State of California

Memorandum

To : Ms. Barbara McDonnell
Department of Water Resources

Date : February 16, 2006

From : Department of Fish and Game

Subject : Mitigation Loss Calculations For Four Pumps Agreement

The State Water Project (SWP) mitigation loss calculation for 2005 has been completed as required by the Four Pumps Agreement between the Department of Water Resources and the Department of Fish and Game. As previously agreed, loss of striped bass under 21 mm is based on the mean loss from 1985 through 1995. The estimated mitigation losses for 2005, which are based on five year mean values, are as follows:

SPECIES	NUMBER OF EQUIVALENTS
Striped bass	**218,058** (yearlings)
Chinook salmon	**116,934** (smolts)
Steelhead rainbow trout	**20,057** (yearlings)

The attached table lists the annual SWP loss estimates for yearling-equivalent striped bass, smolt-equivalent chinook salmon, and yearling-equivalent steelhead rainbow trout (Table 1) The five year loss running averages are also enclosed (Table 2).

Perry L. Herrgesell

Perry Herrgesell
Branch Chief
Central Valley Bay-Delta Branch

Attachment

cc: Department of Water Resources
Sacramento, California
Ms. Delores Brown
Mrs. Laura Flournoy

Department of Fish and Game
Stockton, California
Mr. Frank Wernette
Mr. Fred Jurick
Mr. Robert Fujimura
Fish Facilities File

PH06B002.doc:la

Table 1. Yearling-equivalent losses for striped bass and steelhead rainbow trout and smolt-equivalent losses for chinook salmon for the State Water Project, 1984-2005.

	Yearling-Equivalent Striped Bass			Smolt-Equivalent Chinook Salmon			Yearling-Equivalent Steelhead		
YEAR	<20 mm	>20 mm	Total Loss	YOY	Yearling	Total Loss	YOY	Yearling	Total Loss
1984		873,853	**873,853**	290,696	947,503	**1,238,199**	0	1,713	1,713
1985	65,177	370,976	**436,153**	472,512	489,713	**962,225**	0	15,621	15,621
1986	35,315	944,061	**979,376**	1,147,249	2,300,866	**3,448,115**	0	15,663	15,663
1987	41,726	954,958	**996,684**	528,544	713,791	**1,242,334**	747	21,266	22,013
1988	59,625	874,055	**933,680**	409,103	747,953	**1,157,056**	0	25,080	25,080
1989	56,306	579,003	**635,309**	373,717	246,641	**620,358**	253	32,571	32,824
1990	7,717	401,353	**409,070**	90,098	188,228	**278,326**	0	19,187	19,187
1991	15,117	192,765	**207,882**	122,127	128,466	**250,593**	0	38,430	38,430
1992	13,452	299,687	**313,139**	21,341	224,603	**245,944**	275	39,931	40,206
1993	25,766	1,194,011	**1,219,777**	17,547	68,521	**86,068**	0	47,782	47,782
1994	2,253	122,656	**124,909**	8,217	25,073	**33,290**	0	1,738	1,738
1995	3,256	265,225	**268,481**	26,224	199,012	**225,236**	0	4,802	4,802
1996*	29,610	214,213	**243,823**	28,425	121,437	**149,862**	0	14,240	14,240
1997*	29,610	219,225	**248,835**	39,792	38,973	**78,765**	0	1,153	1,153
1998*	29,610	71,980	**101,590**	10,107	28,683	**38,790**	0	352	352
1999*	29,610	271,436	**301,046**	199,537	73,867	**273,404**	0	4,917	4,917
2000*	29,610	926,501	**956,111**	173,324	71,333	**244,657**	74	27,848	27,922
2001*	29,610	262,459	**292,069**	97,264	80,472	**177,736**	67	35,146	35,213
2002*	29,610	243,270	**272,880**	16,914	36,751	**53,665**	24	9,606	9,630
2003*	29,610	173,492	**203,102**	43,318	96,780	**140,098**	0	25,262	25,262
2004*	29,610	161,021	**190,631**	26,479	84,691	**111,170**	0	20,321	20,321
2005*	29,610	101,999	**131,609**	38,600	63,400	**102,000**	0	9,859	9,859

* After the sampling program was eliminated, YE Striped Bass <20mm estimate is the average of 85-95 loss.

Table 2. Five year running averages for yearling-equivalent losses for striped bass and steelhead rainbow trout and smolt-equivalent losses for chinook salmon for the State Water Project, 1984-2005.

	Yearling-Equivalent Striped Bass			Smolt-Equivalent Chinook Salmon			Yearling-Equivalent Steelhead		
Period	<20 mm	>20 mm	Total Loss	YOY	Yearling	Total Loss	YOY	Yearling	Total Loss
Mean 84-88	50,461	803,581	854,041	569,621	1,039,965	1,609,586	149	15,869	16,018
Mean 85-89	51,630	744,611	796,240	586,225	899,793	1,486,018	200	22,040	22,240
Mean 86-90	40,138	750,686	790,824	509,742	839,496	1,349,238	200	22,753	22,953
Mean 87-91	36,098	600,427	636,525	304,718	405,016	709,733	200	27,307	27,507
Mean 88-92	30,443	469,373	499,816	203,277	307,178	510,455	106	31,040	31,145
Mean 89-93	23,672	533,364	557,035	124,966	171,292	296,258	106	35,580	35,686
Mean 90-94	12,861	442,094	454,955	51,866	126,978	178,844	55	29,414	29,469
Mean 94-98	18,868	178,660	197,528	22,553	82,636	105,189	0	4,457	4,457
Mean 95-99	24,339	208,416	232,755	60,817	92,394	153,211	0	5,093	5,093
Mean 96-00	29,610	340,671	370,281	90,237	66,859	157,096	15	9,702	9,717
Mean 97-01	29,610	350,320	379,930	104,005	58,666	162,670	28	13,883	13,911
Mean 98-02	29,610	355,129	384,739	99,429	58,221	157,650	33	15,574	15,607
Mean 99-03	29,610	375,432	405,042	106,071	71,841	177,912	33	20,556	20,589
Mean 00-04	29,610	353,349	382,959	71,460	74,005	145,465	33	23,637	23,670
Mean 01-05	29,610	188,448	218,058	44,515	72,419	116,934	18	20,039	20,057