Endangered Species Act
Section 7 Consultation

BIOLOGICAL OPINION
and CONFERENCE OPINION

on the

LONG-TERM OPERATIONS OF THE CENTRAL VALLEY PROJECT AND STATE WATER PROJECT

National Marine Fisheries Service
Southwest Region

June 4, 2009

APPENDIX 2-D – SUMMARY OF AMERICAN RIVER FLOW MANAGEMENT STANDARD

SUMMARY OF THE FLOW MANAGEMENT STANDARD PROGRAM

FOR THE LOWER AMERICAN RIVER

1.0 FLOW MANAGEMENT STANDARD DESCRIPTION

The Flow Management Standard (FMS) for the Lower American River includes provisions for: (1) minimum flow and water temperature requirements; (2) the lower American River Group (ARG) to play a consultative role in operational decisions; and (3) monitoring and evaluation to ascertain the biological and ecological status of the river, and to provide input into the river management process.

1.1 MINIMUM FLOW REQUIREMENTS

The Minimum Flow Requirements prescribe the minimum flows to be released from Nimbus Dam, and are the cornerstone of the FMS. The Minimum Flow Requirements do not preclude Reclamation from making higher releases at Nimbus Dam, and can vary throughout the year in response to the hydrology of the Sacramento and American river basins.

Minimum Release Requirements

The Minimum Release Requirements (MRR) range from 800 to 2,000 cfs based on a sequence of seasonal indices and adjustments. The minimum Nimbus Dam release requirement is determined by applying the appropriate water availability index (Index Flow). Three water availability indices (i.e., Four Reservoir Index (FRI), Sacramento River Index (SRI), and the Impaired Folsom Inflow Index (IFII)) are applied during different times of the year, which provides adaptive flexibility in response to changing hydrological and operational conditions.

During some months, Prescriptive Adjustments may be applied to the Index Flow, resulting in the MRR. If there is no Prescriptive Adjustment, the MRR is equal to the Index Flow.

Discretionary Adjustments for water conservation or fish protection may be applied during the period extending from June through October. If Discretionary Adjustments are applied, then the resultant flows are referred to as the Adjusted Minimum Release Requirement (Adjusted MRR).

The MRR and Adjusted MRR may be suspended in the event of extremely dry conditions, represented by "conference years" or "off-ramp criteria". Conference years are defined when the projected March through November unimpaired inflow into Folsom Reservoir is less than 400,000 acre-feet. Off-ramp criteria are triggered if forecasted Folsom Reservoir storage at any time during the next twelve months is less than 200,000 acre-feet.

Water availability indices, Index Flows, Prescriptive Adjustments, MRRs, Discretionary Adjustments, and Adjusted MRRs are presented in **Table 1**.

Table 1. Flow Management Standard Indices and Flow Requirements

Month	Index	Index Flows (cfs)	Prescriptive Adjustments	Minimum Release Requirements (cfs)	Discretionary Adjustments	Adjusted Minimum Release Requirements (cfs)
October	FRI	800-1,500	NA	800-1,500	Fish Protection Adjustment	1,250- 1,499
November	FRI	800-2,000	Spawning Flow Progression	800-2,000	NA	
December	FRI	800-2,000	NA	800-2,000	NA	
January	SRI If Above Normal or Wet Year (SRI ≥ 15.7 MAF) then release 1,750 cfs	1,750	December End-of-Month Storage Adjustment When End-Of-December Storage is < 300 TAF, then January MRR is 85% of December MRR	800-1,750	NA	
	SRI If Dry or Below Normal Year (10.2 < SRI < 15.7 MAF) then maintain December MRR up to 1,750 cfs	800-1,750			NA	
	SRI If Critical Year (SRI < 10.2 MAF) then reduce MRR	85% of December MRR, but not less than 800	NA		NA	
February	SRI If Above Normal or Wet Year (SRI ≥ 15.7 MAF) then release 1,750 cfs	1,750	January End-of-Month Storage Adjustment When End-Of-January Storage is < 350 TAF, then February MRR is 85% of January MRR	800-1,750	NA	
	SRI If Dry or Below Normal Year (10.2 < SRI < 15.7 MAF) then maintain January MRR up to 1,750 cfs	800-1,750			NA	
	SRI If Critical Year (SRI < 10.2 MAF) then reduce MRR	85% of January MRR, but not less than 800	NA		NA	
March through May	IFII	800-1,750	May End-of-Month Storage Adjustment When Calculated End-Of-May storage is < 700 TAF, then IFII Index Flow or February MRR, whichever is less	800-1,750	NA	
June though Labor Day	IFII	800-1,750	September End-of-Month Storage Adjustment When Calculated End-Of-September storage is < 300 TAF, then IFII Index Flow or Calculated Storage-Based Flow, whichever is less	800-1,750	Water Conservation or Fish Protection Adjustment	1,500-1,749
Post-Labor Day through September 30	IFII	June through Labor Day MRR, but not more than	NA	800-1,500	Fish Protection Adjustment	1,250-1,499

