Stanislaus River Operations Group
DRAFT Meeting Notes
Date 17 March 2010

Attendees
Liz Vasquez, Rob Schroeder, Randi Field, Liz Kiteck, Chelsea Stewart, Paul Fujitani, John Hannon, and Carol Nicolos, USBR; Barb Byrne and Rhonda Reed, NMFS; J.D. Wilkert and Nick Hindman, FWS; Andy Chu, DWR; Craig Anderson (phone), FWS; Greg Wilson (phone), SWRCB; and Tim Heyne (phone), DFG.

Handouts
- Agenda
- New Melones – Stanislaus River Basin Storage
- Goodwin Dam (GDW) Discharge
- Orange Blossom Bridge Temperatures
- Estimated Knights Ferry Temperatures
- New Melones Lake Daily Operations, Run date: March 17, 2010
- Tulloch Reservoir Daily Operations, Run date: March 17, 2010
- Goodwin Reservoir Daily Operations, Run date: March 17, 2010
- Draft VAMP Flow Estimates
- Summary of Water Year Types NMFS OCAP BO
- Escapement Summary

Agenda Items:

Announcements: A Reclamation field crew will be on the Stanislaus doing River 2D work March 29-April 2 if anyone would like to come. Please contact Reclamation if you would like to participate.

A reminder was given to follow equipment protocol after working in the Stanislaus due to the New Zealand mud snails.

January minutes are now on the website.

Fish Monitoring and Reporting:

Caswell:

There is a correlation between the flow pulses and fish pulses. There have been 350 chinook counted in 45 days of trapping. There is a study on-going to check the historical viability of fish data. It is a 5 year agreement that started last year and has ½ million dollars committed to the project. One on going study is a study that analyzes Chinook salmon otoliths that were collected by DFG during their escapement survey. The otoliths are prepared and then analyzed for isotopic ratios using a Multicollector-Inductively Coupled Plasma Mass Spectrometer. When available the project processes samples through this machine in a 10 hour tag-team fashion to get maximum handling. We will

try to have someone give a presentation on the topic at a later meeting, possibly at a brown bag lunch session.

Escapement:

The escapement summary shows that the Stanislaus had the greatest escapement numbers of the San Joaquin River tributaries with a total of 92 fish. It is hard to get a good population estimate because of the low numbers observed. DFG has been using the Peterson model for estimating which is appropriate for sample sizes of less than 1000. A couple of interesting statistics of subpopulations of the escapement were that 24 grilse were counted and 10 adipose fin clipped/CWT fish were observed.

B-13 Gravel Program:

The b-13 gravel program targets CVPIA money to gravel augmentation on the Sacramento, American, and Stanislaus Rivers. Reclamation and NMFS need to prioritize the rivers due to money issues. There may be a possibility of moving some funds from the Sacramento River to the Stanislaus (need to consult with NMFS). With current funding levels there will be roughly 10,000 tons of gravel per year. Gravel augmentation near Knights Ferry is not planned at the current time, due to community concerns.

There are currently two projects on the table: restoration of Honolulu Bar which will reduce the grade of the floodplain and Lancaster Road which will focus on improving the function of the side channel. There is also the possibility of a project involving riparian habitat restoration of a 1 mile stretch of the Lover's Leap area; this is in the conceptual phases right now. If Reclamation can't get enough gravel the next step would be to get gravel from CVPIA. AFRP is too far along in the project development for much potential to generate gravel at Honolulu Bar or Lancaster but there is ample time to tap into the Lover's Leap project. ARRP is currently looking for partners for that project and for someone to manage the project. USACE may be interested. Gravel from these restoration projects could potentially be used in the Stanislaus to meet RPA requirements, plus it would be cost effective, and simplify permitting.

Can AFRP give NMFS the work plan for b-13 that shows there are no new gravel augmentation plans for the Stanislaus this year? Need to look for augmentation strategies to meet NMFS 2014 requirement. There is more money in CVPIA but it historically has not been handed down for gravel augmentation. It was determined that the work plan would be submitted to NMFS for their input and then a meeting would be set up to discuss the gravel issue.

