McBain & Trush | FISHERIES
HYDROLOGY
RIPARIAN ECOLOGY
STREAM RESTORATION
FLUVIAL GEOMORPHOLOGY

P.O. Box 663, Arcata, CA 95518 • 980 7th Street, Arcata, CA 95521
Phone: (707)826-7794 • Fax: (707)826-7795 •

February 8, 2011

Gregory Brown
Environmental Scientist
State Water Resources Control Board, Division of Water Rights
Sacramento, CA

Subject: Revised and Corrected Tables for Synthesis Report

To: Greg Brown (SWRCB) and Interested Parties to the Mono Basin Synthesis Report

An error in the Grant Lake Reservoir water budget spreadsheet model was recently brought to our attention by the Mono Lake Committee (MLC). We traced this error to a computational step in a Lee Vining Creek diversion spreadsheet. We would like to bring this error to your attention, describe its implications, and replace the incorrect information presented in the Final Synthesis Report with updated, corrected information.

The analysis in the *Public Review Draft Synthesis of Instream Flow Recommendations to the State Water Resources Control Board and the Los Angeles Department of Water and Power* (Draft Synthesis Report) (dated January 27, 2010) developed an Excel spreadsheet that was used to evaluate different diversion rates (in cfs), then predict the annual volume (in acre-feet) available for diversion from Lee Vining Creek based on the recommended diversion rates. The Draft Synthesis Report recommended diversion rates for 'Lee Vining Creek above Intake' when streamflows are between 30 cfs and 250 cfs, and no diversions below or above those two thresholds. Annual diversion volumes were predicted for runoff years (RY) 1990 to 2008.

During preparation of the Final Synthesis Report (dated April 30, 2010), an error occurred in the Excel formula used to compute Lee Vining Creek annual diversion volumes. The incorrect computation allowed Lee Vining Creek streamflows above 250 cfs to be included in the annual diversion volumes, using a diversion rate of 45 cfs for all streamflows above 250 cfs. Lee Vining Creek streamflows above 250 cfs should have been excluded from the diversion calculations. Data from this faulty spreadsheet were used to generate Tables 6-1, 6-2, and 6-3 in the Final Synthesis Report, and was discussed in report text on pages 121 and 122.

Data presented in the Public Review Draft Synthesis Report did not have this error, and thus contained correct annual diversion estimates.

The computational error over-estimated the volume of water available for diversion from Lee Vining by an annual average 1,103 acre-feet, and affected primarily wetter water years that had more days with streamflows above 250 cfs. Table 1 compares the predicted diversion volumes from the erroneous and corrected spreadsheets. The simulated average annual diversion from Lee Vining should be approximately 10,334 ac-ft, instead of 11,437 ac-ft as reported in Table 6-3. With this new Lee Vining Creek diversion estimate, the simulated "Future Rush Creek and Lee Vining Creek Diversions" of 33,320 af reported in Table 6-2 should be approximately 32,217 af.

The computational error had implications one step further into our analyses: the simulated Lee Vining Creek diversions were linked to the Grant Lake Reservoir storage scenarios also presented in Chapter 6 of the Draft and Final Synthesis Report. We have therefore revised the Lee Vining Creek diversion spreadsheet and each Grant Lake Reservoir scenario to quantify the difference between the erroneous and corrected computations, and to provide updated information to the Interested Parties. Revised Tables 6-1, 6-2, and 6-3 from the Final Synthesis Report are presented below, and are available in other formats if desired.

The Stream Scientists believe this computational error was important enough to bring to your attention, but the implications are not critical to conclusions or recommendations in the Synthesis Report. The primary implication was to reduce the potential water available for diversion from Lee Vining in wetter runoff year types. The revised analysis also shows that Grant Lake Reservoir would be full fewer days in the wetter runoff year types, but doesn't substantially change the potential for GLR spills to achieve recommended peak floods in Rush Creek.

During the upcoming Facilitated Process, it is our understanding that LADWP will develop more refined models to predict diversion volumes, Grant Lake Reservoir storage, and Mono Lake elevation, which can be used to re-examine our Synthesis Report analyses in greater detail.

If you have any questions, please let us know.

Sincerely,

Dr. William J. Trush and Ross N. Taylor, M.S.

Table 1. Comparison of Lee Vining annual diversion volumes using the original Final Synthesis Report Table 6-3 values and revised annual diversion volumes with corrected simulated values. The most relevant numbers are highlighted in yellow.