Table 1. Flow Management Standard Indices and Flow Requirements

Month	Index	Index Flows (cfs)	Prescriptive Adjustments	Minimum Release Requirements (cfs)	Discretionary Adjustments	Adjusted Minimum Release Requirements (cfs)
		1,500				

Water Availability Indices and Other Definitions

Four Reservoir Index

The FRI is an index of the end-of-September combined carryover storage in Folsom, French Meadows, Hell Hole, and Union Valley reservoirs and is used to calculate the Index Flow for October through December.

Sacramento River Index

The SRI is an index of forecasted water year runoff for the Sacramento River Basin, and is used to calculate the Index Flow for the months of January and February.

Impaired Folsom Inflow Index

The IFII is an index of the forecasted volume of flow into Folsom Reservoir from May through September, and is used to calculate the Index Flow from March through September.

Index Flows

Index Flows are the initial flows (nominal flows) identified by application of the various water availability indices, and are subject to Prescriptive and Discretionary Adjustments, which result in Minimum Release Requirements (defined below). Year-round water availability indices and corresponding Index Flows are presented in **Figure 2**. The October 1 through December 31 Index Flows range between 800 and 2,000 cfs. The January 1 through Labor Day Index Flows range between 800 and 1,750 cfs. The post-Labor Day through September 30 Index Flows range between 800 and 1,500 cfs.

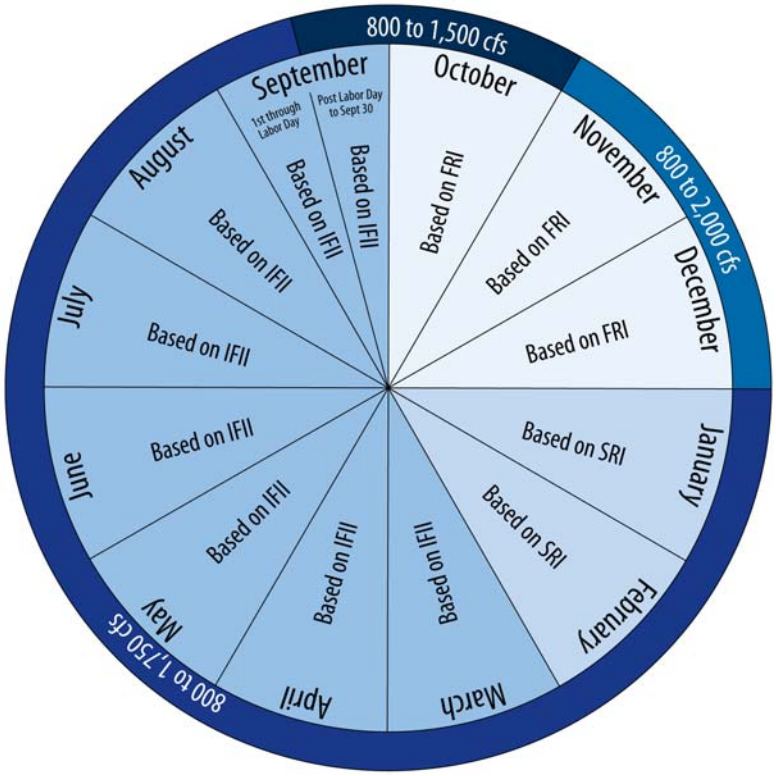

Figure 2. Index Flow Requirements

Prescriptive Adjustments

The FMS includes five Prescriptive (non-discretionary) Adjustments to the Index Flows in consideration of Folsom Reservoir storage and water conservation.

- Chinook Salmon Spawning Flow Progression Adjustment
- December End-of-Month Storage Adjustment
- January End-of-Month Storage Adjustment
- May End-of-Month Storage Adjustment
- September End-of-Month Storage Adjustment

When Prescriptive Adjustments are applicable, the MRR is equal to the value that results from applying the given adjustment to the Index Flow. When Prescriptive Adjustments are not applicable, the MRR is equal to the Index Flow.

Discretionary Adjustments

Two types of discretionary adjustments are possible: (1) water conservation; and (2) fish protection. A water conservation Discretionary Adjustment may be implemented in consideration of Folsom Reservoir storage, but will not be permitted if it would be likely to cause or exacerbate harmful water temperature-related impacts to rearing juvenile steelhead or spawning fall-run Chinook salmon. Fish protection includes conservation of remaining cold water reserves, taking into account effects of the Discretionary Adjustment on in-river water temperature and habitat.

