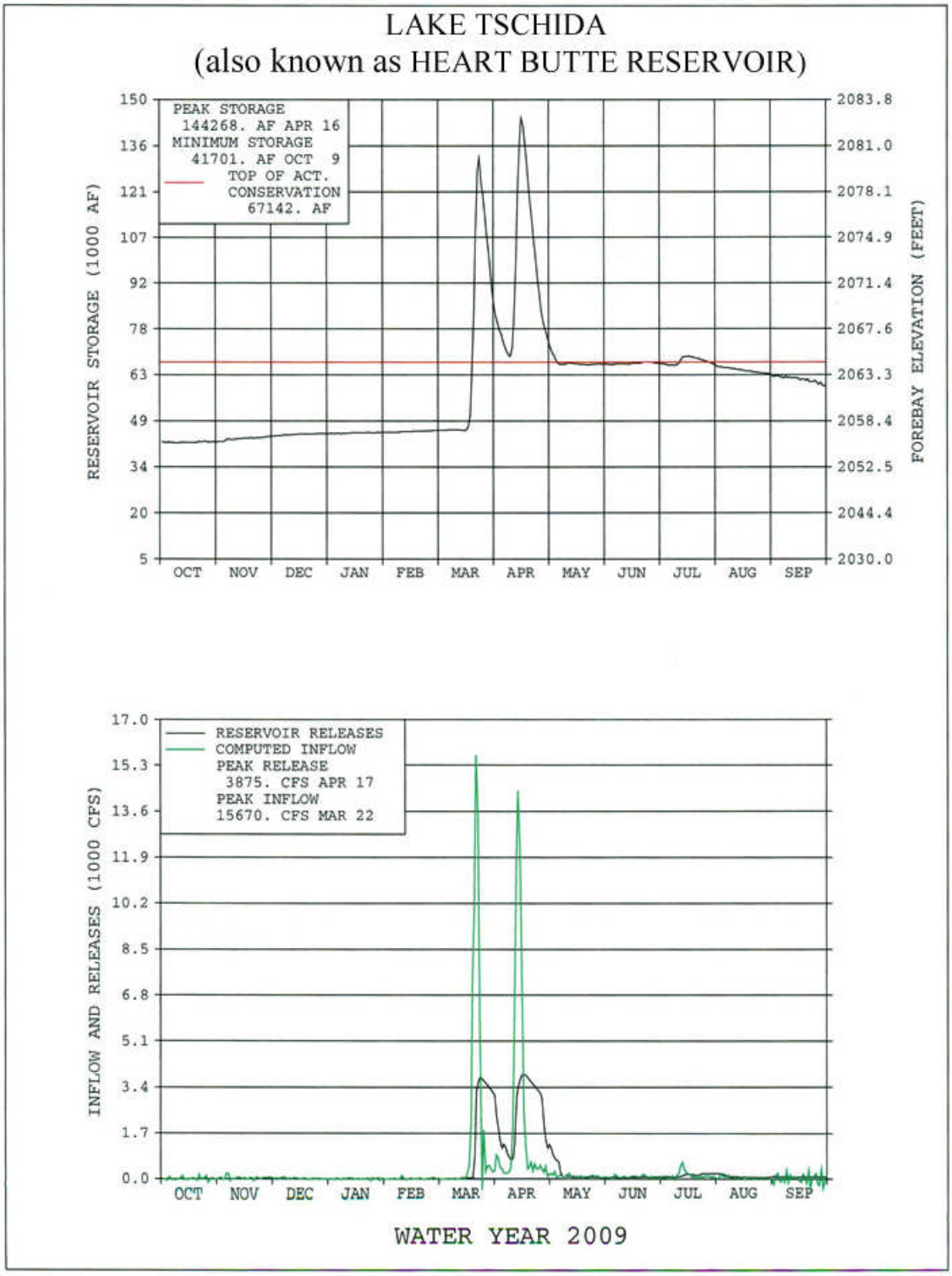
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2,055.84	41,949	OCT 01, 2008
END OF YEAR	2,062.19	59,752	SEP 30, 2009
ANNUAL LOW	2,055.74	41,701	OCT 09, 2008
ANNUAL HIGH	2,082.73	144,268	APR 16, 2009
HISTORIC HIGH	2,086.23	173,203	APR 09, 1952

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	273,689	OCT 08-SEP 09	255,886	OCT 08-SEP 09
DAILY PEAK (CFS)	15,670	MAR 22, 2009	3,950	APR 17, 2009
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	99	10	0	NA	42,048	72
NOVEMBER	1,769	154	0	NA	43,817	75
DECEMBER	850	107	0	NA	44,667	77
JANUARY	312	36	0	NA	44,979	78
FEBRUARY	708	20	0	NA	45,687	77
MARCH	115,870	413	71,364	407	90,193	129
APRIL	132,518	602	147,087	686	75,624	108
MAY	6,082	65	15,189	142	66,517	96
JUNE	4,054	41	3,890	45	66,681	95
JULY	8,040	189	8,368	105	66,353	100
AUGUST	2,213	219	5,384	106	63,182	102
SEPTEMBER	1,173	536	4,603	183	59,752	100
ANNUAL	273,689	334	255,886	315		
APRIL-JULY	150,694	332				

* Frequently observed during fall and winter months

DKG3


LAKE TSCHIDA
(also known as HEART BUTTE RESERVOIR)
PEAK STORAGE
144268. AF APR 16
MINIMUM STORAGE
41701. AF OCT 9
TOP OF ACT.
CONSERVATION
67142. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
150
136
121
107
92
78
63
49
34
20
5
2083.8
2081.0
2078.1
2074.9
2071.4
2067.6
2063.3
2058.4
2052.5
2044.4
2030.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
3875. CFS APR 17
PEAK INFLOW
15670. CFS MAR 22
INFLOW AND RELEASES (1000 CFS)
17.0
15.3
13.6
11.9
10.2
8.5
6.8
5.1
3.4
1.7
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Jamestown Reservoir

Background

Jamestown Reservoir is located on the James River above Jamestown, North Dakota. The reservoir has a dead capacity of 822 acre-feet, an active conservation capacity of 24,535 acre-feet (for a total top of active conservation capacity of 25,357 acre-feet at elevation 1428.00), a joint-use capacity of 6,153 acre-feet, and an exclusive flood control space of 189,468 acre-feet. The exclusive flood control storage is below the crest of an un-gated glory-hole spillway, and flood control releases are controlled by the gated outlets. The joint-use space is available for flood control at the beginning of spring runoff and is used for conservation purposes during the summer months.

Water Year 2009 Operations Summary

Jamestown Reservoir started WY 2009 at elevation 1429.88 and storage of 29,073 acre-feet, which is 1.88 feet, and 3,716 acre-feet above the top of the conservation pool (elevation 1428.00 and storage 25,357 acre-feet). Jamestown Reservoir peaked at elevation 1454.10 on April 26 with 222,318 acre-feet of storage. The reservoir elevation on September 30, 2009, was 1429.95 with storage of 29,217 acre-feet, which is 1.95 feet, and 3,860 acre-feet above the top of active conservation pool.

The maximum discharge of 2,000 cfs occurred on April 22. Reservoir net inflows for water year 2009 totaled 303,210 acre-feet, 724 percent of average. Precipitation for the water year totaled 15.53 inches at 84 percent of average.

No water was specifically released for irrigation purposes. An Emergency Management/Security orientation was conducted on April 7, 2009. The Annual Site Inspection (ASI) was done on October 26 by personnel from the DKAO.

Monthly Statistics For WY 2009

Record and near record monthly inflows in 56 years of record keeping were recorded in the following months: March had its 7th highest inflow, April had its highest inflow, May had its 4th highest inflow, June had its 12th lowest inflow; July had its 11th highest inflow, August had its 13th highest inflow, and September had its 6th highest inflow.

Record and near record monthly end of month content in 56 years of record keeping were recorded in the following months: December had its 11th highest storage, January had its 12th highest storage, March had its 8th highest storage, April, May, and June had its highest storage.

Additional statistical information on Jamestown Reservoir and its operations during 2009 can be found on Table DKT5 and Figure DKG4.

TABLE DKT5
HYDROLOGIC DATA FOR 2009
JAMESTOWN RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	1,400.00	822	822
TOP OF ACTIVE CONSERVATION	1,428.00	25,357	24,535
TOP OF JOINT USE	1,431.00	31,510	6,153
TOP OF EXCLUSIVE FLOOD CONTROL	1,454.00	220,978	189,468

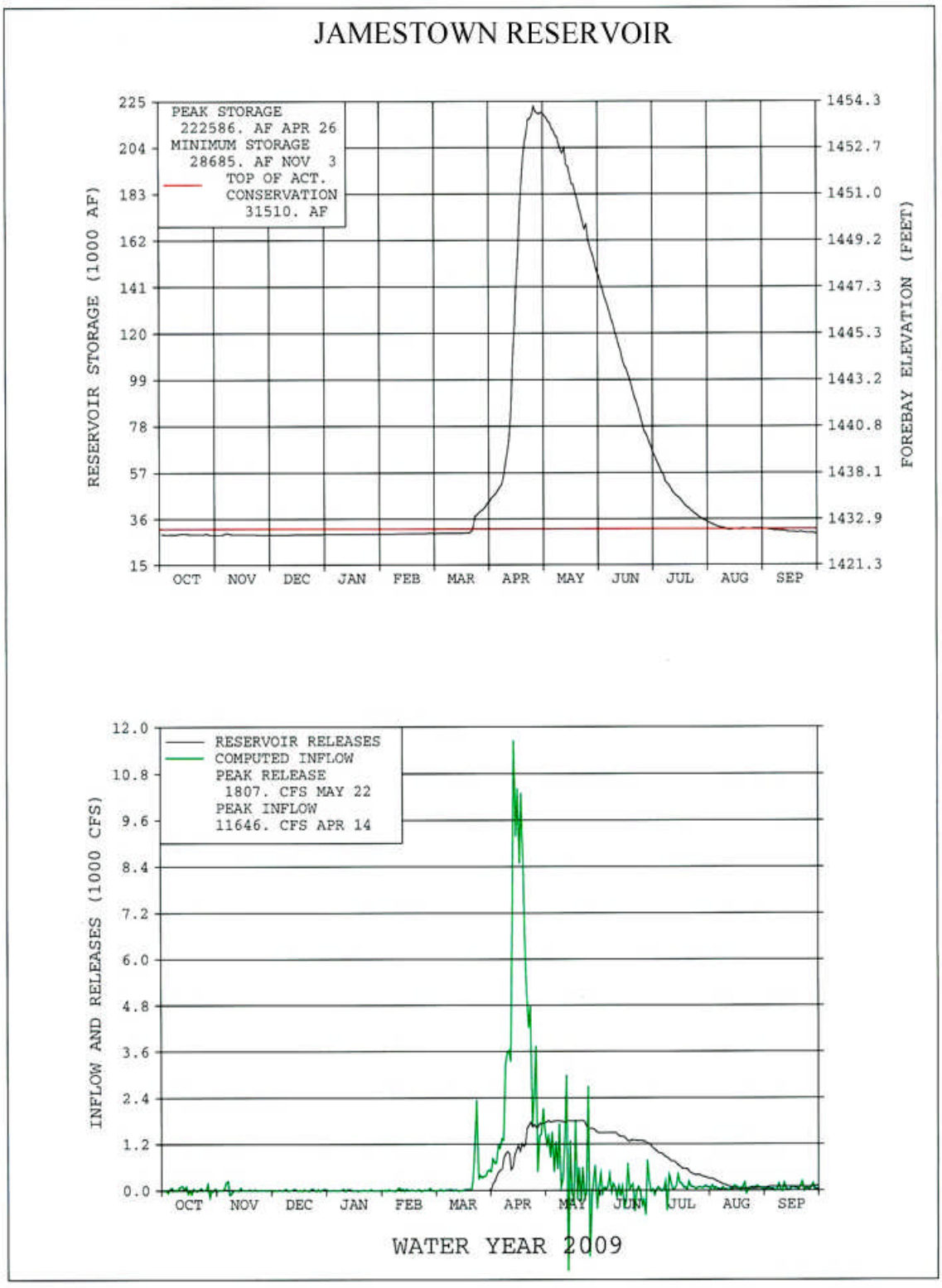
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	1,429.88	29,073	OCT 01, 2008
END OF YEAR	1,429.95	29,217	SEP 30, 2009
ANNUAL LOW	1,429.69	28,685	NOV 03, 2008
ANNUAL HIGH	1,454.10	222,318	APR 26, 2009
HISTORIC HIGH	1,454.10	222,318	APR 26, 2009

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	303,210	OCT 08-SEP 09	303,067	OCT 08-SEP 09
DAILY PEAK (CFS)	11,645	APR 14, 2009	2,000	APR 22, 2009
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	463	51	790	36	28,746	115
NOVEMBER	785	114	764	80	28,767	116
DECEMBER	319	105	12	4	29,073	117
JANUARY	82	66	0	NA	29,155	118
FEBRUARY	295	131	0	NA	29,451	118
MARCH	13,560	225	0	NA	43,010	142
APRIL	239,914	1,372	62,987	904	219,937	539
MAY	34,663	520	106,624	1,033	147,976	398
JUNE	1,111	37	80,582	1,173	68,505	206
JULY	5,136	176	38,779	793	34,862	111
AUGUST	3,437	132	6,766	155	31,533	107
SEPTEMBER	3,444	349	5,761	153	29,217	109
ANNUAL	303,210	724	303,067	733		
APRIL-JULY	280,824	935				

* Frequently observed during fall and winter months

DKG4


JAMESTOWN RESERVOIR
PEAK STORAGE
222586. AF APR 26
MINIMUM STORAGE
28685. AF NOV 3
TOP OF ACT.
CONSERVATION
31510. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
225
204
183
162
141
120
99
78
57
36
15
1454.3
1452.7
1451.0
1449.2
1447.3
1445.3
1443.2
1440.8
1438.1
1432.9
1421.3
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
1807. CFS MAY 22
PEAK INFLOW
11646. CFS APR 14
INFLOW AND RELEASES (1000 CFS)
12.0
10.8
9.6
8.4
7.2
6.0
4.8
3.6
2.4
1.2
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Deerfield Reservoir

Background

Deerfield Reservoir is located on Castle Creek, a tributary of Rapid Creek above Rapid City. Deerfield Reservoir (Rapid Valley Project) and Pactola Reservoir (Rapid Valley Unit, P-S MBP), furnish a supplemental irrigation supply to about 8,900 acres in the Rapid Valley Water Conservancy District and furnish replacement water for a portion of the water used from Rapid Creek by Rapid City. The majority of prior rights to the flows of Rapid Creek during the irrigation season is held by individuals and ditch companies in the Rapid Valley Water Conservancy District.

In 1985, Deerfield Dam was modified to accommodate a larger flood as determined from the results of the Probable Maximum Flood analysis. These modifications consisted of raising the crest of the dam 38 feet, excavating an unlined auxiliary spillway, removing and filling in the old spillway, and extending the existing emergency gate passageway to the new control house at the higher crest elevation. The reservoir has a total capacity of 15,655 acre-feet with an additional 26,655 acre-feet of surcharge capacity.

During the winter of 1995-96 the hollow jet valves were removed to allow the installation of the jet flow valves as part of the outlet works modification contract. The work was done to improve fish habitat in 1.5 miles of the creek immediately downstream of the dam. The stream improvement project was a cooperative effort accomplished by the city of Rapid City, Rapid Valley Water Conservancy District, Black Hills Fly Fishers, Bureau of Reclamation, United States Forest Service, and South Dakota Game Fish and Parks. The project modified the outlet works of Deerfield Dam by installing Jet Flow Gates to allow greater minimum winter releases than the 6-in bypass is capable of providing.

WY 2009 Operations Summary

Deerfield Reservoir started WY 2009 at elevation 5905.22 and storage of 14,510 acre-feet, which is 2.78 feet and 1,145 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 9,603 acre-feet (100 percent of the average). The peak reservoir elevation for WY 2009 was 5907.82 and storage of 15,588 acre-feet and occurred on July 16, 2009. The minimum elevation for WY 2009 was 5905.14 acre-feet and storage of 14,477 acre-feet and occurred on October 8, 2008. WY 2009 ended at elevation 5906.04 and storage of 14,845 acre-feet, which is 1.96 feet and 810 acre-feet below the top of the conservation pool. Precipitation for the water year was 58 percent of average.

Rapid Valley Water Conservancy District did not order any water from Deerfield for the 2009 irrigation season. An Emergency Management/Security Orientation was held February 18, 2009.

The Periodic Facility Review was done on April 14, 2009 by personnel from the Regional Office and the Rapid City Field Office.

Monthly Statistics For WY 2009

October end-of-month (EOM) elevation, at Deerfield Reservoir, was much above average. October inflow was below average. Release is 8cfs. Deerfield finished the month 2.9 feet from full.

November EOM elevation, at Deerfield Reservoir, was much above average. November inflow was below average. Release is 8cfs. Deerfield finished the month 2.8 feet from full.

December EOM elevation, at Deerfield Reservoir, was much above average. December inflow was below average. Release is 8cfs. Deerfield finished the month 2.8 feet from full.

January EOM elevation, at Deerfield Reservoir, was much above average. January inflow was below average. Release is 8cfs. Deerfield finished the month 2.7 feet from full.

February EOM elevation, at Deerfield Reservoir, was above average. February inflow was below average. Release is 8cfs. Deerfield finished the month 2.6 feet from full.

March EOM elevation and inflow, at Deerfield Reservoir, were above average. March inflow was above average. Release is 8cfs. Deerfield finished the month 1.7 feet from full.

April EOM elevation, at Deerfield Reservoir, was above average. April inflow was 5th highest in 56 years of record. Release is 30cfs. Deerfield finished the month 0.4 feet from full.

May EOM elevation and May inflow, at Deerfield Reservoir, were above average. Release is 15cfs. Deerfield finished the month 0.4 feet from full.

June EOM elevation, at Deerfield Reservoir, was above average. June inflow was below average. Release is 12cfs. Deerfield finished the month 0.6 feet from full.

July EOM elevation, at Deerfield Reservoir, was much above average. July inflow was above average. Release is 16 cfs. Deerfield finished the month 0.5 feet from full.

August EOM elevation, at Deerfield Reservoir, was much above average. August inflow was below average. Release is 14 cfs. Deerfield finished the month 1.4 feet from full.

September EOM elevation, at Deerfield Reservoir, was much above average. September inflow was slightly below average. Release is 14 cfs. Deerfield finished the month 2.0 feet from full.

Additional statistical information on Deerfield Reservoir and its operations during 2009 can be found on Table DKT6 and Figure DKG5.

TABLE DKT6
HYDROLOGIC DATA FOR 2009
DEERFIELD RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	5,839.00	151	151
TOP OF ACTIVE CONSERVATION	5,908.00	15,654	15,503
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL			

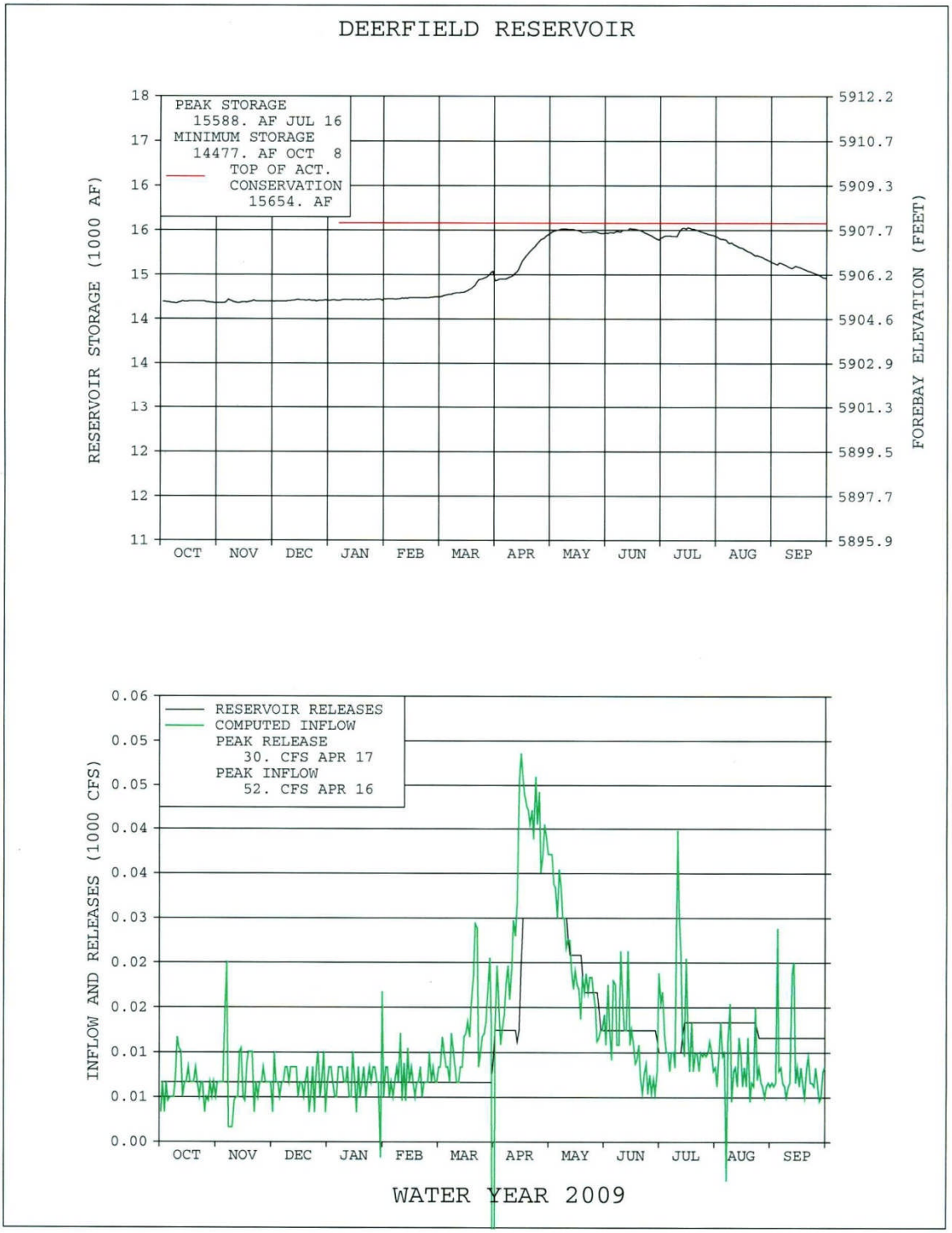
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	5,905.22	14,510	OCT 01, 2008
END OF YEAR	5,906.04	14,845	SEP 30, 2009
ANNUAL LOW	5,905.14	14,477	OCT 8, 2008
ANNUAL HIGH	5,907.82	15,588	JUL 16, 2009
HISTORIC HIGH	5,909.05	16,157	FEB 25, 1985

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	9,603	OCT 08-SEP 09	9,268	OCT 08-SEP09
DAILY PEAK (CFS)	52	APR 16, 2009	30	APR 17,2009
DAILY MINIMUM (CFS)	0	*	8	OCT,2008

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	463	72	492	66	14,481	117
NOVEMBER	505	87	476	139	14,510	115
DECEMBER	500	82	492	163	14,518	113
JANUARY	512	84	492	144	14,538	110
FEBRUARY	477	84	444	130	14,571	108
MARCH	873	102	492	74	14,952	109
APRIL	1,845	157	1,315	41	15,482	111
MAY	1,534	116	1,512	31	15,504	111
JUNE	797	68	890	33	15,411	111
JULY	927	112	877	34	15,461	113
AUGUST	582	88	954	30	15,089	115
SEPTEMBER	589	99	833	40	14,845	119
ANNUAL	9,603	101	9,268	98		
APRIL-JULY	5,103	113				

* Frequently observed during fall and winter months

DKG5


DEERFIELD RESERVOIR
PEAK STORAGE
15588. AF JUL 16
MINIMUM STORAGE
14477. AF OCT 8
TOP OF ACT.
CONSERVATION
15654. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
18
17
16
16
15
14
14
13
12
12
11
5912.2
5910.7
5909.3
5907.7
5906.2
5904.6
5902.9
5901.3
5899.5
5897.7
5895.9
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
30. CFS APR 17
PEAK INFLOW
52. CFS APR 16
INFLOW AND RELEASES (1000 CFS)
0.06
0.05
0.05
0.04
0.04
0.03
0.02
0.02
0.01
0.01
0.00
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER YEAR 2009

Pactola Reservoir

Background

Pactola Reservoir, Rapid Valley Unit (P-S MBP), located on Rapid Creek above Rapid City, South Dakota, acts in conjunction with Deerfield Reservoir, Rapid Valley Project, to furnish a supplemental irrigation supply to about 8,900 acres in the Rapid Valley Water Conservancy District, replacement water for Rapid City, and a supply of domestic water for private water systems both above and below the city. The reservoir is also operated to provide flood control. It has a conservation capacity of 55,972 acre-feet (54,955 acre-feet active) and 43,057 acre-feet of exclusive flood control space. The flood control space is all below the ungated spillway crest, and releases in this pool are controlled by the river outlet works. Rapid City has contracts for Pactola and Deerfield Reservoir water. The Rapid Valley Sanitation District and C&J Sanders Water Company also have contracts for water service from Pactola Reservoir. Operation of the two reservoirs is integrated to maintain as much water as possible in the upstream facility, Deerfield Reservoir, and at the same time maintain a uniform outflow from Deerfield to maximize fishery benefits in the stream between the reservoirs. Since no inflow forecasts are available, the reservoir is normally operated as full as possible. Two Snowtel (North Rapid Creek and Blind Park) sites were installed in the Pactola and Deerfield drainage basin in May of 1990.

As part of the Safety Examination of Existing Structures (Safety of Dams) Program, a study was made in the early 1980's to determine the adequacy of Pactola Dam, Spillway, and Reservoir to safely pass the new Inflow Design Flood (IDF) determined on the basis of present day hydrologic technology. The studies showed that the facility was not able to safely handle the new IDF. Modification work was completed in 1987 and provided sufficient surcharge storage and spillway capacity to pass the IDF. Modification work consisted of raising the crest of the dam 15 feet, widening the existing rock-cut spillway chute and stilling basin from 240 feet to 425 feet, relocating Highway 385 to the new dam crest, extending the existing gate access shaft to the higher crest elevation, and reconstructing a new two-level gate control house at the higher crest elevation.

WY 2009 Operations Summary

Pactola Reservoir started WY 2009 at elevation 4573.08 and storage of 50,103 acre-feet, which is 7.12 feet and 5,869 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 40,103 acre-feet (114 percent of average). The peak reservoir elevation for WY 2009 was 4580.25 and storage of 56,108 acre-feet and occurred on July 2, 2009. The minimum elevation for WY 2009 was 4573.09 feet and storage of 50,111 acre-feet and occurred on October 1, 2008. WY 2009 ended at elevation 4578.65 and storage of 54,651 acre-feet, which is 1.55 feet and 1,321 acre-feet below the top of the conservation pool. Precipitation for the water year was 101 percent of average.

The city of Rapid City ordered 215 acre-feet of water from city storage at Pactola Reservoir to meet needs over and above natural flow releases required to meet prior rights in Rapid Creek during the summer of 2009.

The operation of Pactola Reservoir provided minimal local and mainstream flood relief during WY 2009. The flood plain through Rapid City is designed to pass 6,500 cfs without major property damage, but some areas of the bicycle path near Canyon Lake will inundate at 350 to 400 cfs. Spring releases from Pactola Dam peaked at 200 cfs on April 20.

An Emergency Management/Security Orientation was held February 18, 2009.

The Periodic Facility Review was done on April15, 2009, by personnel from the Regional Office and the Rapid City Field Office. The left regulating gate leaf seats and frame seats were replaced during the winter of 2008-2009.

A new long term storage contract was signed on July 31, 2007, between Reclamation and the city of Rapid City. The contract provides storage space of 49,000 acre-feet for the city and 6,000 acre-feet was retained by Reclamation.

Monthly Statistics For WY 2009

October EOM elevation, at Pactola Reservoir, was above average. October inflow was below average. Release is 21 cfs. Pactola Reservoir ended the month 6.4 feet from full.

November EOM elevation, at Pactola Reservoir, was above average. November inflow was much above average. Release is 24 cfs. Pactola Reservoir ended the month 5.6 feet from full.

December EOM elevation, at Pactola Reservoir, was above average. December inflow was much above average. Release is 28 cfs. Pactola Reservoir ended the month 5.6 feet from full.

January EOM elevation, at Pactola Reservoir, was above average. January inflow was much above average. Release is 14 cfs. Pactola Reservoir ended the month 4.9 feet from full.

February EOM elevation, at Pactola Reservoir, was above average. February inflow was much above average. Release is 14 cfs. Pactola Reservoir ended the month 3.8 feet from full.

March EOM elevation, at Pactola Reservoir, was above average. March inflow was much above average. Release is 66 cfs. Pactola Reservoir ended the month 1.0 feet from full.

April EOM elevation, at Pactola Reservoir, was 5th highest in 53 years of record. April inflow was 4th highest in 53 years of record. Release is 200 cfs. Pactola Reservoir ended the month 0.2 feet from full.

May EOM elevation and May inflow, at Pactola Reservoir, were much above average. Release is 72 cfs. Pactola Reservoir ended the month 0.3 feet from full.

June EOM elevation, at Pactola Reservoir, was above average. June inflow was below average. Release is 50 cfs. Pactola Reservoir ended the month 0.1 feet from full.

July EOM elevation, at Pactola Reservoir, was above average. July inflow was below average. Release is 46 cfs. Pactola Reservoir ended the month 0.7 feet from full.

August EOM elevation, at Pactola Reservoir, was above average. August inflow was below average. Release is 40 cfs. Pactola Reservoir ended the month 1.3 feet from full.

September EOM elevation, at Pactola Reservoir, was much above average. September inflow was slightly below average. Release is 39 cfs. Pactola Reservoir ended the month 1.6 feet from full.

Additional statistical information on Pactola Reservoir and its operations during 2009 can be found on Table DKT7 and Figure DKG6.

TABLE DKT7
HYDROLOGIC DATA FOR 2009
PACTOLA RESERVOIR

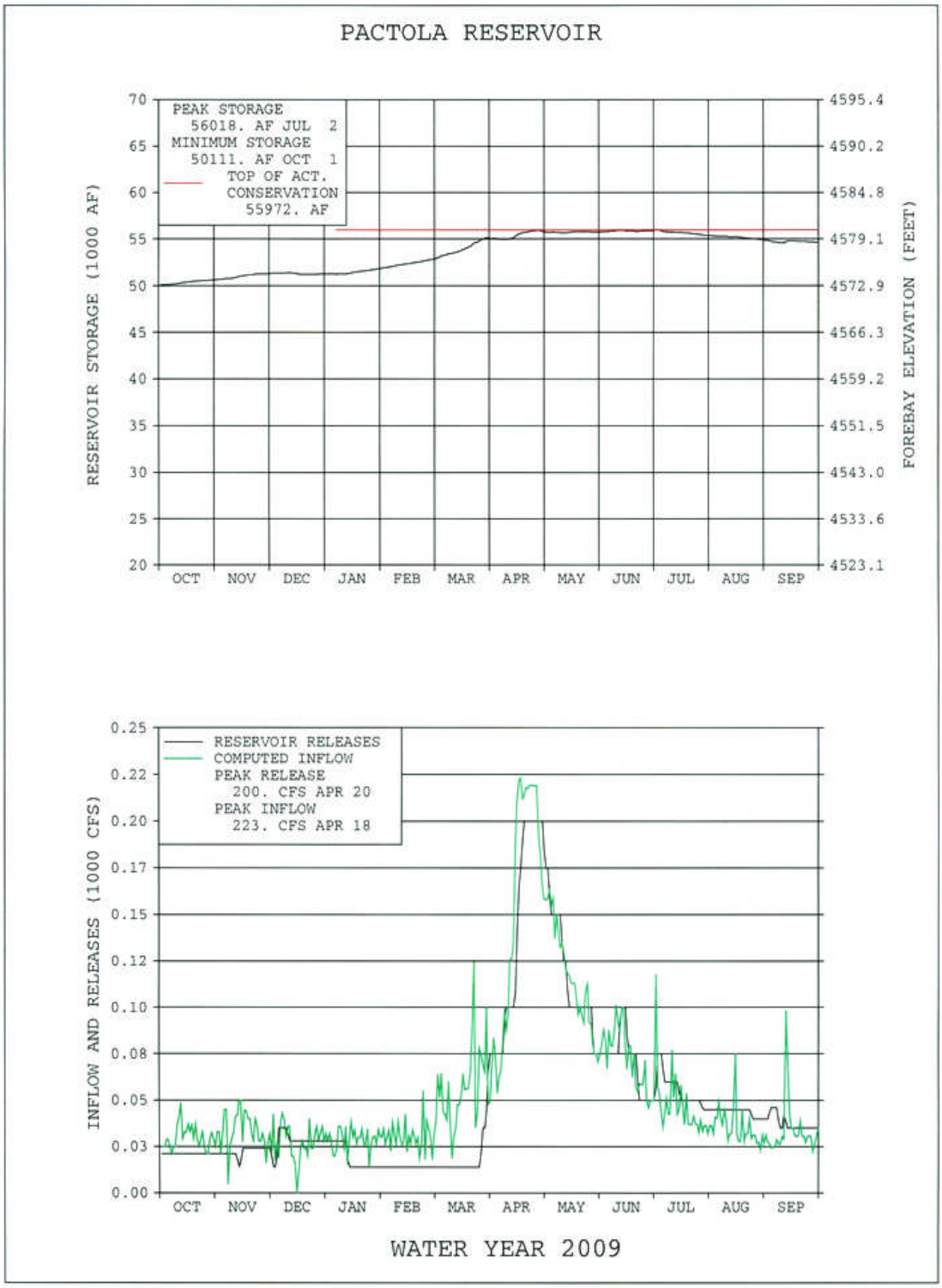
RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4,456.10	1,017	1,017
TOP OF ACTIVE CONSERVATION	4,580.20	55,972	54,955
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL	4,621.50	99,029	43,057

STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4,573.08	50,103	OCT 01, 2008
END OF YEAR	4,578.65	54,651	SEP 30, 2009
ANNUAL LOW	4,573.09	50,111	OCT 01, 2008
ANNUAL HIGH	4,580.25	56,018	JUL 02, 2009
HISTORIC HIGH	4,585.87	61,105	MAY 19, 1965

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	40,103	OCT 08-SEP 09	35,555	OCT 08-SEP 09
DAILY PEAK (CFS)	223	APR 18, 2009	200	APR 20, 2009
DAILY MINIMUM (CFS)	0	DEC 15, 2008	14	NOV 13, 2008

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	1,829	92	1,291	80	50,641	115
NOVEMBER	2,004	136	1,317	99	51,328	116
DECEMBER	1,686	134	1,710	125	51,304	116
JANUARY	1,774	136	1,177	91	51,901	117
FEBRUARY	1,685	126	778	66	52,808	119
MARCH	3,417	144	1,124	67	55,101	122
APRIL	9,001	215	8,273	292	55,829	120
MAY	7,263	115	7,332	140	55,760	117
JUNE	4,371	67	4,233	74	55,898	116
JULY	2,877	80	3,392	66	55,383	119
AUGUST	2,188	83	2,691	68	54,880	124
SEPTEMBER	2,007	92	2,236	86	54,651	124
ANNUAL	40,103	116	35,555	106		
APRIL-JULY	23,512	114				

DKG6


PACTOLA RESERVOIR
PEAK STORAGE
56018. AF JUL 2
MINIMUM STORAGE
50111. AF OCT 1
TOP OF ACT.
CONSERVATION
55972. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
70
65
60
55
50
45
40
35
30
25
20
4595.4
4590.2
4584.8
4579.1
4572.9
4566.3
4559.2
4551.5
4543.0
4533.6
4523.1
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
200. CFS APR 20
PEAK INFLOW
223. CFS APR 18
INFLOW AND RELEASES (1000 CFS)
0.25
0.22
0.20
0.17
0.15
0.12
0.10
0.08
0.05
0.03
0.00
WATER YEAR 2009

Angostura Reservoir

Background

Angostura Reservoir (P-S MBP), located on the Cheyenne River above Hot Springs, South Dakota, was built to service about 12,200 acres in the Angostura Unit (P-S MBP) and for power generation. It has a total capacity of 123,048 acre-feet with an additional surcharge capacity of 57,308 acre-feet. Its principle use is for irrigation of the Angostura Unit, which diverts its water from a high-level outlet at the dam. In the early years, water surplus to irrigation needs was released to the river through a small power plant with a nameplate capacity of 1,200 kilowatts. Because of the low runoff, and because actual irrigation diversions were higher than previously anticipated, it was concluded that continued operation of the power plant was economically infeasible. Except for a few operations of less than 24 hours each, the plant was last operated in February 1959. In 1966, the plant was officially closed and the equipment was declared surplus in March 1968. Disposal of this equipment was completed in 1971. Releases for irrigation are made through the canal outlet works into the Angostura Main Canal having a design capacity of 290 cfs. Releases to the Cheyenne River are only made when the reservoir is assured of filling.

WY 2009 Operations Summary

Angostura Reservoir started WY 2009 at elevation 3173.18 and storage of 69,361 acre-feet, which is 14.02 feet and 53,687 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 41,970 acre-feet (54 percent of the average). Peak inflows occurred in April, totaling 11,559 acre-feet for the month. The peak reservoir elevation for WY 2009 was 3181.49 and storage of 98,558 acre-feet and occurred on June 21, 2009. The minimum elevation for WY 2009 was 3173.17 feet and storage of 69,331 acre-feet and occurred on October 3, 2008. WY 2009 ended at elevation 3174.79 and storage of 74,443 acre-feet, which is 12.41 feet and 48,605 acre-feet below the top of the conservation pool. Precipitation for the water year was 95 percent of average.

The Angostura Irrigation District had a full water allotment for its irrigators. Releases for irrigation began May 21 and reached a peak of 250 cfs on July 15. The irrigation release was terminated on September 18, with 74,734 acre-feet in total storage and 32,529 acre-feet in active storage. Total irrigation releases were 35,969 acre-feet.

Reclamation's Sedimentation and River Hydraulics Group of the Technical Service Center in Denver conducted a sedimentation survey of Angostura Reservoir in 2004 and provided a survey report and new area and capacity tables in August of 2005. The last survey was done in 1979. Angostura Reservoir accumulated 7,716 acre-feet of sediment since the last survey. Since construction in 1949, Angostura Reservoir has accumulated 36,867 acre-feet of sediment. The sedimentation rate from 1949 through 2004 has averaged 670 acre-feet per year. The new area and capacity tables were first used in WY 2006.

An Emergency Management/Security Orientation was held March 18, 2009.

The Periodic Facility Review was done on April 21, 2009, by personnel from the Regional Office and the Rapid City Field Office.

In 2009, the contract for the repair of the left and right spillway walls was completed by the Provo Area Office Construction Group and a local contractor (Red Canyon Construction). The work provided rehabilitation of the drains and installation of free draining material behind the spillway walls.

The cost of the work was $79,205 for the access road and materials stockpiled on the west side of the dam in FY08, and $320,883 for construction work by the contractors.

New batteries were installed in the battery room for operation of the radial gates. An AC to DC convertor was also installed to provide DC power to the radial gates if the power were to go out at the dam.

Monthly Statistics For Water Year 2009

October EOM elevation and October inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 13.8 feet from full.

November EOM elevation and November inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 13.4 feet from full.

December EOM elevation and December inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 12.9 feet from full.

January EOM elevation and January inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 12.4 feet from full.

February EOM elevation and February inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 11.4 feet from full.

March EOM elevation and March inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 10.0 feet from full.

April EOM elevation, at Angostura Reservoir, was below average. April inflow was much above average. Angostura Reservoir ended the month 6.8 feet from full.

May EOM elevation and inflow, at Angostura Reservoir, were below average. Began filling the canal on May 21. Angostura Reservoir ended the month 6.7 feet from full.

June EOM elevation and inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 6.0 feet from full.

July EOM elevation and inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 8.0 feet from full.

August EOM elevation and inflow, at Angostura Reservoir, were below average. Angostura Reservoir ended the month 10.9 feet from full.

September EOM elevation and inflow, at Angostura Reservoir, were below average. Canal shut off on September 18, 2009. Angostura Reservoir ended the month 12.4 feet from full.

Additional statistical information on Angostura Reservoir and its operations during 2009 can be found on Table DKT8 and Figure DKG7.

TABLE DKT8
HYDROLOGIC DATA FOR 2009
ANGOSTURA RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	3,163.00	42,205	42,205
TOP OF ACTIVE CONSERVATION	3,187.20	123,048	80,843
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL			

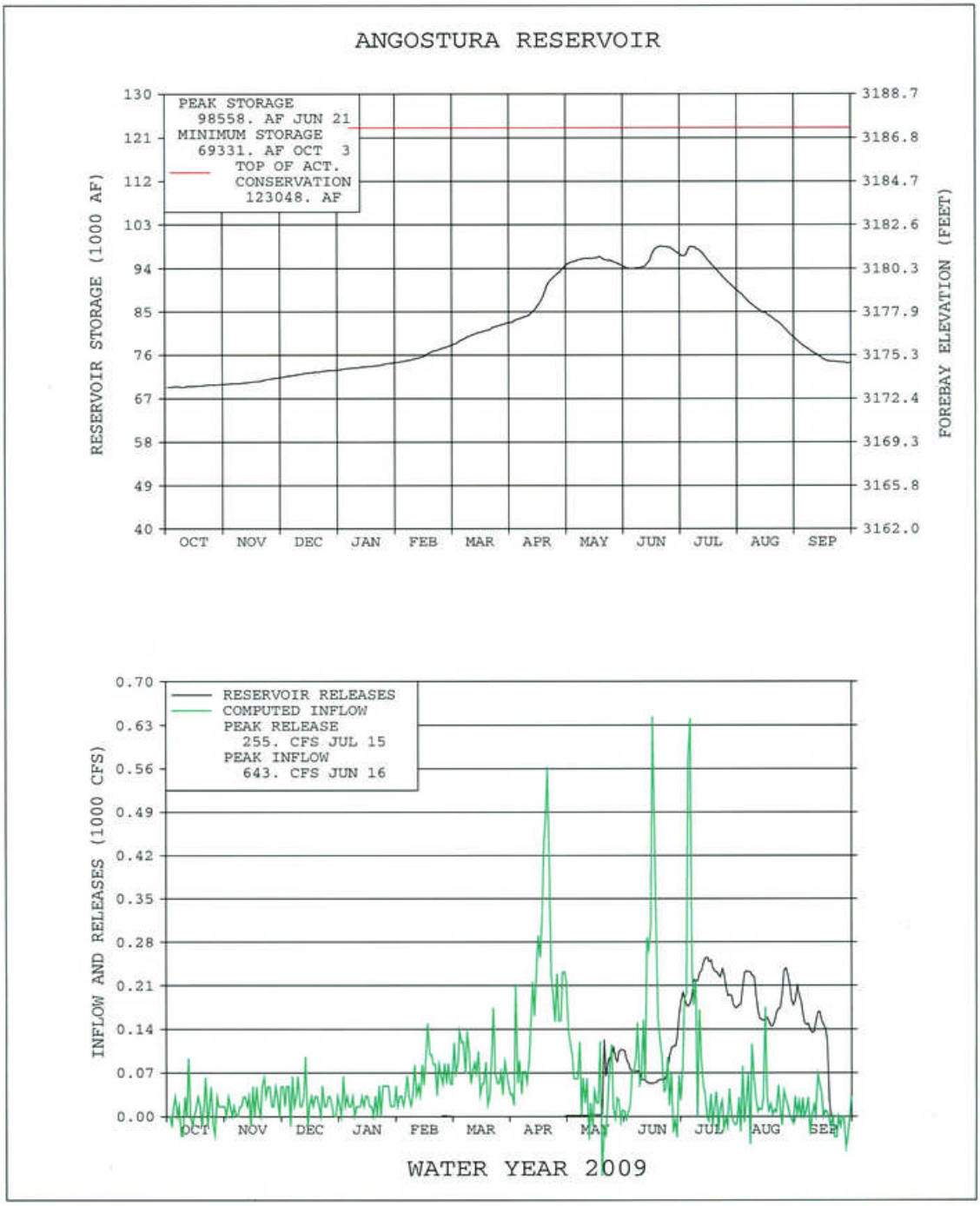
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	3,173.18	69,361	OCT 01, 2008
END OF YEAR	3,174.79	74,443	SEP 30, 2009
ANNUAL LOW	3,173.17	69,331	OCT 3, 2008
ANNUAL HIGH	3,181.49	98,558	JUN 21, 2009
HISTORIC HIGH	3,189.37	**152,228	MAY 20, 1978

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	41,970	OCT 08-SEP 09	36,888	OCT 08-SEP 09
DAILY PEAK (CFS)	643	JUN 16, 2009	255	JUL 15, 2009
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	617	39	0	0	69,978	71
NOVEMBER	1,372	62	0	0	71,350	72
DECEMBER	1,614	91	0	0	72,964	73
JANUARY	1,511	74	0	0	74,475	73
FEBRUARY	3,404	79	8	1	77,871	74
MARCH	4,796	44	0	0	82,667	73
APRIL	11,559	151	0	0	94,226	81
MAY	2,634	16	2,211	18	94,649	78
JUNE	7,198	38	4,591	24	97,256	80
JULY	5,444	77	13,114	83	89,586	80
AUGUST	1,603	52	11,629	90	79,560	78
SEPTEMBER	218	21	5,335	97	74,443	76
ANNUAL	41,970	54	36,888	48		
APRIL-JULY	26,835	53				

* Frequently observed during fall and winter months
** Due to new area-capacity table, the capacity that corresponds to the new historic high elevation is less than a previous high capacity amount (169,020 AF @ Elevation 3189.0 on June 18, 1962)

DKG7


ANGOSTURA RESERVOIR
PEAK STORAGE
98558. AF JUN 21
MINIMUM STORAGE
69331. AF OCT 3
TOP OF ACT.
CONSERVATION
123048. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
130
121
112
103
94
85
76
67
58
49
40
3188.7
3186.8
3184.7
3182.6
3180.3
3177.9
3175.3
3172.4
3169.3
3165.8
3162.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
255. CFS JUL 15
PEAK INFLOW
643. CFS JUN 16
INFLOW AND RELEASES (1000 CFS)
0.70
0.63
0.56
0.49
0.42
0.35
0.28
0.21
0.14
0.07
0.00
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Keyhole Reservoir

Background

Keyhole Reservoir (P-S MBP) located on the Belle Fourche River below Moorcroft, Wyoming, has a conservation capacity of 188,671 acre-feet (182,079 acre-feet active) and 140,463 acre-feet of exclusive flood control space. It was constructed to furnish a supplemental irrigation supply to 57,000 acres in the Belle Fourche Project and for flood control. Keyhole Reservoir is subject to the Belle Fourche River Compact, and the inflows and storage in the reservoir are allocated 10 percent to Wyoming users and 90 percent to South Dakota users, subject to prior rights. On January 3, 1963, the Belle Fourche Irrigation District executed a long-term contract for the use of 7.7 percent of active storage space in the reservoir. This space will be used to store water belonging to the irrigation district under its prior water right along with the District's pro rata share of storable inflows to Keyhole Reservoir. On January 1, 1985, the Crook County Irrigation District's Contract for 18,080 acre-feet of space in Keyhole Reservoir became effective. The allocated space is used by each organization to store its pro rata share of inflows to Keyhole Reservoir. The flood control space at Keyhole Reservoir is all located above an un-gated spillway. The spillway capacity is 11,000 cfs at maximum water surface elevation. The downstream safe channel capacity is 3,000 cfs. Formulas for forecasting inflows have not been developed. Research by the Soil Conservation Service during water years 1992 through 1994 show that inflow forecasting to Keyhole Reservoir is not reliable since there is no consistent snow pack and precipitation is highly cyclical. No further efforts to develop forecast models are planned.