A gravel plan according to the RPAs should be submitted to NMFS by June 2010. An "outline" plan will be sent out in April.

<u>Operations Summary:</u>

Storage conditions; New Melones Reservoir is at 50% capacity with 1.2 MAF

The Goodwin Dam releases are a 30 day snapshot with releases beginning at 1,000cfs in early February. The early March storm events helped with the water recovery.

Orange Blossom temperatures have begun to rise according to the real-time data collected by the USGS gage. The temperatures reported for Knights Ferry are estimated.

Knights Ferry: A history of Knights Ferry temps was done. On March 5, 2010 notification was given to NMFS that the 3-day average maximum exceeded the 3 and 7 day maximums. If warm temperatures continue we will continue to exceed the temperature criteria. Toward the end of March the Stanislaus releases will be increased to 600-800cfs. Air temperatures will be added to next month's temperature printout so a comparison can be done. Any requests for the thermal profile should be done through one point of contact.

Lake Tulloch is encroached 8-9%. New Melones Reservoir September end of month storage may be 865KAF. These projections will depend on the next several months precipitation and snow melt runoff.

San Joaquin is currently releasing approximately 1,500cfs and will be increasing that to 1,600cfs for 20 days.
According to the NMFS handout and the March forecast we are in a Dry Year.

VAMP Handout: The implementation of VAMP may be different than what the handout describes as no final decision has been reached. The group discussed the interaction of the Vernalis flows required under Action IV.2.1, the Stanislaus flows required under Action III.1.3, and the VAMP pulse flow. From NMFS point-of-view, the flow schedule should be followed according to appendix 2E. There was concern regarding the possibility that the Stanislaus will have to put in more water compared to other tributaries. What is the purpose of the VAMP? It is geared toward a 30 day period or so that a survival survey could be done in the Delta? The question was raised whether Reclamation could go to Merced and Tuolumne and see if they would reshape their flows so there won't be such a burden placed on the Stanislaus. There was also concern expressed that if the flows got above 1,500cfs Reclamation will be liable for any seepage, public safety, and damage caused by the high flows. By releasing large amounts of water for VAMP from the Stanislaus, Reclamation may lose flexibility in other areas.

The topic of temperatures was brought up again concerning the exceeding of the maximums under the RPA. It was stated that there is an exception criteria in the RPA to notify NMFS of how much the temperatures were exceeded by and how long the criteria are anticipated to remain at those levels. It was decided that a temperature prospectus would be sent out to the group and then a special focus group meeting would be set up to discuss the issue of what information NMFS needs from Reclamation to comply with the temperature variance provision in the RPAs.

As far as temperature is concerned, what kind of allocation variation is available?

Reclamation and or SOG has an obligation to notify the public if Reclamation plans to release flows that are higher than the historical norm on the Stanislaus River. High flows constitute a potential hazard to the public. High flows above 1500 cfs while not in flood control management might also affect the downstream weir. How should Reclamation go about notifying the public?

FWS brought up that some climate change modeling will be performed on the Stanislaus River basin if anyone is interested in participating.

Next Meeting

Date: Wednesday, 21 April 2010

Location: Central Valley Operations Office
3310 El Camino Ave.
Sacramento, CA 95821

Room: 302

Time: 1300

Notes by: Carol Nicolos and Liz Vasquez

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Meeting Attendance Record

Date: 17 Mar 2010 Time: 1300 Place: CVO Rm 302

Subject of Meeting: SOG

Name	Organization	Phone Number
Carol Nicolos	USBR	989 7276 cnicolos@usbr.gov
Nick Hindman	FWS	Nick_hindman@FWS.gov
Barb Byrne	NMFS	916-930-5612
J.D. Wikert	FWS	209-334-2968 x 403
Rhonda Reed	NMFS	916-930-3609
John Hannon	USBR	jhannon@usbr.gov
Randi Field	USBR	rfield@usbr.gov
Paul Fujitani	USBR	pfujitani@usbr.gov
Liz Kiteck	USBR	ekiteck@usbr.gov
Chelsea Stewart	USBR	cstewart@usbr.gov
Rob Schroeder	"	Rschroeder@usbr.gov
Tim Heyne	DFG	theyne@dfg.ca.gov