Overview of the Coldwater Pool Management Model and the Automated Temperature Selection Procedure

Coldwater Pool Management Model

Flexibility to meet the Flow Management Standard (FMS) water temperature objectives may be promoted by using the Coldwater Pool Management Model (CPMM) in the development and updating of the Annual Water Temperature Management Plan. The CPMM may be used to select the most beneficial seasonal target temperature objectives for the lower American River during a given year. Selection of seasonal water temperatures is:

- ❑ Characterized by the rate and duration with which available cold water will be released from Folsom Reservoir to control water temperatures
- ❑ Based on the biological benefit expected from controlling lower American River water temperatures
- ❑ Limited by the amount of cold water available in Folsom Reservoir.

The CPMM requires:

- Initial reservoir conditions (i.e., profiles of water temperature, total dissolved solids, and suspended solids)
- Hydrologic time series data of projected North and South Forks of the American River inflow to Folsom Reservoir
- Reservoir evaporation and river heat gain
- Meteorological data
- Folsom Reservoir operation data (Folsom Dam releases and Folsom Pumping Plant diversion)

Automated Temperature Selection Procedure

The Folsom Reservoir and lower American River water temperature models are utilized in an iterative manner referred to as the Automated Temperature Selection Procedure (ATSP). The ATSP operates the reservoir and river water temperature models with the objective of achieving monthly target water temperatures in the lower American River at Watt Avenue, and is designed to aid in the planning and achievement of general management objectives for the lower American River.

Seasonal Priorities/Automated Temperature Selection Procedure Schedules

The ATSP involves the use of multiple target water temperature schedules for the lower American River at Watt Avenue. The "schedule" approach was developed with the purpose of balancing the seasonal use of Folsom Reservoir's coldwater availability, which varies from year to year. The prioritization order of the target temperature schedules for the FMS reflects the desire to protect juvenile steelhead over-summer rearing while balancing the needs of fall-run Chinook salmon spawning, given the constraints of coldwater pool availability at Folsom Reservoir.

A schedule of water temperatures, for May through November, is specified as the preferred schedule of monthly water temperature targets. Because Folsom Reservoir water temperatures are not isothermal during the May through November period, ATSP water temperature targets are achieved through choice of reservoir level from which releases are drawn. If the preferred schedule cannot be achieved with the available release level choices, the procedure cycles to a second, slightly less preferred schedule of water temperatures. If the second schedule cannot be met, the procedure continues through a series of schedules, arranged by declining preference, until a schedule of targets is met for that year.

Table 1 presents the ATSP schedule developed with the purpose of balancing the seasonal use of Folsom Reservoir's coldwater availability prioritized to protect juvenile steelhead over-summer rearing while balancing the needs of fall-run Chinook salmon spawning. If desirable, an alternative schedule could be developed. Schedule #1 has the most beneficial application of coldwater for conditions when sufficient coldwater is available for Folsom Reservoir releases during the May though November period. Schedule #78 has the least desirable application for fisheries benefits relative to other schedules, but may be the only achievable schedule during years of extremely limited coldwater pool availability in Folsom Reservoir. The monthly May through November targets are varied incrementally, to reduce and shift the amount of coldwater released during the summer months, to achieve the balanced management objectives for steelhead and fall-run Chinook salmon. In Table 1, the cells highlighted in yellow indicate changes in water temperature targets for a given month and schedule, as compared to the previous schedule.

There are no water temperature targets for the months of December through April. During these months of the year, Folsom Reservoir is typically well-mixed and the water column is nearly isothermal with depth. For this reason and because ambient air temperatures are sufficient to maintain suitable water temperatures for steelhead and fall-run Chinook salmon in the lower American River, water temperature targets are not identified for the December through April period.

Table 1. Automated Temperature Selection Procedure Schedules.

Schedule	Lower American River Water Temperature Targets at Watt Avenue (°F)						
	May	Jun	Jul	Aug	Sep	Oct	Nov
1	63	63	63	63	63	56	56
2	63	63	63	63	63	57	56
3	63	63	63	63	63	58	56
4	63	63	63	63	63	59	56
5	63	63	63	63	63	60	56
6	63	63	63	63	63	60	57
7	63	63	63	63	63	60	58
8	63	63	64	63	63	60	58
9	63	63	64	64	63	60	58
10	63	63	64	64	64	60	58
11	63	64	64	64	64	60	58
12	64	64	64	64	64	60	58
13	64	64	65	64	64	60	58
14	64	64	65	65	64	60	58
15	64	64	65	65	65	60	58
16	64	65	65	65	65	60	58
17	65	65	65	65	65	60	58
18	65	65	65	65	65	61	58