WY 2009 Operations Summary

Keyhole Reservoir started WY 2009 at elevation 4084.99 and storage of 87,601 acre-feet, which is 14.31 feet and 101,070 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 13,078 acre-feet (82 percent of the average). Peak inflows occurred in April, totaling 9,280 acre-feet for the month. The peak reservoir elevation for WY 2009 was 4088.64 and storage of 107,411 acre-feet and occurred on April 30, 2009. The minimum elevation for WY 2009 was 4084.85 feet and storage of 86,911 acre-feet and occurred on October19, 2008. WY 2009 ended at elevation 4087.47 and storage of 100,679 acre-feet, which is 11.83 feet and 87,992 acre-feet below the top of the conservation pool. Precipitation for the water year was 94 percent of average. There were no irrigation releases for WY 2009.

Reclamation's Sedimentation and River Hydraulics Group of the Technical Service Center in Denver conducted a sedimentation survey of Keyhole Reservoir in 2003 and provided a survey report and new area and capacity tables in July of 2005. The last survey was done in 1978. Keyhole Reservoir accumulated 5,082 acre-feet of sediment since the last survey. Since construction in 1952, Keyhole Reservoir has accumulated 12,495 acre-feet of sediment. The sedimentation rate from 1952 through 2003 has averaged 240 acre-feet per year. The new area and capacity tables were first used in WY 2006.

An Emergency Management/Security Functional Exercise was held March 17, 2009.

An Annual Facility Review (AFR) was conducted June 16, 2009, by personnel from the Rapid City Field Office.

Monthly Statistics For Water Year 2009

October EOM elevation, at Keyhole Reservoir, was above average. October inflow was below average. Keyhole Reservoir finished the month 14.4 feet from full.

November EOM elevation, at Keyhole Reservoir, was above average. November inflow was 5th highest in 57 years of record. Keyhole Reservoir finished the month 14.3 feet from full.

December EOM elevation, at Keyhole Reservoir, was above average. December inflow was below average. Keyhole Reservoir finished the month 14.3 feet from full.

January EOM elevation, at Keyhole Reservoir, was above average. January inflow was 4th highest in 57 years of record. Keyhole Reservoir ended month 14.0 feet from full.

February EOM elevation and February inflow, at Keyhole Reservoir, were above average. Keyhole Reservoir ended the month 13.1 feet from full.

March EOM elevation, at Keyhole Reservoir, was above average. March inflow was below average. Keyhole Reservoir ended the month 12.3 feet from full.

April EOM elevation, at Keyhole Reservoir, was above average. April inflow was 4th highest in 57 years of record. Keyhole Reservoir ended the month 10.7 feet from full.

May EOM elevation, at Keyhole Reservoir, was above average. May inflow was below average. Keyhole Reservoir ended the month 10.8 feet from full.

June EOM elevation, at Keyhole Reservoir, was above average. June inflow was below average. Keyhole Reservoir ended the month 10.9 feet from full.

July EOM elevation, at Keyhole Reservoir, was above average. July inflow was below average. Keyhole Reservoir ended the month 11.2 feet from full.

August EOM elevation, at Keyhole Reservoir, was above average. August inflow was above average. Keyhole Reservoir ended the month 11.4 feet from full.

September EOM elevation, at Keyhole Reservoir, was above average. September inflow was below average. Keyhole Reservoir ended the month 11.8 feet from full.

Additional statistical information on Keyhole Reservoir and its operations during 2009 can be found on Table DKT9 and Figure DKG8.

TABLE DKT9
HYDROLOGIC DATA FOR 2009
KEYHOLE RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	4,051.00	6,592	6,592
TOP OF ACTIVE CONSERVATION	4,099.30	188,671	182,079
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL	4,111.50	329,134	140,463

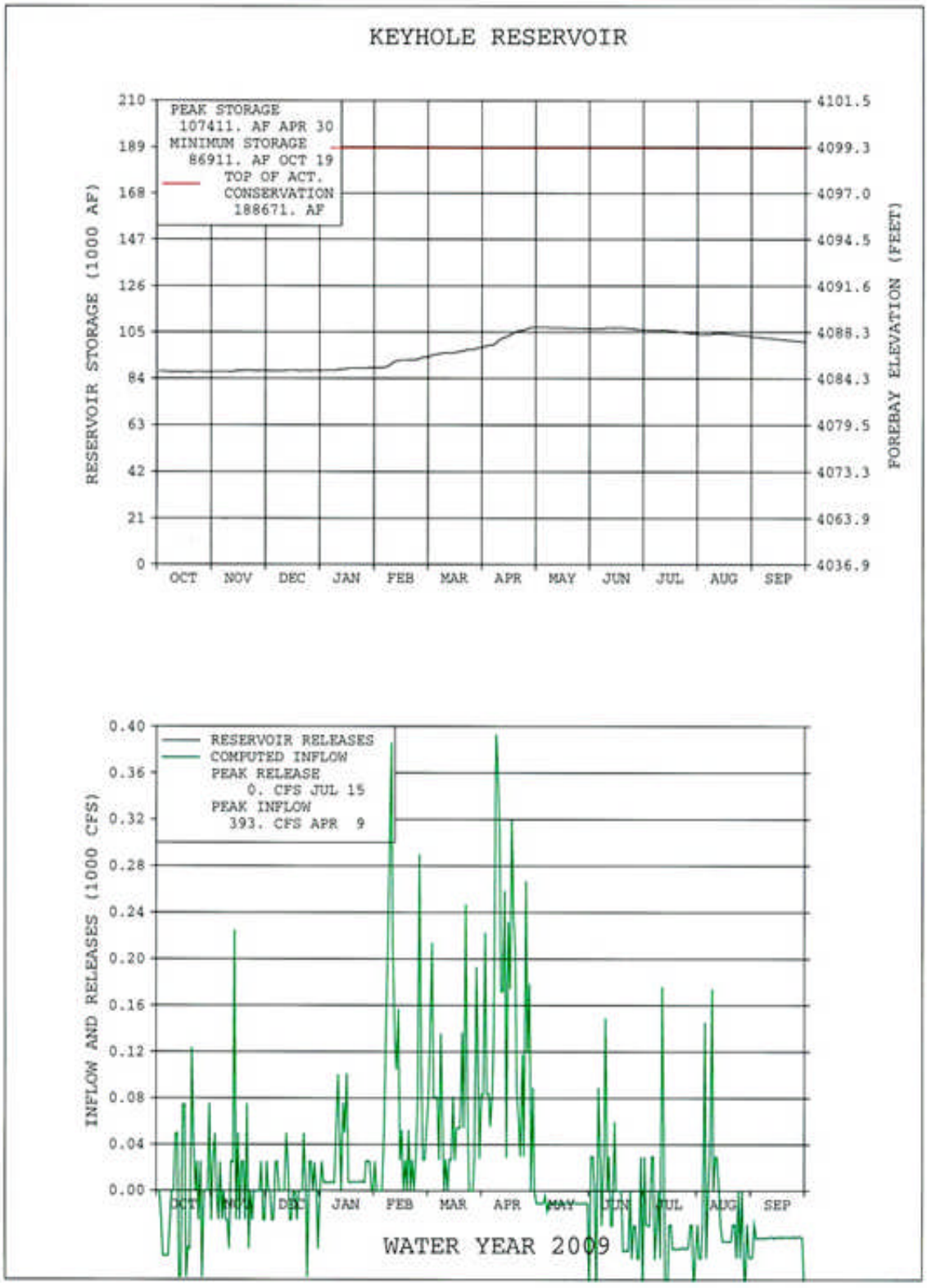
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	4,084.99	87,601	OCT 01, 2008
END OF YEAR	4,087.47	100,679	SEP 30, 2009
ANNUAL LOW	4,084.85	86,911	OCT 19, 2008
ANNUAL HIGH	4,088.64	107,411	APR 30, 2009
HISTORIC HIGH	4,100.38	210,222	MAY 21, 1978

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	13,078	OCT 08-SEP 09	0	OCT 08-SEP 09
DAILY PEAK (CFS)	393	APR 09, 2009	0	
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	-346	NA	0	NA	87,255	100
NOVEMBER	445	NA	0	NA	87,700	101
DECEMBER	50	42	0	NA	87,750	101
JANUARY	1,347	299	0	NA	89,097	102
FEBRUARY	4,735	167	0	NA	93,832	104
MARCH	4,299	65	0	NA	98,131	102
APRIL	9,280	358	0	NA	107,411	112
MAY	-648	NA	0	NA	106,763	108
JUNE	-470	NA	0	NA	106,293	106
JULY	-1,975	NA	0	NA	104,318	109
AUGUST	-1,150	NA	0	NA	103,168	114
SEPTEMBER	-2,489	NA	0	NA	100,679	114
ANNUAL	13,078	82	0	NA		
APRIL-JULY	6,187	62				

* Frequently observed during fall and winter months

DKG8


KEYHOLE RESERVOIR
PEAK STORAGE
107411. AF APR 30
MINIMUM STORAGE
86911. AF OCT 19
TOP OF ACT.
CONSERVATION
188671. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
210
189
168
147
126
105
84
63
42
21
0
4101.5
4099.3
4097.0
4094.5
4091.6
4088.3
4084.3
4079.5
4073.3
4063.9
4036.9
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
0. CFS JUL 15
PEAK INFLOW
393. CFS APR 9
INFLOW AND RELEASES (1000 CFS)
0.40
0.36
0.32
0.28
0.24
0.20
0.16
0.12
0.08
0.04
0.00
WATER YEAR 2009

Shadehill Reservoir

Background

Shadehill Reservoir, a feature of the Shadehill Unit (P-S MBP), is located on the Grand River near Shadehill, South Dakota, and was constructed for irrigation of 9,700 acres, and for flood control, recreation, and fish and wildlife purposes. The reservoir has a dead and conservation capacity totaling 120,172 acre-feet with an additional exclusive flood control capacity of 230,004 acre-feet and a surcharge capacity of 119,560 acre-feet. Flood control space is all located above the crest of an un-gated glory-hole spillway. Because of the questionable quality of water, it was decided to postpone construction of distribution works for irrigation.

After further study, it was concluded that water from Shadehill Reservoir can be used for sustained irrigation if certain limitations of soils, leaching water, soil amendments, and drainage are met. A definite plan report covering 6,700 acres which meets these limitations has been completed, approved by the Commissioner, and released for distribution.

On December 17, 1963, landowners within the area voted 24 to 21 against formation of an irrigation district. Further action on development of the area was deferred until the attitude of the landowners was more favorable. Pending more extensive irrigation development, an additional 51,500 acre-feet of space between elevations 2260 and 2272 was allocated to flood control. Allocations and evacuation of this space was made possible by modification of the outlet works in 1969 to permit a discharge of 600 cfs to the river. In June of 1975, the West River Conservancy Sub-District was formed combining all but one of the old individual contracts for water supply from the reservoir into one. Acreage contracted for by the District was 5,000 acres; however, only 3,064 acres were developed. On March 18, 1986, the contract between Reclamation and the West River Conservancy Sub-District was assigned to the Shadehill Water User District, an organization, which succeeded the Sub-District under South Dakota Law. This contract has expired and presently conservation releases are meeting irrigation demands. Should irrigation releases be required, a temporary water service contract will need to be executed with the Shadehill Water User District.

Because certain release criteria reduced the effectiveness of flood control operations in the zone between elevation 2260 and 2272, and because the Corps has constructed Bowman Haley Reservoir upstream from Shadehill Reservoir with 53,800 acre-feet of flood control space, the Corps requested that the interim flood control agreement be terminated and that responsibility for the operations of Shadehill Reservoir when the pool is between elevations 2260 and 2272 revert to Reclamation. By a revised field working agreement dated May 15, 1972, it was agreed that the space between elevation 2260 and 2272 (51,500 acre-feet) be reallocated to conservation use. However, space below elevation 2272 will continue to be evacuated before the start of the spring runoff, but to a lesser extent than in the past.

WY 2009 Operations Summary

Shadehill Reservoir started WY 2009 at elevation 2262.56 and storage of 78,853 acre-feet, which is 9.44 feet and 41,319 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 413,894 acre-feet (577 percent of the average). Peak inflows occurred in April, totaling 208,544 acre-feet for the month. The peak reservoir elevation for WY 2009 was 2290.83 and storage of 244,398 acre-feet and occurred on April 17, 2009. The minimum elevation for WY 2009 was 2262.44 feet and storage of 78,410 acre-feet and occurred on October 9, 2008. WY 2009 ended at elevation 2268.67 and storage of 104,205 acre-feet, which is 3.33 feet and 15,967 acre-feet below the top of the conservation pool. Precipitation for the water year was 113 percent of average.

All project irrigation demands were met from river maintenance releases. There were no storage releases for irrigation needed during water year 2009.

An Emergency Management/Security orientation was conducted on March 4, 2009.

An Annual Facility Review (AFR) was conducted July 16, 2009, by personnel from the Rapid City Field Office.

Contract 09CC60400; Shadehill Dam Outlet Works Drain Pipe Replacement, was awarded to Hills Material Company for $69,630. The contract was substantially complete in September 2009.

Monthly Statistics For Water Year 2009

October EOM elevation, at Shadehill Reservoir, was much below average. October inflow was above average. Controlled release at 13 cfs. Shadehill Reservoir finished the month 9.4 feet below top of conservation.

November EOM elevation, at Shadehill Reservoir, was below average. November inflow was 5th highest in 57 years of record. Controlled release at 13 cfs. Shadehill Reservoir finished the month 9.1 feet below top of conservation.

December EOM elevation, at Shadehill Reservoir, was below average. December inflow was above average. Controlled release at 13 cfs. Shadehill Reservoir finished the month 9.0 feet below top of conservation.

January EOM elevation, at Shadehill Reservoir, was below average. January inflow was much below average. Controlled release at 13 cfs. Shadehill Reservoir finished the month 9.3 feet below top of conservation.

February EOM elevation, at Shadehill Reservoir, was below average. February inflow was above average. Controlled release at 14 cfs. Shadehill Reservoir finished the month 8.3 feet below top of conservation.

March EOM elevation and March inflow, at Shadehill Reservoir, were the highest in 57 years of record. Spillway release at 3952 cfs. Shadehill Reservoir finished the month 7.1 feet above conservation pool.

April EOM elevation, at Shadehill Reservoir, was the highest in 57 years of record. April inflow was 2nd highest in 57 years of record. Spillway release at 3950 cfs. Shadehill Reservoir finished the month 7.3 feet above conservation pool.

May EOM elevation and May inflow, at Shadehill Reservoir, were above average. Controlled release at 200 cfs. Shadehill Reservoir finished the month 0.4 feet from full.

June EOM elevation, at Shadehill Reservoir, was above average. June inflow was below average. Controlled release at 40 cfs. Shadehill Reservoir finished the month 0.9 feet from full.

July EOM elevation, at Shadehill Reservoir, was above average. July inflow was below average. Controlled release at 61 cfs. Shadehill Reservoir finished the month 1.5 feet from full.

August EOM elevation, at Shadehill Reservoir, was above average. August inflow was below average. Controlled release at 61 cfs. Shadehill Reservoir finished the month 2.4 feet from full.

September EOM elevation, at Shadehill Reservoir, was above average. September inflow was much below average. Controlled release at 72 cfs. Shadehill Reservoir finished the month 3.3 feet from full.

Additional statistical information on Shadehill Reservoir and its operations during 2009 can be found on Table DKT10 and Figure DKG9.

TABLE DKT10
HYDROLOGIC DATA FOR 2009
SHADEHILL RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2,250.80	43,869	43,869
TOP OF ACTIVE CONSERVATION	2,272.00	120,172	76,303
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL	2,302.00	350,176	230,004

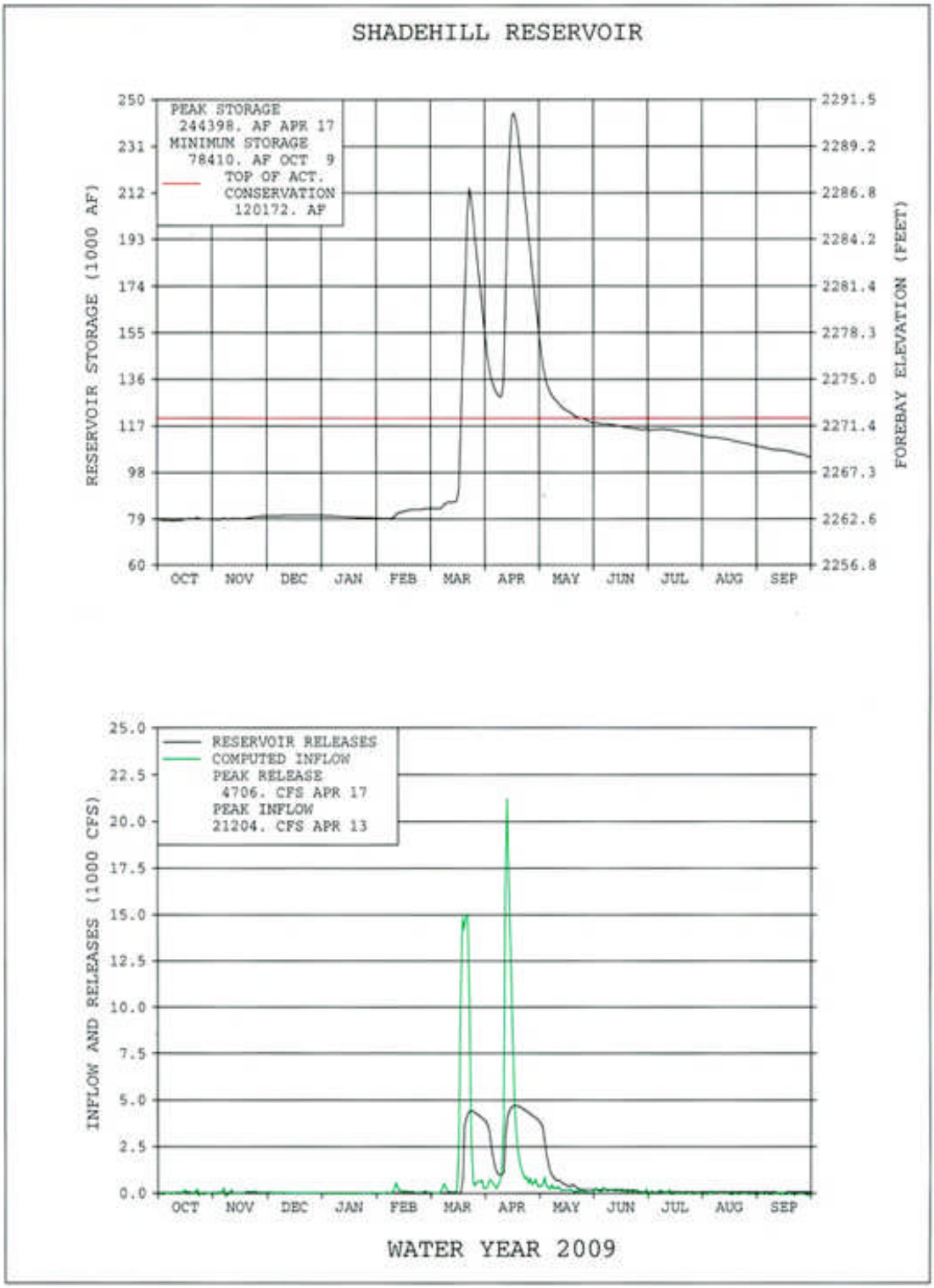
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2,262.56	78,853	OCT 01, 2008
END OF YEAR	2,268.67	104,205	SEP 30, 2009
ANNUAL LOW	2,262.44	78,410	OCT 9, 2008
ANNUAL HIGH	2,290.83	244,398	APR 17, 2009
HISTORIC HIGH	2,297.90	318,438	APR 10, 1952

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	413,894	OCT 08-SEP 09	388,542	OCT 08-SEP 09
DAILY PEAK (CFS)	21,204	APR 13, 2009	4,706	APR 17,2009,
DAILY MINIMUM (CFS)	0	*	6	SEP 02,2009

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	805	171	805	26	78,853	72
NOVEMBER	2,200	307	784	31	80,269	74
DECEMBER	985	139	797	33	80,457	75
JANUARY	-274	NA	811	35	79,372	75
FEBRUARY	4,699	150	748	36	83,323	78
MARCH	177,633	788	101,140	1,050	159,816	134
APRIL	208,544	988	207,130	1,158	161,230	131
MAY	13,417	126	56,471	568	118,176	96
JUNE	7,533	88	10,048	125	115,661	93
JULY	642	19	3,363	65	112,940	92
AUGUST	-599	NA	3,732	88	108,609	92
SEPTEMBER	-1,692	NA	2,712	77	104,205	91
ANNUAL	413,894	577	388,542	552		
APRIL-JULY	230,136	527				

* Frequently observed during fall and winter months

DKG9


SHADEHILL RESERVOIR
PEAK STORAGE
244398. AF APR 17
MINIMUM STORAGE
78410. AF OCT 9
TOP OF ACT.
CONSERVATION
120172. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
250
231
212
193
174
155
136
117
98
79
60
2291.5
2289.2
2286.8
2284.2
2281.4
2278.3
2275.0
2271.4
2267.3
2262.6
2256.8
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
4706. CFS APR 17
PEAK INFLOW
21204. CFS APR 13
INFLOW AND RELEASES (1000 CFS)
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
WATER YEAR 2009

Belle Fourche Reservoir

Background

Belle Fourche Reservoir, located near Belle Fourche, South Dakota, is formed by Belle Fourche Dam on Owl Creek, a tributary of the Belle Fourche River. It has a total capacity of 172,873 acre-feet (169,790 acre-feet active). The reservoir is filled by diverting water from the Belle Fourche River through the Inlet Canal, which has a capacity of 1,300 cfs. The reservoir is used for irrigation of 57,000 acres in the Belle Fourche Project, which also receives a supplemental supply from Keyhole Reservoir. From November 1965 through May 1977, the active capacity of the reservoir was temporarily limited to 160,300 acre-feet at elevation 2981.8 feet until the damaged spillway was replaced.

When the Belle Fourche Reservoir storage right is satisfied by the reservoir filling, the South Dakota Department of Environment and Natural Resources provide guidelines for complying with water rights on the Belle Fourche River. The district is required to continue to bypass 5 cfs for domestic use prior to diverting the Johnson Lateral Water Right for up to 40 cfs. If flows into the diversion dam are greater than 45 cfs, the district is required to bypass up to 60 cfs for downstream irrigation rights. Any flows in excess of these amounts can be diverted into the reservoir and stored. If all of these rights are not needed, the district can divert flows into the reservoir.

Water Year 2009 Operations Summary

Belle Fourche Reservoir started WY 2009 at elevation 2964.31 and storage of 98,330 acre-feet, which is 10.69 feet and 74,543 acre-feet below the top of the conservation pool. Inflows for WY 2009 totaled 144,699 acre-feet, which was 124 percent of the average. Peak inflows occurred in November totaling 16,373 acre-feet for the month, which was 165 percent of average. The peak reservoir elevation for WY 2009 was 2975.31 and storage of 175,379 acre-feet and occurred on April 17, 2009. The minimum elevation for WY 2009 was 2964.15 feet and storage of 97,407 acre-feet and occurred on October 20, 2008. WY 2009 ended at elevation 2967.51 and storage of 117,891 acre-feet, which is 7.49 feet and 54,982 acre-feet below the top of the conservation pool. Precipitation for the water year was 108 percent of average. Water users were allocated 18 inches of water, a full allocation, for the 2009 irrigation season.

The Inlet Canal remained open all winter. The North Canal was turned on, on June 4, 2009, and the South Canal on June 1, 2009. South Canal shut off on September 30 and North Canal was not shut off until October 9, 2009, in WY 2010. Irrigation releases for the 2009 season were North Canal 22,559 acre-feet, South Canal 22,177 acre-feet, and Inlet Canal-Johnson Lateral 2,784 acre-feet for a total of 47,520 acre-feet.

An Emergency Management/Security Orientation was held March 5, 2009.

The annual settlement survey was completed. This survey is done approximately one month after the peak elevation for the year has occurred in the reservoir.

Inclinometer readings were taken quarterly as required by the periodic monitoring schedule.

An Annual Facility Review (AFR) was conducted April 9, 2009, by personnel from the Rapid City Field Office.

Reclamation's Sedimentation and River Hydraulics Group (of the Technical Service Center in Denver) conducted a sedimentation survey of Belle Fourche Reservoir in 2006 and provided a survey report and new area and capacity tables in April, 2007. The last survey was done in 1949. Belle Fourche Reservoir accumulated 19,204 acre-feet since the 1949 survey and 36,364 acre-feet since the original survey in 1910. The sedimentation rate from 1910 through 2006 averages 375 acre-feet per year. The new area and capacity tables were first used in WY 2008.

Monthly Statistics For Water Year 2009

October EOM elevation at, Belle Fourche Reservoir, was above average. October inflow was below average-Inlet Canal shut off for lining installation. Belle Fourche ended the month 10.3 feet from full.

November EOM elevation at, Belle Fourche Reservoir, was much above average. November inflow was 3rd highest in 57 years of record. Belle Fourche ended the month 7.7 feet from full.

December EOM elevation at, Belle Fourche Reservoir, was much above average. December inflow was above average. Belle Fourche ended the month 6.0 feet from full.

January EOM elevation and January inflow at, Belle Fourche Reservoir, was much above average. Belle Fourche ended the month 3.9 feet from full.

February EOM elevation at, Belle Fourche Reservoir, was 4th highest in 57 years of record. February inflow was much above average. Belle Fourche ended the month 2.1 feet from full.

March EOM elevation at, Belle Fourche Reservoir, was 2nd highest in 57 years of record. Inlet Canal shut off on March 6. Belle Fourche ended the month 0.5 feet from full.

April EOM elevation at, Belle Fourche Reservoir, was much above average. April inflow was below average. Began flood control releases to North and South Canals on April 7. Belle Fourche ended the month 0.7 feet from full.

May EOM elevation at, Belle Fourche Reservoir, was much above average. May inflow was below average. Belle Fourche ended the month 0.2 feet from full.

June EOM elevation and June inflow, at Belle Fourche Reservoir, was above average. Belle Fourche ended the month 0.7 feet from full.

July EOM elevation, at Belle Fourche Reservoir, was much above average. July inflow was 5th highest in 57 years of record. Belle Fourche ended the month 3.6 feet from full.

August EOM elevation and August inflow, at Belle Fourche Reservoir, were the 2nd highest in 57 years of record. Belle Fourche ended the month 5.2 feet from full.

September EOM elevation, at Belle Fourche Reservoir, was the 2nd highest in 57 years of record. September inflow was above average. South Canal shut off on Sept 30. Belle Fourche ended the month 7.5 feet from full.

Additional statistical information on Belle Fourche Reservoir and its operations during 2009 can be found on Table DKT11 and Figure DKG10.

TABLE DKT11
HYDROLOGIC DATA FOR 2009
BELLE FOURCHE RESERVOIR

RESERVOIR ALLOCATIONS	ELEVATION (FEET)	TOTAL RESERVOIR STORAGE (AF)	STORAGE ALLOCATION (AF)
TOP OF INACTIVE AND DEAD	2,927.00	3,083	3,083
TOP OF ACTIVE CONSERVATION	2,975.00	172,873	169,790
TOP OF JOINT USE			
TOP OF EXCLUSIVE FLOOD CONTROL			

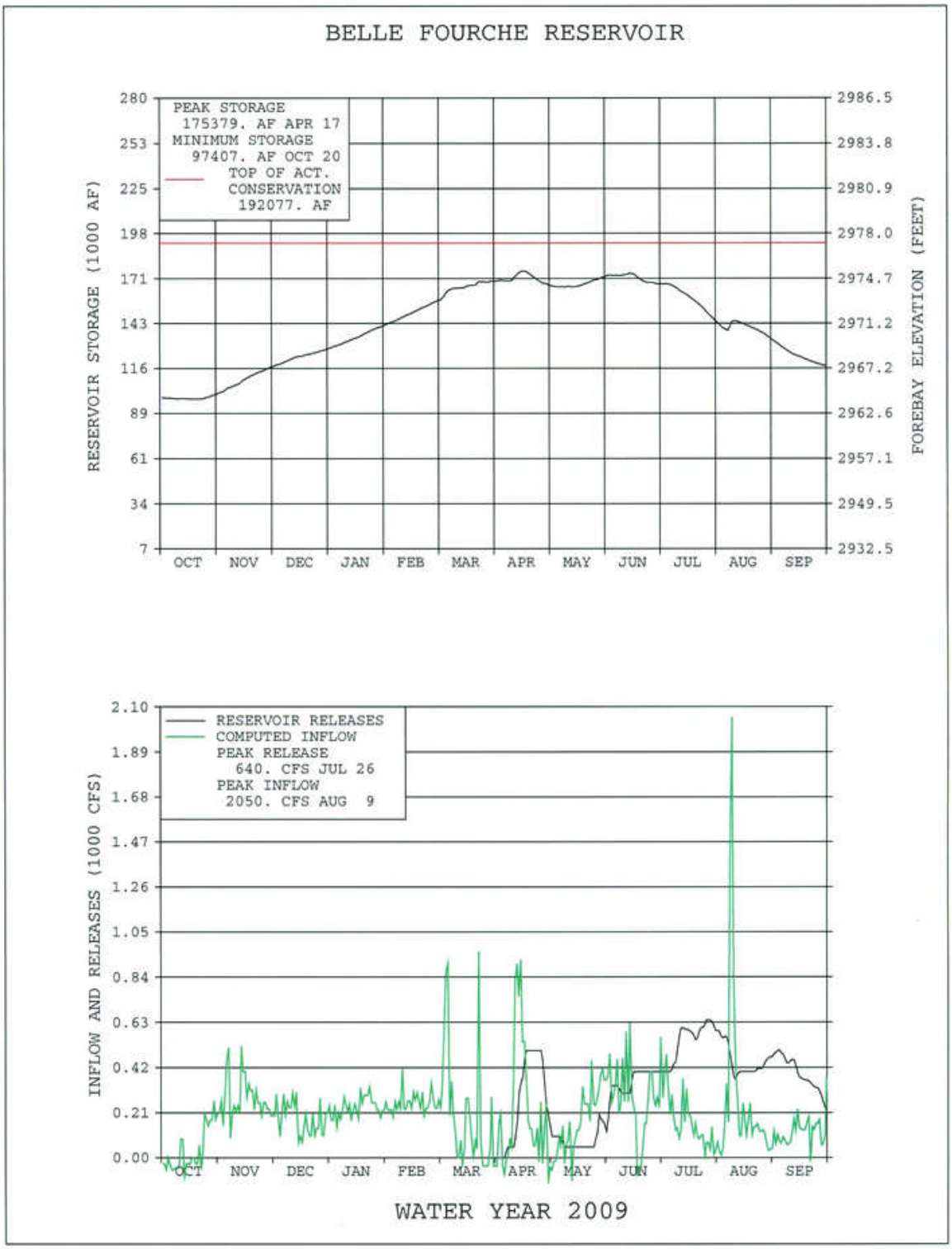
STORAGE-ELEVATION DATA	ELEVATION (FT)	STORAGE (AF)	DATE
BEGINNING OF YEAR	2,964.31	98,330	OCT 01, 2008
END OF YEAR	2,967.51	117,891	SEP 30, 2009
ANNUAL LOW	2,964.15	97,407	OCT 20, 2008
ANNUAL HIGH	2,975.31	175,379	APR 17, 2009
HISTORIC HIGH	2,975.92	180,387	JUN 07, 2008

INFLOW-OUTFLOW DATA	INFLOW	DATE	OUTFLOW	DATE
ANNUAL TOTAL (AF)	144,699	OCT 08-SEP 09	125,138	OCT 08-SEP 09
DAILY PEAK (CFS)	2,050	AUG 09, 2009	640	JUL 26, 2009
DAILY MINIMUM (CFS)	0	*	0	*

MONTH	INFLOW		OUTFLOW		CONTENT	
	AF	% OF AVG	AF	% OF AVG	AF	% OF AVG
OCTOBER	2,152	21	0	NA	100,482	144
NOVEMBER	16,373	165	0	NA	116,855	147
DECEMBER	11,287	119	0	NA	128,142	145
JANUARY	14,356	149	0	NA	142,498	146
FEBRUARY	14,112	137	0	NA	156,610	145
MARCH	12,504	77	0	NA	169,114	136
APRIL	13,269	95	15,332	4,235	167,051	122
MAY	9,665	65	5,126	70	171,590	119
JUNE	16,345	138	20,646	125	167,289	119
JULY	11,187	310	33,251	89	145,225	136
AUGUST	16,150	798	27,698	78	133,677	183
SEPTEMBER	7,299	157	23,085	136	117,891	194
ANNUAL	144,699	124	125,138	109		
APRIL-JULY	50,466	114				

* Frequently observed during fall and winter months

DKG10


BELLE FOURCHE RESERVOIR
PEAK STORAGE
175379. AF APR 17
MINIMUM STORAGE
97407. AF OCT 20
TOP OF ACT.
CONSERVATION
192077. AF
RESERVOIR STORAGE (1000 AF)
FOREBAY ELEVATION (FEET)
280
253
225
198
171
143
116
89
61
34
7
2986.5
2983.8
2980.9
2978.0
2974.7
2971.2
2967.2
2962.6
2957.1
2949.5
2932.5
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RESERVOIR RELEASES
COMPUTED INFLOW
PEAK RELEASE
640. CFS JUL 26
PEAK INFLOW
2050. CFS AUG 9
INFLOW AND RELEASES (1000 CFS)
2.10
1.89
1.68
1.47
1.26
1.05
0.84
0.63
0.42
0.21
0.00
WATER YEAR 2009

OPERATING PLANS FOR WATER YEAR 2010

Clark Canyon Reservoir

Three operating plans were prepared for 2010 to show the operations of Clark Canyon Reservoir which could occur under various runoff conditions. These operations for the three runoff conditions are shown in Table MTT12A-C and Figure MTG13. These plans are presented only to show the probable limits of operations; therefore, unpredictable conditions may cause the actual operations to vary widely from the plans presented here. Flood control operations will be coordinated with the U. S. Army Corps of Engineers (Corps) as specified by the Flood Control Regulations. The Corps will issue instructions on release rates when storage rises into or above the joint use space reserved for flood control.

The objectives of operations of Clark Canyon Reservoir are to meet all conservation commitments, to provide flood control in cooperation with the Corps, and meet fish, wildlife, and recreational needs. The reservoir is generally operated under the following criteria and limitations.

(1) During the fall and winter, releases are adjusted to allow storage to reach no higher than 154,195 acre-feet at elevation 5542.10 by March 1.

(2) From inflow forecasts prepared during January through the end of the spring runoff season, based on existing snow water content, releases are adjusted to allow storage to fill to 174,367 acre-feet at elevation 5546.10 during late May or early June.

(3) During May-September, reservoir releases are adjusted to meet downstream irrigation demands or to control storage in the flood pool if storage increases above the top of the joint use pool. If the Corps requests replacement storage, the reservoir is allowed to fill as high as 230,822 acre-feet at elevation 5556.50.

(4) Whenever an adequate water supply is available, releases from Clark Canyon Dam will be maintained at rates to sustain flows in the Beaverhead River below Clark Canyon Dam between 100-200 cfs. During below normal runoff years, it may be necessary to reduce the releases to as low as 25-30 cfs in the Beaverhead River below Clark Canyon Dam, the absolute minimum flow required to protect the river fishery.

(5) Whenever possible, stable flows are maintained during October through the spring to enhance the fish spawning conditions. Large fluctuations in winter release changes will be avoided whenever possible to prevent any flooding from occurring as a result of ice jams.

The total annual inflow to Clark Canyon Reservoir during 2009 was 213,218 acre-feet, 80 percent of normal. Storage on September 30, 2009, was 139,727 acre-feet at elevation 5539.11, 112 percent of average for the end of September.

Storage in Lima Reservoir, a private facility located upstream of Clark Canyon Reservoir, ended water year 2009 with 96 percent of normal storage.

Depending on snowpack and storage conditions Lima Reservoir may store much of the early season runoff during 2010 from the Red Rock River drainage.

Clark Canyon Reservoir is not expected to fill during 2010 under the minimum runoff conditions, but would be expected to fill in the most probable and maximum probable runoff conditions. Water levels under the minimum runoff conditions are expected to peak in late April or early May at approximately 0.5 feet below the top of the joint-use pool. However, in the most probable and maximum probable runoff condition the water level in Clark Canyon is expected to peak in June at or above the top of the joint-use pool. Under all three plans winter releases are expected to be reduced to approximately 175 cfs, upon close coordination with Montana Fish, Wildlife, and Parks. No irrigation shortages are expected to occur under any of the plans.

The most probable October through February inflows were estimated to equal approximately 80 percentile inflows or inflows that are historically exceeded 20 percent of the time. Inflows during March-September were estimated to equal 50 percentile inflows or inflows that are historically exceeded 50 percent of the time.

The minimum probable October through February inflows were estimated to equal approximately 25 percentile inflows or inflows that are historically exceeded 75 percent of the time. Inflows during March through September were estimated to equal 30 percentile inflows or inflows that are historically exceeded 70 percent of the time.

The maximum probable October through August inflows were estimated to equal 74 percentile inflows or inflows that are historically exceeded 26 percent of the time. The September inflows were estimated to equal 57 percentile inflows or inflows that are historically exceeded 43 percent of the time.

