

CBTAOP V1.10 Run: 07-May-2009 10:15
 Minimum Reasonable Plan (90% Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir		Initial Cont				72.3 kaf				Maximum Cont				153.6 kaf				Minimum Cont				6.0 kaf			
	2009	May	Jun	Elev	7901.12 ft	Jul	Aug	Sep	Oct	Elev	7949.91 ft	Nov	Dec	Jan	Feb	Elev	7795.72 ft	Mar	Apr	Total					
Dillon Inflow	kaf	40.7	74.2	37.1	14.6	8.6	6.1	4.9	4.4	4.0	3.6	4.3	7.7	210.2											
Dillon-Grn Mtn Gain	kaf	28.3	48.5	26.2	12.7	9.0	6.4	4.8	4.2	3.8	3.2	4.1	8.2	159.4											
Undepleted Inflow	kaf	69.0	122.7	63.3	27.3	17.6	12.5	9.7	8.6	7.8	6.8	8.4	15.9	369.6											
Depletion	kaf	36.3	23.3	16.4	7.4	3.4	2.1	0.7	0.0	0.3	-0.3	0.0	4.6	94.2											
Depleted Inflow	kaf	32.7	99.4	46.9	19.9	14.2	10.4	9.0	8.6	7.5	7.1	8.4	11.3	275.4											
Turbine Release	kaf	14.5	43.6	39.1	39.9	44.2	36.9	15.5	11.5	12.3	11.1	12.3	10.5	291.4											
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	0.0										
Total River Release	kaf	14.5	43.6	39.1	39.9	44.2	36.9	15.5	11.5	12.3	11.1	12.3	10.5	291.4											
Min Release	cfs	100	400	600	649	743	600	260	187	200	200	200	200	176											
Total River Release	cfs	236	733	636	649	743	600	260	187	200	200	200	200	176											
Evaporation	kaf	0.5	0.8	0.8	0.6	0.5	0.3	0.1	0.0	0.0	0.0	0.1	0.2	3.9											
End-Month Targets	kaf	90.0	145.0	152.0										75.0											
End-Month Content	kaf	90.0	145.0	152.0	131.4	100.9	74.1	67.5	64.6	59.8	55.8	51.8	52.4												
End-Month Elevation	ft	7914.31	7945.78	7949.15	7938.92	7921.52	7902.56	7897.14	7894.63	7890.26	7886.40	7882.34	7882.96												
Willow Crk Reservoir		Initial Cont				8.2 kaf				Maximum Cont				10.2 kaf				Minimum Cont				5.0 kaf			
	2009	May	Jun	Elev	8121.32 ft	Jul	Aug	Sep	Oct	Elev	8128.83 ft	Nov	Dec	Jan	Feb	Elev	8104.78 ft	Mar	Apr	Total					
Native Inflow	kaf	15.5	8.3	2.4	1.2	0.8	1.1	0.9	0.8	0.8	0.7	1.0	3.4	36.9											
Min Release	kaf	1.5	2.6	2.2	0.5	0.4	0.4	0.8	0.4	0.4	0.4	0.4	0.4	10.4											
Spill/Bypass	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	0.0										
Total River Release	kaf	1.5	2.6	2.2	0.5	0.4	0.4	0.8	0.4	0.4	0.4	0.4	0.4	10.4											
Pumped to Granby	kaf	13.1	4.6	1.1	0.5	0.4	1.3	1.2	0.0	0.0	0.0	2.4	2.3	26.9											
Evaporation	kaf	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6										
End-Month Targets	kaf	9.0	10.0	9.0		9.0			7.2					7.2											
End-Month Content	kaf	9.0	10.0	9.0	9.1	9.0	8.3	7.2	7.6	8.0	8.3	6.5	7.2												
End-Month Elevation	ft	8124.50	8128.14	8124.50	8124.88	8124.50	8121.73	8116.90	8118.74	8120.48	8121.73	8113.41	8116.90												
Lake Granby		Initial Cont				283.8 kaf				Maximum Cont				536.1 kaf				Minimum Cont				76.5 kaf			