Schedule	Lower American River Water Temperature Targets at Watt Avenue (°F)						
	May	Jun	Jul	Aug	Sep	Oct	Nov
19	65	65	65	65	65	62	58
20	65	65	65	65	65	63	58
21	65	65	65	65	65	64	58
22	65	65	65	65	65	65	58
23	65	65	65	65	65	65	59
24	65	65	66	65	65	65	59
25	65	65	66	66	65	65	59
26	65	65	66	66	66	65	59
27	65	66	66	66	66	65	59
28	66	66	66	66	66	65	59
29	66	66	67	66	66	65	59
30	66	66	67	67	66	65	59
31	66	66	67	67	67	65	59
32	66	67	67	67	67	65	59
33	67	67	67	67	67	65	59
34	67	67	68	67	67	65	59
35	67	67	68	68	67	65	59
36	67	67	68	68	68	65	59
37	67	68	68	68	68	65	59
38	68	68	68	68	68	65	59
39	68	68	68	68	68	66	59
40	68	68	68	68	68	67	59
41	68	68	68	68	68	68	59
42	68	68	69	68	68	68	59

Schedule	Lower American River Water Temperature Targets at Watt Avenue (°F)						
	May	Jun	Jul	Aug	Sep	Oct	Nov
43	68	68	69	69	68	68	59
44	68	68	69	69	69	68	59
45	68	69	69	69	69	68	59
46	69	69	69	69	69	68	59
47	69	69	69	69	69	69	59
48	69	69	69	69	69	69	60
49	69	69	70	69	69	69	60
50	69	69	70	70	69	69	60
51	69	69	70	70	70	69	60
52	69	70	70	70	70	69	60
53	70	70	70	70	70	69	60
54	70	70	70	70	70	70	60
55	70	70	70	70	70	70	61
56	70	70	71	70	70	70	61
57	70	70	71	71	70	70	61
58	70	70	71	71	71	70	61
59	70	71	71	71	71	70	61
60	71	71	71	71	71	70	61
61	71	71	71	71	71	71	61
62	71	71	71	71	71	71	62
63	71	71	72	71	71	71	62
64	71	71	72	72	71	71	62
65	71	71	72	72	72	71	62
66	71	72	72	72	72	71	62

Schedule	Lower American River Water Temperature Targets at Watt Avenue (°F)						
	May	Jun	Jul	Aug	Sep	Oct	Nov
67	72	72	72	72	72	71	62
68	72	72	72	72	72	72	62
69	72	72	72	72	72	72	63
70	72	72	72	72	72	72	64
71	72	72	72	72	72	72	65
72	72	72	72	72	72	72	66
73	72	72	72	72	72	72	67
74	72	72	72	72	72	72	68
75	72	72	72	72	72	72	69
76	72	72	72	72	72	72	70
77	72	72	72	72	72	72	71
78	72	72	72	72	72	72	72

APPENDIX 2-E

STANISLAUS RIVER MINIMUM FLOWS FOR FISH NEEDS

Introduction:

The following tables indicate the specific minimum flows needed to achieve the minimum flow schedule as specified in Action III.1.3. The flow is based on releases measured at Goodwin Dam.

Stanislaus River Minimum Fish Flow Schedule
Water Year Type: Critically Dry

OCT	CFS	NOV	CFS	DEC	CFS	JAN	CFS	FEB	CFS	MAR	CFS
1	200	1	200	1	200	1	200	1	200	1	200
2	200	2	200	2	200	2	200	2	200	2	200
3	200	3	200	3	200	3	400	3	200	3	200
4	200	4	200	4	200	4	400	4	200	4	200
5	200	5	200	5	200	5	200	5	400	5	200
6	200	6	200	6	200	6	200	6	400	6	200
7	200	7	200	7	200	7	200	7	200	7	200
8	200	8	200	8	200	8	200	8	200	8	200
9	200	9	200	9	200	9	200	9	200	9	200
10	200	10	200	10	200	10	200	10	200	10	200
11	200	11	200	11	200	11	200	11	200	11	200
12	200	12	200	12	200	12	200	12	200	12	200
13	200	13	200	13	200	13	200	13	200	13	200
14	200	14	200	14	200	14	200	14	200	14	200
15	500	15	200	15	200	15	200	15	200	15	200
16	750	16	200	16	200	16	200	16	200	16	200
17	1000	17	200	17	200	17	200	17	200	17	200
18	1250	18	200	18	200	18	200	18	200	18	200
19	1250	19	200	19	200	19	200	19	200	19	200
20	1250	20	200	20	200	20	200	20	200	20	200
21	1250	21	200	21	200	21	200	21	200	21	200
22	1250	22	200	22	200	22	200	22	200	22	200
23	1250	23	200	23	200	23	200	23	200	23	200
24	1250	24	200	24	200	24	200	24	200	24	200
25	1250	25	200	25	200	25	200	25	200	25	200
26	1000	26	200	26	200	26	200	26	200	26	200
27	750	27	200	27	200	27	200	27	200	27	200
28	500	28	200	28	200	28	200	28	200	28	200
29	200	29	200	29	200	29	200			29	200
30	200	30	200	30	200	30	200			30	200
31	200			31	200	31	200			31	200