TABLE MTT12A

CLARK CANYON RESERVOIR OPERATING PLAN
Based on October 1 2009 Inflow Estimates

2010 Minimum Probable Plan

Clark Canyon Reservoir	2009		Initial	Cont: Elev:	139.7 5539.10	kaf ft	Min	Cont: Elev:	10.0 5489.22	kaf ft	Max	Cont: Elev:	310.1 5569.57	kaf ft
Hydrology	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	13.5	14.7	13.7	12.6	11.4	14.8	14.5	13.8	21.0	17.8	13.3	13.5	174.6
Evaporation Loss	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	
River Release	kaf	13.0	9.6	9.9	9.9	9.0	6.1	6.0	21.2	31.2	41.4	26.7	8.1	192.1
River Release	cfs	211	161	161	161	162	99	101	345	524	673	434	136	
Min Release	cfs	212	150	150	150	150	100	100	100	100	100	100	100	
Excess Release	kaf	0.0	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	2.1	2.1	2.1	
Gordon Spring Gain	kaf	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
End-Month Elevation	ft	5539.21	5540.28	5541.06	5541.61	5542.10	5543.85	5545.52	5544.07	5542.02	5537.05	5534.00	5535.25	
End-Month Content	kaf	140.2	145.3	149.1	151.8	154.2	162.9	171.4	164.0	153.8	130.2	116.8	122.2	
Net Change Content	kaf	0.5	5.1	3.8	2.7	2.4	8.7	8.5	-7.4	-10.2	-23.6	-13.4	5.4	-17.5
Diversions	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
East Bench Demand	kaf								7.0	8.9	12.0	5.1	0.7	33.7
East Bench Req Rels	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Div	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Short	kaf													0.0
CCWSC Tot Demand	kaf								13.8	20.5	25.3	22.1	4.3	86.0
CCWSC Req Rels	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Div	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Shortage	kaf													0.0
Non-proj Demand	kaf								1.9	5.7	4.7	4.7	1.9	18.9

TABLE MTT12B
CLARK CANYON RESERVOIR OPERATING PLAN
Based on October 1 2009 Inflow Estimates

2010 Most Probable Plan

Clark Canyon Reservoir	2009		Initial	Cont: Elev:	139.7 5539.10	kaf ft	Min	Cont: Elev:	10.0 5489.22	kaf ft	Max	Cont: Elev:	310.1 5569.57	kaf ft
Hydrology	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	18.6	17.8	15.2	12.8	11.6	18.9	20.5	21.4	32.4	24.7	18.2	18.9	231.0
Evaporation Loss	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	
River Release	kaf	15.4	10.4	10.8	13.1	11.8	9.3	9.0	22.6	32.5	48.2	33.5	14.6	231.2
River Release	cfs	250	175	176	213	212	151	151	368	546	784	545	245	
Min Release	cfs	250	175	175	150	150	130	130	100	100	100	100	100	
Excess Release	kaf	0.0	0.0	0.0	3.9	3.5	1.3	1.3	1.4	1.3	8.9	8.9	8.6	
Gordon Spring Gain	kaf	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
End-Month Elevation	ft	5539.78	5541.31	5542.20	5542.14	5542.10	5544.03	5546.28	5546.05	5546.03	5541.35	5538.14	5539.06	
End-Month Content	kaf	142.9	150.3	154.7	154.4	154.2	163.8	175.3	174.1	174.0	150.5	135.2	139.5	
Net Change Content	kaf	3.2	7.4	4.4	-0.3	-0.2	9.6	11.5	-1.2	-0.1	-23.5	-15.3	4.3	-0.2
Diversions	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
East Bench Demand	kaf								7.0	8.9	12.0	5.1	0.7	33.7
East Bench Req Rels	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Div	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Short	kaf													0.0
CCWSC Tot Demand	kaf								13.8	20.5	25.3	22.1	4.3	86.0
CCWSC Req Rels	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Div	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Shortage	kaf													0.0
Non-proj Demand	kaf								1.9	5.7	4.7	4.7	1.9	18.9

TABLE MTT12C

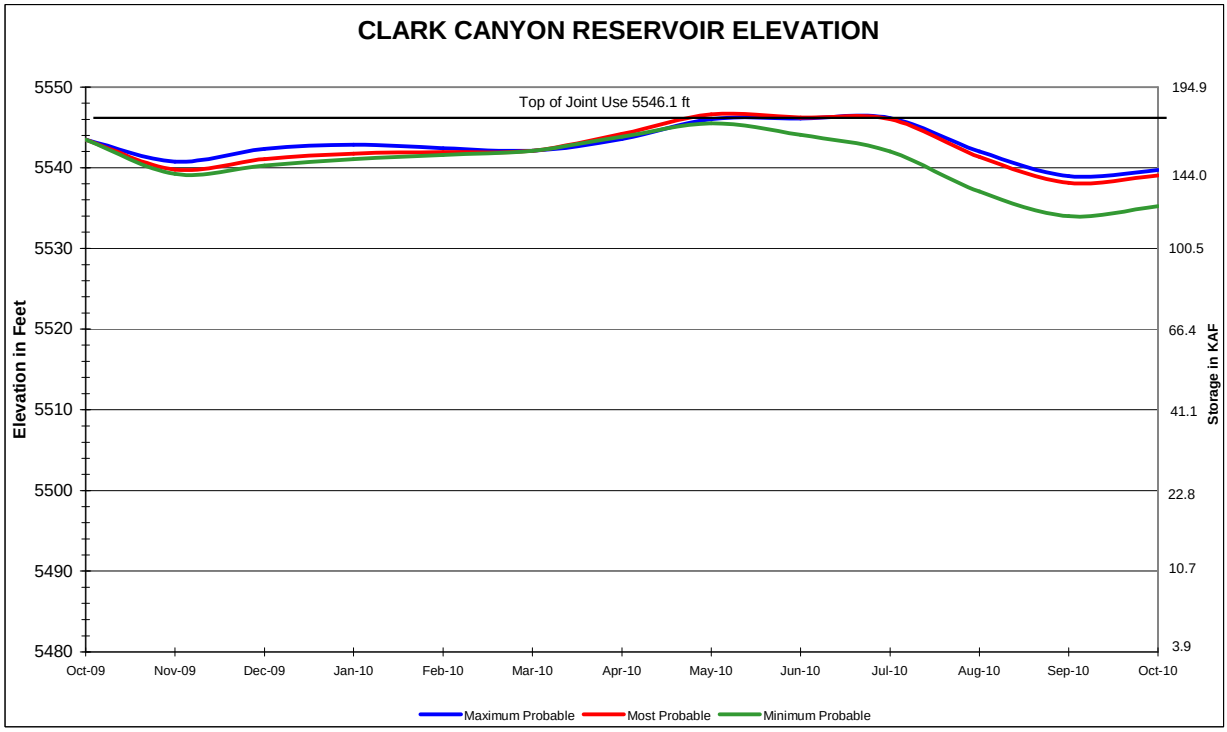
CLARK CANYON RESERVOIR OPERATING PLAN
Based on October 1 2009 Inflow Estimates

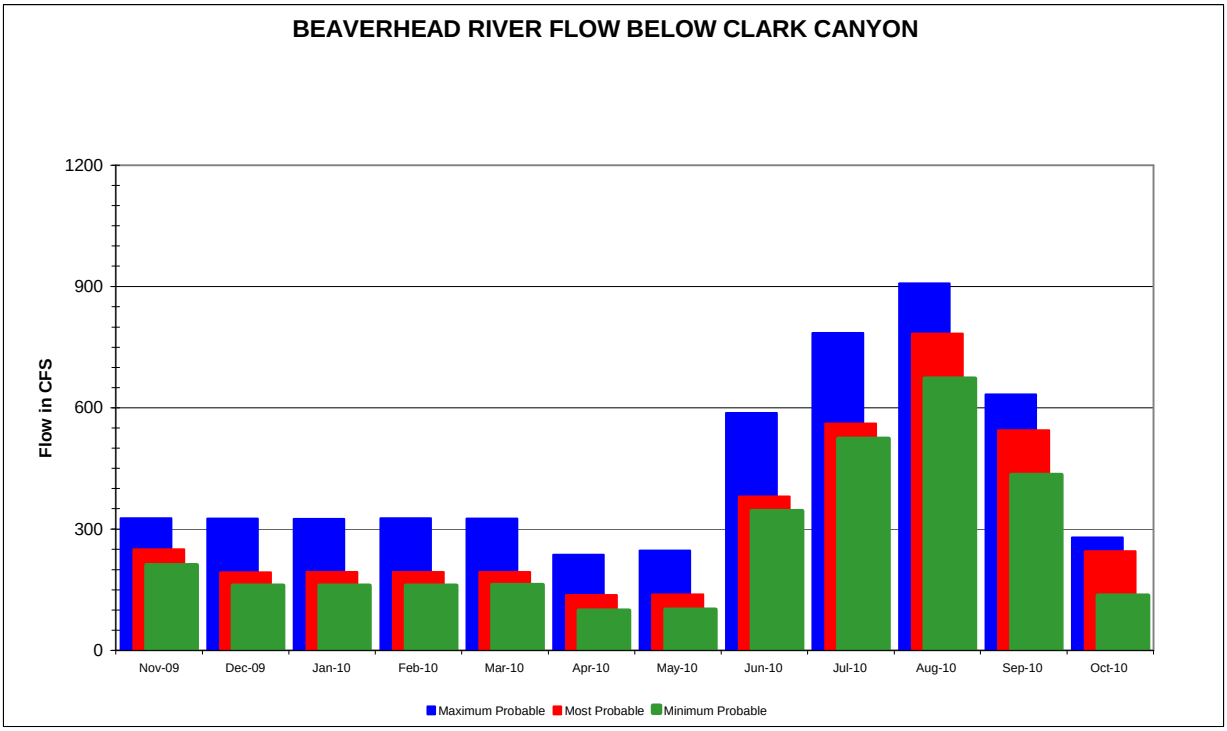
2010 Maximum Probable Plan

Clark Canyon Reservoir	2009		Initial	Cont: Elev:	139.7 5539.10	kaf ft	Min	Cont: Elev:	10.0 5489.22	kaf ft	Max	Cont: Elev:	310.1 5569.57	kaf ft
Hydrology	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	13.5	14.7	13.7	12.6	11.4	14.8	14.5	13.8	21.0	17.8	13.3	13.5	174.6
Evaporation Loss	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	
River Release	kaf	13.0	9.6	9.9	9.9	9.0	6.1	6.0	21.2	31.2	41.4	26.7	8.1	192.1
River Release	cfs	211	161	161	161	162	99	101	345	524	673	434	136	
Min Release	cfs	212	150	150	150	150	100	100	100	100	100	100	100	
Excess Release	kaf	0.0	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	2.1	2.1	2.1	
Gordon Spring Gain	kaf	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
End-Month Elevation	ft	5539.21	5540.28	5541.06	5541.61	5542.10	5543.85	5545.52	5544.07	5542.02	5537.05	5534.00	5535.25	
End-Month Content	kaf	140.2	145.3	149.1	151.8	154.2	162.9	171.4	164.0	153.8	130.2	116.8	122.2	
Net Change Content	kaf	0.5	5.1	3.8	2.7	2.4	8.7	8.5	-7.4	-10.2	-23.6	-13.4	5.4	-17.5
Diversions	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
East Bench Demand	kaf								7.0	8.9	12.0	5.1	0.7	33.7
East Bench Req Rels	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Div	kaf								12.8	16.2	21.9	9.2	1.2	61.3
East Bench Short	kaf													0.0
CCWSC Tot Demand	kaf								13.8	20.5	25.3	22.1	4.3	86.0
CCWSC Req Rels	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Div	kaf								8.7	12.9	15.9	13.9	2.7	54.1
CCWSC Shortage	kaf													0.0
Non-proj Demand	kaf								1.9	5.7	4.7	4.7	1.9	18.9

FIGURE MTG13

CLARK CANYON RESERVOIR





WATER YEAR 2010

Canyon Ferry Lake and Powerplant

Three operating plans were prepared for 2010 to show the operations of Canyon Ferry Lake which could occur under various runoff conditions. These operations for the three runoff conditions are shown in Tables MTT13A-C and Figure MTG14. These plans are presented only to show the probable limits of operations; therefore, actual conditions and operations could vary widely from the plans in order to comply with the authorized project purposes and the current general operating criteria established for Canyon Ferry Dam and Lake.

Power operations will be closely coordinated with Pennsylvania Power & Light, MT (PPL-MT), formerly known as Montana Power Company (MPC), as specified in the formal Agreement to Coordinate Hydroelectric Power Operations dated March 1972. Flood control operations will be coordinated with the Corps of Engineers (Corps) as specified by the Flood Control Regulations Report dated March 1972. The Corps will issue instructions on release rates when storage rises into or above the joint use space reserved for flood control. Both of these documents are on file and available for review at the Bureau of Reclamation's Montana Area Office.

The objectives of operations at Canyon Ferry are to meet all conservation commitments, to provide flood control in cooperation with the Corps, and to coordinate all operations with PPL-MT to achieve optimum benefits from the water resource. Except for special operations, the reservoir is generally operated under the following criteria and limitations:

(1) The top 3 feet between elevations 3797 (1,891,888 acre-feet) and 3800 (1,992,977 acre-feet) are used exclusively for downstream flood control and when storage rises into this pool, operation of the reservoir is directed by the Corps. This storage is generally evacuated as fast as downstream conditions permit.

(2) As soon as storage has peaked, usually in June or July, power releases are adjusted so that the pool will be drawn to near elevation 3780-3782 (1,358,973-1,416,767 acre-feet) by the following April 1. Each month inflows are reevaluated and releases are adjusted accordingly. Releases to meet this schedule are limited to powerplant capacity. Water is generally not spilled to provide this drawdown.

(3) In accordance with operating procedures outlined in the license for the Madison-Missouri Hydro-electric Project, FERC Project No. 2188, most of the water stored in Hebgen Reservoir will be uniformly released from Hebgen during October through March. Releases during October and November may cause storage in Canyon Ferry Lake to rise slightly during these months. However, PPL-MT will try to limit the Hebgen drawdown during these months in an effort to maintain Canyon Ferry Lake below elevation 3794 (1,792,884 acre-feet) after December 1. Storage below elevation 3794 (1,792,884 acre-feet) prior to winter freeze-up is desired to reduce the potential for ice jam problems to occur at the head end of the lake.

(4) Beginning near the first of January and at least monthly thereafter through June, forecasts are made of the estimated spring runoff, based on snow cover and precipitation data.

When these forecasts become available, operational changes may be required. Releases are set based on the most probable spring inflow forecast to allow the reservoir to fill to the top of the joint-use pool at elevation 3797 (1,891,888 acre-feet) near the end of June. On occasions, high spring runoff may result in the reservoir filling above the top of the joint-use pool to the top of the exclusive flood at elevation 3800 (1,992,997 acre-feet).

(5) If spilling is required, it is made only to the extent current inflow and the reservoir content indicates additional spills are required. Attempts are made to limit river releases to 15,000 cfs or full downstream channel capacity immediately downstream of Canyon Ferry Dam, as long as space is available.

(6) Depending on when the spring runoff starts, the release of water, based on inflow forecasts, may draw the pool as low as elevation 3770 (1,097,599 acre-feet). In a series of dry years, the pool may be drawn as low as elevation 3728 (396,031 acre-feet) to meet firm power generation requirements and satisfy PPL-MT's prior water rights. If storage is drawn below elevation 3728 (396,031 acre-feet), the powerplant efficiency is affected. If emergency maintenance is required on the dam or powerplant, the reservoir may be required to be drawn lower than elevation 3728 (396,031 acre-feet), however, the powerplant efficiency is affected.

(7) Whenever an adequate water supply is available, releases from Canyon Ferry Dam to the Missouri River will be maintained at rates required to sustain river flows equal to or greater than the minimum desired flow of 4,100 cfs below Holter Dam, to minimize impacts to downstream river fisheries and recreation activities. During below normal runoff years, it may be necessary to reduce the releases to less than 4,100 cfs but no lower than 2,800 cfs to fulfill contractual obligations with PPL-MT.

During September, there was little to no precipitation reported in the Missouri River Basin above Canyon Ferry. Valley precipitation was only 54 percent of average while the mountain precipitation was much worse at only 13 percent of average. With storage in Canyon Ferry Lake near average in September, releases to the Missouri River were maintained near or above 4,100 cfs, allowing storage in Canyon Ferry Lake to slowly decline to 1,679,615 acre-feet at elevation 3790.50. This was 98 percent of average and about 76,770 acre-feet or 2.38 feet lower than at the end of water year 2008.

The most probable October-February natural inflows to Canyon Ferry Lake, without the effects of Clark Canyon and Hebgen Reservoirs, were estimated to be approximately 90 percent of normal. The most probable March-September natural inflows were estimated to equal median percentile natural inflows or natural inflows that have historically been exceeded 50 percent of the time.

Under the minimum probable operating plan, the October-February natural inflows to Canyon Ferry Lake, without the effects of Clark Canyon and Hebgen Reservoirs, were estimated to be about 10 percent lower than the most probable natural inflows. The March-September natural inflows were estimated to equal lower decile natural inflows or natural inflows that have historically been exceeded 90 percent of the time.

Under the maximum probable operating plan, the October-February natural inflows to Canyon Ferry Lake, without the effects of Clark Canyon and Hebgen Reservoirs, were estimated to be about 15 percent higher than the most probable natural inflows. The maximum probable March-September natural inflows were estimated to equal 80 percentile natural inflows or natural inflows that have historically been exceeded 20 percent of the time.

Based on the storage level on October 1, 2009, Canyon Ferry Reservoir would be expected to fill to the top of the joint-use pool at elevation 3797 by the end of June only under all three probable runoff scenarios. However, under the minimum probable runoff condition, releases from Canyon Ferry Reservoir to the Missouri River downstream of Holter Dam would have to be decreased and maintained between 3,300-4,100 cfs all year to allow storage to fill to elevation 3797, the top of the joint-use pool. Under the most probable and maximum probable runoff conditions, releases to the Missouri River downstream of Holter Dam would be able to be maintained at or above 4,100 cfs all year. Beginning in April, it is anticipated the river releases would be increased above 4,100 cfs or higher to control the rate of fill in Canyon Ferry during the spring snowmelt runoff season.

The average power generation produced at Canyon Ferry Powerplant during 1967-2008 is 384.8 million kilowatt-hours. Under the minimum probable runoff conditions, power generation produced at Canyon Ferry Powerplant during 2010 would be about 81.2 million kilowatt-hours less than average. Under the most and maximum probable runoff condition, power generation would be about 54.9 and 105.4 million kilowatt-hours more than average, respectively. No spills are expected during the routine scheduled maintenance outages shown on Table MTT19.

TABLE MTT13A

CANYON FERRY LAKE MONTHLY OPERATIONS
Based on October 1 2009 Probable Inflow Estimates
2010 Minimum Probable Plan

Canyon Ferry Reservoir		Initial Cont Elev 3790.50 ft	1679.6 kaf			Maximum Cont Elev 3800.00 ft	1993.0 kaf			Minimum Cont Elev 3732.31 ft	445.5 kaf		
2009		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	204.0	223.0	210.6	193.1	203.8	211.2	249.8	301.7	338.7	151.5	103.2	134.8	2525.4
Evaporation Loss	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
HV Canal Diversions	kaf	4.0	0.0	0.0	0.0	0.0	4.0	11.0	22.0	17.0	21.0	21.0	12.0	112.0
HV Pump Turbines	kaf	4.5	0.0	0.0	0.0	0.0	4.4	11.9	23.2	17.3	21.3	22.6	13.7	118.9
Turbine Release	kaf	223.7	202.2	195.2	198.3	175.0	188.0	192.6	210.8	218.5	187.3	188.6	190.4	2370.6
Turbine Release	cfs	3638	3398	3175	3225	3151	3058	3237	3428	3672	3046	3067	3200	
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
River Release	kaf	228.2	202.2	195.2	198.3	175.0	192.4	204.5	234.0	235.8	208.6	211.2	204.1	2489.5
River Release	cfs	3711	3398	3175	3225	3151	3129	3437	3806	3963	3393	3435	3430	
Min Release	cfs	3711	3398	3175	3225	3151	3129	3151	3274	3138	3393	3435	3430	
Total Dam Release	kaf	232.2	202.2	195.2	198.3	175.0	196.4	215.5	256.0	252.8	229.6	232.2	216.1	2601.5
Total Dam Release	cfs	3776	3398	3175	3225	3151	3194	3622	4163	4248	3734	3776	3632	
End-Month Content	kaf	1651.4	1672.2	1687.6	1682.4	1711.2	1726.0	1760.3	1806.0	1891.9	1813.8	1684.8	1603.5	
End-Month Elevation	ft	3789.6	3790.3	3790.8	3790.6	3791.5	3791.9	3793.0	3794.4	3797.0	3794.6	3790.7	3788.1	
Net Change	kaf	-28.2	20.8	15.4	-5.2	28.8	14.8	34.3	45.7	85.9	-78.1	-129.0	-81.3	-76.1

Canyon Ferry Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	cfs	3638	3398	3175	3225	3151	3058	3237	3428	3672	3046	3067	3200	
Tailwater Elev	ft	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	3650.8	
Average Head	ft	139.3	139.1	139.7	139.9	140.2	140.9	141.7	142.9	144.9	145.0	141.9	138.6	
Average Power	mw	39.0	35.9	33.1	33.8	32.9	31.8	34.3	37.0	40.7	32.3	32.1	33.2	
Average Kwh/Af		130	128	126	127	126	126	128	131	134	128	127	126	128
Generation	gwh	28.994	25.826	24.626	25.132	22.095	23.652	24.674	27.543	29.282	24.054	23.860	23.911	303.649
End-Month Power Cap	mw	60	60	60	60	60	60	60	60	60	60	60	60	

Hauser	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	4.0	4.8	7.1	4.5	7.2	8.6	7.8	0.4	1.9	1.9	0.9	1.8	50.9
End-Month Content	kaf	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	
Release	kaf	232.2	207.0	202.3	202.8	182.2	201.0	212.3	234.4	237.7	210.5	212.1	205.9	2540.4
Release	cfs	3776	3479	3290	3298	3281	3269	3568	3812	3995	3423	3449	3460	
Turbine Release	cfs	3776	3479	3290	3298	3281	3269	3568	3812	3995	3423	3449	3460	
Turbine Bypass	cfs	0	0	0	0	0	0	0	0	0	0	0	0	
Generation	gwh	9.777	8.717	8.518	8.539	7.673	8.464	8.940	9.870	10.010	8.863	8.930	8.669	106.970

Holter	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	1.5	1.3	0.6	0.1	1.1	1.9	1.1	1.2	7.8	4.7	3.1	2.4	26.8
End-Month Content	kaf	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	
Release	kaf	233.7	208.3	202.9	202.9	183.3	202.9	213.4	235.6	245.5	215.2	215.2	208.3	2567.2
Release	cfs	3801	3501	3300	3300	3300	3300	3586	3832	4126	3500	3500	3501	
Min Release	cfs	3800	3500	3300	3300	3300	3300	3300	3300	3300	3500	3500	3500	
Turbine Release	cfs	3801	3501	3300	3300	3300	3300	3586	3832	4126	3500	3500	3501	
Turbine Bypass	cfs	0	0	0	0	0	0	0	0	0	0	0	0	
Generation	gwh	19.909	17.746	17.285	17.285	15.612	17.285	18.177	20.071	20.914	18.332	18.332	17.746	218.694

TABLE MTT13B

CANYON FERRY LAKE MONTHLY OPERATIONS
Based on October 1 2009 Probable Inflow Estimates
2010 Most Probable Plan

Canyon Ferry Reservoir		Initial Cont Elev	1679.6 kaf 3790.50 ft			Maximum Cont Elev	1993.0 kaf 3800.00 ft			Minimum Cont Elev	445.5 kaf 3732.31 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	207.9	242.8	233.2	220.2	231.9	282.2	346.6	603.0	758.6	307.5	162.3	193.8	3790.0
Evaporation Loss	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
HV Canal Diversions	kaf	0.0	0.0	0.0	0.0	0.0	4.0	11.0	22.0	17.0	21.0	21.0	12.0	108.0
HV Pump Turbines	kaf	0.0	0.0	0.0	0.0	0.0	5.4	14.9	27.6	18.3	20.9	21.5	12.8	121.4
Turbine Release	kaf	222.5	258.1	305.1	312.2	287.8	313.2	293.4	357.7	322.3	265.6	222.9	221.9	3382.7
Turbine Release	cfs	3619	4338	4962	5077	5182	5094	4931	5818	5417	4320	3625	3729	
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	106.4	0.0	0.0	0.0	121.6
River Release	kaf	222.5	258.1	305.1	312.2	287.8	318.6	308.3	400.5	447.0	286.5	244.4	234.7	3625.7
River Release	cfs	3619	4338	4962	5077	5182	5182	5181	6514	7512	4659	3975	3944	
Min Release	cfs	3619	3936	3939	3928	3893	3880	3911	3959	3707	3981	3975	3944	
Total Dam Release	kaf	222.5	258.1	305.1	312.2	287.8	322.6	319.3	422.5	464.0	307.5	265.4	246.7	3733.7
Total Dam Release	cfs	3619	4338	4962	5077	5182	5247	5366	6871	7798	5001	4316	4146	
End-Month Content	kaf	1665.0	1649.7	1577.8	1485.8	1429.9	1389.5	1416.8	1597.3	1891.9	1891.9	1788.8	1735.9	
End-Month Elevation	ft	3790.0	3789.6	3787.3	3784.3	3782.5	3781.1	3782.0	3787.9	3797.0	3797.0	3793.9	3792.3	
Net Change	kaf	-14.6	-15.3	-71.9	-92.0	-55.9	-40.4	27.3	180.5	294.6	0.0	-103.1	-52.9	56.3

Canyon Ferry Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	cfs	3619	4338	4962	5077	5182	5094	4931	5818	5417	4320	3625	3729	
Tailwater Elev	ft	3650.8	3650.9	3650.9	3651.0	3651.0	3651.0	3651.0	3651.1	3651.3	3650.9	3650.8	3650.8	
Average Head	ft	139.5	138.9	137.5	134.8	132.4	130.8	130.5	133.9	141.2	146.1	144.6	142.3	
Average Power	mw	38.8	47.6	54.1	54.2	54.2	52.7	51.1	60.0	60.0	49.4	40.0	40.8	
Average Kwh/Af		130	133	132	129	126	125	125	125	134	138	133	132	130
Generation	gwh	28.852	34.236	40.221	40.302	36.402	39.209	36.778	44.640	43.200	36.739	29.753	29.398	439.730
End-Month Power Cap	mw	60	60	60	60	60	60	60	60	60	60	60	60	

Hauser	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	9.1	8.4	8.8	9.0	9.3	10.2	9.0	5.4	13.1	1.3	3.3	5.2	92.1
End-Month Content	kaf	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	
Release	kaf	231.6	266.5	313.9	321.2	297.1	328.8	317.3	405.9	460.1	287.8	247.7	239.9	3717.8
Release	cfs	3767	4479	5105	5224	5350	5347	5332	6601	7732	4681	4028	4032	
Turbine Release	cfs	3767	4479	4740	4740	4740	4740	4740	4740	4740	4681	4028	4032	
Turbine Bypass	cfs	0	0	365	484	610	607	592	1861	2992	0	0	0	
Generation	gwh	9.753	11.223	12.272	12.272	11.085	12.272	11.877	12.272	11.877	12.120	10.429	10.103	137.555

Holter	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	2.1	1.4	1.1	1.6	2.2	3.3	2.3	3.3	10.3	6.0	4.4	4.1	42.1
End-Month Content	kaf	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	
Release	kaf	233.7	267.9	315.0	322.8	299.3	332.1	319.6	409.2	470.4	293.8	252.1	244.0	3759.9
Release	cfs	3801	4502	5123	5250	5389	5401	5371	6655	7905	4778	4100	4101	
Min Release	cfs	3800	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	
Turbine Release	cfs	3801	4502	5123	5250	5389	5401	5371	6655	7100	4778	4100	4101	
Turbine Bypass	cfs	0	0	0	0	0	0	0	0	805	0	0	0	
Generation	gwh	19.909	22.820	26.833	27.498	25.495	28.289	27.225	34.857	35.988	25.026	21.475	20.787	316.202

TABLE MTT13C

CANYON FERRY LAKE MONTHLY OPERATIONS
Based on October 1 2009 Probable Inflow Estimates
2010 Maximum Probable Plan

Canyon Ferry Reservoir		Initial Cont 1679.6 kaf Elev 3790.50 ft				Maximum Cont 1993.0 kaf Elev 3800.00 ft				Minimum Cont 445.5 kaf Elev 3732.31 ft				
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	241.5	275.0	264.3	252.4	265.7	316.5	402.7	758.3	1031.8	496.5	209.6	235.4	4749.7
Evaporation Loss	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
HV Canal Diversions	kaf	4.0	0.0	0.0	0.0	0.0	4.0	11.0	22.0	17.0	21.0	21.0	12.0	112.0
HV Pump Turbines	kaf	4.5	0.0	0.0	0.0	0.0	5.7	16.1	30.0	19.0	20.9	21.4	12.7	130.3
Turbine Release	kaf	230.9	328.8	345.6	353.8	328.1	370.7	374.8	380.4	328.5	322.2	255.7	257.4	3876.9
Turbine Release	cfs	3755	5526	5621	5754	5908	6029	6299	6186	5521	5240	4159	4326	
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.1	252.9	132.4	0.0	0.0	553.4
River Release	kaf	235.4	328.8	345.6	353.8	328.1	376.4	390.9	578.5	600.4	475.5	277.1	270.1	4560.6
River Release	cfs	3828	5526	5621	5754	5908	6122	6569	9408	10090	7733	4507	4539	
Min Release	cfs	3828	5099	3915	3915	3833	3825	3850	3711	3284	3731	3807	3838	
Total Dam Release	kaf	239.4	328.8	345.6	353.8	328.1	380.4	401.9	600.5	617.4	496.5	298.1	282.1	4672.6
Total Dam Release	cfs	3893	5526	5621	5754	5908	6187	6754	9766	10376	8075	4848	4741	
End-Month Content	kaf	1681.7	1627.9	1546.6	1445.2	1382.8	1318.9	1319.7	1477.5	1891.9	1891.9	1803.4	1756.7	
End-Month Elevation	ft	3790.6	3788.9	3786.3	3783.0	3780.8	3778.6	3778.6	3784.0	3797.0	3797.0	3794.3	3792.9	
Net Change	kaf	2.1	-53.8	-81.3	-101.4	-62.4	-63.9	0.8	157.8	414.4	0.0	-88.5	-46.7	77.1

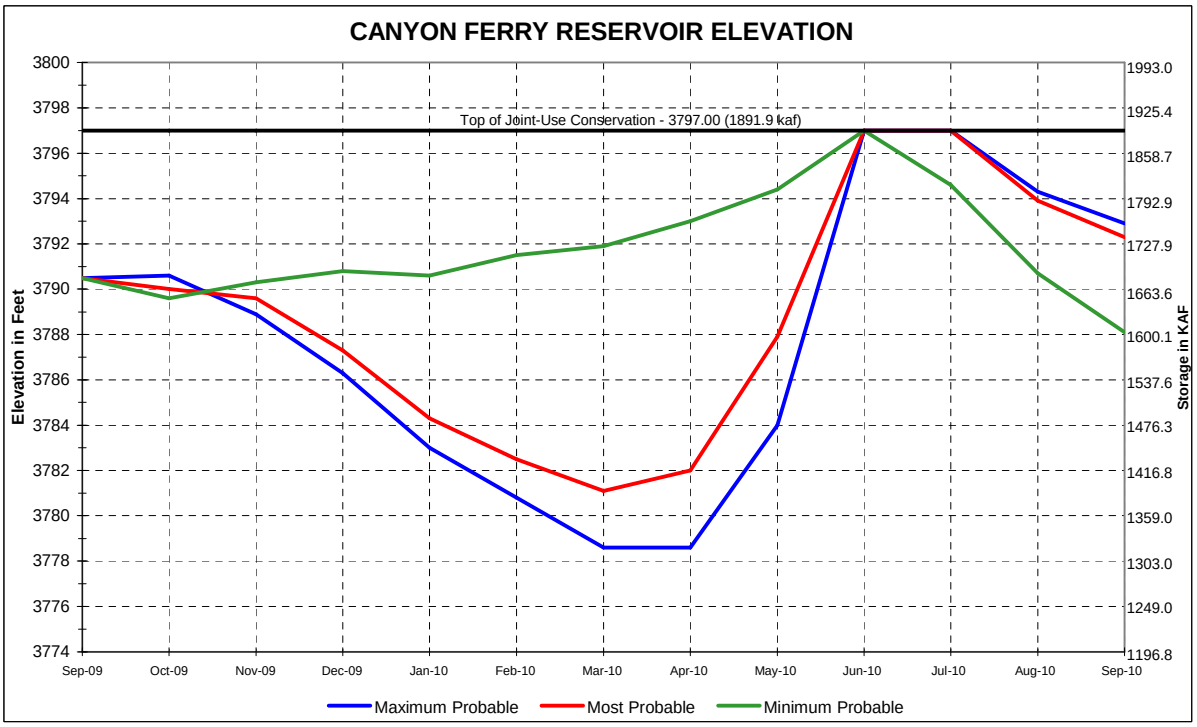
Canyon Ferry Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	cfs	3755	5526	5621	5754	5908	6029	6299	6186	5521	5240	4159	4326	
Tailwater Elev	ft	3650.8	3651.0	3651.0	3651.0	3651.1	3651.1	3651.1	3651.6	3651.7	3651.3	3650.9	3650.9	
Average Head	ft	139.7	138.7	136.6	133.6	130.8	128.6	127.5	129.8	139.0	145.7	144.8	142.7	
Average Power	mw	40.6	59.9	59.8	59.4	59.0	58.6	59.2	60.0	60.0	60.0	47.0	48.5	
Average Kwh/Af		131	131	129	125	121	118	114	117	132	139	137	136	126
Generation	gwh	30.184	43.150	44.476	44.201	39.661	43.561	42.602	44.640	43.200	44.640	34.953	34.927	490.195
End-Month Power Cap	mw	60	60	60	60	60	59	59	60	60	60	60	60	

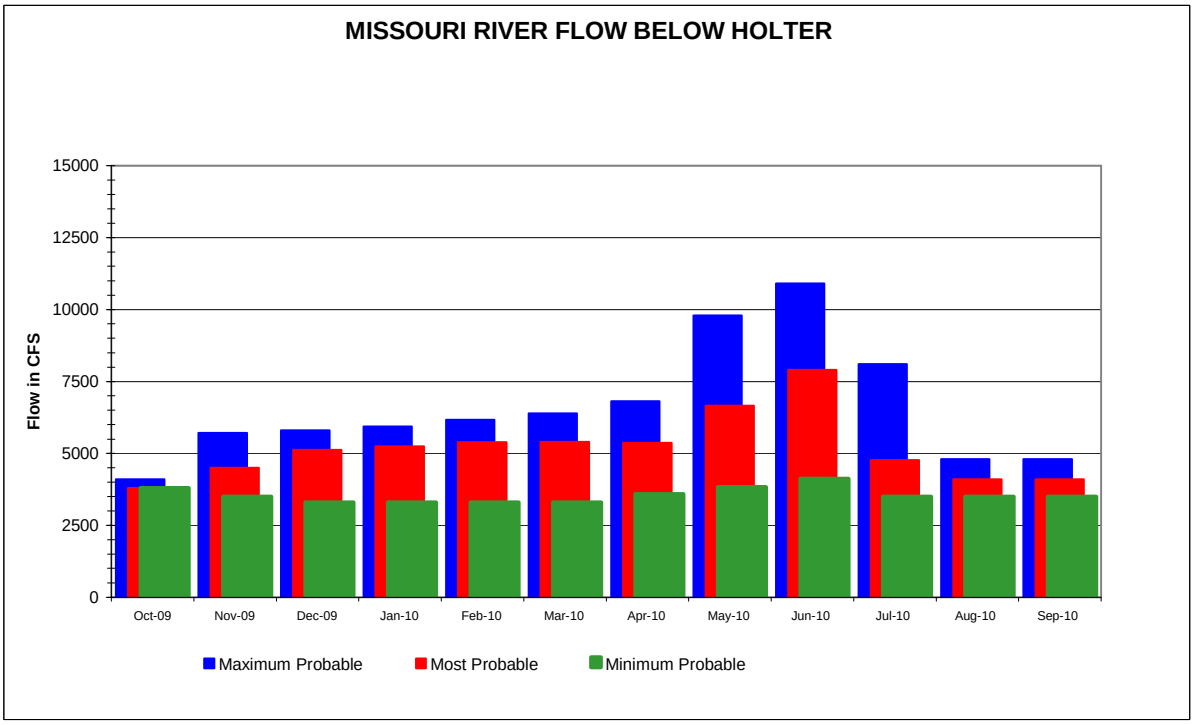
Hauser	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	13.0	9.3	9.4	8.9	11.9	13.3	11.8	17.2	34.1	13.3	10.8	10.0	163.0
End-Month Content	kaf	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	
Release	kaf	248.4	338.1	355.0	362.7	340.0	389.7	402.7	595.7	634.5	488.8	287.9	280.1	4723.6
Release	cfs	4040	5682	5774	5899	6122	6338	6768	9688	10663	7950	4682	4707	
Turbine Release	cfs	4040	4740	4740	4740	4740	4740	4740	4740	4740	4740	4682	4707	
Turbine Bypass	cfs	0	942	1034	1159	1382	1598	2028	4948	5923	3210	0	0	
Generation	gwh	10.460	11.877	12.272	12.272	11.085	12.272	11.877	12.272	11.877	12.272	12.122	11.794	142.452

Holter	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Missouri Gain	kaf	3.7	2.0	2.0	2.5	2.9	3.6	3.1	6.7	14.5	9.4	7.2	5.6	63.2
End-Month Content	kaf	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	81.9	
Release	kaf	252.1	340.1	357.0	365.2	342.9	393.3	405.8	602.4	649.0	498.2	295.1	285.7	4786.8
Release	cfs	4100	5716	5806	5939	6174	6396	6820	9797	10907	8102	4799	4801	
Min Release	cfs	4100	5289	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	
Turbine Release	cfs	4100	5716	5806	5939	6174	6396	6820	7100	7100	7100	4799	4801	
Turbine Bypass	cfs	0	0	0	0	0	0	0	2697	3807	1002	0	0	
Generation	gwh	21.475	28.973	30.410	31.107	29.208	33.501	34.569	37.188	35.988	37.188	25.136	24.335	369.078

FIGURE MTG14

CANYON FERRY RESERVOIR





WATER YEAR 2010

Gibson Reservoir

Three operating plans were prepared for 2010 to show the operations of Gibson Reservoir which could occur under various conditions. These plans are shown in Table MTT14A-C and Figure MTG15. The plans are presented only to show the probable limits of operations; therefore, actual operations may vary widely from these plans.

The primary objective of operations at Gibson Reservoir is to provide irrigation water to the Sun River Project. Gibson Reservoir is operated under the following criteria and limitations:

(1) Beginning near the first of January and at least monthly thereafter through June, forecasts are made of the estimated spring inflow from snow cover and precipitation data. When these forecasts become available, the Facility Operation and Maintenance Division provides assistance to Greenfields Irrigation District to provide incidental flood control and prevent storage content in Gibson Reservoir from exceeding elevation 4724.0 until the peak of the spring runoff has passed and has begun to recede.

(2) The spillway crest elevation is 4712.0 feet (81,255 acre-feet). The spillway gates will remain open until after the peak inflow has occurred. The remaining 12 feet of storage shall be filled with recession inflows. This will normally occur during mid to late June or early July.

(3) Once Gibson Reservoir has filled or reached its maximum level during spring runoff (normally late June or early July), releases are set to maintain the reservoir at or below elevation 4724.0.

(4) After the spring runoff is over, releases during the remainder of the irrigation season from July through mid-October are adjusted as necessary to meet the irrigation demands of the Sun River Project.

(5) When irrigation demands on the Sun River Project places heavy demands on storage in Gibson Reservoir, the reservoir should not be drafted lower than elevation 4609.0 feet (5,000 acre-feet) to prevent sediment from being flushed through the reservoir in an effort to protect the water quality of the Sun River downstream of the dam.

(6) During the non-irrigation season, Gibson Reservoir should be maintained below elevation of 4712.0 feet (81,255 acre-feet) to provide incidental flood control. During most years, Gibson Reservoir is generally maintained below elevation 4702.5 (70,000 acre-feet). When normal or above normal inflow is forecast, the end-of-April target storage content is 55,000 acre-feet. When below normal inflow is forecast, the end-of-April target storage content can be increased but set no higher than 70,000 acre-feet.

(7) Whenever an adequate water supply is available, releases from Gibson Reservoir will be maintained at rates to sustain flows in the Sun River below Sun River Diversion Dam at 100 cfs or higher and in the river below the Fort Shaw Diversion Dam at 50 cfs or higher. This is normally required to achieve the desired end-of-April content and minimize impacts to downstream river fisheries and recreation activities. During below normal runoff years, it may be necessary to reduce the releases to as low as 50 cfs in the Sun River below the Sun River Diversion Dam, the absolute minimum flow required to protect the river fishery.

(8) Releases during July-September are made as necessary to meet irrigation requirements.

Inflow into Gibson Reservoir during both August and September averaged 93, and 96 percent of average. The precipitation and temperatures stayed cool during late spring and summer which caused a delayed snow melt. The total inflow for Gibson Reservoir during 2009 was 509,800 acre-feet, 83 percent of average. By the end of water year 2009, storage in Gibson Reservoir was drafted to 5,600 acre-feet at elevation 4610.93. This was 20 percent of normal for this time of year, and 15,380 acre-feet or 34.63 feet lower than at the end of water year 2008.

The most probable October-December inflows to Gibson Reservoir were estimated to equal 40 percentile flows, or flows that would be exceeded 60 percent of the time. January through April flows are estimated to be 30 percentile flows, or flows that would be exceeded 70 percent of the time, and May through September inflows to Gibson Reservoir were estimated to equal 40 percentile inflows or inflows that have historically been exceeded 60 percent of the time.

The minimum probable October-September inflows to Gibson Reservoir were estimated to equal 12.5 percentile inflows or inflows that have historically been exceeded 87.5 percent of the time.

The max probable October-December inflows to Gibson Reservoir were estimated to equal 74 percentile flows, or flows that would be exceeded 26 percent of the time. June through September inflows to Gibson Reservoir were estimated to equal 57 percentile inflows or inflows that have historically been exceeded 43 percent of the time.

With storage in Gibson Reservoir at 5,600 acre-feet or 20 percent of average on September 30, Gibson Reservoir is expected to fill to the top of the conservation pool at elevation 4724 (96,477 acre-feet) under all three runoff scenarios Based upon the storage content of Gibson Reservoir on September 30, 2009, a winter release of approximately 100 cfs or higher to the Sun River can be maintained to conserve storage for the 2010 irrigation season, as well as to provide a very good winter fishery flow. These flow rates will vary as runoff and snowpack conditions change.