AGENDA
Stanislaus Operations Group
March 17, 2010
Central Valley Operations Office, 3310 El Camino Avenue, Room 300, Sacramento, CA 95821
1:00 PM to 3:00 PM
Telecon Number 1-866-757-8460
Participant Code #9068008

RPA Action	
	Announcements
Action 11.2.1.3	**Fish Monitoring and Reporting**
	-Update on 2009 Escapement Survey
Action III.1.3	**Stanislaus Operations Summary**
	-Recent and Upcoming operations
	-Water Year Types and Forecasts
Action III.1.3	**Minimum Flow**
	-San Joaquin Inflow Export Ratio and VAMP
Action III.1.2	**Temperature Criterion**
	-Temperature Tools Break-out Session - Update

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NOAA OCAP Biological Opinions: RPAs

ACTION ID	RPA NAME
11.2.1.3 (584)	Monitoring and Reporting: (e) Adult escapement and juvenile monitoring for steelhead on the Stanislaus River
Action III.1.1 (581-583, 620)	Establish Stanislaus Operational Group (SOG) for Real-Time Operational Decision-Making
Action III.1.2 (620-621)	Provide Cold Water Releases to Maintain Suitable Steelhead Temperatures.
Action III.1.3 (622-625, Appendix 2-E)	Operate the East Side Division Dams to Meet the Minimum Flows, as Measured at Goodwin Dam.
Action III.2.1 (262)	Increase and Improve Quality of Spawning Habitat with addition of 50,000 Cubic Yards of Gravel by 2014 and with a Minimum Addition of 8,000 Cubic Yards per Year for the Duration of the Project Actions.
Action III.2.2 (627)	Conduct Floodplain Restoration and Inundation in Winter or Spring to Inundate Steelhead Juvenile Rearing Habitat on One- to Three- Year Schedule.
Action III.2.3 (627)	Restore Freshwater Migratory Habitat for Juvenile Steelhead by Implementing Projects to Increase Floodplain Connectivity and to Reduce Predation Risk During Migration.
Action III.2.4 (628)	Evaluate Fish Passage at New Melones, Tulloch, and Goodwin Dams
Action IV.2.1 (641)	Phase I: Interim Operations in 2010-2011: Reclamation shall increase its releases at Goodwin Reservoir, if necessary, in order to meet the flows required at Vernalis