APR	CFS	MAY	CFS	JUN	CFS	JUL	CFS	AUG	CFS	SEP	CFS
1	200	1	725	1	150	1	150	1	150	1	150
2	200	2	725	2	150	2	150	2	150	2	150
3	200	3	725	3	150	3	150	3	150	3	150
4	200	4	725	4	150	4	150	4	150	4	150
5	200	5	725	5	150	5	150	5	150	5	150
6	200	6	725	6	150	6	150	6	150	6	150
7	200	7	725	7	150	7	150	7	150	7	150
8	200	8	725	8	150	8	150	8	150	8	150
9	200	9	725	9	150	9	150	9	150	9	150
10	200	10	725	10	150	10	150	10	150	10	150
11	200	11	725	11	150	11	150	11	150	11	150
12	200	12	725	12	150	12	150	12	150	12	150
13	200	13	550	13	150	13	150	13	150	13	150
14	200	14	450	14	150	14	150	14	150	14	150
15	350	15	300	15	150	15	150	15	150	15	150
16	500	16	150	16	150	16	150	16	150	16	150
17	725	17	150	17	150	17	150	17	150	17	150
18	725	18	150	18	150	18	150	18	150	18	150
19	725	19	150	19	150	19	150	19	150	19	150
20	725	20	150	20	150	20	150	20	150	20	150
21	725	21	150	21	150	21	150	21	150	21	150
22	725	22	150	22	150	22	150	22	150	22	150
23	725	23	150	23	150	23	150	23	150	23	150
24	725	24	150	24	150	24	150	24	150	24	150
25	725	25	150	25	150	25	150	25	150	25	150
26	725	26	150	26	150	26	150	26	150	26	150
27	725	27	150	27	150	27	150	27	150	27	150
28	725	28	150	28	150	28	150	28	150	28	150
29	725	29	150	29	150	29	150	29	150	29	150
30	725	30	150	30	150	30	150	30	150	30	150
		31	150			31	150	31	150		

Table 1of 5

Stanislaus River Minimum Fish Flow Schedule
Water Year Type: Dry

OCT	CFS	NOV	CFS	DEC	CFS	JAN	CFS	FEB	CFS	MAR	CFS
1	200	1	200	1	200	1	200	1	200	1	200
2	200	2	200	2	200	2	200	2	200	2	200
3	200	3	200	3	200	3	400	3	200	3	200
4	200	4	200	4	200	4	400	4	200	4	200
5	200	5	200	5	200	5	400	5	400	5	200
6	200	6	200	6	200	6	200	6	400	6	200
7	200	7	200	7	200	7	200	7	400	7	200
8	200	8	200	8	200	8	200	8	200	8	200
9	200	9	200	9	200	9	200	9	200	9	200
10	200	10	200	10	200	10	200	10	200	10	200
11	200	11	200	11	200	11	200	11	200	11	200
12	200	12	200	12	200	12	200	12	200	12	200
13	200	13	200	13	200	13	200	13	200	13	200
14	200	14	200	14	200	14	200	14	200	14	200
15	500	15	200	15	200	15	200	15	200	15	200
16	750	16	200	16	200	16	200	16	200	16	200
17	1000	17	200	17	200	17	200	17	200	17	200
18	1250	18	200	18	200	18	200	18	200	18	200
19	1250	19	200	19	200	19	200	19	200	19	200
20	1250	20	200	20	200	20	200	20	200	20	200
21	1500	21	200	21	200	21	200	21	200	21	200
22	1500	22	200	22	200	22	200	22	200	22	200
23	1500	23	200	23	200	23	200	23	200	23	200
24	1250	24	200	24	200	24	200	24	200	24	200
25	1250	25	200	25	200	25	200	25	200	25	200
26	1250	26	200	26	200	26	200	26	200	26	200
27	1000	27	200	27	200	27	200	27	200	27	200
28	750	28	200	28	200	28	200	28	200	28	200
29	500	29	200	29	200	29	200			29	200
30	200	30	200	30	200	30	200			30	200
31	200			31	200	31	200			31	200