TABLE MTT14A

GIBSON RESERVOIR MONTHLY OPERATIONS
Based on October 2009 Inflow Estimates

2010 Minimum Probable Runoff

Gibson Reservoir		Initial Cont		5.6 kaf		Maximum Cont		96.5 kaf		Minimum Cont		5.0 kaf	
			Elev	4610.88 ft			Elev	4724.02 ft			Elev	4608.95 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	11.6	11.3	9.7	10.2	9.2	12.2	33.4	130.3	122.6	43.8	14.4	11.6	420.3
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0	
Total Release	kaf	12.2	11.3	5.5	5.5	5.0	5.4	14.4	89.2	111.1	93.5	56.2	11.6	420.9
Total Release	cfs	198	190	89	89	90	88	242	1451	1867	1521	914	195	
End-Month Content	kaf	5.0	5.0	9.2	13.9	18.1	24.9	43.9	85.0	96.5	46.8	5.0	5.0	
End-Month Elevation	ft	4608.95	4608.95	4620.45	4630.66	4638.70	4650.44	4676.52	4715.01	4724.02	4679.76	4608.95	4608.95	
End-Month Area	acre	297.4	297.4	419.4	498.2	546.6	613.9	872.4	1255.1	1296.2	913.5	297.4	297.4	
Net Change Content	kaf	-0.6	0.0	4.2	4.7	4.2	6.8	19.0	41.1	11.5	-49.7	-41.8	0.0	-0.6

Sun River Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Gain Below Gibson	cfs	11	10	10	10	11	11	34	127	123	42	15	12	
Rels to WFC	cfs	0	0	0	0	0	0	76	54	0	0	0	0	
Rels to PSC	cfs	125	99	0	0	0	0	91	859	1329	1309	660	49	
Total Diversion	kaf	7.7	5.9	0.0	0.0	0.0	0.0	9.9	56.1	79.1	80.5	40.6	2.9	282.7
Total Diversion	cfs	125	99	0	0	0	0	166	912	1329	1309	660	49	
Flow Over Div Dam	kaf	5.2	6.0	6.1	6.1	5.6	6.1	6.5	40.9	39.3	15.6	16.5	9.4	163.3
Flow Over Div Dam	cfs	85	101	99	99	101	99	109	665	660	254	268	158	
Min River Rels	kaf	4.6	6.0	6.1	6.1	5.6	6.1	6.5	6.8	6.5	6.8	6.8	6.5	74.4
Min River Rels	cfs	75	100	100	100	100	100	110	110	110	110	110	110	

Willow Crk Operations		Initial Cont		25.2 kaf		Maximum Cont		31.9 kaf		Minimum Cont		0.1 kaf	
			Elev	4137.28 ft			Elev	4142.04 ft			Elev	4093.42 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.1	3.9	2.8	0.0	0.0	0.0	0.0	6.8
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6.9	9.0	5.6	21.6
End-Month Content	kaf	25.2	25.2	25.2	25.2	25.2	25.2	29.1	31.9	31.9	25.0	16.0	10.4	
End-Month Elevation	ft	4137.28	4137.28	4137.28	4137.28	4137.28	4137.28	4140.09	4142.04	4142.04	4137.13	4129.74	4123.72	
Net Change Content	kaf	0.0	0.0	0.0	0.0	0.0	0.0	3.9	2.8	0.0	-6.9	-9.0	-5.6	-14.8

Pishkun Operations		Initial Cont		23.9 kaf		Maximum Cont		46.7 kaf		Minimum Cont		16.0 kaf	
			Elev	4351.68 ft			Elev	4370.00 ft			Elev	4341.99 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels to PSC	kaf	7.7	5.9	0.0	0.0	0.0	0.0	5.4	52.8	79.1	80.5	40.6	2.9	274.9
Total Inflow	kaf	6.5	5.0	0.0	0.0	0.0	0.0	4.6	42.2	64.9	68.4	34.5	2.5	228.6
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.5	65.0	80.0	40.0	16.0	236.5
End-Month Content	kaf	30.4	35.4	35.4	35.4	35.4	35.4	40.0	46.7	46.6	35.0	29.5	16.0	
End-Month Elevation	ft	4358.03	4362.09	4362.09	4362.09	4362.09	4362.09	4365.44	4370.00	4369.94	4361.78	4357.23	4341.99	
Net Change Content	kaf	6.5	5.0	0.0	0.0	0.0	0.0	4.6	6.7	-0.1	-11.6	-5.5	-13.5	-7.9

Greenfields Irrig	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.5	65.0	80.0	40.0	16.0	236.5
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.5	65.0	80.0	40.0	16.0	236.5

River Blw Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow Over Div Dam	cfs	85	101	99	99	101	99	109	665	660	254	268	158	
PSC Return Flow	cfs	16	12	0	0	0	0	10	138	192	168	88	7	
WCR Dam Rels	cfs	0	0	0	0	0	2	0	0	0	112	146	94	
Sr Demand Above	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	50.2
Sr Demand Below	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.4	5.5	5.5	2.0	24.9
Flow @ Ft.Shaw Div	cfs	83	121	112	114	117	125	168	701	652	234	254	202	
Ft Shaw Demand	kaf	2.0	0.0	0.0	0.0	0.0	0.0	0.7	7.1	9.2	11.3	12.5	9.0	51.8
Ft Shaw Tot Deliv	kaf	2.0	0.0	0.0	0.0	0.0	0.0	0.7	7.1	9.2	11.3	12.5	9.0	51.8
Flow blw Ft. Shaw	cfs	50	121	112	114	117	125	156	585	497	50	50	50	

TABLE MTT14B

GIBSON RESERVOIR MONTHLY OPERATIONS
Based on October 2009 Inflow Estimates

2010 Most Probable Runoff

Gibson Reservoir		Initial Cont		5.6 kaf		Maximum Cont		96.5 kaf		Minimum Cont		5.0 kaf	
			Elev	4610.88 ft			Elev	4724.02 ft			Elev	4608.95 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	17.0	14.6	13.3	11.6	10.2	12.7	34.6	160.0	170.0	60.0	24.0	18.0	546.0
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0	
Total Release	kaf	17.6	5.1	5.3	5.4	5.0	5.3	20.9	130.0	158.5	89.0	65.5	30.4	538.0
Total Release	cfs	286	86	86	88	90	86	351	2114	2664	1447	1065	511	
End-Month Content	kaf	5.0	14.5	22.5	28.7	33.9	41.3	55.0	85.0	96.5	67.5	26.0	13.6	
End-Month Elevation	ft	4608.95	4631.86	4646.45	4656.39	4663.90	4673.47	4688.34	4715.01	4724.02	4700.27	4652.21	4630.06	
End-Month Area	acre	297.4	505.7	588.0	662.4	724.1	832.1	995.4	1255.1	1296.2	1108.5	628.4	494.5	
Net Change Content	kaf	-0.6	9.5	8.0	6.2	5.2	7.4	13.7	30.0	11.5	-29.0	-41.5	-12.4	8.0

Sun River Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Gain Below Gibson	cfs	16	15	13	11	11	13	35	156	171	59	23	18	
Rels to WFC	cfs	0	0	0	0	0	0	74	55	0	0	0	76	
Rels to PSC	cfs	228	0	0	0	0	0	92	859	1333	1249	803	289	
Total Diversion	kaf	14.0	0.0	0.0	0.0	0.0	0.0	9.9	56.2	79.3	76.8	49.4	21.7	307.3
Total Diversion	cfs	228	0	0	0	0	0	166	914	1333	1249	803	365	
Flow Over Div Dam	kaf	4.6	6.0	6.1	6.1	5.6	6.1	13.1	83.4	89.4	15.8	17.5	9.8	263.5
Flow Over Div Dam	cfs	75	101	99	99	101	99	220	1356	1502	257	285	165	
Min River Rels	kaf	4.6	6.0	6.1	6.1	5.6	6.1	6.0	9.2	8.9	6.8	6.8	6.5	78.7
Min River Rels	cfs	75	100	100	100	100	100	100	150	150	110	110	110	

Willow Crk Operations		Initial Cont		25.2 kaf		Maximum Cont		31.9 kaf		Minimum Cont		0.1 kaf	
			Elev	4137.28 ft			Elev	4142.04 ft			Elev	4093.42 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.1	3.8	2.9	0.0	0.0	0.0	3.8	10.6
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6.9	7.0	0.0	14.0
End-Month Content	kaf	25.2	25.2	25.2	25.2	25.2	25.2	29.0	31.9	31.9	25.0	18.0	21.8	
End-Month Elevation	ft	4137.28	4137.28	4137.28	4137.28	4137.28	4137.28	4140.02	4142.04	4142.04	4137.13	4131.58	4134.72	
Net Change Content	kaf	0.0	0.0	0.0	0.0	0.0	0.0	3.8	2.9	0.0	-6.9	-7.0	3.8	-3.4

Pishkun Operations		Initial Cont		23.9 kaf		Maximum Cont		46.7 kaf		Minimum Cont		16.0 kaf	
			Elev	4351.68 ft			Elev	4370.00 ft			Elev	4341.99 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels to PSC	kaf	14.0	0.0	0.0	0.0	0.0	0.0	5.5	52.8	79.3	76.8	49.4	17.2	295.0
Total Inflow	kaf	11.9	0.0	0.0	0.0	0.0	0.0	4.7	42.2	65.0	65.3	42.0	14.6	245.7
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.5	35.5	65.0	79.0	39.0	14.0	233.0
End-Month Content	kaf	35.8	35.8	35.8	35.8	35.8	35.8	40.0	46.7	46.7	33.0	36.0	36.6	
End-Month Elevation	ft	4362.39	4362.39	4362.39	4362.39	4362.39	4362.39	4365.44	4370.00	4370.00	4360.21	4362.54	4362.99	
Net Change Content	kaf	11.9	0.0	0.0	0.0	0.0	0.0	4.2	6.7	0.0	-13.7	3.0	0.6	12.7

Greenfields Irrig	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.5	35.5	65.0	79.0	39.0	14.0	233.0
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.5	35.5	65.0	79.0	39.0	14.0	233.0

River Blw Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow Over Div Dam	cfs	75	101	99	99	101	99	220	1356	1502	257	285	165	
PSC Return Flow	cfs	31	0	0	0	0	0	10	138	192	159	109	44	
WCR Dam Rels	cfs	0	0	0	0	0	2	0	0	0	112	114	0	
Sr Demand Above	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	50.2
Sr Demand Below	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.4	5.5	5.5	2.0	24.9
Flow @ Ft.Shaw Div	cfs	88	109	112	114	117	125	279	1392	1494	229	213	151	
Ft Shaw Demand	kaf	1.0	0.0	0.0	0.0	0.0	0.0	1.0	8.5	8.5	11.0	10.0	6.0	46.0
Ft Shaw Tot Deliv	kaf	1.0	0.0	0.0	0.0	0.0	0.0	1.0	8.5	8.5	11.0	10.0	6.0	46.0
Flow blw Ft. Shaw	cfs	72	109	112	114	117	125	262	1254	1351	50	50	50	

TABLE MTT14C

GIBSON RESERVOIR MONTHLY OPERATIONS
Based on October 2009 Inflow Estimates

2010 Maximum Probable Runoff

Gibson Reservoir		Initial Cont		5.6 kaf		Maximum Cont		96.5 kaf		Minimum Cont		5.0 kaf	
		Elev	4610.88 ft			Elev	4724.02 ft			Elev	4608.95 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	21.9	19.9	18.3	15.1	13.5	15.8	45.8	202.1	201.0	68.4	27.4	20.9	670.1
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0	
Total Release	kaf	18.2	4.8	5.0	5.2	4.8	12.1	26.7	190.2	195.5	96.4	71.4	26.0	656.3
Total Release	cfs	296	81	81	85	86	197	449	3093	3285	1568	1161	437	
End-Month Content	kaf	9.3	24.4	37.7	47.6	56.3	60.0	79.1	91.0	96.5	68.5	24.5	19.4	
End-Month Elevation	ft	4620.69	4649.63	4668.98	4680.64	4689.63	4693.26	4710.24	4719.75	4724.02	4701.17	4649.80	4641.04	
End-Month Area	acre	421.3	604.7	773.9	923.0	1006.2	1035.0	1219.2	1278.9	1296.2	1118.3	605.5	559.7	
Net Change Content	kaf	3.7	15.1	13.3	9.9	8.7	3.7	19.1	11.9	5.5	-28.0	-44.0	-5.1	13.8

Sun River Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Gain Below Gibson	cfs	21	20	18	15	14	16	45	197	203	67	26	22	
Rels to WFC	cfs	0	0	0	0	0	72	55	0	0	0	0	0	
Rels to PSC	cfs	242	0	0	0	0	0	87	847	1333	1249	803	309	
Total Diversion	kaf	14.9	0.0	0.0	0.0	0.0	4.4	8.5	52.1	79.3	76.8	49.4	18.4	303.8
Total Diversion	cfs	242	0	0	0	0	72	143	847	1333	1249	803	309	
Flow Over Div Dam	kaf	4.6	6.0	6.1	6.1	5.6	8.7	20.9	150.2	128.3	23.7	23.6	8.9	392.7
Flow Over Div Dam	cfs	75	101	99	99	101	141	351	2443	2156	385	384	150	
Min River Rels	kaf	4.6	6.0	6.1	6.1	5.6	6.1	6.0	9.2	8.9	9.2	9.2	8.9	85.9
Min River Rels	cfs	75	100	100	100	100	100	100	150	150	150	150	150	

Willow Crk Operations		Initial Cont		25.2 kaf		Maximum Cont		31.9 kaf		Minimum Cont		0.1 kaf	
		Elev	4137.28 ft			Elev	4142.04 ft			Elev	4093.42 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Inflow	kaf	0.0	0.0	0.0	0.0	0.0	3.8	2.9	0.0	0.0	0.0	0.0	0.0	6.7
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.3	4.2
End-Month Content	kaf	25.2	25.2	25.2	25.2	25.2	29.0	31.9	31.9	31.9	31.9	31.0	27.7	
End-Month Elevation	ft	4137.28	4137.28	4137.28	4137.28	4137.28	4140.02	4142.04	4142.04	4142.04	4142.04	4141.42	4139.10	
Net Change Content	kaf	0.0	0.0	0.0	0.0	0.0	3.8	2.9	0.0	0.0	0.0	-0.9	-3.3	2.5

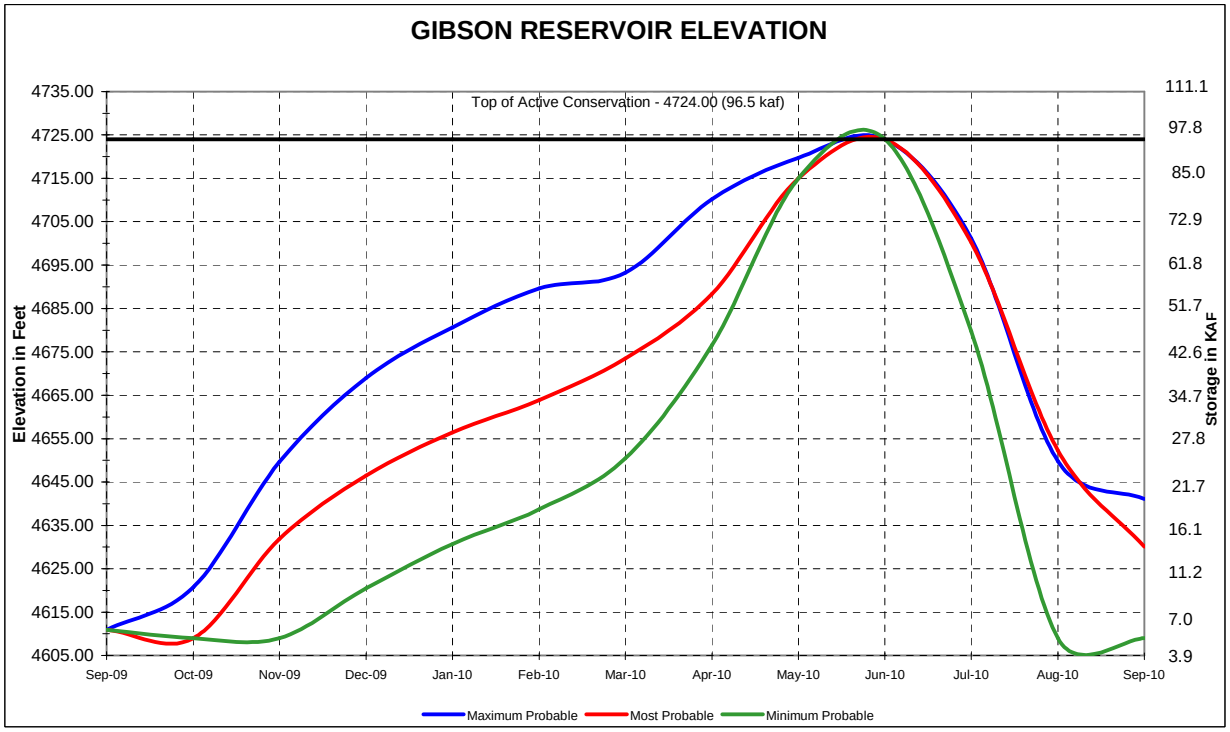
Pishkun Operations		Initial Cont		23.9 kaf		Maximum Cont		46.7 kaf		Minimum Cont		16.0 kaf	
		Elev	4351.68 ft			Elev	4370.00 ft			Elev	4341.99 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels to PSC	kaf	14.9	0.0	0.0	0.0	0.0	0.0	5.2	52.1	79.3	76.8	49.4	18.4	296.1
Total Inflow	kaf	12.7	0.0	0.0	0.0	0.0	0.0	4.4	41.7	65.0	65.3	42.0	15.6	246.7
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	1.0	35.0	65.0	79.0	39.0	15.0	234.0
End-Month Content	kaf	36.6	36.6	36.6	36.6	36.6	36.6	40.0	46.7	46.7	33.0	36.0	36.6	
End-Month Elevation	ft	4362.99	4362.99	4362.99	4362.99	4362.99	4362.99	4365.44	4370.00	4370.00	4360.21	4362.54	4362.99	
Net Change Content	kaf	12.7	0.0	0.0	0.0	0.0	0.0	3.4	6.7	0.0	-13.7	3.0	0.6	12.7

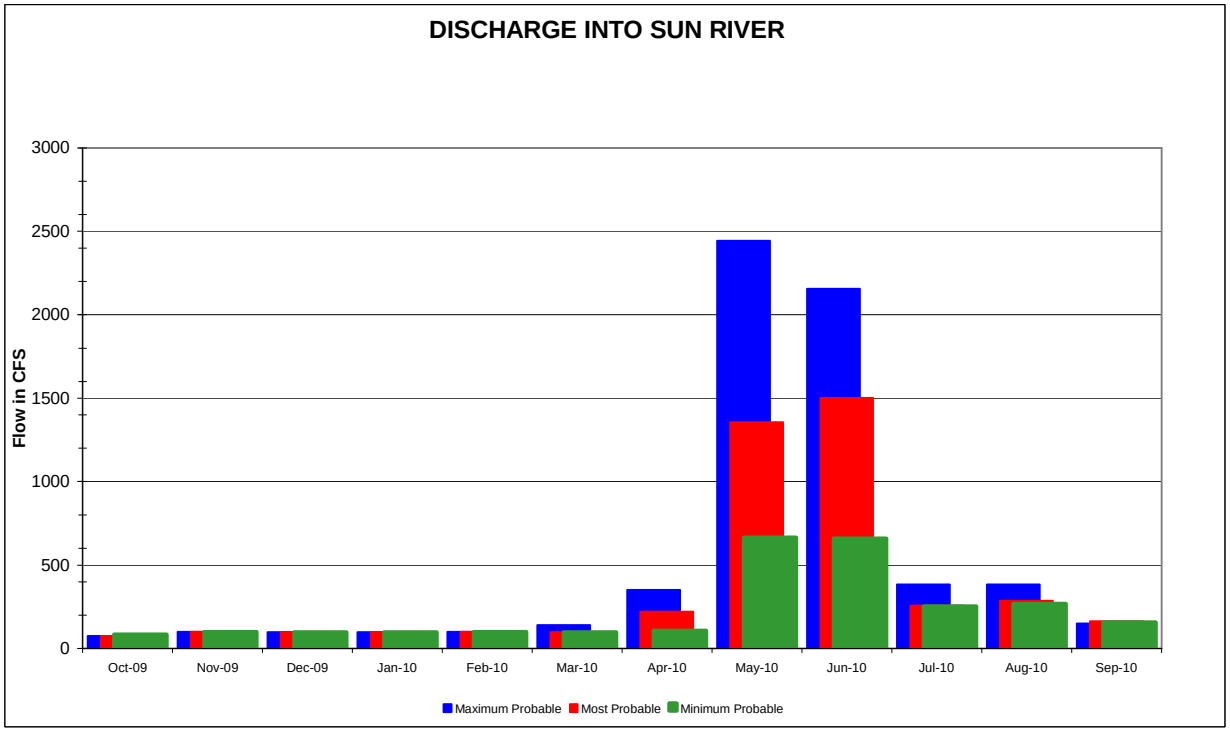
Greenfields Irrig	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	1.0	35.0	65.0	79.0	39.0	15.0	234.0
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	1.0	35.0	65.0	79.0	39.0	15.0	234.0

River Blw Div Dam	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow Over Div Dam	cfs	75	101	99	99	101	141	351	2443	2156	385	384	150	
PSC Return Flow	cfs	34	0	0	0	0	0	10	135	192	159	109	47	
WCR Dam Rels	cfs	0	0	0	0	0	0	0	0	0	0	15	55	
Sr Demand Above	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	50.2
Sr Demand Below	kaf	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.4	5.5	5.5	2.0	24.9
Flow @ Ft.Shaw Div	cfs	91	109	112	114	117	166	410	2475	2148	246	213	195	
Ft Shaw Demand	kaf	1.0	0.0	0.0	0.0	0.0	0.0	1.0	10.0	10.0	12.0	10.0	8.0	52.0
Ft Shaw Tot Deliv	kaf	1.0	0.0	0.0	0.0	0.0	0.0	1.0	10.0	10.0	12.0	10.0	8.0	52.0
Flow blw Ft. Shaw	cfs	75	109	112	114	117	166	393	2313	1980	50	50	61	

FIGURE MTG15

GIBSON RESERVOIR





WATER YEAR 2010

Lake Elwell (Tiber Dam)

Three operating plans were prepared for 2010 to show the operations of Lake Elwell which could occur under various runoff conditions. These operations for the three runoff conditions are shown in Table MTT15 and Figure MTG16. These plans are presented only to show the probable limits of operations; therefore, actual conditions and operations could vary widely from the plans.

In 2002, Reclamation surveyed Lake Elwell to develop a topographic map and compute a present storage-elevation relationship (area-capacity tables). The data were used to calculate reservoir capacity lost due to sediment accumulation since dam closure in October of 1957. The 2002 survey determined that Lake Elwell has a storage capacity of 925,649 acre-feet and a surface area of 18,275 acres at a reservoir elevation of 2993.00. Since closure in 1957, the reservoir has accumulated a sediment volume of 42,179 acre-feet below elevation 2993.00. This volume represents a 4.4 percent change in total capacity at this elevation. The revised area-capacity table was put into effect on October 1, 2005, reflecting the new storage levels.

The objectives of operations at Lake Elwell are to provide flood control in cooperation with the Corps of Engineers, to provide fish and wildlife enhancement to the area, and supply water for irrigation and municipal uses. The reservoir is operated under the following criteria and limitations:

1. Whenever an adequate water supply is available, Tiber Dam and Reservoir is operated to maintain a minimum flow of 500 cfs or more in the Marias River immediately below Tiber Dam to provide a healthy river fishery. When an adequate water supply is not available to maintain a release of 500 cfs, releases will be reduced to 380 cfs during the irrigation season and to 320 cfs during the non-irrigation season. During periods of extreme extended drought it may be necessary to reduce releases to as low as 250 cfs during the non-irrigation season.

2. During unusually low runoff years, the reservoir may not fill in order to maintain the desired or minimum flow levels.

3. Based on monthly seasonal water supply forecasts prepared during January through June, releases are adjusted to allow storage to fill to elevation 2993 (925,649 acre-feet) (top of joint-use pool) by the end of June.

4. To minimize lowland flooding, maximum releases are currently maintained below 5,500 cfs. The maximum safe channel capacity of the Marias River is currently established as 10,000 cfs.

5. After storage has peaked, usually in June, releases are adjusted to evacuate storage to an elevation between 2976-2980 (667,213-719,885 acre-feet) by March 1. This elevation is dependent upon the monthly water supply forecasts in order to provide adequate space to control the next season's snowmelt runoff.

6. Maintain Tiber Reservoir at or above elevation 2982 (747,953 acre-feet) during Memorial Day Weekend in late May through Labor Day Weekend in early September, to protect flat water recreation interests.

7. During October to early November, set a release that can be reasonably maintained through the fall and winter. A stable flow or one that is gradually increased during the winter is needed to protect the spawning habitat for brown trout. This flow rate should be low enough to minimize the possibility that flows may need to be reduced as a result of below normal winter mountain snowpack and runoff projections.

8. If conditions allow, attempt to maintain stable releases to Marias River during April 1 through May 15 to protect goose nesting.

9. If conditions allow, avoid dropping the reservoir level during April and May, to protect fish spawning in the reservoir.

10. In close coordination with MFWP, whenever an adequate water supply is available and conditions allow, releases will be scheduled to assimilate a natural spring runoff hydrograph which normally occurs in late May or early June.

11. All flood control operations are closely coordinated with the Corps. If the Corps advises that replacement storage is desirable during the maximum probable runoff, releases during the spring runoff period from March through June will be maintained at about 500 cfs, allowing storage to exceed elevation 2993 feet (925,649 acre-feet), the top of the joint use pool.

12. March-June releases are based on forecasted inflows with the objective of filling Lake Elwell to an elevation of 2993 feet (925,649 acre-feet) by the end of June. However, in some years, March-June releases may be based on filling the reservoir to as high as an elevation of 3008 feet (1,227,174 acre-feet) by the end of June, to provide replacement storage and assist the Corps with the operations of their main stem reservoir system.

13. Whenever possible, attempts are made to maintain water temperatures in the Marias River between 55°F and 60°F during June 1 through September 15.

14. To prevent ice jam flooding from occurring, the maximum desired winter release is maintained no higher than 700 cfs.

15. Under normal operations, river releases of up to about 700 cfs will generally be released through the 7.5 MW FERC powerplant. If releases greater than 700 cfs are required, flows in excess of the powerplant capacity will be released through a combination of the river outlet works regulating gate, through the auxiliary outlet works or through the spillway gates.

At the beginning of water year 2010, the storage content in Lake Elwell was 841,617 acre-feet at elevation 2988.18 feet, approximately 107 percent of normal and 91 percent of full capacity. This was 6,515 acre-feet higher than at this same time a year ago.

The most probable October-March inflows to Lake Elwell were estimated to equal 25 percentile inflows or inflows that are historically exceeded 75 percent of the time. Most probable April-September inflows were estimated to equal 30 percentile inflows or inflows that are historically exceeded 70 percent of the time.

The minimum probable October-April inflows to Lake Elwell were estimated to equal inflows that are 25 percent less than the most probable inflows. The minimum probable May-September inflows were estimated to equal 10 percentile inflows or inflows that are historically exceeded 90 percent of the time.

The maximum probable October-April inflows to Lake Elwell were estimated to equal inflows that are 25 percent more than the most probable inflows. The maximum probable May inflows were estimated to equal flows of a median year or a year with a 50 percent chance of being exceeded based on historic records. June-September inflows were estimated to equal 75 percentile inflows or inflows that are historically exceeded 25 percent of the time.

Lake Elwell is not expected to fill during 2010 under the minimum probable runoff conditions, but would fill under the most probable and maximum probable runoff conditions. Water levels under the minimum probable runoff conditions are expected to peak in late June or early July at approximately 6 feet below the top of the joint use pool. Under the most probable and maximum probable runoff conditions, the water level in Lake Elwell is expected to peak in late June or early July at or near the top of the joint use pool. A minimum river release of 500 cfs would be maintained through the winter under the minimum probable runoff conditions. A minimum river release of 600 cfs would be maintained through the winter under the most probable runoff conditions. Under the maximum probable runoff conditions, releases would be maintained at 680 cfs through the winter.

TABLE MTT15

TIBER RESERVOIR OPERATING PLAN
Based on October 1 2009 Inflow Estimates

2010 MINIMUM Probable Inflow Forecast

Tiber Reservoir		Initial Cont Elev	841.6 kaf 2988.18 ft			Maximum Cont Elev	1356.5 kaf 3013.69 ft			Minimum Cont Elev	260.7 kaf 2932.27 ft		
2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	9.2	10.5	8.1	10.0	11.4	23.0	36.8	87.6	61.1	19.9	4.9	4.1	286.6
Evaporation	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
Dam Release	kaf	37.0	29.8	30.7	30.7	27.8	30.7	29.8	30.7	29.8	30.7	30.7	29.8	368.2
Dam Release	cfs	602	501	499	499	501	499	501	499	501	499	499	501	
End-Month Content	kaf	813.8	794.5	771.9	751.2	734.8	727.1	734.1	791.0	822.3	811.5	785.7	760.0	
End-Month Elevation	ft	2986.44	2985.18	2983.65	2982.23	2981.07	2980.52	2981.02	2984.95	2986.98	2986.29	2984.59	2982.84	
Net Change Content	kaf	-27.8	-19.3	-22.6	-20.7	-16.4	-7.7	7.0	56.9	31.3	-10.8	-25.8	-25.7	-81.6

2010 MOST Probable Inflow Forecast

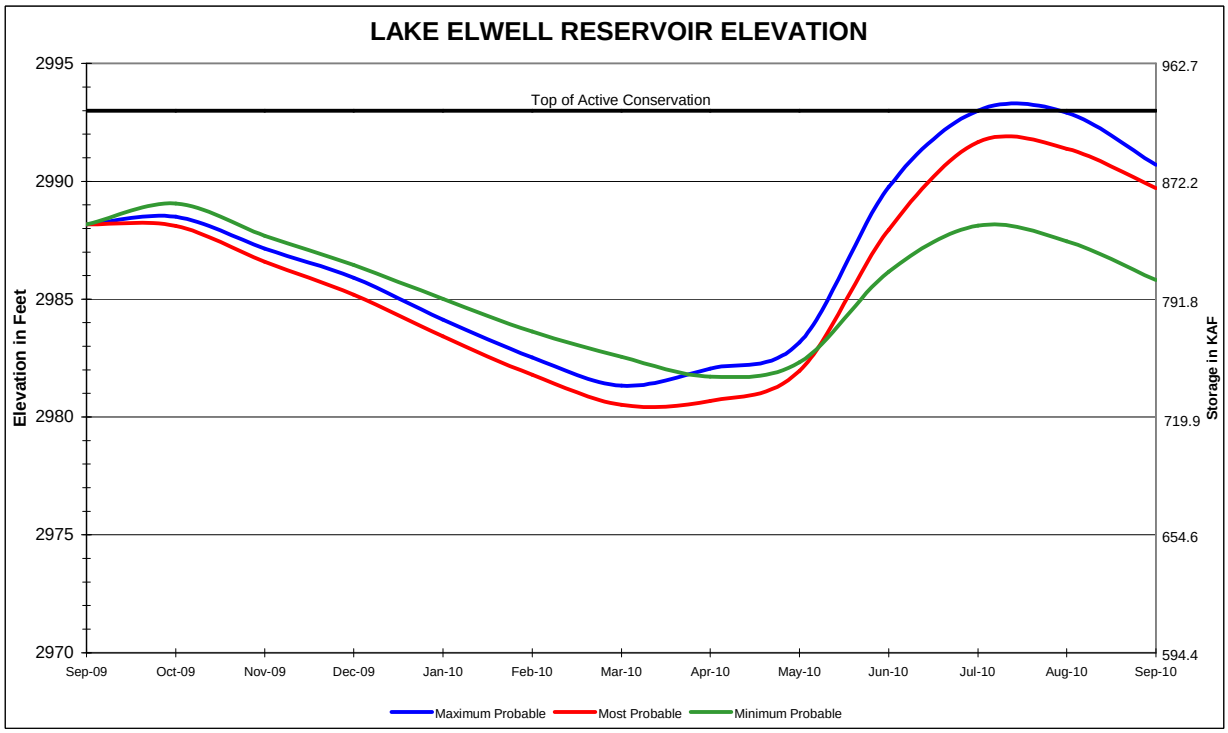
Tiber Reservoir		Initial Cont Elev	841.6 kaf 2988.18 ft			Maximum Cont Elev	1356.5 kaf 3013.69 ft			Minimum Cont Elev	260.7 kaf 2932.27 ft		
2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	12.3	14.0	10.8	13.3	15.2	30.7	49.1	125.3	107.2	36.7	11.8	9.2	435.6
Evaporation	kaf	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
Dam Release	kaf	37.0	35.8	37.0	37.0	33.4	30.7	29.8	30.7	38.7	39.9	39.9	38.7	428.6
Dam Release	cfs	602	602	602	602	601	499	501	499	650	649	649	650	
End-Month Content	kaf	816.9	795.1	768.9	745.2	727.0	727.0	746.3	840.9	909.4	906.2	878.1	848.6	
End-Month Elevation	ft	2986.64	2985.22	2983.45	2981.81	2980.52	2980.52	2981.88	2988.14	2992.11	2991.93	2990.34	2988.60	
Net Change Content	kaf	-24.7	-21.8	-26.2	-23.7	-18.2	0.0	19.3	94.6	68.5	-3.2	-28.1	-29.5	7.0

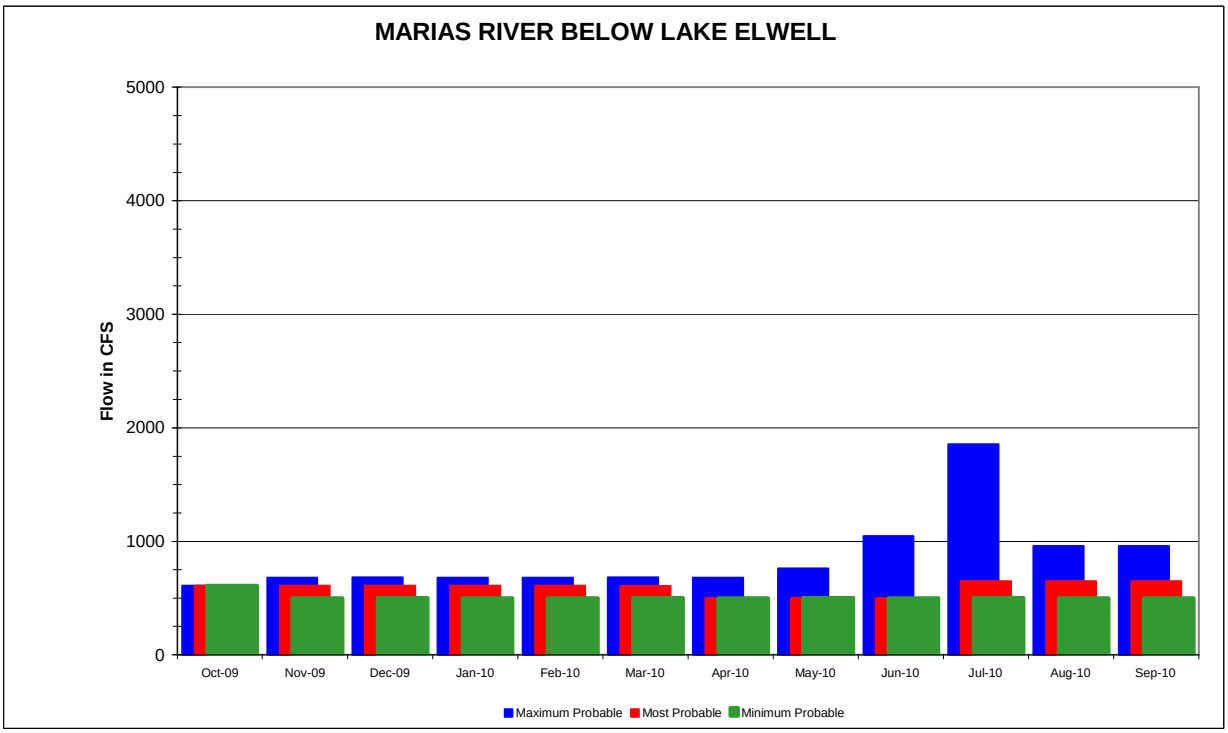
2010 MAXIMUM Probable Inflow Forecast

Tiber Reservoir		Initial Cont Elev	841.6 kaf 2988.18 ft			Maximum Cont Elev	1356.5 kaf 3013.69 ft			Minimum Cont Elev	260.7 kaf 2932.27 ft		
2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	15.4	17.5	13.5	16.6	19.0	38.4	61.4	162.9	273.2	87.3	26.5	20.7	752.4
Evaporation	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
Dam Release	kaf	36.9	40.5	41.8	41.8	37.8	41.8	40.5	93.1	159.7	139.6	115.3	39.8	828.6
Dam Release	cfs	600	681	680	680	681	680	681	1514	2684	2270	1875	669	
End-Month Content	kaf	820.1	797.1	768.8	743.6	724.8	721.4	742.3	812.1	925.6	873.3	784.5	765.4	
End-Month Elevation	ft	2986.84	2985.35	2983.44	2981.69	2980.36	2980.11	2981.60	2986.33	2993.00	2990.06	2984.51	2983.21	
Net Change Content	kaf	-21.5	-23.0	-28.3	-25.2	-18.8	-3.4	20.9	69.8	113.5	-52.3	-88.8	-19.1	-76.

FIGURE MTG16

LAKE ELWELL





WATER YEAR 2010

Milk River Project

The 120,000-acre Milk River Project is served by three reservoirs: Sherburne, Fresno, and Nelson. All are single-purpose irrigation structures except Fresno, which has some joint-use flood control space and furnishes a small amount of municipal water to Havre, Chinook, and Harlem, Montana, and to the Hill County Water District.

Lake Sherburne

Storage on September 30, 2009 was 13,668 acre-feet, 163 percent of normal at elevation 4746.44. The total inflow to Lake Sherburne during water year 2009 was 104,193 acre-feet, 72 percent of normal. The division of the waters of the St. Mary River, including Lake Sherburne inflow, is carried out in accordance with the Order of the International Joint Commission dated October 4, 1921. There are no agreements for reservoir releases specifically for fish, wildlife, or recreation purposes. There is no minimum release requirement. All stored water is required for irrigation use, and other uses are incidental. Lake Sherburne lands are administered for recreation and wildlife habitat by the National Park Service in accordance with the management plan for Glacier National Park. Lake Sherburne is operated under the following criteria:

1. Near the end of the spring runoff, the discharge should be regulated based on snow measurements and inflow forecasts to insure filling the reservoir to elevation 4788.00. The final reservoir filling up to elevation 4788.00 should be delayed until near the end of the spring runoff. During this final phase, care should be taken to avoid use of the outlet works overflow crest because of less desirable hydraulic flow conditions which develop in the conduit. When the water surface reaches elevation 4788.00, the outlet gates must be opened to the extent necessary to maintain this elevation. If reservoir inflows continue to increase, the outlet gates must be fully opened and maintained in the full open position until the water surface recedes to elevation 4788.00.

2. Every effort must be made to prevent the reservoir from spilling while assuring a full reservoir. During all stages, except the final stage of the spring runoff, the outlet gates should be adjusted to maintain the water surface no higher than elevation 4788.00. The outlet gates should be fully opened during the spring runoff when the water surface rises to or above elevation 4788.00 and fully open at any time the water surface is above elevation 4788.00. Three operating plans were prepared for 2010 to show the operations which could occur under various runoff conditions. These plans were prepared to show the probable limits of operations, therefore, actual conditions and operations could vary widely from the plans.

The most probable plan estimates October and December inflows increasing from 10 percentile to 25 percentile values. The January-April inflows are estimated to increase from 25 percentile to 30 percentile values. The May-July inflows are estimated to equal median flows. August and September inflows are estimated to be equal to the 30 percentile values.

October flows for the St. Mary River near the International Boundary are estimated to equal approximately 25 percentile flows and November-April are estimated to equal 30 percentile flows. May and June flows are estimated at median values, while July through September flows are estimated at 30 percentile values.

The minimum probable October inflow is estimated to be near record low. The November through September inflows to Lake Sherburne were estimated to equal 10 percentile inflows or inflows that are exceeded 90 percent of the time. October through September flows in the St. Mary River near the International Boundary is also estimated to equal 12.5 percentile flows.

The maximum probable October through September inflows to Lake Sherburne are estimated to equal 90 percentile flows or inflows that are exceeded 10 percent of the time. October through April flows in the St. Mary River near the International Boundary are estimated to transition from flows equal to 60 percentile flows, to 74 percentile flows by June, and then back to 50 percentile flows by September.

Fresno Reservoir

Storage in Fresno Reservoir was 41,114 acre-feet, 103 percent of normal at elevation 2559.94, by the end of water year 2009. The natural runoff of the Milk River at the Eastern Crossing, which is immediately upstream of Fresno Reservoir, is computed as part of the International Joint Commission accounting and published in associated report each subsequent water year. The initial estimate of natural flow at Eastern Crossing for water year 2009 is approximately 61,859 acre-feet.

The storage is primarily for irrigation and municipal water supply. However, the operation of the joint use storage space does provide both conservation use and limited flood control benefits. There is no exclusive flood control space, but some flood benefits are obtained by maintaining the water level below elevation 2567.0 by March 1, prior to spring runoff. Maintaining the water level below elevation 2567.0 provides 32,534 acre-feet of space for storage of spring runoff.

Winter releases will be the amount necessary to provide a minimum of 32,534 acre-feet of space before spring runoff begins, however no less than 25 cfs to the Milk River as measured at the highway bridge at Havre. An anticipated release of 35 to 45 cfs will be made from Fresno Reservoir during October through February to meet contractual amounts required for the maintenance of suitable water quality for municipal use for the cities of Havre, Chinook, and Harlem, Montana. After spring runoff begins, releases will be made only to meet conservation requirements until it becomes obvious that the reservoir will fill and spill. At that time, releases will be gradually increased so that spill will be minimized when the pool rises above the spillway crest.

The only required summer releases will be those for irrigation and municipal uses. Municipal requirements are established by contract and scheduled in advance by the municipal water contractors.

The most probable inflows during October through August are estimated to transition from 50 percentile flows to 30 percentile flows, and then hold at that level through September.

The minimum probable inflows during October through September to Fresno Reservoir are estimated to equal 12.5 percentile inflows that transition to 25 percentile inflows.

The maximum probable inflows during October through January to Fresno Reservoir are estimated to equal median flow conditions. The February-September inflows are estimated to equal 60 percentile inflows or inflows that have historically been exceeded 40 percent of the time.

Nelson Reservoir

Storage in Nelson Reservoir on September 30, 2008 was 71,228 acre-feet, 126 percent of average at elevation 22179.73. Nelson Reservoir is filled in the spring, prior to the irrigation season, utilizing Dodson South Canal to convey water from the Milk River to the reservoir. Under most circumstances, water is transferred from storage in Fresno Reservoir in the early spring instead of in the fall to minimize seepage losses from Nelson Reservoir during the winter. However, if water is available in Fresno Reservoir after the irrigation season, it may be transferred to Nelson Reservoir to ensure a full supply for the following irrigation season. Nelson Reservoir is operated to satisfy irrigation demands and all other uses are incidental to irrigation. In conjunction with delivering water to Nelson Reservoir, water is conveyed through the Dodson South Canal to provide the Bowdoin Wildlife Refuge adequate water for migratory birds. Bowdoin usually receives a proportional share of their full contract allotment, 3,500 acre-feet, based on the irrigation supply. The operation of Nelson Reservoir and delivery to Bowdoin is integrated with the operation of Fresno Reservoir and Lake Sherburne to ensure maximum utilization of expected runoff.

Irrigation shortages are not expected to occur under the maximum or most probable expected runoff, but may occur under the minimum probable expected runoff. Lake Sherburne is expected to fill under the maximum and most probable runoff, but not under the minimum probable. Fresno Reservoir is expected to fill under the maximum and most probable expected, but not under the minimum expected runoff. These operations for the three runoff conditions are shown in Table MTT16A-C and Figure MTG17-18. Water will need to be transferred to Nelson Reservoir during early spring of 2010 to provide water for those users dependent on a full and supplemental supply from Nelson Reservoir. The projected transfer of water during March and April is anticipated to be approximately 18,000-30,000 acre-feet for all three operational plans depending on irrigation allotments and available natural runoff.

TABLE MTT16A

MILK RIVER BASIN OPERATING PLAN
Based on October 1 Inflow Estimates

2010 Minimum Probable Runoff

Sherburne Reservoir		Initial Cont		13.7 kaf		Maximum Cont		66.2 kaf		Minimum Cont		3.1 kaf		
				Elev	4746.48 ft			Elev	4788.03 ft			Elev	4731.73 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	4.0	3.0	3.0	2.5	1.6	2.4	8.5	24.9	28.1	14.8	6.6	4.1	103.5
Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	28.2	22.7	18.1	33.8	7.2	4.1	114.1
Release	cfs	0	0	0	0	0	0	474	369	304	550	117	69	
Net Change Content	kaf	4.0	3.0	3.0	2.5	1.6	2.4	-19.7	2.2	10.0	-19.0	-0.6	0.0	-10.6
End-Month Content	kaf	17.7	20.7	23.7	26.2	27.8	30.2	10.5	12.7	22.7	3.7	3.1	3.1	
End-Month Elevation	ft	4750.90	4754.01	4756.95	4759.29	4760.75	4762.89	4742.62	4745.31	4755.98	4732.81	4731.73	4731.73	
St. Mary River	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
St. Mary Gain	kaf	10.0	6.3	5.3	3.8	4.6	4.6	8.0	73.8	88.0	45.1	22.5	13.9	285.9
Nat. flow at bound.	kaf	14.0	9.3	8.3	6.3	6.2	7.0	16.5	98.7	116.1	59.9	29.1	18.0	389.4
US share	kaf	3.5	4.7	4.2	3.2	3.1	3.5	4.1	39.1	48.1	19.7	7.3	4.5	145.0
Can share	kaf	10.5	4.6	4.1	3.1	3.1	3.5	12.4	59.6	68.0	40.2	21.8	13.5	244.4
Can del.	kaf	10.0	4.6	4.1	3.1	3.1	3.5	12.4	59.6	68.0	40.2	21.8	13.5	243.9
Excess to Canada	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
US share to Canada	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
Max canal flow	cfs	200	0	0	0	0	0	650	650	640	630	630	500	
Desired canal div	cfs	0	0	0	0	0	0	400	600	640	630	550	343	
St. Mary Canal Div	cfs	0	0	0	0	0	0	400	600	640	629	128	76	
St. Mary Canal Div	kaf	0.0	0.0	0.0	0.0	0.0	0.0	23.8	36.9	38.1	38.7	7.9	4.5	149.9

Fresno Reservoir		Initial Cont		41.1 kaf		Maximum Cont		97.0 kaf		Minimum Cont		0.5 kaf		
				Elev	2559.93 ft			Elev	2575.83 ft			Elev	2530.27 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Milk R. runoff	kaf	1.7	1.1	0.8	0.5	1.2	6.0	8.8	8.7	7.4	1.9	1.2	2.1	41.4
From St. Mary Canal	kaf	0.0	0.0	0.0	0.0	0.0	0.0	21.4	33.2	34.3	34.8	7.1	4.1	134.9
Total inflow	kaf	1.7	1.1	0.8	0.5	1.2	6.0	30.2	41.9	41.7	36.7	8.3	6.2	176.3
Release	kaf	2.6	2.6	2.6	2.6	2.4	2.6	8.9	24.3	48.9	55.3	28.9	10.3	192.0
Release	cfs	42	44	42	42	43	42	150	395	822	899	470	173	
Project irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	34.0	38.8	19.0	5.3	109.5
Bowdoin WR req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	2.5
Ft Belknap irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	4.0	1.0	4.0	11.0
Nelson transfer	kaf	0.0	0.0	0.0	0.0	0.0	0.0	8.0	10.0	8.0	9.0	7.0	1.0	43.0
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.5	12.4	36.0	42.8	20.0	9.3	123.0
Fresno bypass	kaf	3.6	2.6	2.6	2.6	2.4	7.6	0.0	0.0	0.0	0.0	0.0	1.9	23.3
Irrigation shortage	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
Net Change Content	kaf	-0.9	-1.5	-1.8	-2.1	-1.2	3.4	21.3	17.6	-7.2	-18.6	-20.6	-4.1	-15.7
End-Month Content	kaf	40.2	38.7	36.9	34.8	33.6	37.0	58.3	75.9	68.7	50.1	29.5	25.4	
End-Month Elevation	ft	2559.54	2558.89	2558.08	2557.12	2556.56	2558.13	2566.36	2571.21	2569.39	2563.50	2554.55	2552.38	

Nelson Reservoir		Initial Cont		71.3 kaf		Maximum Cont		79.0 kaf		Minimum Cont		18.0 kaf		
				Elev	2219.77 ft			Elev	2221.61 ft			Elev	2199.91 ft	
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Nelson delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	7.7	9.9	8.0	8.7	6.9	1.0	42.2
Nelson Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	8.4	14.2	9.5	1.2	41.4
Malta irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	5.6	9.8	6.2	0.6	27.6
Glasgow irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.8	4.4	3.3	0.6	13.8
Net Change Content	kaf	-1.8	-1.8	-1.8	-1.8	-1.7	-1.8	5.9	0.0	-2.2	-7.3	-4.4	-2.0	-20.7
End-Month Content	kaf	69.5	67.7	65.9	64.1	62.4	60.6	66.5	66.5	64.3	57.0	52.6	50.6	
End-Month Elevation	ft	2219.33	2218.87	2218.42	2217.95	2217.51	2217.03	2218.57	2218.57	2218.00	2216.05	2214.81	2214.22	

TABLE MTT16B

MILK RIVER BASIN OPERATING PLAN
Based on October 1 Inflow Estimates

2010 Most Probable Runoff

Sherburne Reservoir		Initial Cont		13.7 kaf		Maximum Cont		66.2 kaf		Minimum Cont		3.1 kaf		
			Elev	4746.48 ft			Elev	4788.03 ft			Elev	4731.73 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	4.0	3.0	3.0	2.5	1.6	2.4	8.5	24.9	28.1	14.8	6.6	4.1	103.5
Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	28.2	22.7	18.1	33.8	7.2	4.1	114.1
Release	cfs	0	0	0	0	0	0	474	369	304	550	117	69	
Net Change Content	kaf	4.0	3.0	3.0	2.5	1.6	2.4	-19.7	2.2	10.0	-19.0	-0.6	0.0	-10.6
End-Month Content	kaf	17.7	20.7	23.7	26.2	27.8	30.2	10.5	12.7	22.7	3.7	3.1	3.1	
End-Month Elevation	ft	4750.90	4754.01	4756.95	4759.29	4760.75	4762.89	4742.62	4745.31	4755.98	4732.81	4731.73	4731.73	
St. Mary River	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
St. Mary Gain	kaf	10.0	6.3	5.3	3.8	4.6	4.6	8.0	73.8	88.0	45.1	22.5	13.9	285.9
Nat. flow at bound.	kaf	14.0	9.3	8.3	6.3	6.2	7.0	16.5	98.7	116.1	59.9	29.1	18.0	389.4
US share	kaf	3.5	4.7	4.2	3.2	3.1	3.5	4.1	39.1	48.1	19.7	7.3	4.5	145.0
Can share	kaf	10.5	4.6	4.1	3.1	3.1	3.5	12.4	59.6	68.0	40.2	21.8	13.5	244.4
Can del.	kaf	10.0	4.6	4.1	3.1	3.1	3.5	12.4	59.6	68.0	40.2	21.8	13.5	243.9
Excess to Canada	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
US share to Canada	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
Max canal flow	cfs	200	0	0	0	0	0	650	650	640	630	630	500	
Desired canal div	cfs	0	0	0	0	0	0	400	600	640	630	550	343	
St. Mary Canal Div	cfs	0	0	0	0	0	0	400	600	640	629	128	76	
St. Mary Canal Div	kaf	0.0	0.0	0.0	0.0	0.0	0.0	23.8	36.9	38.1	38.7	7.9	4.5	149.9