% skim diverted	%	84	100	4										
Irrigation demand	kaf	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	1.4
Irrigation delivery	kaf	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	1.4
Total river release	kaf	8.7	7.6	12.9	6.4	3.7	2.6	1.9	1.2	1.1	0.8	1.1	2.1	50.1
Olympus Tunnel	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Max Tunnel Capacity	kaf	33.8	32.7	33.8	33.8	32.7	30.4	16.4	33.8	33.8	30.5	33.8	32.7	378.2
Actual delivery	kaf	33.8	26.8	33.8	17.7	32.6	5.9	0.4	16.7	33.7	28.7	30.0	25.3	285.4
% max delivery	%	100	82	100	52	100	19	2	49	100	94	89	77	
Seepage and Evap	kaf	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	1.7
Inflow to Flatiron	kaf	33.7	26.7	33.7	17.5	32.4	5.7	0.2	16.5	33.6	28.6	29.9	25.2	283.7
Carter Lake		Initial Cont Elev	110.8 kaf		Maximum Cont Elev	112.2 kaf		Minimum Cont Elev	11.2 kaf					
	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Pump from Flatiron	kaf	0.0	0.7	11.9	3.0	9.8	1.4	0.0	11.5	20.7	17.1	17.4	9.4	102.9
Release to Flatiron	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
Evaporation loss	kaf	0.4	0.5	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.2	0.3	2.6
Seepage loss	kaf	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.7
End-Month Targets	kaf	98.0	85.0	75.0	56.0	49.0	45.0	40.0	66.2	81.4	96.4	105.5	110.0	
End-Month Content	kaf	99.4	85.0	74.6	51.7	45.4	45.0	43.1	52.9	71.9	87.3	102.5	105.5	
End-Month Elevation	ft	5747.55	5734.08	5723.88	5699.43	5692.03	5691.55	5689.24	5700.80	5721.16	5736.28	5750.36	5753.05	
Irrigation demand	kaf	5.5	8.0	14.7	18.9	10.5	0.7	0.0	0.0	0.0	0.0	0.0	3.3	61.6
Metered delivery	kaf	3.0	3.7	4.5	4.3	3.4	0.2	1.3	1.2	1.2	1.2	1.4	2.1	27.5
Windy Gap demand	kaf	2.3	2.7	2.5	2.3	1.9	0.6	0.4	0.4	0.4	0.4	0.4	0.5	14.8
Total demand	kaf	10.8	14.4	21.7	25.5	15.8	1.5	1.7	1.6	1.6	1.6	1.8	5.9	103.9
Total delivery	kaf	10.8	14.4	21.7	25.5	15.8	1.5	1.7	1.6	1.6	1.6	1.8	5.9	103.9
% required delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
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
Hansen Canal	930	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Minimum flow	kaf	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	6.1	5.6	6.1	1.5	31.3
Maximum flow	kaf	57.2	55.3	57.2	57.2	55.3	57.2	55.3	57.2	57.2	51.6	57.2	27.7	645.6
Actual flow	kaf	33.7	26.0	21.8	14.5	22.6	4.3	0.2	5.0	12.9	11.5	12.5	15.8	180.8
Dille Tunnel	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Big T @ Canyon Mouth	kaf	16.2	23.3	14.3	10.1	6.5	4.0	2.3	1.5	1.4	1.3	1.8	2.5	85.2
Less Estes Skim	kaf	8.6	13.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
Big T irr (Estes)	kaf	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	1.4
Handy Ditch release	kaf	1.2	1.2	1.8	2.9	1.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	11.2
Water available	kaf	6.6	9.3	12.5	7.4	4.9	2.8	2.4	1.5	1.5	1.4	1.9	1.4	53.6

Generation	gwh	9.980	6.500	14.920	8.160	14.450	2.460	0.000	7.680	11.940	10.060	10.450	9.660	106.260
% Max Generation	%	100	65	100	55	100	16		51	100	100	100	100	
Ave kwh/af		440	464	441	456	442	417		460	441	439	441	441	
Pole Hill Gen	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Olympus Tunnel flow	kaf	33.8	26.8	33.8	17.7	32.6	5.9	0.4	16.7	33.7	28.7	30.0	25.3	285.4
Max generation	gwh	25.260	24.460	25.260	25.260	24.460	22.720	0.000	5.750	25.260	22.800	25.260	24.460	250.950
Generation	gwh	10.200	9.880	10.200	10.200	9.880	3.790	0.000	4.640	10.200	9.240	10.200	9.880	98.310
% Max Generation	%	40	40	40	40	40	17		81	40	41	40	40	
Ave kwh/af		302	369	302	576	303	642		546	303	322	340	391	
Flatiron 1&2 Gen	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Inflow to Flatiron	kaf	33.7	26.7	33.7	17.5	32.4	5.7	0.2	16.5	33.6	28.6	29.9	25.2	283.7
Max generation	gwh	12.050	11.690	12.050	12.050	11.690	12.050	0.000	5.580	12.050	10.880	12.050	11.690	123.830
Generation	gwh	12.050	11.690	12.050	12.050	11.690	4.460	0.000	5.580	12.050	10.880	12.050	11.690	116.240
% Max Generation	%	100	100	100	100	100	37		100	100	100	100	100	
Ave kwh/af		893	892	893	893	892	782		821	893	892	893	892	
Flatiron 3 Pump/Gen	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Maximum pumping	kaf	0.0	17.4	19.5	21.7	23.0	24.2	0.0	11.9	21.8	17.6	17.6	9.6	184.3
Pump from Flatiron	kaf	0.0	0.7	11.9	3.0	9.8	1.4	0.0	11.5	20.7	17.1	17.4	9.4	102.9
Pump energy	gwh	0.000	0.246	3.879	0.885	2.675	0.377	0.000	3.140	6.065	5.558	6.229	3.572	32.626
% max pumping	%		4	61	14	43	6		97	95	97	99	98	
Average kwh/af			352	326	295	273	269		273	293	325	358	380	
Release to Flatiron	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
Maximum generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Actual generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% max generation	%													
Average kwh/af														
Big Thompson Gen	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Total release	kaf	18.5	23.9	17.0	15.2	13.3	4.7	0.0	0.0	0.0	0.0	0.0	2.4	95.0
Turbine release	kaf	18.5	23.9	17.0	15.2	13.3	4.7	0.0	0.0	0.0	0.0	0.0	2.4	95.0
Wasteway 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
Max generation	gwh	3.940	3.800	3.940	3.940	3.800	3.940	0.000	0.000	0.000	0.000	0.000	3.800	27.160
Generation	gwh	2.800	3.800	2.600	2.240	1.960	0.500	0.000	0.000	0.000	0.000	0.000	0.206	14.106
% Max Generation	%	71	100	66	57	52	13						5	
Ave kwh/af		151	159	153	147	147	106						86	