Runoff Year	Runoff Year Type	Lee Vining Creek above Intake Runoff (af)	Incorrect Table 6-3 Values		New Table 6-3 Values		Change in Value
			Simulated Lee Vining Creek below Intake Releases (af)	Simulated Lee Vining Creek Diversions (af)	Simulated Lee Vining Creek below Intake Releases (af)	Simulated Lee Vining Creek Diversions (af)	Reduced Annual Diversion Volume based on Corrected Computations
1990	Dry	20,144	16,530	3,614	16,530	3,614	0
1991	Dry	26,571	19,956	6,614	19,956	6,614	0
1992	Dry	25,174	18,623	6,551	18,623	6,551	0
1993	Wet-Normal	50,313	36,910	13,402	36,910	13,135	267
1994	Dry	28,308	19,549	8,758	19,549	8,758	0
1995	Extreme-Wet	76,704	56,029	20,675	56,029	16,930	3,744
1996	Wet-Normal	65,295	44,776	20,518	44,776	19,003	1,516
1997	Wet-Normal	60,554	45,310	15,244	45,310	13,461	1,783
1998	Wet	64,044	49,433	14,611	49,433	11,134	3,477
1999	Normal	46,713	34,595	12,118	34,595	11,316	802
2000	Normal	41,236	30,878	10,358	30,878	10,269	89
2001	Dry-Normal I	32,613	23,830	8,784	23,830	8,784	0
2002	Dry-Normal II	37,463	27,299	10,164	27,299	10,164	0
2003	Dry-Normal I	41,282	30,105	11,177	30,105	9,929	1,248
2004	Dry-Normal II	34,779	24,596	10,183	24,596	10,183	0
2005	Wet-Normal	65,677	49,242	16,435	49,242	12,690	3,744
2006	Wet	74,558	58,157	16,401	58,157	12,122	4,279
2007	Dry	24,067	18,972	5,095	18,972	5,095	0
2008	Normal	32,322	25,721	6,600	25,721	6,600	0
Average:		44,622	33,185	11,437	33,185	10,334	1,103
Maximum:		76,704	58,157	20,675	58,157	19,003	
Minimum:		20,144	16,530	3,614	16,530	3,614	

Final Synthesis Report Table 6-1 Revised.

	Scenario 1a: Actual Historical Conditions — Average NGDs						Scenario 1b: Predicted Historical Conditions — Average NGDs						Scenario 2: Historical Rush Creek and Exports; Lee Vining Creek SEF — Average NGDs						Scenario 3: Historical Exports; Rush and Lee Vining SEFs — Average NGDs						Scenario 4: Rush and Lee Vining SEFs; 16K Export; NO Curtailment — Average NGDs						Scenario 5: Rush and Lee Vining SEFs; 16K Export; 3 Month curtailment — Average NGDs						Scenario 6: Rush and Lee Vining SEFs; 16K Export; Change RY2008 to DN-I — Average NGDs						Scenario 10: BASELINE + Export Excess from Each Runoff Year (~30,000 af) — Average NGDs						Scenario 11: Baseline + Export Excess from Each Runoff Year (~30,000 af); RY1995 10,000 af export — Average NGDs					
	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years	Dry	Dry-Normal	Normal	Wet-Normal	Wet/Extreme-Wet	All Runoff Years
Number of Days Grant Lake Elevation below 7,090 ft	94	0	45	0	0	32	0	0	29	0	0	5	2	0	0	0	0	1	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	0	0	0	0	0	0	0	0
Number of Days Grant Lake Elevation above 7,090 ft	271	365	320	365	365	333	365	365	336	365	365	360	363	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Number of Days Grant Lake Elevation above 7,100 ft	121	310	268	341	353	268	215	348	282	356	365	307	274	365	314	365	365	333	365	365	288	365	365	353	276	365	282	365	365	329	326	365	288	365	365	343	308	365	288	365	365	338	365	365	365	365	365	365	365	365	365	365	365	365
Number of Days Grant Lake Elevation above 7,110 ft	49	172	243	270	330	200	82	236	243	297	331	226	172	365	256	352	365	295	361	365	243	365	365	345	146	365	244	349	365	286	164	365	243	349	365	290	156	365	243	348	365	288	123	365	365	347	350	295	123	365	365	347	365	299
Number of Days Grant Lake Elevation above 7,120 ft	15	37	232	243	312	152	45	48	220	238	322	162	74	365	243	321	365	262	251	365	243	365	365	316	112	365	243	331	365	274	118	365	243	337	365	276	118	365	243	326	365	275	13	365	252	179	324	217	13	365	252	204	336	223
Number of Days Grant Lake Elevation above 7,130 ft (Spillway Elevation)	0	0	21	70	65	28	0	0	11	71	92	32	5	21	49	144	212	81	120	166	115	283	336	200	31	200	138	212	342	178	27	202	115	213	320	169	22	181	115	135	299	146	0	0	4	10	67	16	0	0	4	42	136	36
Peak Discharge below MGORD (cfs)	102	219	264	225	492	254	116	218	256	241	464	253	128	233	297	288	520	285	113	242	392	423	523	319	87	219	387	380	475	290	96	234	392	380	495	301	95	234	392	550	653	361	70	140	280	380	419	240	70	140	320	380	472	258