Fresno Reservoir		Initial Cont		41.1 kaf		Maximum Cont		97.0 kaf		Minimum Cont		0.5 kaf		
			Elev	2559.93 ft			Elev	2575.83 ft			Elev	2530.27 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Milk R. runoff	kaf	1.7	1.1	0.8	0.5	1.2	6.0	8.8	8.7	7.4	1.9	1.2	2.1	41.4
From St. Mary Canal	kaf	0.0	0.0	0.0	0.0	0.0	0.0	21.4	33.2	34.3	34.8	7.1	4.1	134.9
Total inflow	kaf	1.7	1.1	0.8	0.5	1.2	6.0	30.2	41.9	41.7	36.7	8.3	6.2	176.3
Release	kaf	2.6	2.6	2.6	2.6	2.4	2.6	8.9	24.3	48.9	55.3	28.9	10.3	192.0
Release	cfs	42	44	42	42	43	42	150	395	822	899	470	173	
Project irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	34.0	38.8	19.0	5.3	109.5
Bowdoin WR req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	2.5
Ft Belknap irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	4.0	1.0	4.0	11.0
Nelson transfer	kaf	0.0	0.0	0.0	0.0	0.0	0.0	8.0	10.0	8.0	9.0	7.0	1.0	43.0
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.5	12.4	36.0	42.8	20.0	9.3	123.0
Fresno bypass	kaf	3.6	2.6	2.6	2.6	2.4	7.6	0.0	0.0	0.0	0.0	0.0	1.9	23.3
Irrigation shortage	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
Net Change Content	kaf	-0.9	-1.5	-1.8	-2.1	-1.2	3.4	21.3	17.6	-7.2	-18.6	-20.6	-4.1	-15.7
End-Month Content	kaf	40.2	38.7	36.9	34.8	33.6	37.0	58.3	75.9	68.7	50.1	29.5	25.4	
End-Month Elevation	ft	2559.54	2558.89	2558.08	2557.12	2556.56	2558.13	2566.36	2571.21	2569.39	2563.50	2554.55	2552.38	

Nelson Reservoir		Initial Cont		71.3 kaf		Maximum Cont		79.0 kaf		Minimum Cont		18.0 kaf		
			Elev	2219.77 ft			Elev	2221.61 ft			Elev	2199.91 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Nelson delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	7.7	9.9	8.0	8.7	6.9	1.0	42.2
Nelson Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	8.4	14.2	9.5	1.2	41.4
Malta irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	5.6	9.8	6.2	0.6	27.6
Glasgow irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.8	4.4	3.3	0.6	13.8
Net Change Content	kaf	-1.8	-1.8	-1.8	-1.8	-1.7	-1.8	5.9	0.0	-2.2	-7.3	-4.4	-2.0	-20.7
End-Month Content	kaf	69.5	67.7	65.9	64.1	62.4	60.6	66.5	66.5	64.3	57.0	52.6	50.6	
End-Month Elevation	ft	2219.33	2218.87	2218.42	2217.95	2217.51	2217.03	2218.57	2218.57	2218.00	2216.05	2214.81	2214.22	

TABLE MTT16C

MILK RIVER BASIN OPERATING PLAN
Based on October 1 Inflow Estimates

2010 Maximum Probable Runoff

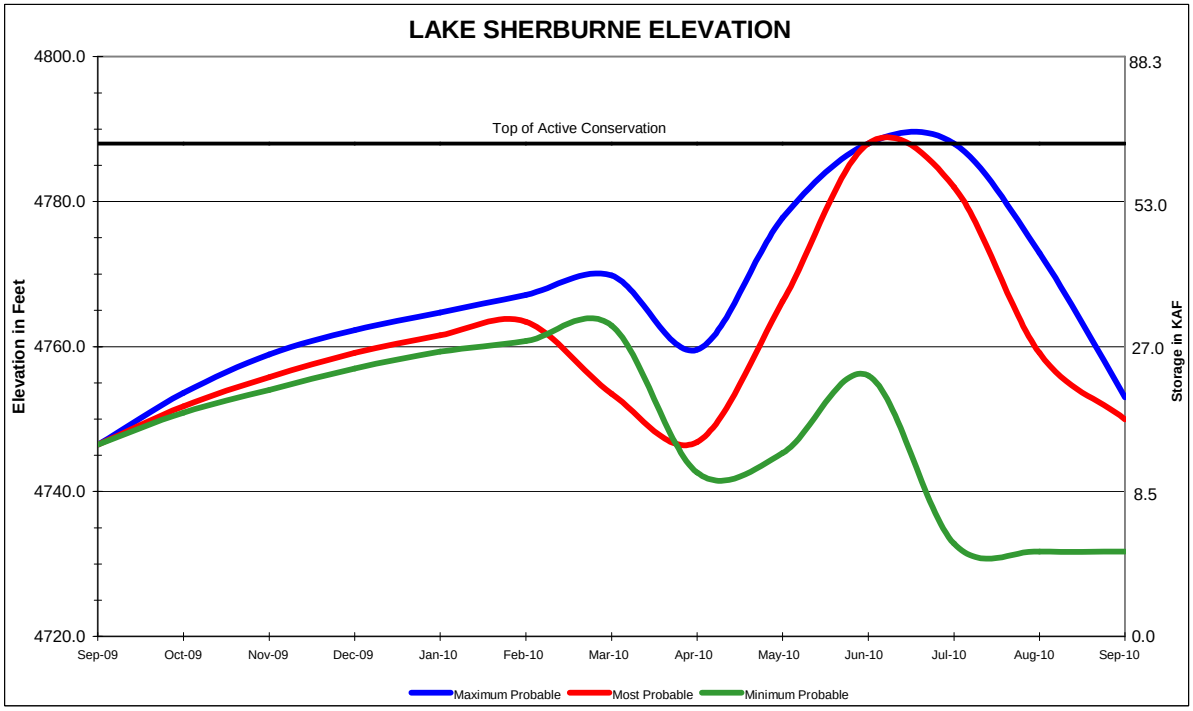
Sherburne Reservoir		Initial Cont		13.7 kaf		Maximum Cont		66.2 kaf		Minimum Cont		3.1 kaf		
			Elev	4746.48 ft			Elev	4788.03 ft			Elev	4731.73 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	6.6	5.5	3.7	2.8	2.9	3.3	9.6	35.4	49.9	24.5	11.0	7.4	162.6
Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	21.6	12.3	33.3	24.5	34.6	30.3	156.6
Release	cfs	0	0	0	0	0	0	363	200	560	398	563	509	
Net Change Content	kaf	6.6	5.5	3.7	2.8	2.9	3.3	-12.0	23.1	16.6	0.0	-23.6	-22.9	6.0
End-Month Content	kaf	20.3	25.8	29.5	32.3	35.2	38.5	26.5	49.6	66.2	66.2	42.6	19.7	
End-Month Elevation	ft	4753.60	4758.92	4762.27	4764.70	4767.14	4769.81	4759.57	4777.77	4788.03	4788.03	4772.92	4752.99	
St. Mary River	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
St. Mary Gain	kaf	19.5	13.3	13.2	10.4	9.3	11.2	33.9	125.2	170.6	103.4	42.4	19.2	571.6
Nat. flow at bound.	kaf	26.1	18.8	16.9	13.2	12.2	14.5	43.5	160.6	220.5	127.9	53.4	26.6	734.2
US share	kaf	6.5	9.4	8.5	6.6	6.1	7.3	11.8	70.0	100.3	53.7	16.4	6.7	303.3
Can share	kaf	19.6	9.4	8.4	6.6	6.1	7.2	31.7	90.6	120.2	74.2	37.0	19.9	430.9
Can del.	kaf	19.4	9.4	8.4	6.6	6.1	7.2	31.7	90.6	120.2	74.2	37.0	18.3	429.1
Excess to Canada	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8	13.7	0.0	0.0	45.5
US share to Canada	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	13.7	0.0	0.0	58.7
Max canal flow	cfs	200	0	0	0	0	0	650	650	650	650	650	600	
Desired canal div	cfs	0	0	0	0	0	0	400	500	650	650	650	525	
St. Mary Canal Div	cfs	0	0	0	0	0	0	400	563	650	651	651	524	
St. Mary Canal Div	kaf	0.0	0.0	0.0	0.0	0.0	0.0	23.8	34.6	38.7	40.0	40.0	31.2	208.3

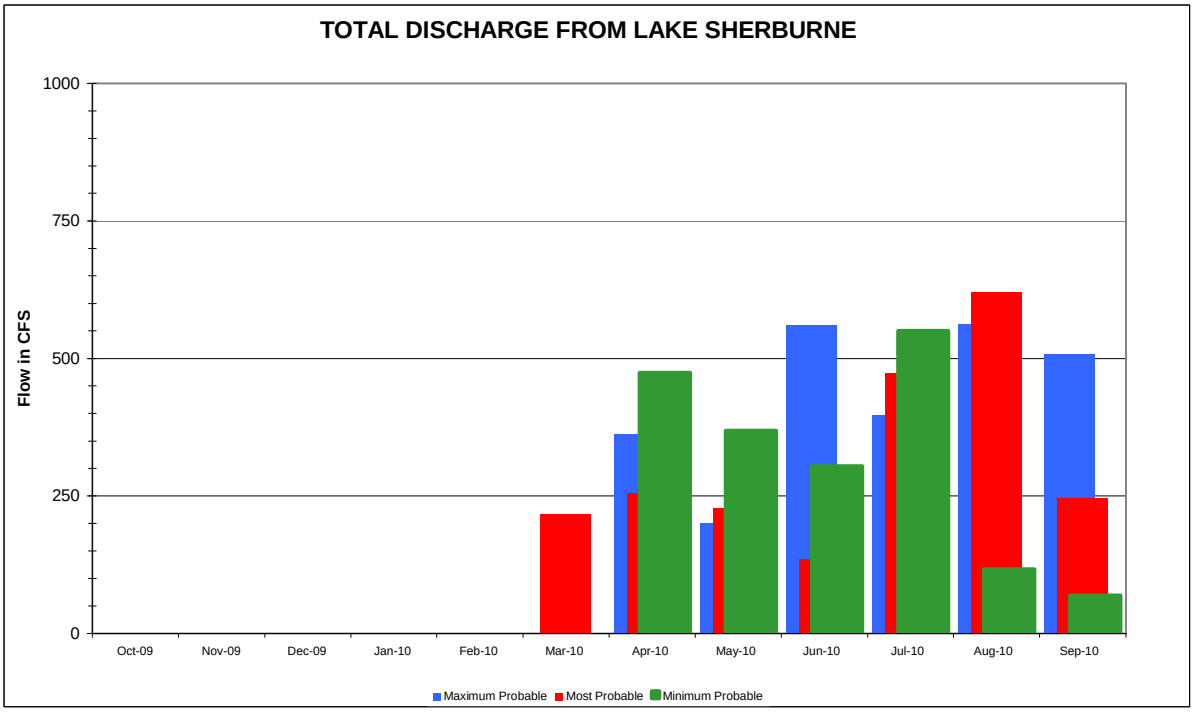
Fresno Reservoir		Initial Cont		41.1 kaf		Maximum Cont		97.0 kaf		Minimum Cont		0.5 kaf		
			Elev	2559.93 ft			Elev	2575.83 ft			Elev	2530.27 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Milk R. runoff	kaf	8.0	3.6	2.6	1.9	5.2	21.9	25.0	25.0	19.7	9.5	4.7	9.0	136.1
From St. Mary Canal	kaf	0.0	0.0	0.0	0.0	0.0	0.0	21.4	31.1	34.8	36.0	36.0	28.1	187.4
Total inflow	kaf	8.0	3.6	2.6	1.9	5.2	21.9	46.4	56.1	54.5	45.5	40.7	37.1	323.5
Release	kaf	2.6	2.6	2.6	2.6	2.4	2.6	22.4	56.1	76.8	65.6	51.0	37.0	324.3
Release	cfs	42	44	42	42	43	42	376	912	1291	1067	829	622	
Project irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	60.1	49.0	34.9	29.3	195.1
Bowdoin WR req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.5	0.0	0.0	0.0	0.0	3.5
Ft Belknap irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	5.0	4.0	13.0
Nelson transfer	kaf	0.0	0.0	0.0	0.0	0.0	10.0	18.0	16.0	14.0	12.0	12.0	3.0	85.0
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	2.0	23.3	60.1	53.0	39.9	33.3	211.6
Fresno bypass	kaf	9.6	2.6	2.6	2.6	2.4	6.5	23.9	19.6	0.0	0.0	0.0	1.7	71.5
Irrigation shortage	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
Net Change Content	kaf	5.4	1.0	0.0	-0.7	2.8	19.3	24.0	0.0	-22.3	-20.1	-10.3	0.1	-0.8
End-Month Content	kaf	46.5	47.5	47.5	46.8	49.6	68.9	92.9	92.9	70.6	50.5	40.2	40.3	
End-Month Elevation	ft	2562.14	2562.53	2562.53	2562.26	2563.32	2569.44	2575.00	2575.00	2569.90	2563.67	2559.54	2559.59	

Nelson Reservoir		Initial Cont		71.3 kaf		Maximum Cont		79.0 kaf		Minimum Cont		18.0 kaf		
			Elev	2219.77 ft			Elev	2221.61 ft			Elev	2199.91 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Nelson delivery	kaf	0.0	0.0	0.0	0.0	0.0	10.0	10.2	15.8	13.5	11.4	11.4	3.0	75.3
Nelson Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	14.7	25.9	15.3	3.1	73.0
Malta irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	9.8	17.3	9.8	2.2	48.7
Glasgow irr req	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	4.9	8.6	5.5	0.9	24.3
Net Change Content	kaf	-1.8	-1.8	-1.8	-1.8	-1.7	8.2	8.4	0.0	-3.0	-16.3	-5.7	-1.9	-19.2
End-Month Content	kaf	69.5	67.7	65.9	64.1	62.4	70.6	79.0	79.0	76.0	59.7	54.0	52.1	
End-Month Elevation	ft	2219.33	2218.87	2218.42	2217.95	2217.51	2219.60	2221.61	2221.61	2220.91	2216.79	2215.21	2214.66	

FIGURE MTG17

LAKE SHERBURNE

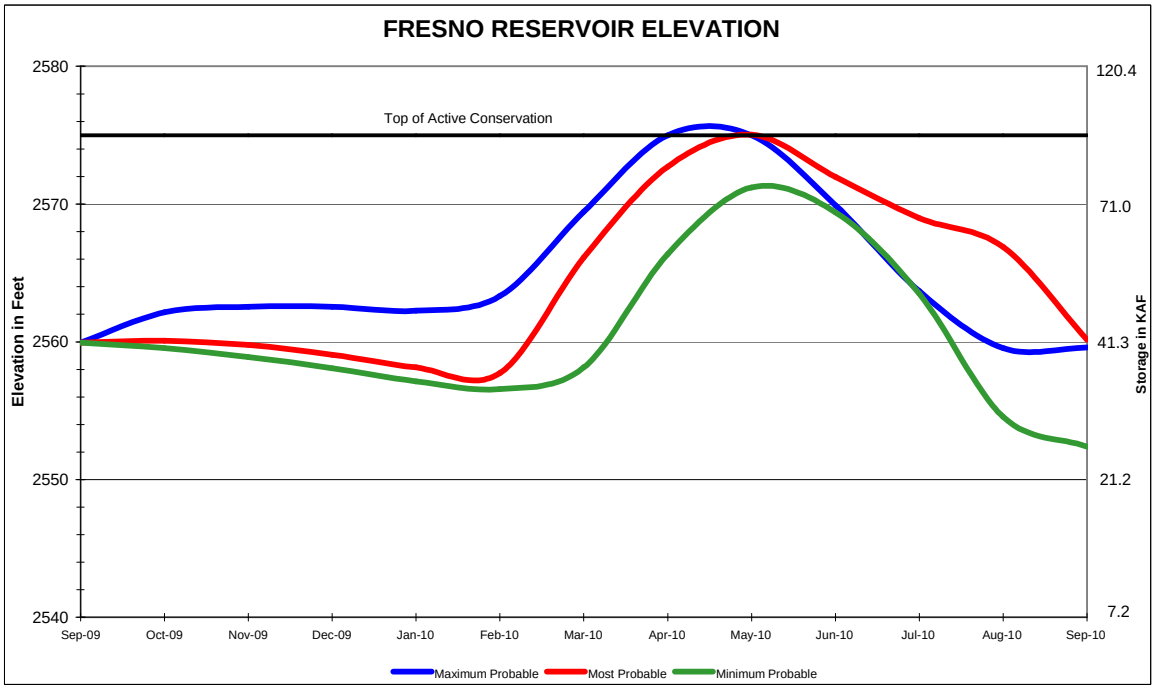


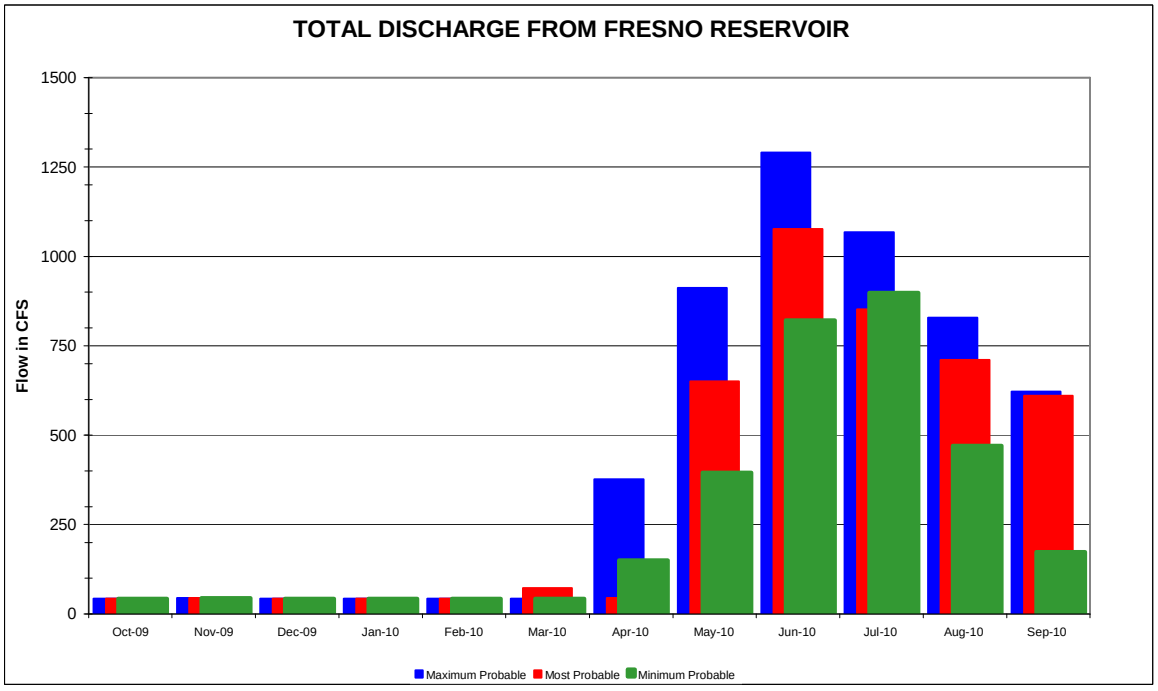


WATER YEAR 2010

FIGURE MTG18

FRESNO RESERVOIR





WATER YEAR 2010

Bighorn Lake and Yellowtail Powerplant

Three operating plans were prepared for 2010 to show the operations of Bighorn Lake which could occur under various runoff conditions. These operations for the three runoff conditions are shown in Tables MTT17A-C and Figure MTG19. These plans were prepared only to show the probable limits of operations and therefore, actual conditions and operations could vary widely from the plans in order to conform with the authorized project purposes and the current general operating criteria established for Yellowtail Dam and Bighorn Lake.

The objectives of operations at Yellowtail are to meet all contractual and agreement obligations, all conservation commitments, to optimize generation, provide flood control in cooperation with the Corps of Engineers, and meet fish, wildlife, and recreational needs. The reservoir is operated under the following criteria and limitations:

(1) Beginning near the first of January and at least monthly thereafter through June, forecasts are made of the estimated spring inflow from snow cover and precipitation data. When these forecasts become available, Yellowtail Dam and Bighorn Lake is managed and regulated to allow storage to fill to the top of the joint-use pool at elevation 3640 (1,070,029 acre-feet) and prevent storage in Bighorn Lake from exceeding this level until the peak of the runoff has passed or has begun to recede. If releases in excess of full powerplant capacity are required, they are made only to the extent that current inflow and reservoir content indicate that spills are required. Depending on when the spring runoff starts and the volume of water forecasted, the release of water may draw Bighorn Lake below elevation 3618.0 (858,442 acre-feet).

(2) Once Bighorn Lake has filled or reached its maximum level during spring runoff (normally late June or early July), it is desirable to adjust the releases to maintain storage near the top of the joint-use pool at elevation 3640 (1,070,029 acre-feet) through October. Maintaining Bighorn Lake near this elevation provides suitable waterfowl habitat, enhances flat-water recreation, enhances habitat for the lake fisheries, and minimizes dust problems around the southern area of Bighorn Lake.

(3) In late fall, a uniform release from Bighorn Lake to the Bighorn River is scheduled during November through March with the objective of evacuating storage to an elevation between 3617-3621 (851,060-881,369 acre-feet) by the end of March, depending on the forecasted snowmelt runoff into Bighorn Lake. This attempt to provide the required storage space needed to safely store the spring runoff while protecting the desired reservoir levels for summer and fall lake recreation activities.

(4) Releases during October and early November are generally maintained at the lowest forecasted minimum release rate to protect the brown trout spawn, if dry winter conditions require reducing releases later during the winter months.

(5) Whenever an adequate water supply is available, releases from Bighorn Lake will be maintained at rates to sustain flows in the Bighorn River at 2,500 cfs or higher. When there is not an adequate water supply available, it may be necessary to reduce releases to the Bighorn River to 2,000 cfs or the absolute minimum flow of 1,500 cfs required to protect a lower quality river fishery. These flow levels affect the river fishery as follows:

2,500 cfs - provides good spawning, rearing, and cover conditions in all major side channels.
2,000 cfs - provides adequate spawning and rearing conditions in most side channels but cover for adult fish is limited.
1,500 cfs - protects main channel habitat but not important side channels.

(6) During years of below normal runoff, storage in Bighorn Lake may not reach the top of the joint-use pool in efforts to protect the desired minimum river fishery flow levels. During some critical dry years, it has been observed that river flows have even been reduced to less than 1,500 cfs to ensure the operation of the Yellowtail powerplant and also provide desirable lake levels for the recreation season.

(7) All water released from Bighorn Lake is generally released through the Yellowtail Powerplant. Releasing any water in excess of the powerplant capacity (normally 7,500-8,200 cfs) is avoided, except during times of unusually heavy inflow or scheduled powerplant maintenance.

(8) For downstream flood control purposes, avoid making releases that would cause flows in the Bighorn River to exceed 20,000 cfs at St. Xavier and 25,000 cfs at Bighorn and 65,000 cfs in the Yellowstone River at Miles City.

(9) During April through October, water is diverted to the Bighorn Canal to meet downstream irrigation demands of the Crow Indian Irrigation Project. Maximum diversions to the Bighorn Canal are limited to a maximum of about 550 cfs.

(10) During low flow years when the Yellowstone River flow rate at Forsyth, Montana, drops below 6,000 cfs anytime between August 10 and September 15, river releases will be increased by 100 cfs to meet contractual commitments with Pennsylvania Power & Light, MT (PPL-MT) concerning their operations of Castle Rock Reservoir at Colstrip Powerplant. This release will continue for approximately 10-30 days.

(11) Every 3 years about mid-October after the irrigation season is over, all storage is evacuated from the Yellowtail Afterbay, except for approximately 190 acre-feet, to allow for the measurement of seepage downstream of Yellowtail Dam. During this time, releases to the Bighorn River are reduced to no lower than 400 cfs for approximately 5½ hours. To minimize effects to downstream water users and landowners, changes in release rates from the Afterbay are done gradually.

(12) Release rates during the winter are generally not changed or fluctuated more than 100 cfs in 6 hours when the downstream river channel is ice covered.

(13) Because the inflow to Bighorn Lake is heavily dependent upon the releases from Boysen and Buffalo Bill Reservoirs, all reservoir and river operations are closely coordinated with the WYAO.

(14) In an Agreement with the Northern Cheyenne Indian Tribe and pursuant to the Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992, Reclamation recognizes 30,000 acre-feet of stored water in Bighorn Reservoir for use or disposition by the Tribe. The United States shall furnish a maximum of 30,000 acre-feet of water annually to the Tribe in accordance with the limitations set forth in the Compact and the Settlement Act.

During May through August, the inflows into Bighorn Lake were well above normal at 153 percent of average. With mountain precipitation in the Bighorn River Basin well below normal in September, inflows into Bighorn Lake during September declined to about 89 percent of average. In response, releases from Bighorn Lake to the Bighorn River during September were maintained near 3,000 cfs, allowing storage in Bighorn Lake to essentially remain near the top of the joint-use pool through the end of water year 2009. On September 30, 2009, Bighorn Lake ended water year 2009 with a storage content of 1,060,795 acre-feet at elevation 3639.26. This was 0.56 feet and 6,973 acre-feet lower than reported on September 30, 2008.

The forecasted inflows to Bighorn Lake are based upon the natural accretions between Boysen and Buffalo Bill Reservoirs to Yellowtail Dam plus the projected releases out of Boysen and Buffalo Bill Dams.

The most probable October-September accretions were estimated to equal 85 percent of the long-term historic monthly average October-September accretions.

The minimum probable October-September accretions were estimated to equal 10 percentile historic accretions or accretions that have historically been exceeded 90 percent of the time.

The maximum probable October-March accretions were estimated to equal 45 percentile historic accretions or accretions that have been exceeded 55 percent of the time. The maximum probable April-September accretions were estimated to equal 80 percentile historic accretions or accretions that have historically been exceeded 20 percent of the time.

Under the most probable and maximum probable runoff conditions, storage in Bighorn Lake would be expected to fill to the top of the joint-use pool at elevation 3640 (1,070,029 acre-feet) by the end of July and essentially remain full through September. However, under the minimum probable runoff scenario, Bighorn Lake would be expected to continually slowly fill to near elevation 3629 by the end of September. This would be about 11.0 feet below the top of the joint-use pool. Under the most probable runoff condition, it is anticipated the minimum fall and winter release from Bighorn Lake to the Bighorn River will be maintained at or above 2,700 cfs to better assure the reservoir of filling to the top of the joint-use pool by late June or early July. Under the minimum probable runoff condition, it is anticipated the minimum release from Bighorn Lake to the Bighorn River would need to be decreased to 2,000 cfs during March through June and then further reduced to 1,700 cfs during July through September to best assure the reservoir of filling to levels that would enhance and meet the operating objectives of the lake during water year 2010. Under the most and maximum probable runoff conditions, it is anticipated river releases would be maintained at 2,500 cfs or higher all year.

The average power generation produced annually at Yellowtail Powerplant during 1967-2009 is 863.0 million kilowatt-hours. Under the minimum probable runoff conditions, power generation produced at Yellowtail Powerplant during 2010 would be expected to be about 213.7 million kilowatt-hours less than average. Under the most and maximum probable runoff conditions, power generation would respectively be about 19.4 and 442.7 million kilowatt-hours greater than average.

In all three plans, maintenance outages are scheduled as shown on Table MTT19. Only under maximum probable runoff conditions, would a spill in excess of full powerplant capacity be expected during these 2010 power outages.

TABLE MTT17A

BIGHORN LAKE OPERATING PLAN
Based on October 1 2009 Inflow Estimates

2010 MINIMUM Probable Runoff

Bighorn Reservoir		Initial Cont Elev	1060.8 kaf 3639.26 ft			Maximum Cont Elev	1328.4 kaf 3657.00 ft			Minimum Cont Elev	300.0 kaf 3547.00 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	55.4	53.6	55.3	55.4	50.0	55.3	53.6	67.6	69.9	76.9	69.2	59.5	721.7
Boysen Release	cfs	901	901	899	901	900	899	901	1099	1175	1251	1125	1000	
Buffalo Bill Release	kaf	43.5	21.1	21.8	21.8	19.7	21.8	31.7	101.2	105.0	118.7	104.3	82.3	692.9
Buffalo Bill Release	cfs	707	355	355	355	355	355	533	1646	1765	1930	1696	1383	
Station Gain	kaf	50.0	35.7	26.6	25.1	28.7	43.9	17.7	14.5	-7.9	-63.8	-42.3	4.8	133.0
Monthly Inflow	kaf	148.9	110.4	103.7	102.3	98.4	121.0	103.0	183.3	167.0	131.8	131.2	146.6	1547.6
Monthly Inflow	cfs	2422	1855	1687	1664	1772	1968	1731	2981	2807	2144	2134	2464	
Turbine Release	kaf	161.7	156.5	161.7	161.7	123.8	118.7	115.4	143.3	141.6	127.9	127.0	115.8	1655.1
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	161.7	156.5	161.7	161.7	123.8	118.7	115.4	143.3	141.6	127.9	127.0	115.8	1655.1
Total Release	cfs	2630	2630	2630	2630	2229	1930	1939	2331	2380	2080	2065	1946	
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	0.6	24.6	26.8	27.7	26.8	18.8	125.3
Afterbay Rels	kaf	166.0	160.7	166.0	166.0	127.7	123.0	119.6	147.6	145.8	132.2	131.3	120.0	1705.9
Afterbay Rels	cfs	2700	2701	2700	2700	2299	2000	2010	2400	2450	2150	2135	2017	
River Release	kaf	166.0	160.7	166.0	166.0	127.7	123.0	119.0	123.0	119.0	104.5	104.5	101.2	1580.6
River Release	cfs	2700	2701	2700	2700	2299	2000	2000	2000	2000	1700	1700	1701	
Min Release	kaf	166.0	160.7	166.0	166.0	127.7	123.0	119.0	123.0	119.0	104.5	104.5	101.2	1580.6
End-Month Targets	kaf	1070.0					879.8			1070.0				
End-Month Content	kaf	1048.0	1001.9	943.9	884.5	859.1	861.4	849.0	889.0	914.4	918.3	922.5	953.3	
End-Month Elevation	ft	3638.21	3634.16	3628.34	3621.39	3618.09	3618.39	3616.72	3621.96	3625.03	3625.48	3625.96	3629.35	
Net Change Content	kaf	-12.8	-46.1	-58.0	-59.4	-25.4	2.3	-12.4	40.0	25.4	3.9	4.2	30.8	-107.5
Yellowtail Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	161.7	156.5	161.7	161.7	123.8	118.7	115.4	143.3	141.6	127.9	127.0	115.8	1655.1
Generation	gwh	65.998	63.312	64.358	63.118	47.612	45.461	44.115	55.056	55.035	49.961	49.678	45.565	649.269
End-Month Power Cap	mw	285.7	281.7	276.0	269.5	266.4	266.7	265.2	270.0	272.9	273.3	273.8	277.0	
% Max Gen		31	31	30	29	25	21	21	26	27	23	23	22	
Ave kwh/af		408	405	398	390	385	383	382	384	389	391	391	393	392
Upstream Generation	gwh	14.884	10.265	10.557	10.483	8.790	10.333	11.889	25.250	25.254	27.601	24.934	20.441	200.681
Total Generation	gwh	80.882	73.577	74.915	73.601	56.402	55.794	56.004	80.306	80.289	77.562	74.612	66.006	849.950

TABLE MTT17B

BIGHORN LAKE OPERATING PLAN
Based on October 1 2009 Inflow Estimates

2010 MOST Probable Runoff

Bighorn Reservoir		Initial Cont Elev	1060.8 kaf 3639.26 ft			Maximum Cont Elev	1328.4 kaf 3657.00 ft			Minimum Cont Elev	493.6 kaf 3547.00 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	55.4	53.6	55.3	55.4	50.0	55.3	71.1	119.7	132.3	121.8	100.3	71.4	941.6
Boysen Release	cfs	901	901	899	901	900	899	1195	1947	2223	1981	1631	1200	
Buffalo Bill Release	kaf	45.4	21.1	21.8	21.8	19.7	21.8	31.7	118.5	163.9	174.0	118.6	107.2	865.5
Buffalo Bill Release	cfs	738	355	355	355	355	355	533	1927	2754	2830	1929	1802	
Station Gain	kaf	59.9	53.0	38.2	39.5	47.0	63.9	29.4	52.1	89.5	-39.6	-37.9	17.5	412.5
Monthly Inflow	kaf	160.7	127.7	115.3	116.7	116.7	141.0	132.2	290.3	385.7	256.2	181.0	196.1	2219.6
Monthly Inflow	cfs	2614	2146	1875	1898	2101	2293	2222	4721	6482	4167	2944	3296	
Turbine Release	kaf	167.0	157.6	162.9	162.9	147.1	162.9	158.2	232.9	234.8	247.0	195.3	181.8	2210.4
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	167.0	157.6	162.9	162.9	147.1	162.9	158.2	232.9	234.8	247.0	195.3	181.8	2210.4
Total Release	cfs	2716	2649	2649	2649	2649	2649	2659	3788	3946	4017	3176	3055	
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	4.1	0.0	0.0	0.0	0.0	0.0	0.6	24.6	26.8	27.7	26.8	18.8	129.4
Afterbay Rels	kaf	171.3	161.8	167.2	167.2	151.0	167.2	162.4	237.2	239.0	251.3	199.6	186.0	2261.2
Afterbay Rels	cfs	2786	2719	2719	2719	2719	2719	2729	3858	4017	4087	3246	3126	
River Release	kaf	167.2	161.8	167.2	167.2	151.0	167.2	161.8	212.6	212.2	223.6	172.8	167.2	2131.8
River Release	cfs	2719	2719	2719	2719	2719	2719	2719	3458	3566	3637	2810	2810	
Min Release	kaf	167.2	148.8	153.7	153.7	138.8	153.7	148.8	153.7	148.8	153.7	153.7	148.8	1823.4
End-Month Targets	kaf	1061.1						852.5			1070.0		1070.0	
End-Month Content	kaf	1054.5	1024.6	977.0	930.8	900.4	878.5	852.5	909.9	1060.8	1070.0	1055.7	1070.0	
End-Month Elevation	ft	3638.74	3636.21	3631.77	3626.90	3623.36	3620.63	3617.20	3624.50	3639.26	3640.00	3638.84	3640.00	
Net Change Content	kaf	-6.3	-29.9	-47.6	-46.2	-30.4	-21.9	-26.0	57.4	150.9	9.2	-14.3	14.3	9.2
Yellowtail Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	167.0	157.6	162.9	162.9	147.1	162.9	158.2	232.9	234.8	247.0	195.3	181.8	2210.4
Generation	gwh	68.226	64.040	65.412	64.437	57.447	63.043	60.704	89.871	93.825	101.140	79.911	74.387	882.443
End-Month Power Cap	mw	286.2	283.7	279.3	274.7	271.3	268.8	265.6	272.4	286.8	287.5	286.3	287.5	
% Max Gen		32	31	31	30	30	29	29	42	45	47	37	36	
Ave kwh/af		409	406	402	396	391	387	384	386	400	409	409	409	399
Upstream Generation	gwh	15.524	10.276	10.585	10.533	8.837	10.435	13.434	32.840	33.868	34.350	32.411	28.716	241.809
Total Generation	gwh	83.750	74.316	75.997	74.970	66.284	73.478	74.138	122.711	127.693	135.490	112.322	103.103	1124.252

TABLE MTT17C

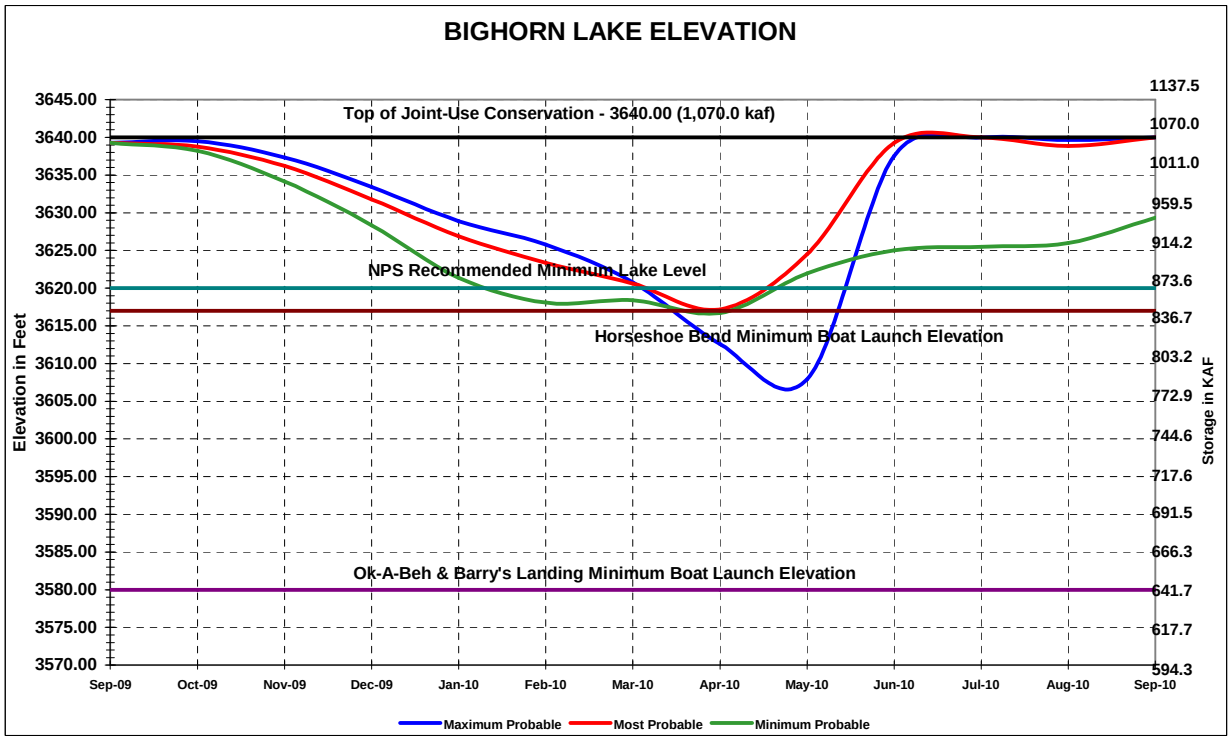
BIGHORN LAKE OPERATING PLAN
Based on October 1 2009 Inflow Estimates

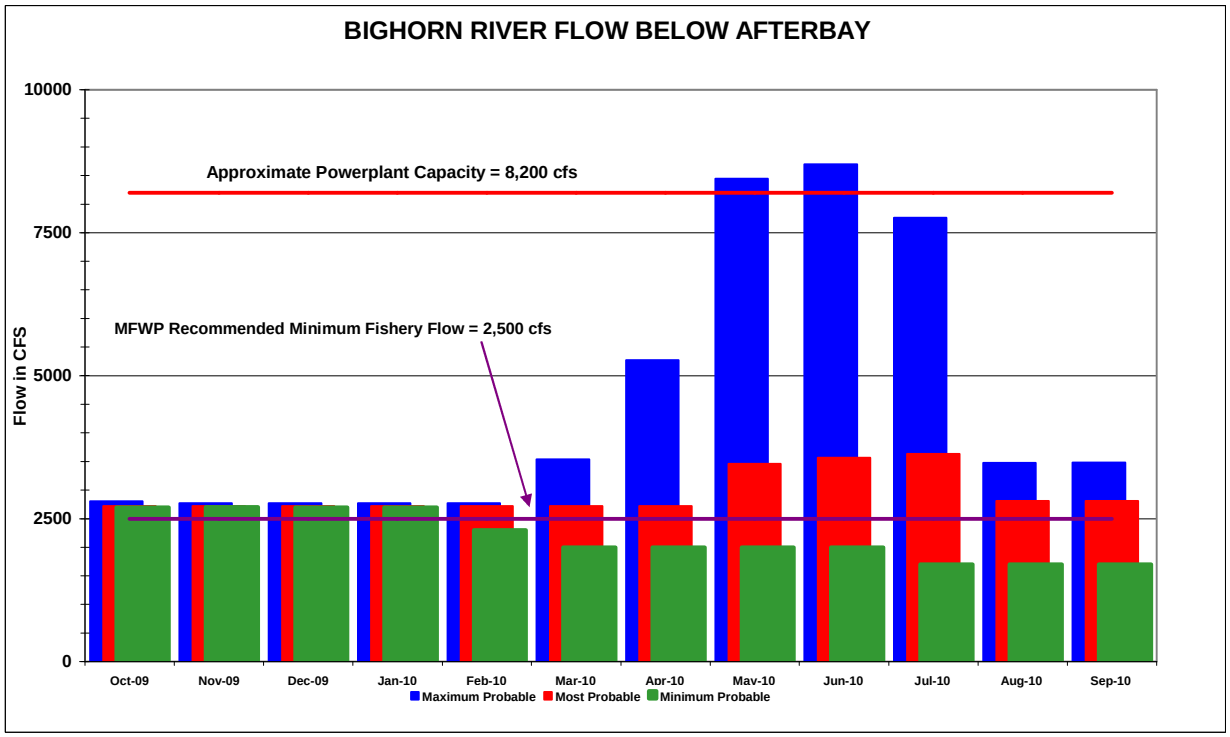
2010 MAXIMUM Probable Runoff

Bighorn Reservoir		Initial Cont Elev	1060.8 kaf 3639.26 ft			Maximum Cont Elev	1328.4 kaf 3657.00 ft			Minimum Cont Elev	493.6 kaf 3547.00 ft		
	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	55.4	53.6	55.4	55.3	50.0	79.2	136.9	218.0	275.1	268.1	119.5	74.3	1440.8
Boysen Release	cfs	901	901	901	899	900	1288	2301	3545	4623	4360	1943	1249	
Buffalo Bill Release	kaf	45.4	21.1	21.8	21.8	19.7	21.8	68.7	172.8	300.5	267.4	145.0	107.6	1213.6
Buffalo Bill Release	cfs	738	355	355	355	355	355	1155	2810	5050	4349	2358	1808	
Station Gain	kaf	70.0	60.0	45.0	44.0	52.0	71.0	44.6	105.6	209.3	-5.0	-32.8	37.4	701.1
Monthly Inflow	kaf	170.8	134.7	122.2	121.1	121.7	172.0	250.2	496.4	784.9	530.5	231.7	219.3	3355.5
Monthly Inflow	cfs	2778	2264	1987	1970	2191	2797	4205	8073	13191	8628	3768	3685	
Turbine Release	kaf	167.9	160.6	166.0	166.0	149.9	213.1	310.0	514.2	503.4	500.5	236.3	214.7	3302.6
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	31.7	0.0	0.0	0.0	43.7
Total Release	kaf	167.9	160.6	166.0	166.0	149.9	213.1	310.0	526.2	535.1	500.5	236.3	214.7	3346.3
Total Release	cfs	2731	2699	2700	2700	2699	3466	5210	8558	8993	8140	3843	3608	
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	0.5	11.2	21.8	27.7	26.8	11.9	99.9
Afterbay Rels	kaf	172.2	164.8	170.3	170.3	153.8	217.4	314.2	530.5	539.3	504.8	240.6	218.9	3397.1
Afterbay Rels	cfs	2801	2770	2770	2770	2769	3536	5280	8628	9063	8210	3913	3679	
River Release	kaf	172.2	164.8	170.3	170.3	153.8	217.4	313.7	519.3	517.5	477.1	213.8	207.0	3297.2
River Release	cfs	2801	2770	2770	2770	2769	3536	5272	8446	8697	7759	3477	3479	
Min Release	kaf	172.2	164.8	170.3	170.3	153.8	170.3	148.8	153.7	148.8	153.7	153.7	148.8	1909.2
End-Month Targets	kaf	1070.0					879.8				1070.0		1070.0	
End-Month Content	kaf	1063.7	1037.8	994.0	949.1	920.9	879.8	820.0	790.2	1040.0	1070.0	1065.4	1070.0	
End-Month Elevation	ft	3639.49	3637.35	3633.42	3628.90	3625.78	3620.80	3612.57	3607.90	3637.54	3640.00	3639.63	3640.00	
Net Change Content	kaf	2.9	-25.9	-43.8	-44.9	-28.2	-41.1	-59.8	-29.8	249.8	30.0	-4.6	4.6	9.2

Yellowtail Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	167.9	160.6	166.0	166.0	149.9	213.1	310.0	514.2	503.4	500.5	236.3	214.7	3302.6
Generation	gwh	68.687	65.478	66.969	66.041	58.925	82.786	118.278	192.904	196.551	204.315	96.824	87.974	1305.732
End-Month Power Cap	mw	287.0	284.8	281.0	276.6	273.6	269.0	261.4	257.1	285.0	287.5	287.1	287.5	
% Max Gen		32	32	31	31	30	39	57	90	95	95	45	42	
Ave kwh/af		409	408	403	398	393	388	382	375	390	408	410	410	395
Upstream Generation	gwh	15.556	10.338	10.670	10.620	8.933	12.562	28.978	33.606	33.740	35.251	34.082	29.046	263.382
Total Generation	gwh	84.243	75.816	77.639	76.661	67.858	95.348	147.256	226.510	230.291	239.566	130.906	117.020	1569.114

FIGURE MTG19
BIGHORN LAKE





WATER YEAR 2010

ENERGY GENERATION OPERATION PLANS

Energy generation at Canyon Ferry and Yellowtail powerplants for conditions of minimum probable, most probable, and maximum probable runoff is expected to vary between 1,225,000,000 and 1,796,000,000 kilowatt-hours as shown in Table MTT18.