PROJECT GENERATION AND PUMPING SUMMARY

Project Generation	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
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Total project	Max gwh	57.147	53.065	69.095	47.448	66.942	18.905	2.574	20.880	57.206	49.299	52.111	46.607
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GENERATION CAPACITY AND DURATION

Project Generation	2009	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Base Generation:														
Green Mtn	mw	3.4	11.9	11.0	11.1	12.0	8.8	3.6	2.5	2.6	2.6	2.5	2.2	
Flatiron 3	mw													
Big Thompson	mw	3.8	5.3	3.5	3.0	2.7	0.7						0.3	
Total base load	mw	7.2	17.2	14.5	14.1	14.7	9.5	3.6	2.5	2.6	2.6	2.5	2.5	
Load Following Generation:														
Marys Lake														
Min Capacity	mw	0.0	0.0	8.1	0.0	8.1	0.0	0.0	0.0	8.1	0.0	0.3	0.0	
Duration	hr/d	4.7	10.9	12.0	10.3	12.0	12.2	12.0	10.9	12.0	2.2	1.6	4.7	
Max Capacity	mw	8.1	6.6	8.1	8.1	8.1	2.7	0.0	8.0	8.1	8.1	8.1	8.1	
Duration	hr/d	18.3	12.1	12.0	12.7	12.0	11.8	12.0	12.1	12.0	20.8	21.7	18.3	
Lake Estes														
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Duration	hr/d	12.0	12.0	11.0	12.0	11.0	12.2	12.0	12.0	11.0	12.0	12.1	12.0	
Max Capacity	mw	31.5	16.7	45.0	21.9	45.0	7.0	0.0	20.5	45.0	36.0	38.5	31.5	
Duration	hr/d	12.0	12.0	10.0	12.0	10.0	11.8	12.0	12.0	10.0	12.0	11.9	12.0	
Pole Hill														
Min Capacity	mw	34.0	0.0	34.0	0.0	34.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0	
Duration	hr/d	12.0	4.3	12.0	11.0	12.0	12.2	12.0	11.7	12.0	2.9	2.2	5.5	
Max Capacity	mw	34.0	34.0	34.0	34.0	34.0	11.0	0.0	33.7	34.0	34.0	34.0	34.0	
Duration	hr/d	12.0	19.7	12.0	13.0	12.0	11.8	12.0	12.4	12.0	21.1	22.0	18.5	
Flatiron 1&2														
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Duration	hr/d	8.7	12.0	8.7	11.6	9.6	12.6	12.0	11.6	8.8	12.0	11.6	12.0	
Max Capacity	mw	86.0	66.1	86.0	43.5	84.8	13.0	0.0	42.0	86.0	72.4	77.6	62.4	
Duration	hr/d	10.0	12.0	10.0	12.5	10.1	11.4	12.0	12.4	10.0	12.0	11.7	12.0	
Total Load Following														
Min Capacity	mw	34.0	0.0	42.1	0.0	42.1	0.0	0.0	0.0	42.1	0.0	0.3	0.0	
Max Capacity	mw	159.6	123.4	173.1	107.5	171.9	33.7	0.0	104.2	173.1	150.5	158.2	136.0	
Total Project Capacity														
Min Capacity	mw	41.2	17.2	56.6	14.1	56.8	9.5	3.6	2.5	44.7	2.6	2.8	2.5	
Max Capacity	mw	166.8	140.6	187.6	121.6	186.6	43.2	3.6	106.7	175.7	153.1	160.7	138.5	