APR	CFS	MAY	CFS	JUN	CFS	JUL	CFS	AUG	CFS	SEP	CFS
1	200	1	1000	1	200	1	200	1	200	1	200
2	200	2	1000	2	200	2	200	2	200	2	200
3	200	3	1000	3	200	3	200	3	200	3	200
4	200	4	1000	4	200	4	200	4	200	4	200
5	200	5	1000	5	200	5	200	5	200	5	200
6	200	6	1000	6	200	6	200	6	200	6	200
7	200	7	1000	7	200	7	200	7	200	7	200
8	350	8	1000	8	200	8	200	8	200	8	200
9	500	9	1000	9	200	9	200	9	200	9	200
10	750	10	1000	10	200	10	200	10	200	10	200
11	1000	11	1000	11	200	11	200	11	200	11	200
12	1000	12	1000	12	200	12	200	12	200	12	200
13	1000	13	1000	13	200	13	200	13	200	13	200
14	1000	14	1000	14	200	14	200	14	200	14	200
15	1000	15	1000	15	200	15	200	15	200	15	200
16	1000	16	800	16	200	16	200	16	200	16	200
17	1000	17	600	17	200	17	200	17	200	17	200
18	1000	18	450	18	200	18	200	18	200	18	200
19	1000	19	300	19	200	19	200	19	200	19	200
20	1000	20	200	20	200	20	200	20	200	20	200
21	1000	21	200	21	200	21	200	21	200	21	200
22	1000	22	200	22	200	22	200	22	200	22	200
23	1000	23	200	23	200	23	200	23	200	23	200
24	1000	24	200	24	200	24	200	24	200	24	200
25	1000	25	200	25	200	25	200	25	200	25	200
26	1000	26	200	26	200	26	200	26	200	26	200
27	1000	27	200	27	200	27	200	27	200	27	200
28	1000	28	200	28	200	28	200	28	200	28	200
29	1000	29	200	29	200	29	200	29	200	29	200
30	1000	30	200	30	200	30	200	30	200	30	200
		31	200			31	200	31	200		

Table 2 of 5

Stanislaus River Minimum Fish Flow Schedule
Water Year Type: Below Normal

OCT	CFS	NOV	CFS	DEC	CFS	JAN	CFS	FEB	CFS	MAR	CFS
1	250	1	200	1	200	1	200	1	200	1	200
2	250	2	200	2	200	2	200	2	200	2	200
3	250	3	200	3	200	3	400	3	200	3	200
4	250	4	200	4	200	4	400	4	200	4	200
5	250	5	200	5	200	5	400	5	400	5	200
6	250	6	200	6	200	6	400	6	400	6	200
7	250	7	200	7	200	7	200	7	400	7	200
8	250	8	200	8	200	8	200	8	400	8	200
9	250	9	200	9	200	9	200	9	200	9	200
10	250	10	200	10	200	10	200	10	200	10	200
11	250	11	200	11	200	11	200	11	200	11	200
12	250	12	200	12	200	12	200	12	200	12	200
13	250	13	200	13	200	13	200	13	200	13	200
14	250	14	200	14	200	14	200	14	200	14	200
15	500	15	200	15	200	15	200	15	200	15	200
16	750	16	200	16	200	16	200	16	200	16	200
17	1000	17	200	17	200	17	200	17	200	17	200
18	1250	18	200	18	200	18	200	18	200	18	200
19	1500	19	200	19	200	19	200	19	200	19	200
20	1500	20	200	20	200	20	200	20	200	20	200
21	1500	21	200	21	200	21	200	21	200	21	200
22	1500	22	200	22	200	22	200	22	200	22	200
23	1500	23	200	23	200	23	200	23	200	23	200
24	1500	24	200	24	200	24	200	24	200	24	200
25	1500	25	200	25	200	25	200	25	200	25	200
26	1500	26	200	26	200	26	200	26	200	26	200
27	1500	27	200	27	200	27	200	27	200	27	200
28	1250	28	200	28	200	28	200	28	200	28	200
29	1000	29	200	29	200	29	200			29	200
30	750	30	200	30	200	30	200			30	200
31	500			31	200	31	200			31	200

APR	CFS	MAY	CFS	JUN	CFS	JUL	CFS	AUG	CFS	SEP	CFS
1	400	1	1500	1	900	1	250	1	250	1	250
2	750	2	1500	2	600	2	250	2	250	2	250
3	1000	3	1500	3	600	3	250	3	250	3	250
4	1250	4	1500	4	600	4	250	4	250	4	250
5	1500	5	1500	5	600	5	250	5	250	5	250
6	1700	6	1500	6	600	6	250	6	250	6	250
7	2000	7	1500	7	450	7	250	7	250	7	250
8	2000	8	1500	8	450	8	250	8	250	8	250
9	2000	9	1500	9	450	9	250	9	250	9	250
10	2000	10	1500	10	450	10	250	10	250	10	250
11	1500	11	1500	11	300	11	250	11	250	11	250
12	1500	12	1500	12	300	12	250	12	250	12	250
13	1500	13	1500	13	300	13	250	13	250	13	250
14	1500	14	1250	14	300	14	250	14	250	14	250
15	1500	15	1250	15	250	15	250	15	250	15	250
16	1500	16	1250	16	250	16	250	16	250	16	250
17	1500	17	1250	17	250	17	250	17	250	17	250
18	1500	18	1250	18	250	18	250	18	250	18	250
19	2000	19	1250	19	250	19	250	19	250	19	250
20	2000	20	1000	20	250	20	250	20	250	20	250
21	2000	21	1000	21	250	21	250	21	250	21	250
22	2000	22	1000	22	250	22	250	22	250	22	250
23	1500	23	1000	23	250	23	250	23	250	23	250
24	1500	24	1000	24	250	24	250	24	250	24	250
25	1500	25	1000	25	250	25	250	25	250	25	250
26	1500	26	1000	26	250	26	250	26	250	26	250
27	1500	27	900	27	250	27	250	27	250	27	250
28	1500	28	900	28	250	28	250	28	250	28	250
29	1500	29	900	29	250	29	250	29	250	29	250
30	1500	30	900	30	250	30	250	30	250	30	250
		31	900			31	250	31	250		