Table MTT18

Estimated Energy Generation During Water Year 2010
(Million Kilowatt-hours)

Plant	Minimum Probable Runoff	Most Probable Runoff	Maximum Probable Runoff
Canyon Ferry	307	440	490
Yellowtail	649	821	1,306
Total	1,225	1,261	1,796

Operation of powerplants and transmission facilities in the Eastern and Western Divisions will be coordinated to bring about the most efficient utilization of power production to realize maximum project benefits. It is also anticipated that the marketing from all Federal power systems in the Missouri and Colorado River Basins will be closely coordinated to optimize the revenues to the Federal Government.

Powerplant maintenance is performed periodically throughout the year and the schedule for water year 2010 is shown on Table MTT19.

Table MTT19

2010 SCHEDULED OUTAGES

YELLOWTAIL RESERVOIR

FACILITY	DESCRIPTION OF WORK	SCHEDULED DATE
Units #1, 2, 3, &4	2-day outage for spring leakage tests.	10/20-21/2009
Yellowtail Afterbay	2 day outage when maximum Afterbay elevation cannot exceed 3187.5 feet as the Fort Smith Government Camp sewage lagoon is drawn down in preparation for winter	10/27-28/2009
Unit #1	10-day outage for annual electrical and mechanical maintenance. RTU points check.	01/04-13/2010
Unit #2	30-day outage for 4-year electrical and mechanical maintenance. RTU points check. Unbalanced headgate closure test.	01/19-02/18/2010
Unit #3	10-day outage for annual electrical and mechanical maintenance. RTU points check.	02/22-03/03/2010
Unit #4	10-day outage for annual electrical and mechanical maintenance. RTU points check.	03/08-17/2010
Yellowtail Afterbay	12-day outage for sluice gate maintenance. Maintain Afterbay elevation of 3183 to discharge all releases to the Bighorn River through the radial gates.	04/12-23/2010
Black Start Unit #2	Annual black start requirement from 0900-1200. Units #1 & #2 will be unavailable during this time.	04/20/2010
Yellowtail Afterbay	12-day outage for sluice gate maintenance. Maintain Afterbay elevation of 3183 to discharge all releases to the Bighorn River through the radial gates.	08/23-09/03/2010

CANYON FERRY RESERVOIR

FACILITY	DESCRIPTION OF WORK	SCHEDULED DATE
Unit #3	6-month outage for penstock inspection.	10/05-08/2009
Transformer K3A	1-day outage for annual maintenance.	10/07/2009
Unit #1	4-day outage for annual maintenance.	11/16-19/2009
Transformer K1A	1-day outage for annual maintenance.	11/18/2009
Unit #3	25-day outage for 3-year maintenance.	02/22-03/18/2010
Transformer K3A	4-day outage for 3-year maintenance.	03/01-04/2010
Unit #3 Protective Relays	2-day outage for relay functional test.	03/17-18/2010
Crow Creek	4-day outage for annual maintenance on OCB 412 and transformer KY1A	04/05-08/2010
River Outlet Gates	4-day outage for annual inspection and maintenance.	04/12-15/2010
Radial Gates	4-day outage for CFR inspection.	04/19-22/2010
OCB 162	4-day outage for 5-year Doble test and annual electrical and mechanical maintenance.	05/24-27/2010
OCB 266	4-day outage for 5-year Doble test and annual electrical and mechanical maintenance.	06/07-10/2010
OCB 262	4-day outage for 5-year Doble test and annual electrical and mechanical maintenance.	06/14-17/2010
OCB 366	4-day outage for 5-year Doble test and annual electrical and mechanical maintenance.	06/21-24/2010
OCB 362	4-day outage for 5-year Doble test and annual electrical and mechanical maintenance.	06/28-07/01/2010
Unit #1	4-day outage for annual inspection.	10/04-07/2010
Transformer K1A	1-day outage for annual maintenance.	10/06/2010
Unit #2	4-day outage for annual maintenance.	11/15-18/2010
Transformer K2A	1-day outage for annual maintenance.	11/17/2010

OPERATING PLANS FOR WATER YEAR 2010

Bull Lake

Three operating plans were prepared for water year 2010 to show the operations which could occur under various runoff conditions. The operations for the three runoff conditions are shown in Table WYT10A, WYT10B, WYT10C and Figure WYG6. These plans were prepared only to show the probable limits of operations and therefore actual conditions and operations could vary widely from the most probable plan.

The primary objective of operations at Bull Lake is to provide irrigation water to the Midvale Irrigation District (Midvale). Under normal operation, the reservoir also provides small incidental flood control benefits and a water resource for fish, wildlife, and recreation. Bull Lake is operated under the following criteria and limitations:

(1) Based on forecasted inflows, March-June releases are scheduled with the objective of filling the lake to a content of 152,459 acre-feet (AF) at elevation 5805.00 feet during July while eliminating or minimizing any spill.

(2) During April-October, releases must be adequate to meet the irrigation needs of Midvale and downstream irrigators with senior water rights on Bull Lake Creek.

(3) Based on the available water supply, non-irrigation season releases from Bull Lake to Bull Lake Creek are generally maintained between 20 and 45 cubic feet per second (cfs).

(4) The reservoir water surface elevation will be kept below elevation 5794.00 feet during the winter to prevent ice damage to the spillway gates. The gates were not designed to withstand ice pressure. To prevent damage to the concrete in the spillway inlet from freezing and ice, the reservoir is operated to have a storage level of 100,000 AF or less by November 30. The objective at the onset of winter is to be as close as possible to the 100,000 AF level (5787.13 feet) to also provide winter fish habitat.

2010 Operating Plans

Storage in Bull Lake at the end of water year 2009 was 79,758 AF at elevation 5779.36 feet, which is 52 percent of capacity and 105 percent of the end of September average. Projected inflows for all months of water year 2010 under most probable inflow conditions are estimated to be median flows, or flows which have historically been exceeded 50 percent of the time. The reservoir is expected to fill if most probable or greater inflows are realized. If reasonable minimum condition inflows occurred during each month of water year 2010, the reservoir would fall slightly short of filling.

Reasonable minimum condition inflows are estimated to be lower decile flows for all months in water year 2010. Lower decile flows are flows which have historically been exceeded 90 percent of the time.

Under reasonable maximum inflow conditions, upper decile flows are expected for all months in water year 2010. Upper decile flows are flows which have historically been exceeded 10 percent of the time.

Under all three inflow scenarios, releases in October following the end of irrigation season and continuing through the fall and winter would be held at 25 cfs with the objective of maintaining the reservoir level through the winter period.

Water diverted into the Wyoming Canal can be delivered to Midvale lands directly or routed through Pilot Butte Reservoir and delivered to district lands via the Pilot Canal. In June of 2009 both units at Pilot Butte Powerplant were placed in "Mothballed" status and are not expected to generate electricity in water year 2010.

TABLE WYT10A

RIVERTON PROJECT OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Reasonable Minimum Inflow Estimates

Bull Lake Reservoir Operations — Initial Content 79.8 Kaf — Operating Limits: Max 151.9 Kaf, 5804.82 Ft. / Min 20.0 Kaf, 5750.93 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	4.7	2.2	1.8	1.6	1.2	1.5	2.6	25.8	40.2	26.5	14.6	7.2	129.9
Total Dam Release	kaf	5.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	43.1	58.9	47.8	167.3
Total Dam Release	cfs	90.	25.	25.	25.	25.	25.	25.	25.	25.	701.	958.	803.	
Excess Release	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
End-month Content	kaf	79.0	79.7	79.9	80.0	79.8	79.8	80.9	105.2	143.9	127.3	83.0	42.4	
End-month Elevation	ft	5779.0	5779.3	5779.4	5779.5	5779.4	5779.4	5779.8	5789.0	5802.2	5796.8	5780.6	5762.9	
BLR Net Change	kaf	-0.8	0.7	0.3	0.1	-0.2	0.0	1.1	24.3	38.7	-16.6	-44.3	-40.6	-37.4

Wind River		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow abv BL Creek	kaf	28.1	22.6	21.0	16.0	13.8	16.3	23.4	72.5	93.8	57.8	36.4	26.1	427.8
Crowheart Gage Flow	kaf	33.6	24.1	22.5	17.5	15.2	17.8	24.9	74.0	95.3	100.9	95.3	73.9	595.1
Flow Below Div Dam	kaf	13.8	24.1	22.5	17.5	15.2	17.8	5.6	23.7	29.0	32.1	26.6	18.3	246.3
Gain/Return Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	4.8	7.4	7.1	7.4	6.1	5.4	38.2
Indian Irrigation	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.8	6.1	6.0	6.1	5.5	4.5	31.3
LeClair/Riverton	kaf	5.0	0.0	0.0	0.0	0.0	0.0	3.5	18.8	24.2	27.2	21.1	15.0	114.8
LeC/Riv Shortage	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
Riverton Gage Flow	cfs	123.7	404.8	366.5	285.2	273.5	290.1	85.1	100.0	100.0	100.0	100.0	70.0	

Wyoming Canal		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Diversion	kaf	19.8	0.0	0.0	0.0	0.0	0.0	19.3	50.3	66.3	68.8	68.7	55.6	348.8
North Canal Flow	kaf	3.4	0.0	0.0	0.0	0.0	0.0	9.8	26.4	31.2	36.5	30.9	27.0	165.2
North Canal Shortage	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

Pilot Butte Reservoir Operations — Initial Content 15.2 Kaf — Operating Limits: Max 29.9 Kaf, 5459.98 Ft. / Min 10.0 Kaf, 5433.49 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	16.4	0.0	0.0	0.0	0.0	0.0	9.5	23.9	35.1	32.3	37.8	28.6	183.6
Power Generated	mwh	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
Pilot Canal Release	kaf	3.4	0.0	0.0	0.0	0.0	0.0	6.7	28.0	33.1	43.9	37.4	33.3	185.8
Pilot Canal Shortage	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
End-month Content	kaf	28.0	27.8	27.7	27.6	27.5	27.3	29.9	25.5	27.1	15.0	15.0	10.0	
PBR Net Change	kaf	12.8	-0.2	-0.1	-0.1	-0.1	-0.2	2.6	-4.4	1.6	-12.1	0.0	-5.0	-5.2
End-month Elevation	ft	5457.8	5457.6	5457.5	5457.4	5457.3	5457.0	5460.0	5455.0	5456.9	5441.3	5441.3	5433.5	

TABLE WYT10B

RIVERTON PROJECT OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Most Probable Inflow Estimates

Bull Lake Reservoir Operations — Initial Content 79.8 Kaf — Operating Limits: Max 151.9 Kaf, 5804.82 Ft. / Min 20.0 Kaf, 5750.93 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	6.0	3.3	2.4	2.6	1.5	1.8	2.5	30.9	61.5	50.1	20.2	10.4	193.2
Total Dam Release	kaf	5.5	1.5	1.5	1.5	1.4	1.5	1.5	15.2	29.6	31.2	45.0	43.0	178.5
Total Dam Release	cfs	90.	25.	25.	25.	25.	25.	25.	248.	497.	507.	732.	722.	
Excess Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	29.6	31.2	16.9	0.0	92.9
End-month Content	kaf	80.3	82.1	82.9	84.0	84.1	84.4	85.4	101.0	133.0	151.9	127.1	94.5	
End-month Elevation	ft	5779.6	5780.3	5780.6	5781.0	5781.1	5781.2	5781.6	5787.5	5798.7	5804.8	5796.7	5785.1	
BLR Net Change	kaf	0.5	1.8	0.9	1.1	0.1	0.3	1.0	15.7	31.9	18.9	-24.8	-32.6	14.7

Wind River		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow abv BL Creek	kaf	35.0	25.2	19.4	16.9	15.4	17.8	28.1	109.2	173.5	119.6	53.5	33.9	647.5
Crowheart Gage Flow	kaf	40.5	26.7	20.9	18.4	16.8	19.3	29.6	124.4	203.1	150.8	98.5	76.9	826.0
Flow Below Div Dam	kaf	20.7	26.7	20.9	18.4	16.8	19.3	10.3	69.7	138.4	69.9	41.7	19.3	472.2
Gain/Return Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	4.8	7.4	7.1	7.4	6.1	5.4	38.2
Indian Irrigation	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.8	6.1	6.0	6.1	5.5	4.5	31.3
LeClair/Riverton	kaf	5.0	0.0	0.0	0.0	0.0	0.0	3.5	18.8	24.2	27.2	21.1	15.0	114.8
LeC/Riv Shortage	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
Riverton Gage Flow	cfs	235.9	448.5	340.5	299.9	302.3	314.5	164.1	848.5	1938.9	713.9	345.5	86.8	

Wyoming Canal		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Diversion	kaf	19.8	0.0	0.0	0.0	0.0	0.0	19.3	54.7	64.7	80.9	56.8	57.6	353.8
North Canal Flow	kaf	3.4	0.0	0.0	0.0	0.0	0.0	9.8	26.4	31.2	36.5	30.9	27.0	165.2
North Canal Shortage	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

Pilot Butte Reservoir Operations — Initial Content 15.2 Kaf — Operating Limits: Max 29.9 Kaf, 5459.98 Ft. / Min 10.0 Kaf, 5433.49 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	16.4	0.0	0.0	0.0	0.0	0.0	9.5	28.3	33.5	44.4	25.9	30.6	188.6
Power Generated	mwh	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
Pilot Canal Release	kaf	3.4	0.0	0.0	0.0	0.0	0.0	6.7	28.0	33.1	43.9	37.4	33.3	185.8
Pilot Canal Shortage	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
End-month Content	kaf	28.0	27.8	27.7	27.6	27.5	27.3	29.9	29.9	29.9	29.9	18.0	15.0	
PBR Net Change	kaf	12.8	-0.2	-0.1	-0.1	-0.1	-0.2	2.6	0.0	0.0	0.0	-11.9	-3.0	-0.2
End-month Elevation	ft	5457.8	5457.6	5457.5	5457.4	5457.3	5457.0	5460.0	5460.0	5460.0	5460.0	5445.5	5441.3	

TABLE WYT10C

RIVERTON PROJECT OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Reasonable Maximum Inflow Estimates

Bull Lake Reservoir Operations — Initial Content 79.8 Kaf — Operating Limits: Max 151.9 Kaf, 5804.82 Ft. / Min 20.0 Kaf, 5750.93 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	5.7	3.0	2.7	2.4	1.8	2.2	4.8	29.5	88.1	74.5	32.9	12.4	260.0
Total Dam Release	kaf	5.5	1.5	1.5	1.5	1.4	1.5	1.5	18.0	53.8	56.2	52.3	50.6	245.5
Total Dam Release	cfs	90.	25.	25.	25.	25.	25.	25.	293.	905.	914.	850.	850.	
Excess Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	53.8	56.2	52.3	22.0	202.4
End-month Content	kaf	80.0	81.5	82.6	83.5	83.9	84.6	87.9	99.3	133.6	151.9	132.5	94.3	
End-month Elevation	ft	5779.4	5780.0	5780.5	5780.8	5781.0	5781.3	5782.6	5786.9	5798.9	5804.8	5798.5	5785.0	
BLR Net Change	kaf	0.2	1.5	1.2	0.9	0.4	0.7	3.3	11.5	34.3	18.3	-19.4	-38.2	14.5

Wind River		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Flow abv BL Creek	kaf	34.8	25.0	20.5	18.8	16.3	20.0	25.2	113.9	312.9	185.4	80.8	45.8	899.4
Crowheart Gage Flow	kaf	40.3	26.5	22.0	20.3	17.7	21.5	26.7	131.9	366.7	241.6	133.1	96.4	1144.9
Flow Below Div Dam	kaf	20.5	26.5	22.0	20.3	17.7	21.5	11.9	72.7	302.0	160.7	76.3	38.8	791.1
Gain/Return Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	4.8	7.4	7.1	7.4	6.1	5.4	38.2
Indian Irrigation	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.8	6.1	6.0	6.1	5.5	4.5	31.3
LeClair/Riverton	kaf	5.0	0.0	0.0	0.0	0.0	0.0	3.2	16.9	21.8	24.5	19.0	13.5	103.9
LeC/Riv Shortage	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
Riverton Gage Flow	cfs	232.6	445.1	358.4	330.8	318.5	350.3	197.0	927.2	4729.4	2235.4	941.8	440.3	

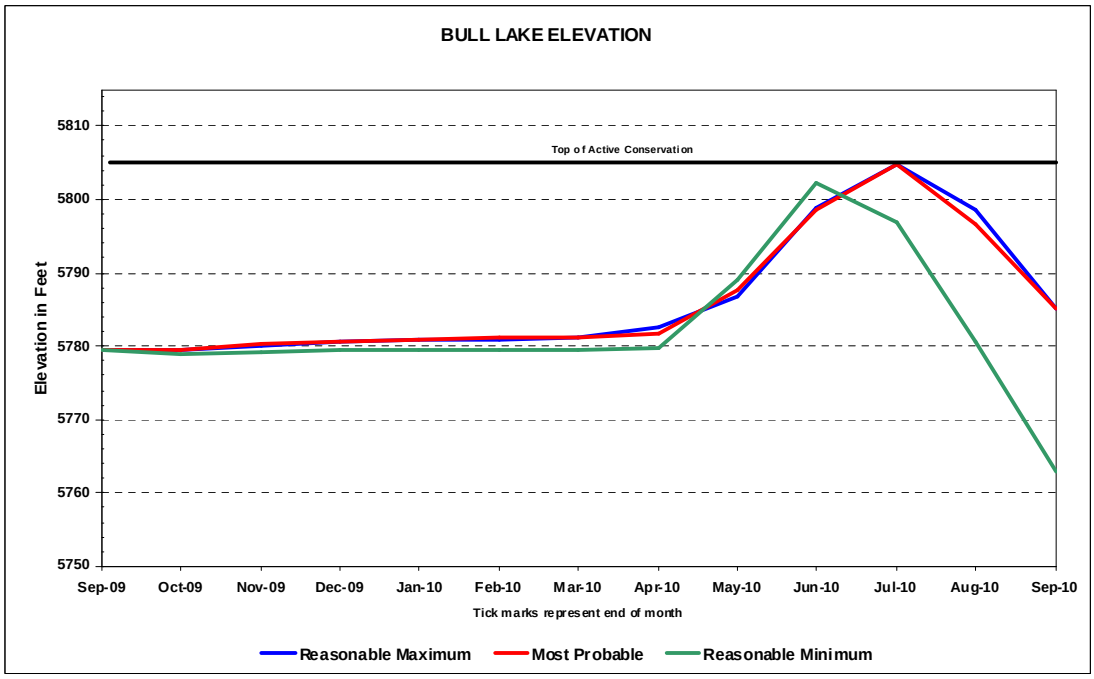
Wyoming Canal		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Diversion	kaf	19.8	0.0	0.0	0.0	0.0	0.0	14.7	59.3	64.7	80.9	56.8	57.6	353.8
North Canal Flow	kaf	3.4	0.0	0.0	0.0	0.0	0.0	9.8	26.4	31.2	36.5	30.9	27.0	165.2
North Canal Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

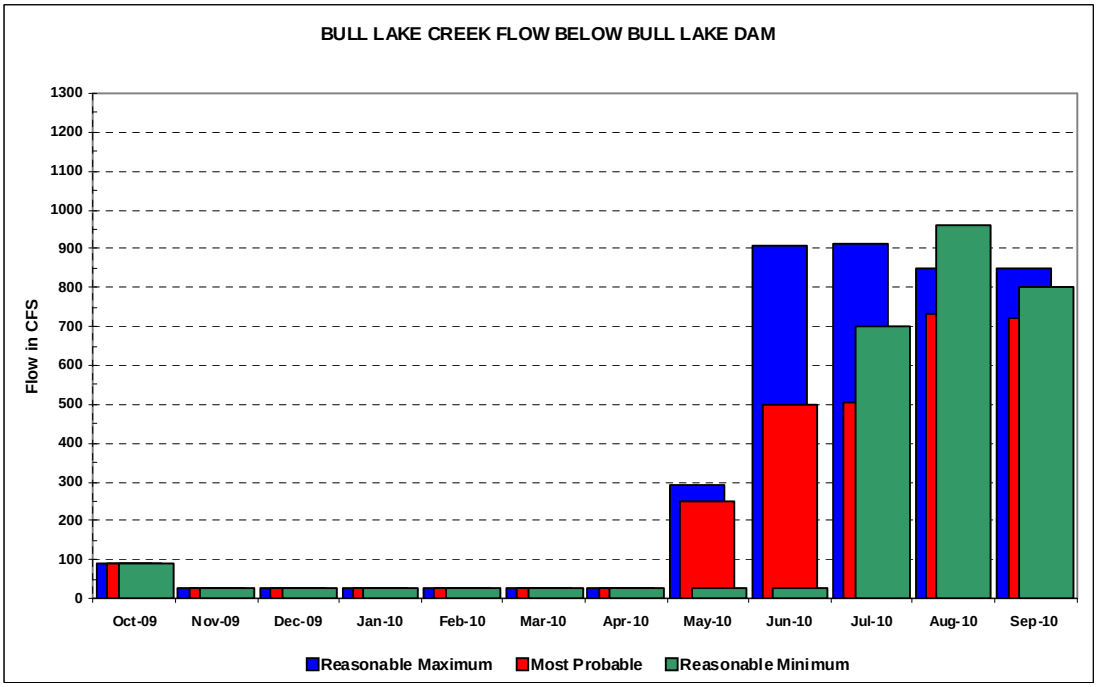
Pilot Butte Reservoir Operations — Initial Content 15.2 Kaf — Operating Limits: Max 29.9 Kaf, 5459.98 Ft. / Min 10.0 Kaf, 5433.49 Ft.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reservoir Inflow	kaf	16.4	0.0	0.0	0.0	0.0	0.0	4.9	32.9	33.5	44.4	25.9	30.6	188.6
Power Generated	mwh	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
Pilot Canal Release	kaf	3.4	0.0	0.0	0.0	0.0	0.0	6.7	28.0	33.1	43.9	37.4	33.3	185.8
Pilot Canal Shortage	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
End-month Content	kaf	28.0	27.8	27.7	27.6	27.5	27.3	25.3	29.9	29.9	29.9	18.0	15.0	
PBR Net Change	kaf	12.8	-0.2	-0.1	-0.1	-0.1	-0.2	-2.0	4.6	0.0	0.0	-11.9	-3.0	-0.2
End-month Elevation	ft	5457.8	5457.6	5457.5	5457.4	5457.3	5457.0	5454.8	5460.0	5460.0	5460.0	5445.5	5441.3	

FIGURE WYG6

BULL LAKE RESERVOIR





Boysen Reservoir and Powerplant

Three operating plans were prepared for water year 2010 to show the operations of Boysen Reservoir which could occur under various runoff conditions. The operations for the three runoff conditions are shown in Table WYT11 and Figure WYG7. These plans are presented only to show the probable limits of operations and therefore, actual conditions and operations could vary widely from the most probable plan.

The operating objectives at Boysen Dam and Reservoir are to provide water for irrigation, municipal and industrial use, and power generation; provide flood control in cooperation with the COE; and enhance fish, wildlife, and recreation opportunities in both the reservoir and the Wind/Bighorn River.

Irrigation Season Release

During the irrigation season, water releases from Boysen Reservoir are made to satisfy all downstream senior water rights and storage contract commitments. Generally, demands for downstream senior water rights are met with a reservoir release between 900 and 1,200 cfs. Releases above what is required to meet irrigation demands may be made to manage reservoir levels and generate power.

Non-irrigation Season Release

During the non-irrigation season, releases are made to produce power, enhance the river and reservoir fishery, and provide storage space for the expected spring runoff or conserve storage if the reservoir is not expected to fill. Winter releases are generally in the range between 400 cfs and 1,150 cfs, depending on reservoir conditions going into the winter. The Wyoming Game and Fish Department considers 800 cfs to be the preferred fishery flow from October through February and flows below 600 cfs to be detrimental to the river fishery. A release of approximately 1,150 cfs can be made through one unit at Boysen Powerplant. By releasing less than the capacity of one powerplant unit, annual maintenance can be performed on the other unit during the winter months.

General Operating Procedures

(1) October - February: Releases of water for power generation are scheduled to evacuate storage while assuring an adequate water supply for the upcoming irrigation season. It is desirable to maintain a uniform release during November through February to reduce the risk of flooding due to river ice.
(2) March - July: Based upon monthly water supply forecasts and as soon as river ice conditions allow, releases are scheduled to meet the irrigation demand as a minimum. Greater releases may be made if necessary to eliminate or minimize a spill, with the objective of filling the reservoir to elevation 4724.50 feet (731,841 AF) by the end of July. Depending on inflows, attempts will be made to provide a reservoir level of at least elevation 4707.00 feet from the end of May through the end of August for recreational boating access.

For the spawning of rainbow trout it is desirable to have stable or slightly rising river flows from mid-March through early June. When conditions are suitable and without affecting power operations, attempts will be made to limit the drop in reservoir level to 2 feet or less during the reservoir fish spawn and hatch period (which begins in March and ends in May). A rising pool is desirable during this period.

(3) August - September: As soon as storage has peaked, water releases are scheduled to meet the irrigation demand and generate power. Releases above what is needed to meet irrigation demand may be made in order to generate power and prevent the need to release water through the spillway gates if inflow conditions warrant.

2010 Operating Plans

At the beginning of water year 2010, storage was 659,577 AF at elevation 4720.63 feet. This was 110 percent of average and about 30,747 AF more than the reservoir held at the beginning of water year 2009. Projected inflows for all months of water year 2010 under most probable inflow conditions are estimated to be median flows, or flows which have historically been exceeded 50 percent of the time. A release of 900 cfs is scheduled for the months of October through March. Under most probable inflow conditions, end of month reservoir content is expected to peak in July with 732,000 AF at reservoir elevation 4724.50 feet. The reservoir is expected to fill if most probable or greater inflows are realized. If reasonable minimum condition inflows occurred during each month of water year 2010 the reservoir level would decline during each month of the water year except June when the projected inflow is expected to be slightly more than the release.

Reasonable minimum condition inflows are estimated to be lower decile flows for all months in water year 2010. Lower decile flows are flows which have historically been exceeded 90 percent of the time.

Under reasonable maximum inflow conditions, upper decile flows are expected for all months in water year 2010. Upper decile flows are flows which have historically been exceeded 10 percent of the time.

Winter releases under minimum and maximum inflow scenarios are the same as under the most probable condition. This is due to the fact that a release which meets the operating objectives under the range of inflows which could be expected to occur needs to be set prior to the time when the river might freeze. At the time the winter release is set, very limited information is available on snowpack and what inflows might be during the snowmelt runoff period. It must be assumed that releases cannot be changed significantly from mid-December through mid-March as the changes could cause flooding downstream of the reservoir if ice conditions are present on the river. It was determined that with a winter release of 900 cfs, the reservoir would be maintained at a level through the winter that would enable storing most probable condition inflows without having to release water in excess of the powerplant capacity during the spring and summer. Power unit maintenance outages for the Boysen Powerplant are scheduled as shown in Table WYT13.

TABLE WYT 11
BOYSEN RESERVOIR OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Reasonable Minimum Inflow Estimates

Boysen Reservoir		Initial Cont 659.6 kaf				Maximum Cont 892.2 kaf				Minimum Cont 219.2 kaf				
Elev 4720.63 ft		Elev 4732.20 ft				Elev 4685.00 ft								
2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	
Monthly Inflow	kaf	40.0	41.8	35.0	32.4	31.6	45.7	41.5	67.0	76.5	39.3	25.2	29.8	505.8
Monthly Inflow	cfs	651	702	569	527	569	743	697	1090	1286	639	410	501	
Turbine Release	kaf	48.3	53.6	55.3	55.4	50.0	55.3	53.6	67.6	69.9	76.9	69.2	59.5	714.6
Bypass/Spill	kaf	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1
Total Release	kaf	55.4	53.6	55.3	55.4	50.0	55.3	53.6	67.6	69.9	76.9	69.2	59.5	721.7
Total Release	cfs	901	901	899	901	900	899	901	1099	1175	1251	1125	1000	
End-Month Content	kaf	644.2	632.4	612.1	589.1	570.7	561.1	549.0	548.4	555.0	517.4	473.4	443.7	
End-Month Elevation	ft	4719.76	4719.09	4717.89	4716.49	4715.32	4714.70	4713.90	4713.86	4714.30	4711.75	4708.58	4706.31	
Net Change Content	kaf	-15.4	-11.8	-20.3	-23.0	-18.4	-9.6	-12.1	-0.6	6.6	-37.6	-44.0	-29.7	-215.9

Boysen Power Plant	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	48.3	53.6	55.3	55.4	50.0	55.3	53.6	67.6	69.9	76.9	69.2	59.5	714.6
Turbine Release	cfs	786	901	899	901	900	899	901	1099	1175	1251	1125	1000	
Generation	gwh	4.247	4.680	4.786	4.735	4.221	4.628	4.454	5.574	5.768	6.273	5.490	4.545	59.401
Max Generation	gwh	4.250	11.520	11.904	11.904	10.752	11.904	11.520	11.904	11.520	11.904	11.904	11.520	132.506
% Max Generation	%	100	41	40	40	39	39	39	47	50	53	46	39	
Ave kwh/af		88	87	87	85	84	84	83	82	83	82	79	76	83
End-Month Power Cap	mw	16	16	16	16	16	16	16	16	16	15	14	14	

BOYSEN RESERVOIR OPERATING PLAN - Based on October 1 Inflow Estimates
2010 Most Probable Inflow Estimates

Boysen Reservoir		Initial Cont 659.6 kaf				Maximum Cont 892.2 kaf				Minimum Cont 219.2 kaf				
Elev 4720.63 ft		Elev 4732.20 ft				Elev 4685.00 ft								
2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	
Monthly Inflow	kaf	45.0	51.1	40.2	36.5	38.2	52.2	50.3	155.8	250.1	127.7	69.9	57.1	974.1
Monthly Inflow	cfs	732	859	654	594	688	849	845	2534	4203	2077	1137	960	
Turbine Release	kaf	48.3	53.6	55.4	55.4	50.1	55.4	75.8	119.7	132.3	121.8	100.3	71.4	939.5
Bypass/Spill	kaf	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1
Total Release	kaf	55.4	53.6	55.4	55.4	50.1	55.4	75.8	119.7	132.3	121.8	100.3	71.4	946.6
Total Release	cfs	901	901	901	901	902	901	1274	1947	2223	1981	1631	1200	
End-Month Content	kaf	649.2	646.7	631.5	612.6	600.7	597.5	572.0	608.1	725.9	731.8	701.4	687.1	
End-Month Elevation	ft	4720.05	4719.91	4719.03	4717.92	4717.20	4717.01	4715.40	4717.65	4724.19	4724.50	4722.91	4722.14	
Net Change Content	kaf	-10.4	-2.5	-15.2	-18.9	-11.9	-3.2	-25.5	36.1	117.8	5.9	-30.4	-14.3	27.5

Boysen Power Plant	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	48.3	53.6	55.4	55.4	50.1	55.4	75.8	119.7	132.3	121.8	100.3	71.4	939.5
Turbine Release	cfs	786	901	901	901	902	901	1274	1947	2223	1981	1631	1200	
Generation	gwh	4.253	4.704	4.839	4.794	4.297	4.731	6.378	10.013	11.520	10.963	9.013	6.384	81.889
Max Generation	gwh	4.250	11.520	11.904	11.904	10.752	11.904	11.520	11.904	11.520	11.904	11.904	11.520	132.506
% Max Generation	%	100	41	41	40	40	40	55	84	100	92	76	55	
Ave kwh/af		88	88	87	87	86	85	84	84	87	90	90	89	87
End-Month Power Cap	mw	16	16	16	16	16	16	16	16	16	16	16	16	

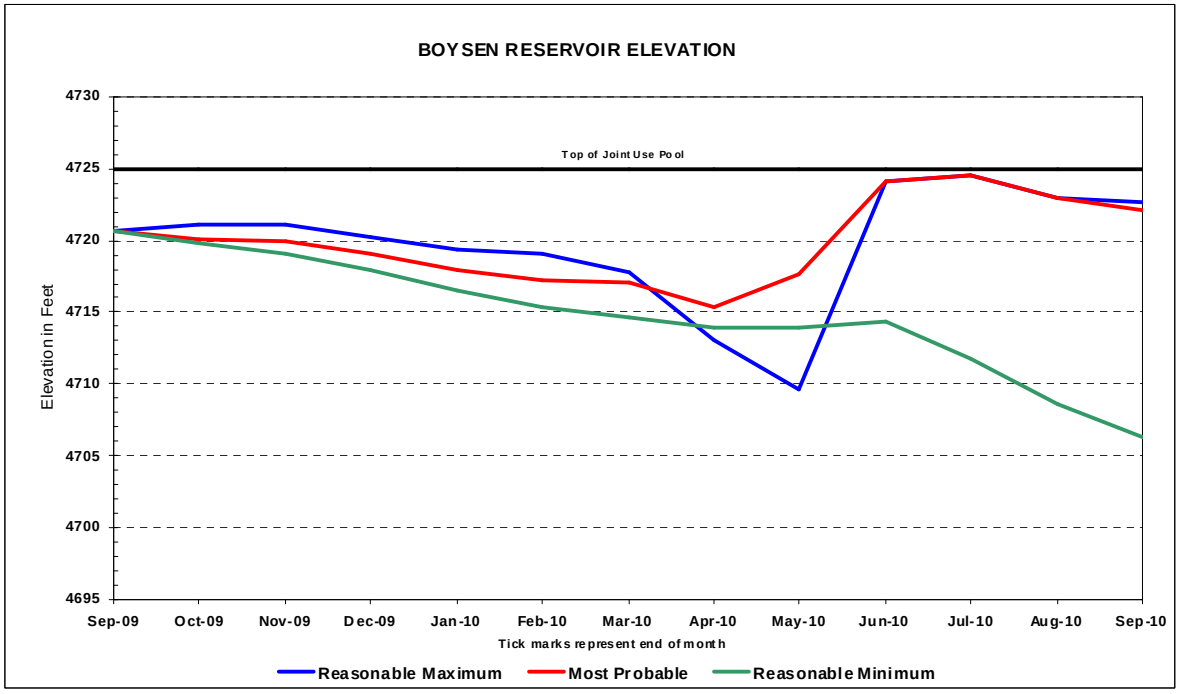
BOYSEN RESERVOIR OPERATING PLAN - Based on October 1 Inflow Estimates
2010 Reasonable Maximum Inflow Estimates

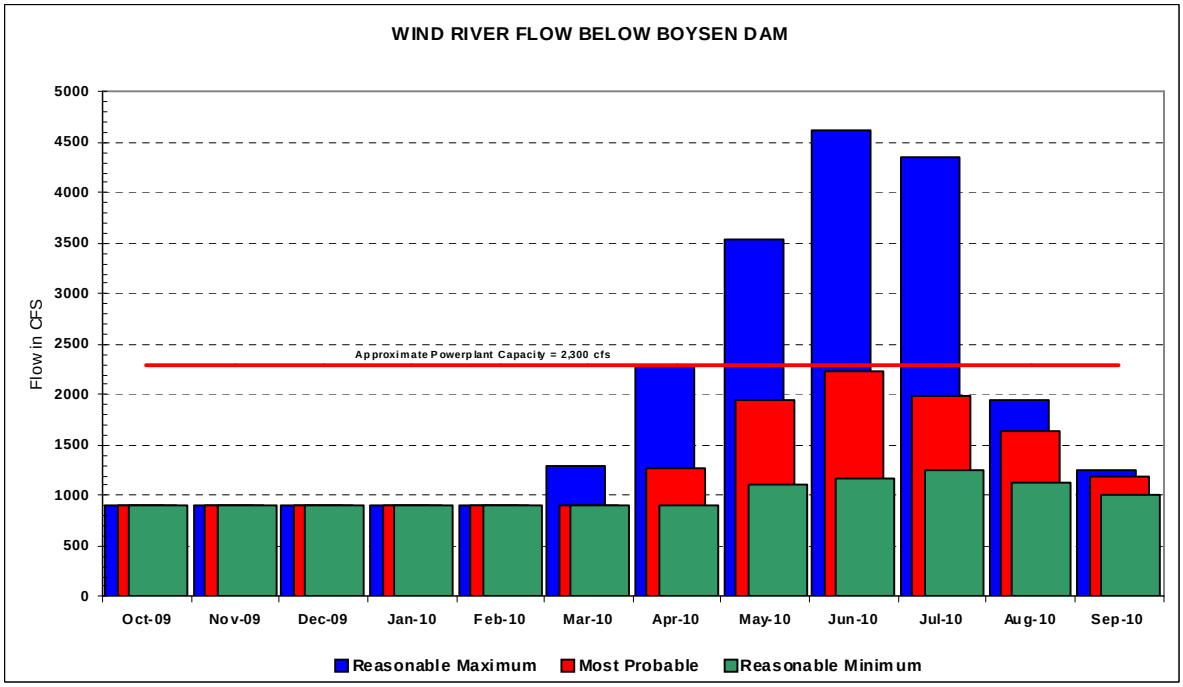
Boysen Reservoir		Initial Cont 659.6 kaf				Maximum Cont 892.2 kaf				Minimum Cont 219.2 kaf				
Elev 4720.63 ft		Elev 4732.20 ft				Elev 4685.00 ft								
2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	
Monthly Inflow	kaf	62.7	53.5	41.1	40.2	46.0	57.2	62.4	169.4	510.1	276.6	88.9	69.1	1477.2
Monthly Inflow	cfs	1020	899	668	654	828	930	1049	2755	8573	4498	1446	1161	
Turbine Release	kaf	48.3	53.6	55.4	55.3	50.0	79.2	136.9	139.2	138.4	135.1	119.5	74.3	1085.2
Bypass/Spill	kaf	7.1	0.0	0.0	0.0	0.0	0.0	0.0	78.8	136.7	133.0	0.0	0.0	355.6
Total Release	kaf	55.4	53.6	55.4	55.3	50.0	79.2	136.9	218.0	275.1	268.1	119.5	74.3	1440.8
Total Release	cfs	901	901	901	899	900	1288	2301	3545	4623	4360	1943	1249	
End-Month Content	kaf	666.9	666.8	652.5	637.4	633.4	611.4	536.9	488.3	723.3	731.8	701.2	696.0	
End-Month Elevation	ft	4721.04	4721.03	4720.23	4719.37	4719.14	4717.85	4713.09	4709.68	4724.06	4724.50	4722.90	4722.62	
Net Change Content	kaf	7.3	-0.1	-14.3	-15.1	-4.0	-22.0	-74.5	-48.6	235.0	8.5	-30.6	-5.2	36.4

Boysen Power Plant	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	48.3	53.6	55.4	55.3	50.0	79.2	136.9	139.2	138.4	135.1	119.5	74.3	1085.2
Turbine Release	cfs	786	901	901	899	900	1288	2301	2264	2326	2197	1943	1249	
Generation	gwh	4.273	4.750	4.892	4.845	4.358	6.811	11.293	10.788	11.408	11.907	10.698	6.653	92.676
Max Generation	gwh	4.274	11.520	11.904	11.904	10.752	11.904	11.520	11.904	11.520	11.904	11.904	11.520	132.530
% Max Generation	%	100	41	41	41	41	57	98	91	99	100	90	58	
Ave kwh/af		88	89	88	88	87	86	82	78	82	88	90	90	85
End-Month Power Cap	mw	16	16	16	16	16	16	15	14	16	16	16	16	

FIGURE WYG7

BOYSEN RESERVOIR





Buffalo Bill Reservoir and Powerplants

Three operating plans were prepared for water year 2010 to show the operations of Buffalo Bill Reservoir which could occur under various runoff conditions. The operations for the three runoff conditions are shown in Table WYT12A, WYT12B, WYT12C, and Figure WYG8. These plans were prepared only to show the probable limits of operations, therefore, actual conditions and operations could vary widely from the most probable plan.

Normal Operating Procedures

At the end of the irrigation season, releases will be adjusted with the objective of filling the reservoir to elevation 5393.50 feet (646,565 AF) while meeting the release criteria of the ***Buffalo Bill Reservoir Enlargement Winter Release Operation Agreement***. Under the Agreement, Buffalo Bill Reservoir will be operated to insure that a minimum flow of 100 cfs is provided in the river below the dam at all times. Additional winter releases beyond the 100 cfs minimum release up to a combined total of 350 cfs in the river below Buffalo Bill Powerplant will be provided based on the criteria set forth in the Agreement.

Reservoir releases to meet downstream irrigation requirements will, to the extent possible, be made through the most efficient power turbines available, after meeting winter flow requirements. A release of at least 100 cfs will be made through the Shoshone Powerplant, whenever the powerplant is available, to provide the required river flow directly below the dam. If the Shoshone Powerplant is not available, the release will be made through the jetflow valve at the dam.

During irrigation season, releases are determined by the requirements for irrigation, and municipal and industrial demand. If snow conditions, inflow, and reservoir content indicate an assured fill of the reservoir, additional releases may be required after the start of the spring runoff to provide flood control and make optimum use of the water for power generation. An attempt is made to maintain a release of 7,000 cfs or less during the runoff season and also assure that outflow is less than inflow at all times of flood rate inflow.

2010 Operating Plans

Inflow to Buffalo Bill Reservoir during August and September of 2009 was near average and average inflow is expected to continue into water year 2010 under most probable inflow conditions. Projected flows for all months of water year 2010 are estimated to be median flows, or flows which have historically been exceeded 50 percent of the time.

The reasonable minimum inflows are estimated to equal lower decile flows for all months of water year 2010. A lower decile flow is a flow which has historically been exceeded 90 percent of the time.

Upper decile flows, flows which have historically been exceeded 10 percent of the time are projected for all months of water year 2010 under reasonable maximum conditions.

At the beginning of water year 2010, storage in Buffalo Bill Reservoir was 486,016 AF at elevation 5372.51 feet. This was about 1,605 AF more water than the reservoir held at the beginning of water year 2009. Winter releases under minimum and maximum inflow scenarios are the same as under most probable conditions. Based on the criteria set forth in the ***Buffalo Bill Reservoir Enlargement Winter Release Operation Agreement***, the release from Buffalo Bill Dam through the winter will be 350 cfs. Ice in the Shoshone River can limit Reclamation's ability to change releases during the winter because of possible flooding due to ice jams, particularly near Lovell, Wyoming.

The Shoshone, Buffalo Bill, Heart Mountain, and Spirit Mountain Powerplants will all be available for power generation in water year 2010. Releases from Buffalo Bill Reservoir will be dependent upon the most efficient operation of all the powerplants while providing the required flow in the Shoshone River.

Under the most probable runoff plan, total generation from all the plants is expected to be 155,100,000 kilowatt hours (kWh). Total generation with reasonable minimum inflows is expected to be 134,600,000 kWh while generation is expected to total 166,400,000 kWh under the plan with reasonable maximum inflows.

Power unit maintenance outages for the Shoshone, Buffalo Bill, Heart Mountain, and Spirit Mountain Powerplants are scheduled as shown in Table WYT13.