Final Synthesis Report Table 6-2 Revised.

Runoff Year	Runoff Year Type	Simulated Future Rush Creek and Lee Vining Creek Diversions (af)	Percent of Annual Mono Basin Yield Diverted
1990	Dry	10,467	18%
1991	Dry	19,358	25%
1992	Dry	20,190	28%
1993	Wet-Normal	42,398	30%
1994	Dry	19,984	26%
1995	Extreme-Wet	67,469	31%
1996	Wet-Normal	53,807	33%
1997	Wet-Normal	33,021	23%
1998	Wet	46,639	27%
1999	Normal	26,359	23%
2000	Normal	30,621	27%
2001	Dry-Normal I	30,074	32%
2002	Dry-Normal II	23,959	26%
2003	Dry-Normal I	32,745	31%
2004	Dry-Normal II	27,247	30%
2005	Wet-Normal	60,419	33%
2006	Wet	55,277	29%
2007	Dry	1,825	3%
2008	Normal	10,268	12%
Average:		32,217	26%
Maximum:		67,469	33%
Minimum:		1,825	3%

Final Synthesis Report Table 6-3 Revised.

Runoff Year	Runoff Year Type	Mono Basin Yield (Rush, Parker, Walker, Lee Vining) (af)	Lee Vining Creek above Intake (af)	Simulated Lee Vining Creek below Intake (af)	Simulated Lee Vining Creek Diversions (af)	Rush Creek at Damsite (af)	Simulated Rush Creek below MGORD (af)	Simulated Rush Creek Diversions (af)
1990	Dry	59,782	20,144	16,530	3,614	32,246	25,393	6,853
1991	Dry	77,935	26,571	19,956	6,614	38,137	25,393	12,744
1992	Dry	72,766	25,174	18,623	6,551	39,033	25,393	13,640
1993	Wet-Normal	140,291	50,313	37,178	13,135	73,320	44,058	29,263
1994	Dry	76,218	28,308	19,549	8,758	36,619	25,393	11,226
1995	Extreme-Wet	215,252	76,704	59,773	16,930	110,105	59,566	50,539
1996	Wet-Normal	164,817	65,295	46,292	19,003	78,862	44,058	34,804
1997	Wet-Normal	143,433	60,554	47,093	13,461	63,618	44,058	19,560
1998	Wet	172,744	64,044	52,910	11,134	86,259	50,754	35,505
1999	Normal	112,946	46,713	35,397	11,316	51,755	36,712	15,043
2000	Normal	113,129	41,236	30,967	10,269	57,064	36,712	20,352
2001	Dry-Normal I	93,438	32,613	23,830	8,784	48,732	27,441	21,291
2002	Dry-Normal II	90,734	37,463	27,299	10,164	41,264	27,469	13,794
2003	Dry-Normal I	106,012	41,282	31,353	9,929	50,257	27,441	22,816
2004	Dry-Normal II	89,538	34,779	24,596	10,183	44,533	27,469	17,064
2005	Wet-Normal	182,283	65,677	52,987	12,690	91,786	44,058	47,729
2006	Wet	188,596	74,558	62,436	12,122	93,909	50,754	43,156
2007	Dry	56,069	24,067	18,972	5,095	22,122	25,393	-3,271
2008	Normal	86,229	32,322	25,721	6,600	40,380	36,712	3,668
	Average:	118,011	44,622	34,288	10,334	57,895	36,012	21,883
	Maximum:	215,252	76,704	62,436	19,003	110,105	59,566	50,539
	Minimum:	56,069	20,144	16,530	3,614	22,122	25,393	-3,271