Table 3 of 5

Stanislaus River Minimum Fish Flow Schedule
Water Year Type: Above Normal

OCT	CFS	NOV	CFS	DEC	CFS	JAN	CFS	FEB	CFS	MAR	CFS
1	300	1	200	1	200	1	200	1	200	1	200
2	300	2	200	2	200	2	200	2	200	2	350
3	300	3	200	3	200	3	400	3	200	3	700
4	300	4	200	4	200	4	400	4	200	4	1200
5	300	5	200	5	200	5	400	5	400	5	1800
6	300	6	200	6	200	6	400	6	400	6	2300
7	300	7	200	7	200	7	400	7	400	7	3000
8	300	8	200	8	200	8	200	8	400	8	3000
9	300	9	200	9	200	9	200	9	400	9	3000
10	300	10	200	10	200	10	200	10	200	10	3000
11	300	11	200	11	200	11	200	11	200	11	3000
12	300	12	200	12	200	12	200	12	200	12	3000
13	300	13	200	13	200	13	200	13	200	13	1200
14	300	14	200	14	200	14	200	14	200	14	800
15	500	15	200	15	200	15	200	15	200	15	800
16	750	16	200	16	200	16	200	16	200	16	800
17	1000	17	200	17	200	17	200	17	200	17	800
18	1250	18	200	18	200	18	200	18	200	18	800
19	1500	19	200	19	200	19	200	19	200	19	800
20	1500	20	200	20	200	20	200	20	200	20	800
21	1500	21	200	21	200	21	200	21	200	21	800
22	1500	22	200	22	200	22	200	22	200	22	800
23	1500	23	200	23	200	23	200	23	200	23	800
24	1500	24	200	24	200	24	200	24	200	24	800
25	1500	25	200	25	200	25	200	25	200	25	800
26	1500	26	200	26	200	26	200	26	200	26	800
27	1500	27	200	27	200	27	200	27	200	27	1200
28	1250	28	200	28	200	28	200	28	200	28	1500
29	1000	29	200	29	200	29	200			29	2300
30	750	30	200	30	200	30	200			30	3000
31	500			31	200	31	200			31	3000

APR	CFS	MAY	CFS	JUN	CFS	JUL	CFS	AUG	CFS	SEP	CFS
1	3000	1	3000	1	1200	1	300	1	300	1	300
2	3000	2	3000	2	1200	2	300	2	300	2	300
3	3000	3	3000	3	1200	3	300	3	300	3	300
4	3000	4	3000	4	1200	4	300	4	300	4	300
5	2300	5	2300	5	1200	5	300	5	300	5	300
6	1500	6	1500	6	1200	6	300	6	300	6	300
7	1200	7	1500	7	1200	7	300	7	300	7	300
8	800	8	1500	8	1200	8	300	8	300	8	300
9	800	9	1500	9	1000	9	300	9	300	9	300
10	800	10	1500	10	1000	10	300	10	300	10	300
11	800	11	1500	11	1000	11	300	11	300	11	300
12	800	12	1500	12	1000	12	300	12	300	12	300
13	800	13	1500	13	1000	13	300	13	300	13	300
14	800	14	1500	14	1000	14	300	14	300	14	300
15	800	15	1200	15	1000	15	300	15	300	15	300
16	800	16	1200	16	1000	16	300	16	300	16	300
17	800	17	1200	17	1000	17	300	17	300	17	300
18	800	18	1200	18	1000	18	300	18	300	18	300
19	800	19	1200	19	1000	19	300	19	300	19	300
20	800	20	1200	20	1000	20	300	20	300	20	300
21	800	21	1200	21	1000	21	300	21	300	21	300
22	800	22	1200	22	1000	22	300	22	300	22	300
23	800	23	1200	23	1000	23	300	23	300	23	300
24	800	24	1200	24	750	24	300	24	300	24	300
25	800	25	1200	25	750	25	300	25	300	25	300
26	800	26	1200	26	500	26	300	26	300	26	300
27	1500	27	1200	27	500	27	300	27	300	27	300
28	2300	28	1200	28	500	28	300	28	300	28	300
29	3000	29	1200	29	300	29	300	29	300	29	300
30	3000	30	1200	30	300	30	300	30	300	30	300
		31	1200			31	300	31	300		