TABLE WYT12A

BUFFALO BILL RESERVOIR OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Reasonable Minimum Inflow Estimates

Buffalo Bill Reservoir		Initial Cont Elev	482.4 kaf 5372.57 ft			Maximum Cont Elev	643.1 kaf 5393.50 ft			Minimum Cont Elev	41.8 kaf 5259.64 ft		
2009		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	25.1	20.0	14.4	12.8	11.8	16.1	39.2	144.0	199.6	71.7	25.8	21.0	601.5
Shoshone Release	kaf	6.1	6.0	6.1	6.1	3.4	6.1	6.0	6.1	6.0	6.2	6.2	6.0	70.3
Non-Power Release	kaf	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Total Flow Below Dam	kaf	6.1	6.0	6.1	6.1	5.6	6.1	6.0	6.1	6.0	6.2	6.2	6.0	72.5
Buffalo Bill Release	kaf	28.7	14.8	15.4	15.4	13.8	15.4	14.8	52.6	49.8	51.2	52.2	42.7	366.8
Municipal Delivery	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
Heart Mtn Release	kaf	2.4	0.0	0.0	0.0	0.0	0.0	3.6	6.2	6.9	13.0	4.6	1.3	38.0
Heart Mtn Delivery	kaf	8.0	0.0	0.0	0.0	0.0	0.0	7.0	36.0	42.0	48.0	41.0	32.0	214.0
Total Outflow	kaf	45.5	21.1	21.8	21.8	19.7	21.8	31.7	101.2	105.0	118.7	104.3	82.3	694.9
Bypass/Spill	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
End-Month Targets	kaf	462.0									630.0			
End-Month Content	kaf	462.0	460.9	453.5	444.5	436.6	430.9	438.4	481.2	575.8	528.8	450.3	389.0	
Est Total Storage	kaf	465.4	464.3	456.9	447.9	440.0	434.3	441.8	484.6	579.2	532.2	453.7	392.4	
End-Month Elevation	ft	5369.73	5369.58	5368.53	5367.25	5366.12	5365.30	5366.38	5372.41	5385.07	5378.87	5368.08	5358.93	
Net Change Content	kaf	-20.4	-1.1	-7.4	-9.0	-7.9	-5.7	7.5	42.8	94.6	-47.0	-78.5	-61.3	-93.4
Flow Below BB Pwr	kaf	34.8	20.8	21.5	21.5	19.4	21.5	20.8	58.7	55.8	57.4	58.4	48.7	439.3
Flow Below BB Pwr	cfs	566	350	350	350	349	350	350	955	938	934	950	818	
Spring Inflow	kaf	3.7	3.6	3.7	3.7	3.3	3.7	3.6	3.7	3.6	3.7	3.7	3.6	43.6
Passing Cody Gage	kaf	40.9	24.4	25.2	25.2	22.7	25.2	28.0	68.6	66.3	74.1	66.7	53.6	520.9
Passing Cody Gage	cfs	665	410	410	410	409	410	471	1116	1114	1205	1085	901	

Shoshone Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Shoshone Release	kaf	6.1	6.0	6.1	6.1	3.4	6.1	6.0	6.1	6.0	6.2	6.2	6.0	70.3
Generation	gwh	1.129	1.104	1.120	1.114	0.618	1.104	1.086	1.121	1.146	1.200	1.159	1.076	12.977
Max Generation	gwh	2.232	2.160	2.232	2.232	0.625	2.232	2.160	2.232	2.160	2.232	2.232	2.160	24.889
% Max Generation		51	51	50	50	99	49	50	50	53	54	52	50	
Ave kwh/af		185	184	184	183	182	181	181	184	191	194	187	179	185
End-Month Power Cap	mw	3	3	3	3	1	3	3	3	3	3	3	3	

Buffalo Bill Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Buffalo Bill Release	kaf	28.7	14.8	15.4	15.4	13.8	15.4	14.8	52.6	49.8	51.2	52.2	42.7	366.8
Generation	gwh	7.795	4.054	4.210	4.194	3.744	4.165	3.990	13.266	12.828	13.094	13.293	10.839	95.472
Max Generation	gwh	13.392	12.960	13.392	13.392	12.096	13.392	12.960	13.392	12.960	13.392	13.392	12.960	157.680
% Max Generation		58	31	31	31	31	31	31	99	99	98	99	84	
Ave kwh/af		272	274	273	272	271	270	270	252	258	256	255	254	260
End-Month Power Cap	mw	18	18	18	18	18	18	18	18	18	18	18	18	

Spirit Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Spirit Mtn Release	kaf	10.4	0.0	0.0	0.0	0.0	0.0	10.6	34.4	33.3	34.4	34.4	33.3	190.8
Generation	gwh	1.079	0.000	0.000	0.000	0.000	0.000	1.067	2.940	3.030	3.063	3.027	2.877	17.083
Max Generation	gwh	1.674	0.000	0.000	0.000	0.000	0.000	1.620	3.348	3.240	3.348	3.348	3.240	19.818
% Max Generation		64	0	0	0	0	0	66	88	94	91	90	89	
Ave kwh/af		104						101	85	91	89	88	86	90
End-Month Power Cap	mw	2	0	0	0	0	0	2	4	5	4	4	4	

Heart Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Heart Mtn Release	kaf	2.4	0.0	0.0	0.0	0.0	0.0	3.6	6.2	6.9	13.0	4.6	1.3	38.0
Generation	gwh	0.575	0.000	0.000	0.000	0.000	0.000	0.862	1.484	1.652	3.112	1.101	0.311	9.097
Max Generation	gwh	0.580	0.000	0.000	0.000	0.000	0.000	2.160	4.464	4.320	4.464	4.464	4.320	24.772
% Max Generation		99	0	0	0	0	0	40	33	38	70	25	7	
Ave kwh/af		240						239	239	239	239	239	239	239
End-Month Power Cap	mw	1	0	0	0	0	0	3	6	6	6	6	6	

Total Generation	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Generation	gwh	10.578	5.158	5.330	5.308	4.362	5.269	7.005	18.811	18.656	20.469	18.580	15.103	134.629
End-month Power Cap	mw	24	21	21	21	19	21	26	31	32	31	31	31	

TABLE WYT12B

BUFFALO BILL RESERVOIR OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Most Probable Inflow Estimates

Buffalo Bill Reservoir		Initial Cont	482.4 kaf		Maximum Cont	643.1 kaf		Minimum Cont	41.8 kaf			
		Elev	5372.57 ft		Elev	5393.50 ft		Elev	5259.64 ft			
2009		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	27.0	21.9	17.4	15.3	13.4	16.1	34.3	145.3	309.0	187.6	52.2	28.6	868.1
Shoshone Release	kaf	6.2	6.0	6.2	6.2	3.4	6.1	6.0	9.1	11.3	11.2	7.5	6.3	85.5
Non-Power Release	kaf	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	41.0	44.4	0.0	0.0	87.6
Total Flow Below Dam	kaf	6.2	6.0	6.2	6.2	5.6	6.1	6.0	9.1	52.3	55.6	7.5	6.3	173.1
Buffalo Bill Release	kaf	26.5	14.8	15.3	15.3	13.8	15.4	14.8	54.5	51.3	51.5	51.2	50.6	375.0
Municipal Delivery	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
Heart Mtn Release	kaf	4.4	0.0	0.0	0.0	0.0	0.0	3.6	18.6	18.0	18.6	18.6	18.0	99.8
Heart Mtn Delivery	kaf	8.0	0.0	0.0	0.0	0.0	0.0	7.0	36.0	42.0	48.0	41.0	32.0	214.0
Total Outflow	kaf	45.4	21.1	21.8	21.8	19.7	21.8	31.7	118.5	163.9	174.0	118.6	107.2	865.5
Bypass/Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.0	44.4	0.0	0.0	85.4
End-Month Targets	kaf	464.0									630.0		485.0	
End-Month Content	kaf	464.0	464.8	460.4	453.9	447.6	441.9	444.5	471.3	616.4	630.0	563.6	485.0	
Est Total Storage	kaf	467.4	468.2	463.8	457.3	451.0	445.3	447.9	474.7	619.8	633.4	567.0	488.4	
End-Month Elevation	ft	5370.01	5370.13	5369.51	5368.59	5367.70	5366.88	5367.25	5371.03	5390.27	5391.97	5383.48	5372.93	
Net Change Content	kaf	-18.4	0.8	-4.4	-6.5	-6.3	-5.7	2.6	26.8	145.1	13.6	-66.4	-78.6	2.6
Flow Below BB Pwr	kaf	32.7	20.8	21.5	21.5	19.4	21.5	20.8	63.6	103.6	107.1	58.7	56.9	548.1
Flow Below BB Pwr	cfs	532	350	350	350	349	350	350	1034	1741	1742	955	956	
Spring Inflow	kaf	3.7	3.6	3.7	3.7	3.3	3.7	3.6	3.7	3.6	3.7	3.7	3.6	43.6
Passing Cody Gage	kaf	40.8	24.4	25.2	25.2	22.7	25.2	28.0	85.9	125.2	129.4	81.0	78.5	691.5
Passing Cody Gage	cfs	664	410	410	410	409	410	471	1397	2104	2104	1317	1319	

Shoshone Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Shoshone Release	kaf	6.2	6.0	6.2	6.2	3.4	6.1	6.0	9.1	11.3	11.2	7.5	6.3	85.5
Generation	gwh	1.149	1.106	1.142	1.138	0.622	1.111	1.092	1.669	2.158	2.227	1.484	1.201	16.099
Max Generation	gwh	2.232	2.160	2.232	2.232	0.625	2.232	2.160	2.232	2.160	2.232	2.232	2.160	24.889
% Max Generation		51	51	51	51	100	50	51	75	100	100	66	56	
Ave kwh/af		185	184	184	184	183	182	182	183	191	199	198	191	188
End-Month Power Cap	mw	3	3	3	3	1	3	3	3	3	3	3	3	

Buffalo Bill Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Buffalo Bill Release	kaf	26.5	14.8	15.3	15.3	13.8	15.4	14.8	54.5	51.3	51.5	51.2	50.6	375.0
Generation	gwh	7.206	4.059	4.193	4.183	3.762	4.186	4.006	13.383	12.956	13.397	13.388	12.961	97.680
Max Generation	gwh	13.392	12.960	13.392	13.392	12.096	13.392	12.960	13.392	12.960	13.392	13.392	12.960	157.680
% Max Generation		54	31	31	31	31	31	31	100	100	100	100	100	
Ave kwh/af		272	274	274	273	273	272	271	246	253	260	261	256	260
End-Month Power Cap	mw	18	18	18	18	18	18	18	18	18	18	18	18	

Spirit Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Spirit Mtn Release	kaf	12.4	0.0	0.0	0.0	0.0	0.0	10.6	34.4	33.3	34.4	34.4	33.3	192.8
Generation	gwh	1.288	0.000	0.000	0.000	0.000	0.000	1.079	2.709	2.884	3.249	3.271	2.983	17.463
Max Generation	gwh	1.674	0.000	0.000	0.000	0.000	0.000	1.620	3.348	3.240	3.348	3.348	3.240	19.818
% Max Generation		77	0	0	0	0	0	67	81	89	97	98	92	
Ave kwh/af		104						102	79	87	94	95	90	91
End-Month Power Cap	mw	2	0	0	0	0	0	2	4	5	5	5	4	

Heart Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Heart Mtn Release	kaf	4.4	0.0	0.0	0.0	0.0	0.0	3.6	18.6	18.0	18.6	18.6	18.0	99.8
Generation	gwh	1.053	0.000	0.000	0.000	0.000	0.000	0.862	4.453	4.309	4.453	4.453	4.309	23.892
Max Generation	gwh	1.049	0.000	0.000	0.000	0.000	0.000	2.160	4.464	4.320	4.464	4.464	4.320	25.241
% Max Generation		100	0	0	0	0	0	40	100	100	100	100	100	
Ave kwh/af		239						239	239	239	239	239	239	239
End-Month Power Cap	mw	1	0	0	0	0	0	3	6	6	6	6	6	

Total Generation	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Generation	gwh	10.696	5.165	5.335	5.321	4.384	5.297	7.039	22.214	22.307	23.326	22.596	21.454	155.134
End-month Power Cap	mw	24	21	21	21	19	21	26	31	32	32	32	31	

TABLE WYT12C

BUFFALO BILL RESERVOIR OPERATING PLAN
Based on October 1 Inflow Estimates
2010 Reasonable Maximum Inflow Estimates

Buffalo Bill Reservoir		Initial Cont		482.4 kaf		Maximum Cont		643.1 kaf		Minimum Cont		41.8 kaf	
			Elev	5372.57 ft			Elev	5393.50 ft			Elev	5259.64 ft	
2009		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Monthly Inflow	kaf	28.0	24.3	19.8	16.5	14.7	20.9	51.8	205.3	442.0	286.3	73.2	34.4	1217.2
Shoshone Release	kaf	6.2	6.0	6.2	6.1	3.4	6.1	6.0	12.3	11.4	11.3	11.4	6.6	93.0
Non-Power Release	kaf	0.0	0.0	0.0	0.0	2.2	0.0	0.0	51.0	177.5	137.8	22.3	0.0	390.8
Total Flow Below Dam	kaf	6.2	6.0	6.2	6.1	5.6	6.1	6.0	63.3	188.9	149.1	33.7	6.6	483.8
Buffalo Bill Release	kaf	26.4	14.8	15.3	15.4	13.8	15.4	46.5	54.8	51.7	51.7	51.4	50.7	407.9
Municipal Delivery	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
Heart Mtn Release	kaf	4.5	0.0	0.0	0.0	0.0	0.0	9.0	18.6	18.0	18.6	18.6	18.0	105.3
Heart Mtn Delivery	kaf	8.0	0.0	0.0	0.0	0.0	0.0	7.0	36.0	42.0	48.0	41.0	32.0	214.0
Total Outflow	kaf	45.4	21.1	21.8	21.8	19.7	21.8	68.8	173.0	300.9	267.7	145.0	107.6	1214.6
Bypass/Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.0	177.5	137.8	22.3	0.0	388.6
End-Month Targets	kaf	465.0									630.0		485.0	
End-Month Content	kaf	465.0	468.2	466.2	460.9	455.9	455.0	438.0	470.3	611.4	630.0	558.2	485.0	
Est Total Storage	kaf	468.4	471.6	469.6	464.3	459.3	458.4	441.4	473.7	614.8	633.4	561.6	488.4	
End-Month Elevation	ft	5370.15	5370.60	5370.32	5369.58	5368.87	5368.75	5366.32	5370.89	5389.64	5391.97	5382.77	5372.93	
Net Change Content	kaf	-17.4	3.2	-2.0	-5.3	-5.0	-0.9	-17.0	32.3	141.1	18.6	-71.8	-73.2	2.6
Flow Below BB Pwr	kaf	32.6	20.8	21.5	21.5	19.4	21.5	52.5	118.1	240.6	200.8	85.1	57.3	891.7
Flow Below BB Pwr	cfs	530	350	350	350	349	350	882	1921	4043	3266	1384	963	
Spring Inflow	kaf	3.7	3.6	3.7	3.7	3.3	3.7	3.6	3.7	3.6	3.7	3.7	3.6	43.6
Passing Cody Gage	kaf	40.8	24.4	25.2	25.2	22.7	25.2	65.1	140.4	262.2	223.1	107.4	78.9	1040.6
Passing Cody Gage	cfs	664	410	410	410	409	410	1094	2283	4406	3628	1747	1326	

Shoshone Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Shoshone Release	kaf	6.2	6.0	6.2	6.1	3.4	6.1	6.0	12.3	11.4	11.3	11.4	6.6	93.0
Generation	gwh	1.149	1.107	1.145	1.124	0.624	1.118	1.094	2.232	2.157	2.232	2.240	1.256	17.478
Max Generation	gwh	2.232	2.160	2.232	2.232	0.625	2.232	2.160	2.232	2.160	2.232	2.232	2.160	24.889
% Max Generation		51	51	51	50	100	50	51	100	100	100	100	58	
Ave kwh/af		185	185	185	184	184	183	182	181	189	198	196	190	188
End-Month Power Cap	mw	3	3	3	3	1	3	3	3	3	3	3	3	

Buffalo Bill Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Buffalo Bill Release	kaf	26.4	14.8	15.3	15.4	13.8	15.4	46.5	54.8	51.7	51.7	51.4	50.7	407.9
Generation	gwh	7.181	4.063	4.202	4.222	3.775	4.207	12.145	13.380	12.956	13.379	13.398	12.968	105.876
Max Generation	gwh	13.392	12.960	13.392	13.392	12.096	13.392	12.960	13.392	12.960	13.392	13.392	12.960	157.680
% Max Generation		54	31	31	32	31	31	94	100	100	100	100	100	
Ave kwh/af		272	275	275	274	274	273	261	244	251	259	261	256	260
End-Month Power Cap	mw	18	18	18	18	18	18	18	18	18	18	18	18	

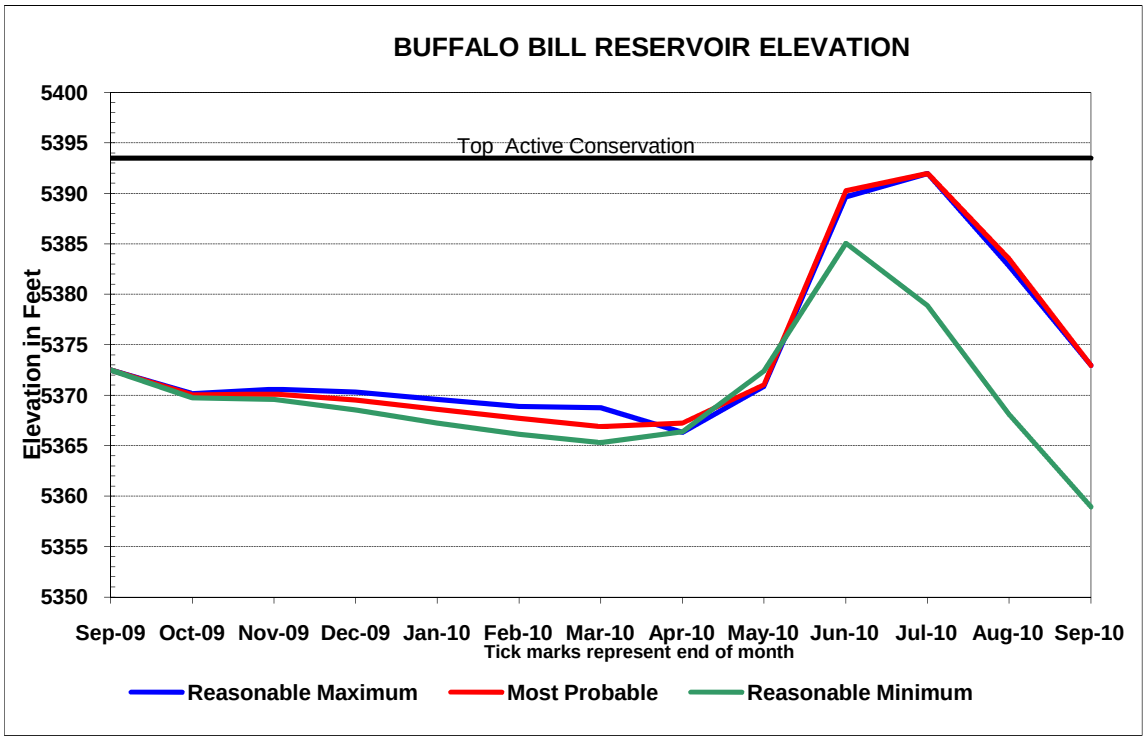
Spirit Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Spirit Mtn Release	kaf	12.5	0.0	0.0	0.0	0.0	0.0	16.0	34.4	33.3	34.4	34.4	33.3	198.3
Generation	gwh	1.299	0.000	0.000	0.000	0.000	0.000	1.511	2.687	2.864	3.235	3.257	2.970	17.823
Max Generation	gwh	1.674	0.000	0.000	0.000	0.000	0.000	1.620	3.348	3.240	3.348	3.348	3.240	19.818
% Max Generation		78	0	0	0	0	0	93	80	88	97	97	92	
Ave kwh/af		104						94	78	86	94	95	89	90
End-Month Power Cap	mw	2	0	0	0	0	0	2	4	5	5	5	4	

Heart Mtn Power	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Heart Mtn Release	kaf	4.5	0.0	0.0	0.0	0.0	0.0	9.0	18.6	18.0	18.6	18.6	18.0	105.3
Generation	gwh	1.077	0.000	0.000	0.000	0.000	0.000	2.154	4.453	4.309	4.453	4.453	4.309	25.208
Max Generation	gwh	1.071	0.000	0.000	0.000	0.000	0.000	2.160	4.464	4.320	4.464	4.464	4.320	25.263
% Max Generation		101	0	0	0	0	0	100	100	100	100	100	100	
Ave kwh/af		239						239	239	239	239	239	239	239
End-Month Power Cap	mw	1	0	0	0	0	0	3	6	6	6	6	6	

Total Generation	2009	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total Generation	gwh	10.706	5.170	5.347	5.346	4.399	5.325	16.904	22.752	22.286	23.299	23.348	21.503	166.385
End-month Power Cap	mw	24	21	21	21	19	21	26	31	32	32	32	31	

FIGURE WYG8

BUFFALO BILL RESERVOIR



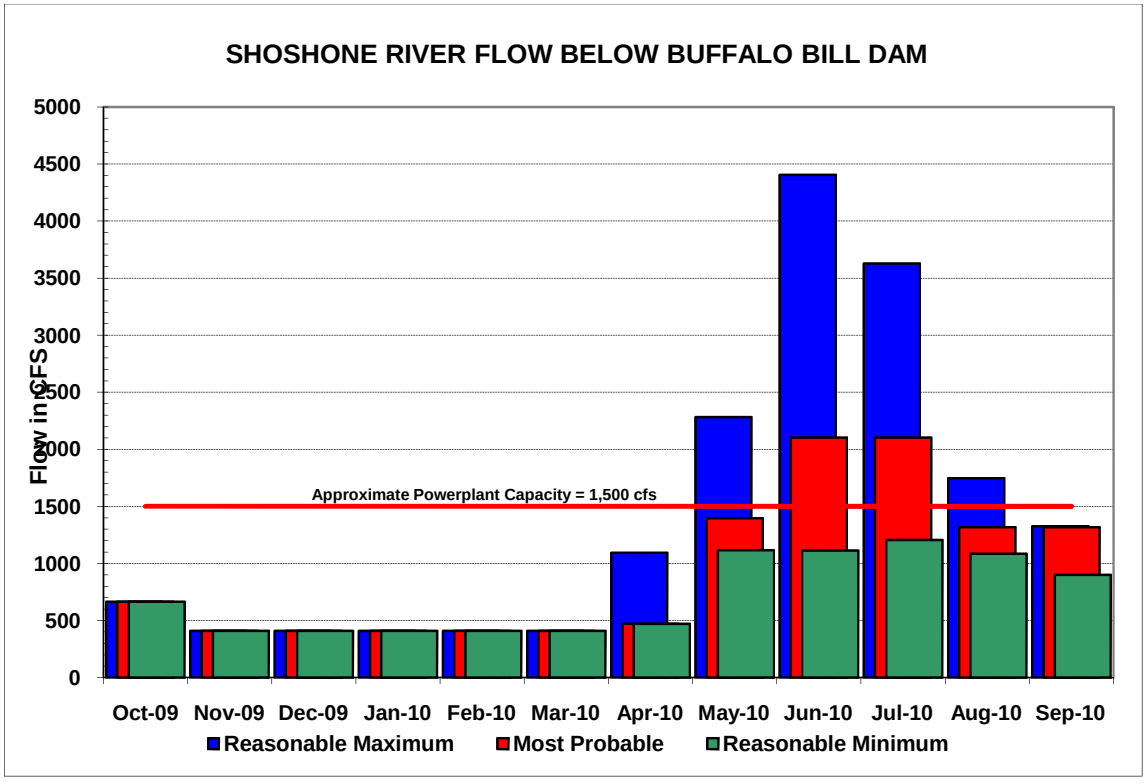


TABLE WYT13

WATER YEAR 2010 SCHEDULED OUTAGES FOR WYOMING POWERPLANTS

Facilities	Description of Work	Scheduled Dates
BOYSEN		
Unit 1	Penstock Inspection/Ring Seal Gate Maintenance	10/19/09- 10/22/09
Unit 1	Annual Maintenance/Install Greasing System	11/09/09 - 11/26/09
Unit 1	Hi-Pot DC Ramp Test	01/11/10 - 01/14/10
Unit 2	Penstock Inspection/Ring Seal Gate Maintenance	10/19/09 - 10/22/09
Unit 2	Annual Maintenance	11/30/09 - 12/10/09
Unit 2	Hi-Pot DC Ramp Test	01/11/10 - 01/14/10
BUFFALO BILL		
Buffalo Bill Powerplant		
Unit 1	Annual Maint./Hi-Pot DC Ramp Test/ Breaker 118 Maint.	11/09/09 - 12/10/09
Unit 2	Annual Maint./Hi-Pot DC Ramp Test	12/21/09 - 01/07/10
Unit 3	Annual Maint./Hi-Pot DC Ramp Test	01/19/10 - 01/28/10
Shoshone Powerplant		
Unit 3	Annual Maintenance	02/08/10 - 02/18/10
Unit 3	Hi-Pot DC Ramp Test	02/22/10 - 02/25/10
Heart Mountain Powerplant		
Unit 1	Dress Collector Rings	12/21/09 - 01/07/10
Unit 1	Transformer KZ1A Maintenance	10/19/09 - 10/23/09
Unit 1	Annual Maint./Hi-Pot DC Ramp Test/. Breaker 104 Maint	03/01/10 - 03/25/10
Spirit Mountain Powerplant		
Unit 1	Annual Maintenance	10/19/09 - 10/29/09
Unit 1	Hi-Pot DC Ramp Test	03/29/10 - 04/01/10

OPERATING PLANS FOR WATER YEAR 2010

Dickinson Reservoir

At the beginning of WY 2010, Dickinson Dam and E. A. Patterson Lake (also known as Dickinson Reservoir) had storage of 1,751 acre-feet at elevation 2410.87, which is 6,861 acre-feet and 9.13 feet below the top of the active conservation pool (elevation 2,420.00 @ 8,612 acre-feet). The reservoir is normally operated as full as possible at all times. Excess water will be released by spilling over the Bascule gate after the reservoir has filled, and by gated releases through the 24-inch river outlet valve. No releases are planned until irrigation water is required or if the spring runoff deems it necessary for flood protection.

Heart Butte Reservoir

At the beginning of WY 2010, Heart Butte Dam and Lake Tschida (also known as Heart Butte Reservoir) had storage of 52,752 acre-feet at elevation 2062.19, which is 7,390 acre-feet and 2.31 feet below the top of the active conservation pool (elevation 2,064.50 @ 67,142 acre-feet). Since there are no accurate inflow forecasts available, plans are to operate the reservoir as close to the top of the conservation pool as possible while regulating releases required, maintaining downstream conservation commitments, and preserving flood control space. During winter months, and when the reservoir level is below the spillway crest at elevation 2064.50, the river releases will be maintained at about 10 cfs to meet senior water right domestic water use demands below Heart Butte Dam. This will continue through the winter until the spring runoff requires higher releases sometime in late March or early April. Excess water is released only when the reservoir is full or ensured of filling.

Jamestown Reservoir

At the beginning of WY 2010, Jamestown Reservoir had storage of 29,217 acre-feet at elevation 1429.95, which is 3,860 acre-feet and 1.95 feet above the top of the active conservation pool (elevation 1,428.00 @ 25,357 acre-feet). Water releases were cut to 13 cfs in early December and will be continued throughout the winter until spring runoff requires additional releases to be made for flood protection. The reservoir is normally operated under the following criteria and limitations set forth in the Field Working Agreement between the Corps and Reclamation that reads:

Flood Control Regulation of Joint-Use Pool - Jamestown Reservoir

The joint space between elevations 1428 and 1431 will be used for seasonal multipurpose regulation. For purposes of flood control storage, the reservoir water elevation will be no higher than 1429.8 at the beginning of spring runoff period. That portion of the joint-use pool between elevations 1429.8 and 1431.0 will be used for storage and regulation of the spring runoff and summer rainstorms. In addition, water stored in this zone may be used during the summer months for conservation purposes. Storage remaining in the joint-use pool above elevation 1429.8 ft, msl after September 1 will be evacuated as directed by the Corps.

The Bureau has the option of lowering the reservoir below elevation 1429.8 ft, msl should it be desirable based on water supply needs. There are no requirements for maintaining a specified minimum reservoir release.

SEASON: BEGINNING OF SPRING RUNOFF TO SEPTEMBER 1

Elev. 1429.80 (Base of flood control zone) to Elev. 1431.00 (Top of Joint Use Pool)

Release greater of:

a. Conservation releases
b. Based on inflows occurring at the time and the existing potential for further inflows, releases will be maintained as necessary to result in a pool elevation of 1431 at the time inflows cease.

SEASON: SEPTEMBER 1 TO NOVEMBER 1

Make releases necessary to evacuate reservoir to elevation 1429.80 prior to November 1.

SEASON: NOVEMBER 1 TO BEGINNING OF SPRING RUNOFF

Make releases necessary to maintain elevation 1429.80.

Deerfield Reservoir

Deerfield Reservoir started WY2010 at elevation 5906.04 ft and storage of 14,845 acre-feet, which is 1.96 feet and 810 acre-feet below the top of conservation. The reservoir winter draw down will be about 14,500 acre-feet by December 1, 2009. This is close to our target of 15,000 acre-feet by December 1. A target of 15,000 acre-feet of storage by March 1 will usually dictate the winter release, which is set near December 1. The winter release for WY 2010 is set based on water usage from Deerfield by the Rapid Valley Water Conservancy District (District) and the storage target of 15,000 acre-feet by March 1. The goal is to be near full by May 1 which is the start of the irrigation season. No irrigation water was used by the District during the 2009 irrigation season.

A release of 11 cfs will be maintained until the spring runoff requires higher releases in late March or early April. Excess water is normally released only when the reservoir is full or assured of filling. Since no inflow forecasts are available, the reservoir is normally operated as full as possible. Two Snowtel sites (North Rapid Creek and Blind Park) are operated in the Pactola and Deerfield drainage basin. Deerfield storage may be required to meet District irrigation needs in water year 2010.

The jet flow gates will be used for winter releases and provide minimum stream flows of 6 cfs or more which will enhance winter fishery conditions in Castle Creek and improve fishery production conditions in the stream.

Storage at the end of water year will depend on the amount of inflow to the Pactola-Deerfield system and the need for project water deliveries from Deerfield Reservoir.

During average and above average inflow years, summer releases will be made to bring the reservoir storage to about 14,900 acre-feet by September 30. This is to accommodate minimum releases of 6 cfs into Castle Creek during the winter. The actual release will depend on runoff conditions and will take into account downstream ice conditions in Castle Creek.

Pactola Reservoir

Pactola Reservoir started WY 2010 at elevation 4578.65 feet and storage of 54,651 acre-feet (53,634 acre-feet active storage), which is 1.55 feet and 1,321 acre-feet below the top of conservation. Operating criteria established for the reservoir in the Definite Plan Report called for minimum winter conservation releases to be 7 cfs from October 1 to April 15 and 20 cfs from April 15 to April 30 when the reservoir content is below 29,000 acre-feet. Releases of 15 cfs from October 1 through March 1 and 20 cfs from March 1 through April 30 are established for reservoir content above 29,000 acre-feet. Minimum summer conservation releases are 20 cfs at all reservoir contents.

Pactola Reservoir is operated as close to the top of the conservation pool as possible, while regulating releases required to maintain a downstream fishery and to preserve flood control space. The new long term storage contract, for Pactola Reservoir, between Reclamation and the city of Rapid City was signed on July 31, 2007. New operating criteria for releases to Rapid Creek were established in the Standard Operating Plans. The following minimum releases will be made as long as water is available in the Fisheries, Wildlife, and Recreation Pool.

1. Reservoir content greater than 29,000 acre-feet

Year round	20 cfs

2. Reservoir content less than 29,000 acre-feet

October 1 to April 15	15 cfs
April 15 to October 1	20 cfs

The winter release for WY 2010 is approximately 33 cfs and has been coordinated with the city of Rapid City, South Dakota, Department of Game, Fish, and Parks, local water users, Forest Service, and Corps of Engineers. With a reservoir content of 29,000 acre-feet and above, a release of 20 cfs has been specified in the Finding of No Significant Impact for the Environmental Assessment for the Pactola Reservoir Water Service Contract Renewal (FONSI No. DK600-00-03). Pactola Reservoir winter releases can be increased by 2 or 3 cfs during extremely cold weather to replace water that is lost in the formation of ice in the creek channel. Once the channel is covered with ice and snow, which provides insulation for the stream, the releases can be reduced if below average snow pack and inflow conditions indicate a need to conserve storage.

During the flood control season, total releases will be controlled between 20 cfs and 1000 cfs. Releases in excess of 200 cfs when storage is below the top of the conservation pool at elevation 4580.20 will be cleared with the Corps of Engineers. The Corps will issue release orders on a current basis when storage is in the exclusive flood control pool. Contract negotiations with water users at Pactola Reservoir will provide the basis for future reservoir operations.

During the irrigation season of May 1 through October 30 sufficient natural flows to meet prior rights of the irrigators will be bypassed through the reservoir. Orders by water users will be released under the provisions of contracts with the water users. Drought conditions that have existed in past years have resulted in conservation measures being initiated by water users. Continuation of water conservation measures will assist in conserving reservoir storage and refilling of the reservoir.

Angostura Reservoir

Angostura Reservoir started WY 2010 at elevation 3174.79 feet and storage of 74,443 acre-feet (32,238 acre-feet active storage), which is 12.41 feet and 48,605 acre-feet below the top of conservation. Since Angostura Reservoir is the principle source of water for the Angostura Irrigation District and no accurate inflow forecasts are available for this reservoir, it is operated as full as possible at all times. Excess water is released through the spillway when the reservoir is full or assured of filling.

Keyhole Reservoir

Keyhole Reservoir started WY 2010 at elevation 4087.47 feet and storage of 100,679 acre-feet (94,087 acre-feet active storage), which is 11.83 feet and 87,992 acre-feet below the top of conservation. At the beginning of WY 2010, South Dakota storage for the Belle Fourche Irrigation District is 12,730 acre-feet and Wyoming storage for the Crook County Irrigation District is 10,863 acre-feet.

Releases from Keyhole Reservoir are made for either irrigation requirements or flood control. Releases are not anticipated from the reservoir from October through May. Flood control releases are not expected unless extreme precipitation events occur to fill the reservoir.

Discharges from toe drains of the dam and downstream inflows normally satisfy downstream requirements for stock water and other minor uses during this period. Releases from storage accounts will be made during the summer of 2010 in response to irrigation demand from the Belle Fourche Irrigation District in South Dakota and the Crook County Irrigation District in Wyoming. Each organization maintains a storage account in Keyhole Reservoir and the contract with the Belle Fourche Irrigation District also includes provisions for the annual purchase of additional unsold South Dakota storage. Peak irrigation demand is normally between 125 and 175 cfs.

The Belle Fourche Irrigation District has lands along the inlet canal that depend entirely on Keyhole Reservoir for storage. These lands will be served with flows from the Belle Fourche River and storage from Keyhole. Additional water from Keyhole Reservoir to supplement storage in Belle Fourche Reservoir may be necessary. Crook County Irrigation District also depends entirely on Keyhole Reservoir for storage and has adequate supplies of water in its account for use this year.

Shadehill Reservoir

Shadehill Reservoir started WY 2010 at elevation 2268.67 feet and storage of 104,205 acre-feet (60,336 acre-feet active storage), which is 3.33 feet and 15,967 acre-feet below the top of conservation. The winter release will be maintained at around 49 cfs to conserve storage and still maintain stream flow. This release rate will be maintained constant or reduced from the time the stream ices over until ice comes out of the channel in the spring to prevent ice jams at crossings. The release rate will be adjusted as necessary in the spring to control reservoir inflows and fill the reservoir. Excess water is released only when the reservoir is full or assured of filling. Releases for irrigation demands will be made based on water user requests.

Belle Fourche Reservoir

Belle Fourche Reservoir started WY 2010 at elevation 2967.51 feet and storage of 117,891 acre-feet (114,808 acre-feet active storage), which is 7.49 feet and 54,982 acre-feet below the top of conservation.

A bypass of 5 cfs will be made at the Belle Fourche Diversion Dam to provide flows for domestic use between the diversion dam and the Belle Fourche River confluence with Owl Creek. No releases from the reservoir are planned until irrigation begins in the spring of 2010.

When the volume of water supply available from the reservoir can be estimated in May or June, the Belle Fourche Irrigation District will establish allotments of water to each irrigator and the storage will be used accordingly. The Standing Operating Procedures for Belle Fourche Dam limit the maximum drawdown of the reservoir to 0.3 feet per day as established in the 1984 Safety Evaluation of Existing Dams report.

Higher rates of drawdown are acceptable if the total drawdown is limited to 20 feet. This restriction will affect delivery rates to water users in the late summer if the reservoir does not fill. At low reservoir levels, the draw down rate becomes the governing factor for releases.

CORPS OF ENGINEERS MAIN STEM RESERVOIRS

The Missouri River main stem reservoir system consists of six reservoirs located on the Missouri River in Montana, North Dakota, South Dakota, and Nebraska. This reservoir system serves flood control, irrigation, navigation, power, municipal and industrial water supply, water quality control, fish and wildlife, and recreation. Based on information from the Corps' 2009 AOP, the capacity and storage allocations of the main stem system were updated to current values and are shown in downstream order as follows:

Reservoir Storage Allocation (1,000 Acre-Feet)

Dam	Permanent	Carryover Multiple Use	Annual Flood Control and Multiple Use	Exclusive Flood Control	Total Storage
Fort Peck	4,073	10,667	2,838	922	18,500
Garrison	4,980	13,130	4,222	1,489	23,821
Oahe	5,373	13,461	3,201	1,102	23,137
Big Bend	1,621	0	117	60	1,798
Fort Randall	1,517	1,607	1,309	985	5,418
Gavins Point	307	0	86	57	450
Totals	17,871	38,865	11,773	4,615	73,124

Each main stem facility serves a powerplant. The number of generating units and total nameplate capabilities are shown below:

Powerplant	Units	Capacity (Kilowatts)
Fort Peck	5	185,250
Garrison	5	583,300
Oahe	7	786,030
Big Bend	8	494,320
Fort Randall	8	320,000
Gavins Point	3	132,300
Totals	36	2,501,200

Main stem system releases are regulated to support the multiple use purposes of the reservoirs. The navigation season on the Missouri River below the dams normally is from late March to late November. Generally, releases from the system for navigation are higher during late summer and fall lowering the system storage. During that time, much of the system's hydropower is generated from the lower most projects. During closure of the navigation season, higher releases are made and more power is generated from the upstream Fort Peck and Garrison Reservoirs. This offsets the reduced release and generation from the downstream projects during winter closure of the river for navigation. The desired annual target system storage level is 56.8 million acre-feet on the first of March.

The regulation of Missouri River flows by the main stem storage provided benefits to nine water resource related functions, including flood control, irrigation, navigation, power, municipal and industrial water supply, water quality control, fish and wildlife, and recreation. Table CET1 presents the regulation benefit for most of those functions as recorded in 2008-2009, 2007-2008, and the average. Benefits are defined as the tons of produce shipped, dollars of damages prevented, kilowatt hours of electricity produced, and reservoir elevation and river stages maintained. For the shipping information, estimates also were provided this year which included the sand, gravel, and waterway material shipped.

TABLE CET1

Main Stem Reservoir Water Regulation
Comparison with Past Regulations

Use of Regulated Water	Period of Use or Season	Totals	Totals	Long-Term
Navigation*	Apr. - Dec.[4]	0.185 million tons (2009)	0.186 million tons (2008)	1.89 million tons[1]
Flood Damages Prevented	Oct. – Sept.	$ 3,308.5** million (2009)	$ 2,877 million (2008)	$ 24.9 billion[2]
Energy	Aug. - Jul.	5.7 billion KWH (Aug. 08-July 09)	4.7 billion KWH (Aug. 07-July 08)	9.4 billion KWH[3]

* Excludes sand, gravel, and waterway material (2009 estimated and 2008 preliminary)
2009 – 5.06 million tons sand, gravel, and waterway material
Total Tonnage including sand, gravel, and waterway material
5.22 million tons (2009)
5.68 million tons (2008)
7.02 million tons (43-year long-term average through 2009)
** Includes flood damages prevented in Kansas City District.

The main stem reservoirs also provide supplemental water for irrigation and municipal uses and improves water quality in the river system.

[1]Average for 43 years 1967-2009 with the peak shipments in 1977 (3.34 million tons) [2]Total damages prevented (1937-2009) in non-updated dollars

[3]Average Annual 1968-2009

[4]End of navigation season shortened 30 days in 2008 and 0 days in 2009

A detailed description of the main stem system operations during 2009 is presented in annual operating reports prepared by and available for distribution from the U.S. Missouri River Basin Water Management Division, U.S. Army Corps of Engineers, Northwestern Division, and Omaha, Nebraska.

ENERGY GENERATION

There are 14 Federal powerplants located in the Upper Missouri River Basin that are currently operating. Eight of the powerplants are operated and maintained by Reclamation and have a total capacity of 348,100 kilowatts. The other six have a total capacity of 2,501,200 kilowatts and are operated and maintained by the Corps. The Corps' powerplants are located on the main stem of the Missouri River. Generation from the 14 powerplants is marketed by the Department of Energy.

Total generation in the combined system in WY 2009 was 7755.338 million kilowatt hours, 1797.039 million kilowatt hour's more than in WY 2008. A summary of the past 10 years of energy generation within the Upper Missouri River Basin is shown below.

USBR and COE Energy Generation Million KiloWatt Hours			
Year	USBR	COE	TOTAL
2009	1481.641	6273.697	7755.338
2008	1182.399	4775.900	5958.299
2007	794.348	5061.000	5855.348
2006	1088.603	6199.964	7288.567
2005	953.992	5553.800	6507.792
2004	688.367	7046.084	7734.451
2003	757.118	7783.378	8540.496
2002	708.594	7271.994	7980.588
2001	905.528	6521.944	7427.472
2000	1240.802	10363.931	11604.733

A comparison of 2008 and 2009 generation and other data from Missouri Basin Region powerplants is shown on Table CET 2. Tables CET 3, 4, and 5, show the monthly generation, power releases, and total downstream releases, respectively, for all Federal plants in the Missouri Basin Region. The annual energy generation for each of the last several years for all Reclamation, Corps, and combined plants is shown graphically on Figures CEG 1, 3, and 5, respectively, Monthly generation for each month during the past several years is shown graphically on Figures CEG 2, 4, and 6.

For a more detailed account of powerplants operation at Reclamation facilities during the year, refer to the 2009 operation summaries. Information on the Corps' powerplants operations can be obtained from the annual operating reports prepared by and available for distribution from the Reservoir Control Center, U.S. Army Corps of Engineers, Omaha, Nebraska.

TABLE CET2

ANNUAL ENERGY PRODUCTION DATA

WATER YEAR 2009

BUREAU PLANTS	INSTALLED CAPACITY (KW)	MILLION KILOWATT-HOURS GENERATED 2008	MILLION KILOWATT-HOURS GENERATED 2009	WATER USED FOR GENERATION IN 2009 1,000 AF	WATER USED FOR GENERATION IN 2009 PERCENT OF TOTAL RELEASE	WATER USED FOR GENERATION IN 2009 KW-HOURS PER AF	RIVER RELEASE 1,000 AF	TOTAL RELEASE 1,000 AF
Canyon Ferry	50,000	319.265	385.930	3,149.078	84.78	122.55	3,614.835	3,714.225
Pilot Butte[1]	1,600	2.015	0.000	0.000	0.00	N/A	185.145	185.145
Boysen	15,000	40.805	67.408	782.472	71.90	86.15	1,088.303	1,088.303
Buffalo Bill Reservoir Units								
Shoshone	3,000	20.703	22.595	122.943	10.86	183.78	See below for total.	
Buffalo Bill	18,000	70.254	84.268	341.551	30.17	246.72	See below for total.	
Heart Mountain	6,000	16.582	18.710	83.321	7.36	224.55	See below for total.	
Spirit Mountain [2]	4,500	14.468	16.689	165.665	14.63	100.74	See below for total.	
Total for Buffalo Bill Reservoir[3]	31,500	122.007	142.262	713.480	63.01	199.39	910.267	1,132.270
Yellowtail	250,000	698.307	886.041	2,428.707	88.75	364.82	2,678.953	2,736.682
Subtotal	**348,100**	**1,182.399**	**1,481.641**	**7,073.737**	**79.87**	**209.46**	**8,477.503**	**8,856.625**
CORPS PLANTS								
Fort Peck	185,250	595.200	592.102	3,916.00	100.00	151.20	3,916.000	3,916.000
Garrison	583,300	1,249.700	1,422.468	9,783.00	100.00	145.40	9,783.000	9,783.000
Oahe	786,030	1,088.900	1,769.198	11,911.00	100.00	148.53	11,911.000	11,911.000
Big Bend	494,320	460.100	667.800	11,070.00	100.00	60.33	11,070.000	11,070.000
Fort Randall	320,000	902.800	1,205.027	11,683.00	100.00	103.14	11,683.000	11,683.000
Gavins Point	132,300	479.200	617.102	13,200.00	98.58	46.75	13,390.000	13,390.000
Subtotal	**2,501,200**	**4,775.900**	**6,273.697**	**61,563.00**	**99.69**	**101.91**	**61,753.000**	**61,753.000**
TOTAL MISSOURI BASIN	**2,849,300**	**5,958.299**	**7,755.338**	**68,636.74**	**97.21**	**112.99**	**70,230.503**	**70,609.625**

[1] River Release and Total Release at Pilot Butte Reservoir is computed inflow to Pilot Butte Reservoir due to the location of the powerplant at inlet of supply canal.

[2] Spirit Mountain Powerplant is used to dissipate energy in the transition from the pressurized portion of the Shoshone Canyon Conduit to the free flow section of the conduit.

TABLE CET3
MONTHLY ENERGY GENERATION (MILLION KILOWATT-HOURS)
WATER YEAR 2009

	BUREAU OF RECLAMATION PLANTS								
				BUFFALO BILL PLANTS					
MONTH	CANYON FERRY	PILOT BUTTE	BOYSEN	HEART MOUNTAIN	SPIRIT MOUNTAIN	BUFFALO BILL	SHOSHONE	YELLOWTAIL	TOTAL
October	27.422	0.000	3.459	0.845	0.737	4.831	2.019	61.279	**100.592**
November	28.728	0.000	3.597	0.000	0.000	3.371	1.946	52.342	**89.984**
December	31.140	0.000	3.856	0.000	0.000	2.400	2.004	51.507	**90.907**
January	32.467	0.000	3.857	0.000	0.000	2.466	2.020	52.475	**93.285**
February	30.494	0.000	3.339	0.000	0.000	3.199	0.545	43.705	**81.282**
March	28.647	0.000	3.934	0.000	0.000	2.951	1.279	45.003	**81.814**
April	38.939	0.000	3.092	1.066	0.586	7.081	1.989	59.409	**112.162**
May	41.677	0.000	9.395	3.519	2.470	13.185	2.026	87.294	**159.566**
June	37.387	0.000	10.857	3.406	3.210	12.932	2.152	156.190	**226.134**
July	36.392	0.000	9.452	3.513	3.207	13.232	2.321	141.534	**209.651**
August	27.092	0.000	7.398	3.179	3.399	10.856	2.253	68.117	**122.294**
September	25.545	0.000	5.172	3.182	3.080	7.764	2.041	67.186	**113.970**
TOTAL	**385.930**	**0.000**	**67.408**	**18.710**	**16.689**	**84.268**	**22.595**	**886.041**	**1,481.641**

	CORPS OF ENGINEERS PLANTS							MISSOURI
MONTH	FORT PECK	GARRISON	OAHE	BIG BEND	FORT RANDALL	GAVINS POINT	TOTAL	BASIN TOTAL
October	35.371	94.921	118.565	49.823	87.933	51.546	**438.159**	**538.751**
November	34.942	91.834	43.273	16.320	38.088	25.163	**249.620**	**339.604**
December	54.506	119.514	128.095	52.074	72.966	38.171	**465.326**	**556.233**
January	55.994	133.793	123.335	52.644	66.658	38.054	**470.478**	**563.763**
February	50.487	123.525	82.764	37.825	34.908	56.409	**385.918**	**467.200**
March	36.317	84.744	110.165	44.606	71.725	36.900	**384.457**	**466.271**
April	35.568	74.869	107.785	44.225	82.789	45.008	**390.244**	**502.406**
May	56.394	118.832	124.782	39.642	109.668	50.683	**500.001**	**659.567**
June	57.353	142.104	194.687	69.913	140.394	54.631	**659.082**	**885.216**
July	63.219	149.198	225.986	79.462	158.364	71.042	**747.271**	**956.922**
August	62.373	153.580	242.290	85.497	164.287	72.803	**780.830**	**903.124**
September	49.578	135.554	267.471	95.769	177.247	76.692	**802.311**	**916.281**
TOTAL	**592.102**	**1,422.468**	**1,769.198**	**667.800**	**1,205.027**	**617.102**	**6,273.697**	**7,755.338**

TABLE CET4

WATER USED FOR POWER GENERATION (1,000 ACRE-FEET)
WATER YEAR 2009

MONTH	CANYON FERRY	BOYSEN	PILOT BUTTE	BUFFALO BILL RESERVOIR UNITS				YELLOWTAIL	FORT PECK	GARRISON	OAHE	BIG BEND	FORT RANDALL	GAVINS POINT
				SHOSHONE	BUFF. BILL	HEART MTN.	SPIRIT MTN.[1]							
October	221.690	38.590	0.000	11.394	21.899	3.920	7.303	158.834	254.000	675.000	852.000	806.000	950.000	1,117.000
November	230.074	41.855	0.000	11.025	14.724	0.000	0.000	140.262	250.000	653.000	313.000	259.000	399.000	535.000
December	250.995	43.390	0.000	11.354	10.239	0.000	0.000	145.782	359.000	853.000	926.000	841.000	780.000	830.000
January	263.723	43.321	0.000	11.445	10.091	0.000	0.000	145.400	370.000	966.000	911.000	861.000	672.000	795.000
February	252.466	39.235	0.000	3.088	11.998	0.000	0.000	131.248	330.000	891.000	590.000	620.000	335.000	574.000
March	247.066	46.595	0.000	6.789	12.646	0.000	0.000	145.150	258.000	614.000	777.000	751.000	664.000	826.000
April	335.929	42.692	0.000	10.558	28.440	5.009	6.340	174.297	246.000	536.000	714.000	743.000	756.000	1,011.000
May	353.496	113.591	0.000	10.754	52.066	16.330	28.216	245.875	363.000	818.000	801.000	657.000	1,011.000	1,146.000
June	289.634	120.605	0.000	11.423	48.861	16.069	30.852	383.156	369.000	947.000	1,248.000	1,171.000	1,337.000	1,268.000
July	277.896	105.372	0.000	12.320	49.897	16.289	31.417	351.700	398.000	965.000	1,450.000	1,332.000	1,498.000	1,629.000
August	219.479	84.440	0.000	11.959	44.066	13.862	31.897	212.941	399.000	987.000	1,572.000	1,422.000	1,571.000	1,679.000
September	206.630	62.786	0.000	10.834	36.624	11.842	29.640	194.062	320.000	878.000	1,757.000	1,607.000	1,710.000	1,790.000
TOTAL	**3,149.078**	**782.472**	**0.000**	**122.943**	**341.551**	**83.321**	**165.665**	**2,428.707**	**3,916.000**	**9,783.000**	**11,911.000**	**11,070.000**	**11,683.000**	**13,200.000**

[1] Spirit Mountain Powerplant is used to dissipate energy in the transition from the pressurized portion of the Shoshone Canyon Conduit to the free flow section of the conduit. Water used for generation at Spirit Mountain Powerplant is then routed to Heart Mountain Canal or used for generation at Heart Mountain Powerplant.

TABLE CET5

TOTAL RELEASE (1,000 ACRE-FEET)
WATER YEAR 2009

MONTH	CANYON FERRY	BOYSEN	PILOT BUTTE	BUFFALO BILL	BULL LAKE	ANCHOR	YELLOWTAIL	FORT PECK	GARRISON	OAHE	BIG BEND	FORT RANDALL	GAVINS POINT
October	221.690	43.338	0.533	47.388	1.630	0.380	158.834	254.000	675.000	852.000	806.000	950.000	1,117.000
November	230.074	41.985	0.000	25.958	1.030	0.142	140.262	250.000	653.000	313.000	259.000	399.000	535.000
December	253.381	43.390	0.000	22.033	1.009	0.000	145.782	359.000	853.000	926.000	841.000	780.000	830.000
January	263.723	43.321	0.000	21.740	1.213	0.000	145.400	370.000	966.000	911.000	861.000	672.000	795.000
February	256.050	39.235	0.000	19.735	1.145	0.000	131.248	330.000	891.000	590.000	620.000	335.000	574.000
March	263.605	49.033	0.000	22.038	1.271	0.000	145.150	258.000	614.000	777.000	751.000	664.000	826.000
April	350.920	43.049	1.767	49.069	1.210	0.000	174.297	246.000	536.000	714.000	743.000	756.000	1,011.000
May	514.620	113.591	25.227	146.167	4.160	1.671	245.875	363.000	818.000	801.000	657.000	1,011.000	1,147.000
June	480.547	256.335	35.557	375.024	42.224	5.485	531.575	369.000	947.000	1,248.000	1,171.000	1,337.000	1,457.000
July	387.263	267.800	44.449	194.808	54.779	4.084	511.257	398.000	965.000	1,450.000	1,332.000	1,498.000	1,629.000
August	260.486	84.440	39.692	112.945	37.595	2.821	212.941	399.000	987.000	1,572.000	1,422.000	1,571.000	1,679.000
September	231.867	62.786	30.384	95.365	55.879	1.129	194.062	320.000	878.000	1,757.000	1,607.000	1,710.000	1,790.000
TOTAL	**3,714.226**	**1,088.303**	**177.609**	**1,132.270**	**203.145**	**15.712**	**2,736.683**	**3,916.000**	**9,783.000**	**11,911.000**	**11,070.000**	**11,683.000**	**13,390.000**

TABLE CET6
TOTAL RESERVOIR STORAGE CONTENTS (1,000 ACRE-FEET)
WATER YEARS 2008 AND 2009

BUREAU RESERVOIRS	TOP OF CONSERVATION CAPACITY [3]	DEAD AND INACTIVE CAPACITY	TOTAL STORAGE SEPTEMBER 30		END OF SEPTEMBER PERCENT OF AVERAGE	
			2008	2009	2008	2009
Clark Canyon	174.4	1.1	64.5	139.7	52	112
Canyon Ferry	1,891.9	396.0	1,756.4	1,679.6	103	98
Helena Valley	10.5	4.6	7.4	6.9	111	92
Gibson	96.5	0.0	22.0	5.6	79	20
Willow Creek	31.8	0.0	27.7	25.2	159	144
Pishkun	46.7	16.0	36.4	23.9	111	73
Lake Elwell	925.6	554.3	835.1	841.6	107	107
Sherburne	66.1	1.9	35.2	13.7	420	163
Fresno	92.9	0.4	57.6	41.1	144	103
Nelson	79.0	18.1	63.4	71.2	112	126
Bull Lake	152.5	0.7	84.5	79.8	111	105
Pilot Butte	33.7	3.8	11.6	19.1	63	106
Boysen	741.6	219.2	628.8	659.6	104	110
Anchor[1]	17.2	0.1	0.3	0.3	107	100
Buffalo Bill[2]	646.6	41.7	484.4	486.0	111	111
Bighorn Lake	1,070.0	493.6	1,067.8	1,060.8	105	104
E. A. Patterson	8.6	0.5	3.0	1.8	48	28
Lake Tschida	67.1	5.2	41.9	59.8	73	105
Jamestown Reservoir	31.5	0.8	29.1	29.2	101	101
Shadehill Reservoir	120.2	43.9	78.9	104.2	74	99
Angostura Reservoir	123.0	42.2	69.4	74.4	78	86
Deerfield Reservoir	15.7	0.2	14.5	14.8	109	111
Pactola Reservoir	56.0	1.0	50.1	54.7	108	118
Keyhole Reservoir	188.7	6.6	87.6	100.7	95	112
Belle Fourche Reservoir	172.9	3.1	98.3	117.9	144	171
Subtotal	**6,860.6**	**1,855.0**	**5,655.9**	**5,711.5**		
CORPS RESERVOIRS						
Fort Peck	17,578.0	4,073.0	10,435.0	12,066.0		
Garrison	22,332.0	4,980.0	14,705.0	19,405.0		
Oahe	22,035.0	5,373.0	14,731.0	18,884.0		
Big Bend	1,738.0	1,621.0	1,655.0	1,648.0		
Fort Randall	4,433.0	1,517.0	2,604.0	3,498.0		
Gavins Point	393.0	307.0	394.0	373.0		
Subtotal	**68,509.0**	**17,871.0**	**44,524.0**	**55,874.0**		
TOTAL UPPER MISSOURI BASIN	**75,369.6**	**19,726.0**	**50,179.9**	**61,585.5**		

[1] Percent of average content of Anchor Reservoir is based on an 18-year average, 1991-2008.

[2] Percent of average content of Buffalo Bill Reservoir is based on an 16-year average, 1993-2008; to reflect the operation of the reservoir since 1992 when the dam was raised and the capacity of the reservoir was increased to 646,565 acre-feet.

[3] Includes joint-use space.

TABLE CET7
WATER YEAR 2009
End-of-Month Reservoir Contents
(1,000 Acre-Feet)

RECLAMATION RESERVOIRS	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
CLARK CANYON RESERVOIR	77.4	87.9	97.2	106.6	118.8	129.4	147.3	151.1	176.4	161.0	147.9	139.7
% of Average	62	66	71	76	84	87	93	91	106	107	116	112
CANYON FERRY RESERVOIR	1,730.5	1,733.7	1,656.3	1,596.6	1,543.8	1,520.0	1,528.3	1,663.6	1,949.9	1,874.2	1,781.8	1,679.6
% of Average	100	99	99	101	102	105	105	102	103	102	103	98
HELENA VALLEY RESERVOIR	7.0	6.8	6.5	6.3	6.1	5.9	9.7	9.0	9.4	7.8	9.0	6.9
% of Average	102	101	100	103	106	105	105	100	106	105	111	92
GIBSON RESERVOIR	29.0	39.6	39.1	37.2	38.0	39.7	72.0	84.4	95.4	46.7	29.8	5.6
% of Average	97	115	102	89	84	83	135	99	107	80	89	20
WILLOW CREEK	27.5	27.6	27.8	27.9	28.2	28.7	29.9	32.7	31.1	28.7	26.9	25.2
% of Average	145	141	139	138	136	132	121	119	104	122	145	144
PISHKUN RESERVOIR	36.8	36.2	35.9	35.5	35.2	35.1	34.8	46.8	37.3	35.8	33.5	23.9
% of Average	108	105	105	104	104	103	85	102	88	96	95	73
LAKE ELWELL (TIBER DAM)	811.5	789.9	765.4	744.8	724.0	717.1	730.3	824.0	896.9	888.2	867.9	841.6
% of Average	109	108	108	109	109	106	104	103	97	98	103	107
SHERBURNE LAKE	39.5	43.8	46.2	48.0	49.3	46.8	31.7	39.2	61.6	52.8	30.3	13.7
% of Average	420	322	264	238	218	208	168	134	117	110	128	163
FRESNO RESERVOIR	56.2	56.4	54.4	51.4	48.6	59.1	85.6	91.8	81.1	51.9	38.4	41.1
% of Average	143	146	145	144	137	113	121	140	131	117	103	103
NELSON RESERVOIR	63.6	61.4	59.7	57.8	56.2	61.1	76.4	76.1	65.8	62.5	68.5	71.2
% of Average	107	105	106	105	104	112	127	126	110	114	126	126
BULL LAKE	87.9	89.6	89.9	90.3	90.6	90.9	88.7	115.5	143.3	144.3	125.7	79.8
% of Average	117	118	118	118	118	119	116	129	114	113	123	105
PILOT BUTTE RESERVOIR	28.6	28.4	28.2	28.1	28.0	27.8	31.3	31.0	32.1	30.9	20.3	19.1
% of Average	110	105	104	104	103	96	103	115	108	122	94	106
BOYSEN RESERVOIR	622.5	626.1	612.9	603.6	597.5	591.4	601.6	617.8	768.6	713.6	683.8	659.6
% of Average	104	106	107	109	110	110	116	112	117	110	111	110
ANCHOR RESERVOIR	0.4	0.3	0.3	0.5	0.5	0.6	1.1	3.4	6.3	4.2	1.1	0.3
% of Average[1]	132	157	143	223	212	185	218	223	200	215	192	100
BUFFALO BILL RESERVOIR	461.3	459.1	452.8	443.7	436.7	432.9	436.1	536.0	597.0	622.1	560.5	486.0
% of Average[2]	111	110	108	106	106	106	112	122	106	110	112	111
BIGHORN LAKE	1,060.3	1,038.9	991.2	957.8	939.5	933.0	901.3	923.7	1,163.7	1,126.5	1,102.5	1,060.8
% of Average	105	106	108	110	112	112	110	105	113	109	109	104
E. A. PATTERSON LAKE	3.0	2.4	2.4	2.4	2.4	7.5	8.8	8.7	8.8	5.8	3.3	1.8
% of Average	48	38	39	38	36	98	114	114	118	83	51	28
LAKE TSCHIDA	42.0	43.8	44.7	45.0	45.7	90.2	75.6	66.5	66.7	66.4	63.2	59.8
% of Average	72	75	77	77	76	134	114	101	101	107	108	105
JAMESTOWN RESERVOIR	28.7	28.8	29.1	29.2	29.5	43.0	219.9	148.0	68.5	34.9	31.5	29.2
% of Average	107	109	109	109	109	124	456	357	189	102	96	101
SHADEHILL RESERVOIR	78.9	80.3	80.5	79.4	83.3	159.8	161.2	118.2	115.7	112.9	108.6	104.2
% of Average	76	78	79	79	81	141	139	101	100	99	99	99
ANGOSTURA RESERVOIR	70.0	71.4	73.0	74.5	77.9	82.7	94.2	94.6	97.3	89.6	79.6	74.4
% of Average	78	78	79	79	78	78	87	85	88	89	88	86
DEERFIELD RESERVOIR	14.5	14.5	14.5	14.5	14.6	15.0	15.5	15.5	15.4	15.5	15.1	14.8
% of Average	109	108	106	104	103	104	108	107	107	109	110	111
PACTOLA RESERVOIR	50.6	51.3	51.3	51.9	52.8	55.1	55.8	55.8	55.9	55.4	54.9	54.7
% of Average	108	109	110	111	113	116	115	112	111	114	117	118
KEYHOLE RESERVOIR	87.3	87.7	87.8	89.1	93.8	98.1	107.4	106.8	106.3	104.3	103.2	100.7
% of Average	95	96	95	96	99	97	105	102	102	106	112	112
BELLE FOURCHE RESERVOIR	100.5	116.9	128.1	142.5	156.6	169.1	167.1	171.6	167.3	145.2	133.7	117.9
% of Average	126	131	130	132	134	128	116	112	115	128	166	171
CORPS RESERVOIRS	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
FORT PECK RESERVOIR	10,521.0	10,601.0	10,254.0	10,305.0	10,425.0	10,700.0	11,043.0	11,651.0	12,020.0	12,153.0	12,135.0	12,066.0
GARRISON RESERVOIR	14,794.0	14,813.0	14,457.0	14,305.0	14,126.0	14,874.0	15,947.0	16,758.0	18,493.0	19,610.0	19,599.0	19,405.0
OAHE RESERVOIR	14,505.0	14,900.0	14,706.0	14,765.0	15,561.0	17,674.0	20,469.0	20,831.0	20,793.0	20,427.0	19,865.0	18,884.0
BIG BEND RESERVOIR	1,621.0	1,645.0	1,650.0	1,634.0	1,652.0	1,670.0	1,628.0	1,660.0	1,640.0	1,640.0	1,640.0	1,648.0
FORT RANDALL RESERVOIR	2,512.0	2,469.0	2,488.0	2,880.0	3,344.0	3,594.0	3,819.0	3,574.0	3,532.0	3,528.0	3,501.0	3,498.0
LEWIS AND CLARK LAKE	404.0	410.0	380.0	394.0	335.0	364.0	352.0	348.0	359.0	364.0	361.0	373.0

[1] Percent of average content of Anchor Reservoir is based on a 18-year average, 1991-2008; this is due to the availability of data for Anchor Reservoir.

[2] Percent of average content of Buffalo Bill Reservoir is based on an 16-year average, 1993-2008; to reflect the operation of the reservoir since 1992 when the dam was raised and the capacity of the reservoir was increased

TABLE CET8
WATER YEAR 2009
Monthly Inflow Amounts
(1,000 Acre-Feet)

RECLAMATION RESERVOIRS	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CLARK CANYON RESERVOIR	15.0	12.5	11.5	11.5	14.0	12.7	20.0	19.5	45.2	19.4	16.0	15.8	213.2
% of Average	65	56	60	72	96	68	92	72	126	70	83	79	80
CANYON FERRY RESERVOIR	195.8	233.3	176.0	204.1	203.2	239.8	359.2	650.0	766.9	311.6	168.0	129.7	3,637.5
% of Average	68	79	73	92	92	89	103	113	100	92	98	61	92
HELENA VALLEY RESERVOIR	-0.4	-0.3	-0.2	-0.3	-0.2	-0.2	5.9	11.4	17.3	14.7	18.1	6.7	72.5
% of Average	N/A	N/A	N/A	N/A	N/A	N/A	109	100	123	97	111	82	105
GIBSON RESERVOIR	14.5	17.5	13.6	12.2	9.1	10.4	44.5	157.2	140.1	47.9	24.6	18.4	509.8
% of Average	77	102	86	88	74	71	111	92	71	70	93	96	83
WILLOW CREEK	-0.2	0.1	0.2	0.2	0.3	0.5	1.2	2.8	0.5	-0.1	-0.2	-0.3	4.9
% of Average	N/A	7	38	51	63	58	59	69	14	N/A	N/A	N/A	34
PISHKUN RESERVOIR	0.7	-0.6	-0.3	-0.4	-0.3	-0.1	-0.3	31.0	74.8	83.3	41.2	38.4	267.4
% of Average	27	N/A	N/A	N/A	N/A	N/A	N/A	85	129	119	100	298	117
LAKE ELWELL (TIBER DAM)	15.9	12.6	10.1	15.4	12.9	25.1	43.2	125.2	107.3	30.5	17.7	9.8	425.8
% of Average	71	57	54	95	60	50	68	75	56	49	91	61	63
SHERBURNE LAKE	4.2	4.3	2.3	1.9	1.2	1.3	8.4	26.0	26.8	15.2	8.4	4.1	104.2
% of Average	69	78	62	67	51	43	93	81	64	72	89	64	73
FRESNO RESERVOIR	1.5	3.1	0.8	0.1	-0.3	13.5	37.6	43.3	36.4	30.1	30.2	24.7	221.0
% of Average	21	146	83	11	N/A	44	95	99	80	85	92	95	82
NELSON RESERVOIR	0.2	-2.3	-1.6	-2.0	-1.5	4.9	15.3	5.4	5.7	10.8	13.4	6.9	55.2
% of Average	5	N/A	N/A	N/A	N/A	328	206	81	73	216	187	113	135
BULL LAKE	5.0	2.8	1.3	1.6	1.4	1.5	2.7	30.9	70.1	55.7	19.0	10.0	202.0
% of Average	92	90	54	75	88	85	73	108	116	122	90	106	109
PILOT BUTTE RESERVOIR[1]	17.6	-0.3	-0.1	-0.1	-0.2	-0.1	5.3	24.9	36.7	43.2	29.1	29.2	185.1
% of Average	175	N/A	N/A	N/A	N/A	N/A	72	105	97	103	89	127	103
BOYSEN RESERVOIR	37.0	45.6	30.2	34.0	33.2	42.9	53.3	129.7	407.2	212.8	54.6	38.6	1,119.1
% of Average	62	94	79	93	88	81	110	104	169	166	93	72	121
ANCHOR RESERVOIR	0.4	0.1	0.0	0.1	0.0	0.1	0.5	4.0	8.4	2.0	-0.2	0.3	15.7
% of Average[2]	64	44	N/A	185	36	26	75	98	129	94	N/A	53	99
BUFFALO BILL RESERVOIR	24.3	23.7	15.8	12.6	12.7	18.3	52.2	246.1	436.0	219.9	51.3	20.9	1,133.9
% of Average	97	113	100	85	97	97	127	155	150	141	115	80	137
BIGHORN LAKE	151.4	118.9	98.0	112.0	113.0	138.6	142.6	268.3	771.6	474.1	188.9	152.3	2,729.7
% of Average	83	78	71	84	84	82	87	109	187	163	118	89	116
E. A. PATTERSON LAKE	-0.1	0.6	0.2	0.0	0.0	21.2	20.5	0.4	0.7	3.3	2.3	1.0	50.1
% of Average	-21	261	115	7	1	351	622	38	42	363	555	841	310
LAKE TSCHIDA	0.1	1.8	0.9	0.3	0.7	115.9	132.5	6.1	4.1	8.0	2.2	1.2	273.7
% of Average	7	119	90	37	15	440	943	118	54	234	170	678	406
JAMESTOWN RESERVOIR	0.5	0.8	0.3	0.1	0.3	13.6	239.9	34.7	1.1	5.1	3.4	3.4	303.2
% of Average	33	67	57	33	73	155	952	384	27	100	70	194	485
SHADEHILL RESERVOIR	0.8	2.2	1.0	-0.3	4.7	177.6	208.5	13.4	7.5	0.6	-0.6	-1.7	413.9
% of Average	89	202	109	N/A	112	920	1682	115	139	16	N/A	N/A	675
ANGOSTURA RESERVOIR	0.6	1.4	1.6	1.5	3.4	4.8	11.6	2.6	7.2	5.4	1.6	0.2	42.0
% of Average	26	44	81	66	64	41	141	22	50	172	69	21	62
DEERFIELD RESERVOIR	0.5	0.5	0.5	0.5	0.5	0.9	1.8	1.5	0.8	0.9	0.6	0.6	9.6
% of Average	60	74	70	74	75	88	143	105	59	97	72	85	87
PACTOLA RESERVOIR	1.8	2.0	1.7	1.8	1.7	3.4	9.0	7.3	4.4	2.9	2.2	2.0	40.1
% of Average	84	111	115	116	109	124	207	114	69	79	77	94	109
KEYHOLE RESERVOIR	-0.3	0.4	0.1	1.3	4.7	4.3	9.3	-0.6	-0.5	-2.0	-1.2	-2.5	13.1
% of Average	N/A	N/A	27	303	183	67	494	N/A	N/A	N/A	N/A	N/A	105
BELLE FOURCHE RESERVOIR	2.2	16.4	11.3	14.4	14.1	12.5	13.3	9.7	16.3	11.2	16.2	7.3	144.7
% of Average	19	167	122	153	154	85	112	59	161	271	978	148	128

[1] Negative values are the result of calculated inflow based on reservoir release and change in reservoir content.

[2] Percent of average inflow for Anchor Reservoir is based on a 18-year average, 1991-2008, this is due to the availability of data for Anchor Reservoir.

FIGURE CEG1

ANNUAL GENERATION AT USBR PLANTS

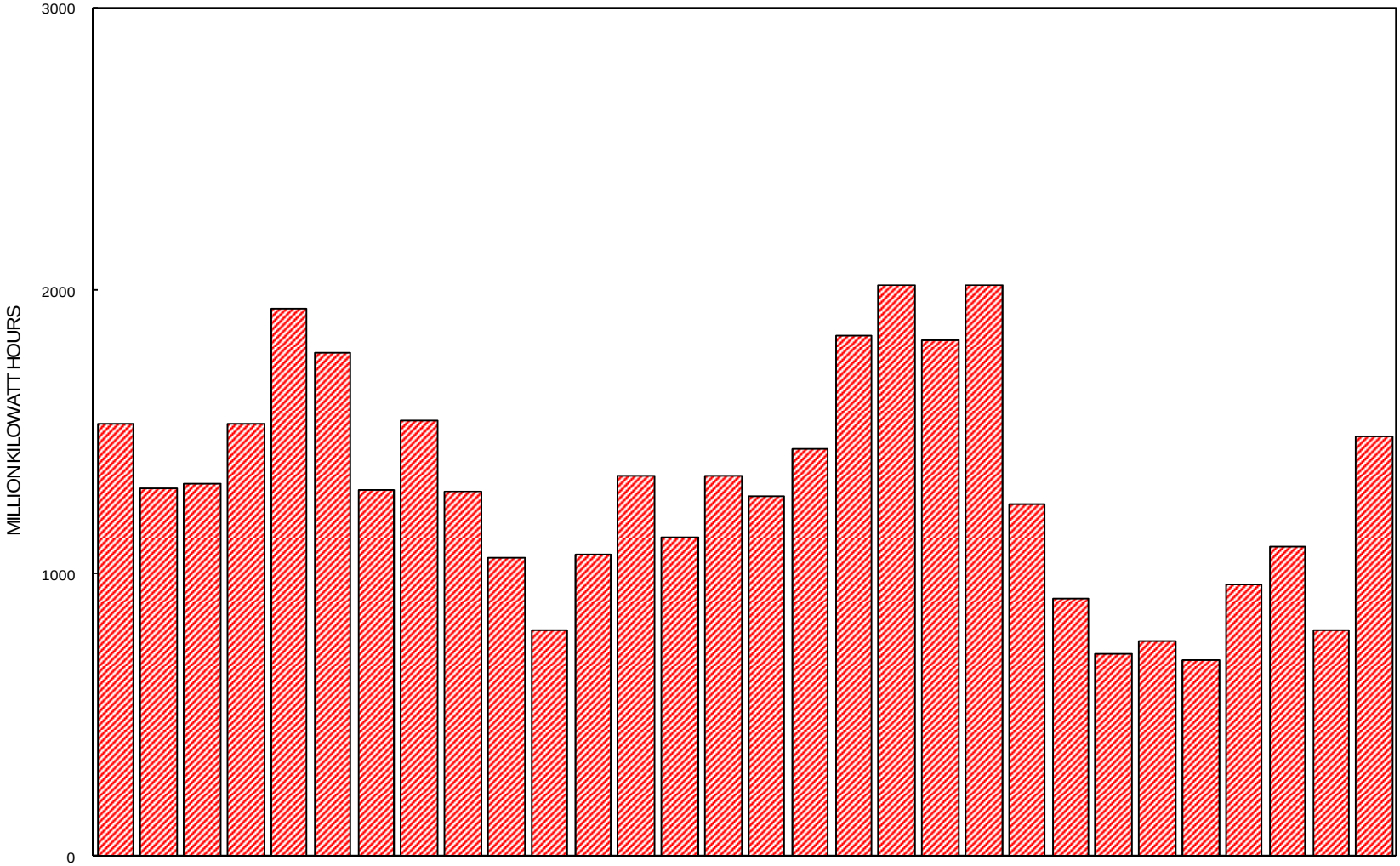


FIGURE CEG2

MONTHLY GENERATION AT USBR PLANTS

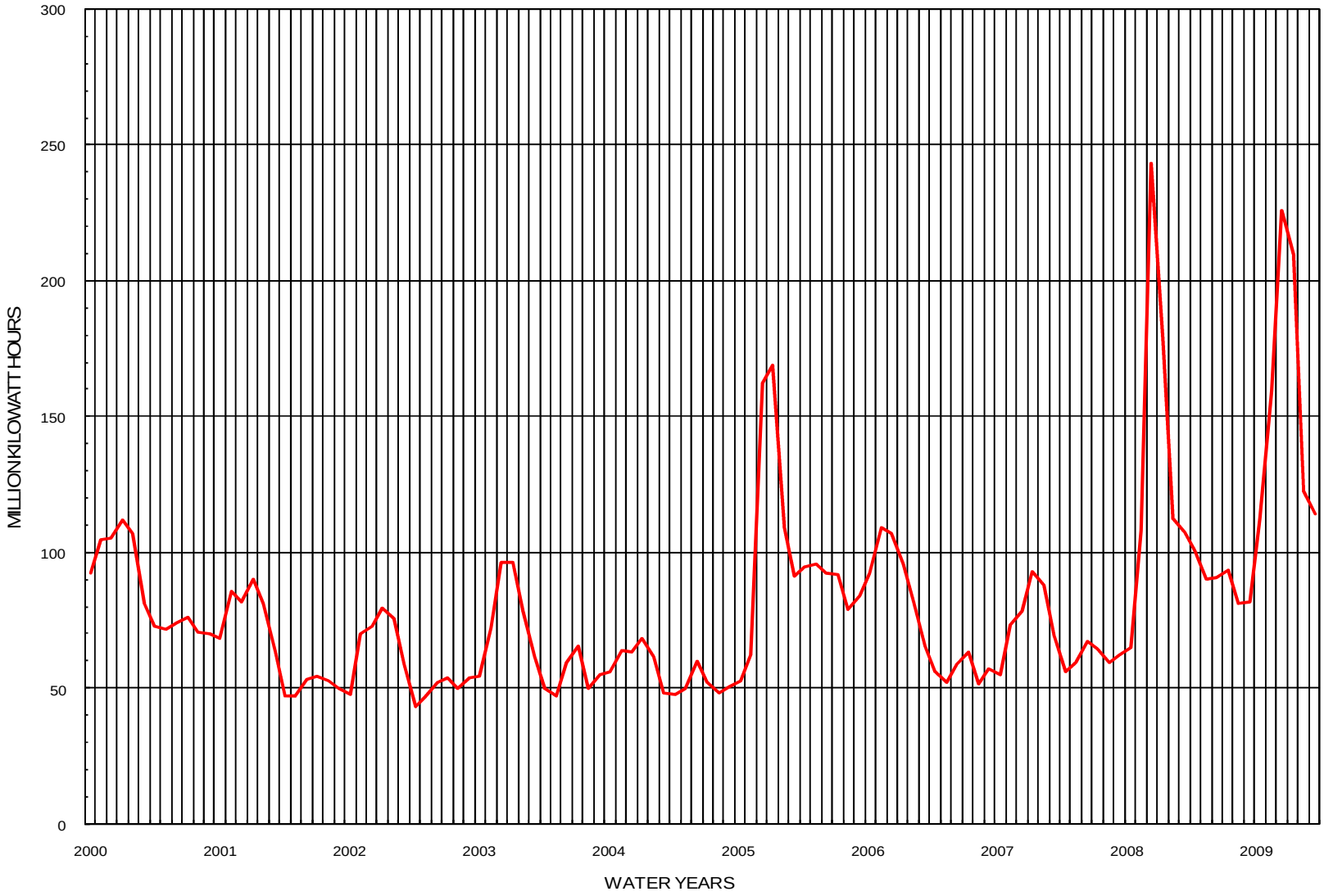


FIGURE CEG3

ANNUAL GENERATION AT COE PLANTS

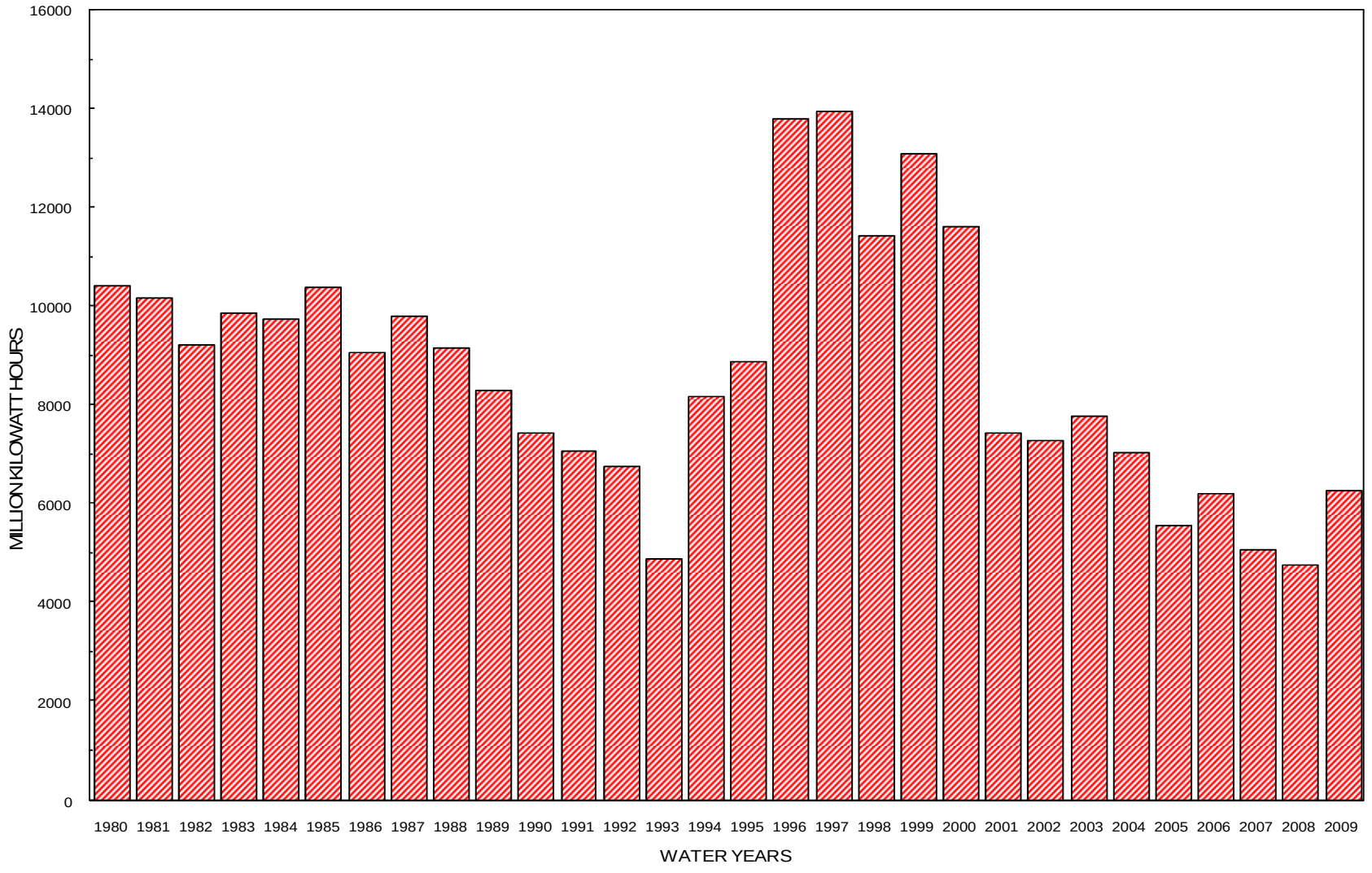


FIGURE CEG4

MONTHLY GENERATION AT COE PLANTS

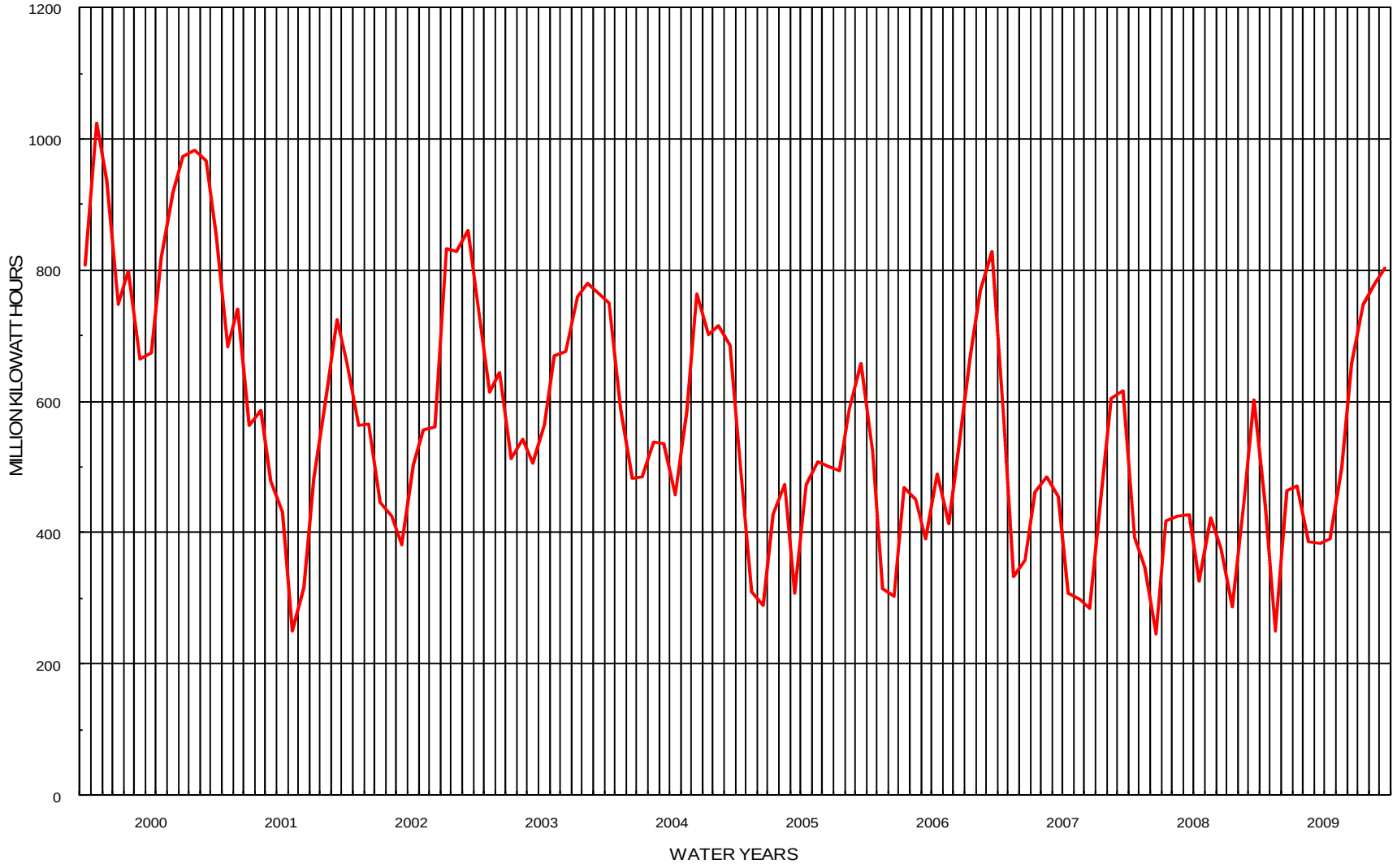


FIGURE CEG5

ANNUAL GENERATION - USBR & COE PLANTS

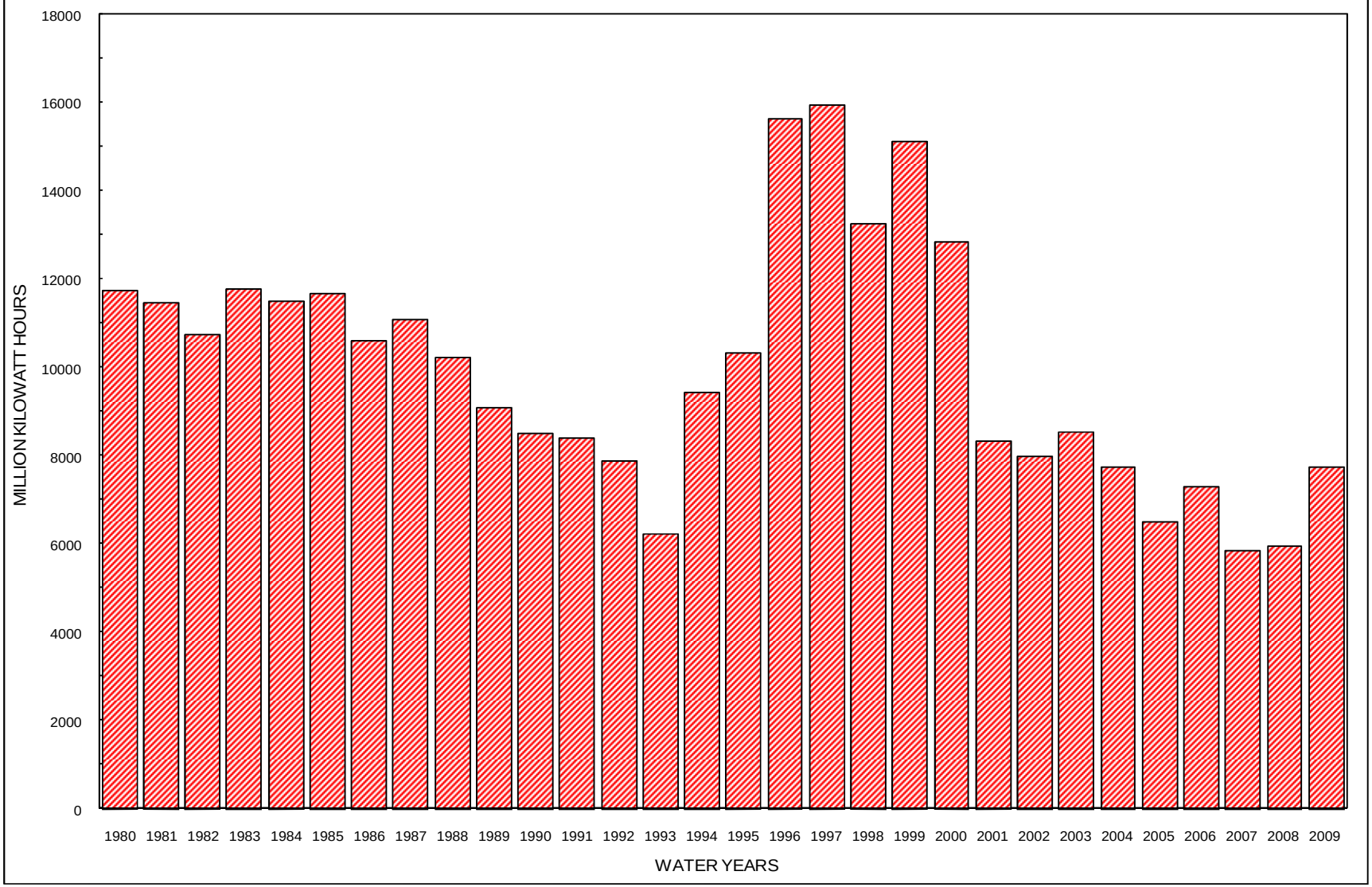


FIGURE CEG6

MONTHLY GENERATION - USBR & COE PLANTS