Table 4 of 5

Stanislaus River Minimum Fish Flow Schedule
Water Year Type: Wet

OCT	CFS	NOV	CFS	DEC	CFS	JAN	CFS	FEB	CFS	MAR	CFS
1	400	1	300	1	300	1	300	1	300	1	600
2	400	2	300	2	300	2	300	2	300	2	1200
3	400	3	300	3	300	3	600	3	300	3	2400
4	400	4	300	4	300	4	600	4	300	4	5000
5	400	5	300	5	300	5	600	5	600	5	5000
6	400	6	300	6	300	6	600	6	600	6	5000
7	400	7	300	7	300	7	600	7	600	7	5000
8	400	8	300	8	300	8	600	8	600	8	4500
9	400	9	300	9	300	9	300	9	600	9	2400
10	400	10	300	10	300	10	300	10	600	10	1200
11	400	11	300	11	300	11	300	11	300	11	800
12	400	12	300	12	300	12	300	12	300	12	800
13	400	13	300	13	300	13	300	13	300	13	800
14	400	14	300	14	300	14	300	14	300	14	800
15	500	15	300	15	300	15	300	15	300	15	800
16	750	16	300	16	300	16	300	16	300	16	800
17	1000	17	300	17	300	17	300	17	300	17	800
18	1250	18	300	18	300	18	300	18	300	18	800
19	1500	19	300	19	300	19	300	19	300	19	800
20	1500	20	300	20	300	20	300	20	300	20	1200
21	1500	21	300	21	300	21	300	21	300	21	1200
22	1500	22	300	22	300	22	300	22	300	22	1200
23	1500	23	300	23	300	23	300	23	300	23	1200
24	1500	24	300	24	300	24	300	24	300	24	1200
25	1500	25	300	25	300	25	300	25	300	25	800
26	1500	26	300	26	300	26	300	26	300	26	800
27	1500	27	300	27	300	27	300	27	300	27	800
28	1250	28	300	28	300	28	300	28	300	28	800
29	1000	29	300	29	300	29	300			29	800
30	750	30	300	30	300	30	300			30	800
31	500			31	300	31	300			31	800

APR	CFS	MAY	CFS	JUN	CFS	JUL	CFS	AUG	CFS	SEP	CFS
1	800	1	4800	1	1200	1	800	1	400	1	400
2	800	2	4800	2	1200	2	500	2	400	2	400
3	1200	3	4500	3	1200	3	500	3	400	3	400
4	2400	4	4500	4	1200	4	500	4	400	4	400
5	5000	5	4500	5	1200	5	500	5	400	5	400
6	5000	6	2400	6	1200	6	500	6	400	6	400
7	5000	7	1200	7	1200	7	400	7	400	7	400
8	4500	8	800	8	1200	8	400	8	400	8	400
9	3500	9	800	9	1200	9	400	9	400	9	400
10	2400	10	800	10	1200	10	400	10	400	10	400
11	1200	11	800	11	1200	11	400	11	400	11	400
12	800	12	800	12	1200	12	400	12	400	12	400
13	800	13	800	13	1200	13	400	13	400	13	400
14	800	14	800	14	1200	14	400	14	400	14	400
15	800	15	800	15	1200	15	400	15	400	15	400
16	800	16	800	16	1200	16	400	16	400	16	400
17	800	17	800	17	1200	17	400	17	400	17	400
18	800	18	1500	18	1200	18	400	18	400	18	400
19	800	19	1500	19	1000	19	400	19	400	19	400
20	800	20	1500	20	1000	20	400	20	400	20	400
21	800	21	2500	21	1000	21	400	21	400	21	400
22	800	22	2500	22	1000	22	400	22	400	22	400
23	800	23	2500	23	1000	23	400	23	400	23	400
24	800	24	2500	24	1000	24	400	24	400	24	400
25	800	25	2500	25	1000	25	400	25	400	25	400
26	800	26	1500	26	1000	26	400	26	400	26	400
27	800	27	1500	27	1000	27	400	27	400	27	400
28	800	28	1500	28	800	28	400	28	400	28	400
29	1200	29	1500	29	800	29	400	29	400	29	400
30	2400	30	1500	30	800	30	400	30	400	30	400
		31	1500			31	400	31	400		

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