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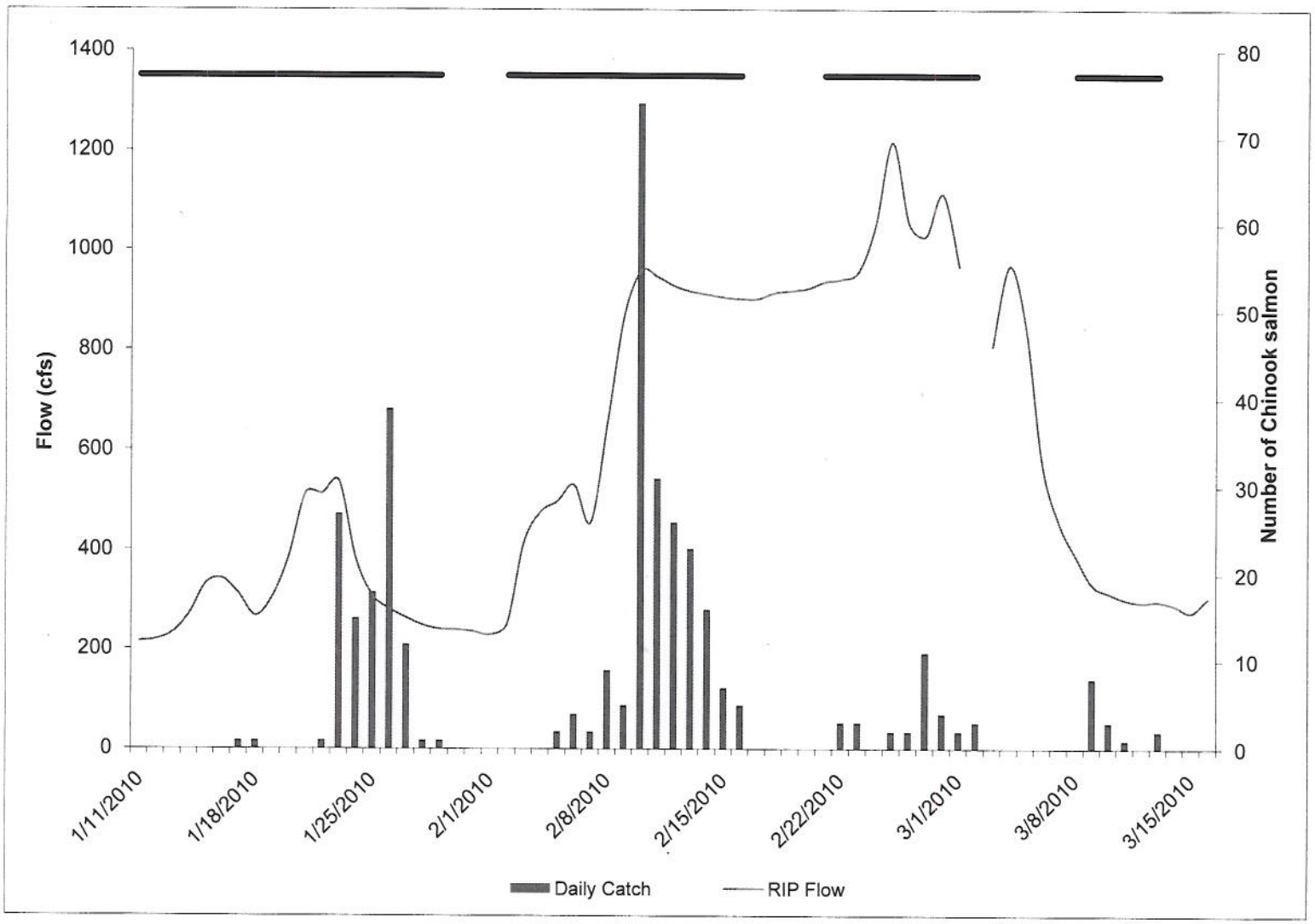
Sheet 1

	A	B	C	D	E	F	G	H	I
1	BatchDate	Days trapped	Chinook salmon		*O. mykiss*	RIP Flow (cfs)	Temp (C)	D.O. (mg/L)	Turbidity (NTU)
2			Count	Mean FL (mm	Count				
3	1/11/2010	Install	n/a		n	215			
4	1/12/2010	x	0		0	219			
5	1/13/2010	x	0		0	233	9.6	10.83	0.94
6	1/14/2010	x	0		0	270	10.8	10.20	3.77
7	1/15/2010	x	0		0	331	10.5	10.29	1.32
8	1/16/2010	x	0		0	342	10.2	10.83	2.70
9	1/17/2010	x	1	38.0	0	311	10.0	10.60	2.10
10	1/18/2010	x	1	38.0	0	267	10.2	10.54	2.12
11	1/19/2010	x	0		0	304	10.4	10.54	1.70
12	1/20/2010	x	0		0	386	10.0		6.06
13	1/21/2010	x	0		0	513	10.0		7.75
14	1/22/2010	x	1	34.0	0	513	10.0		21.60
15	1/23/2010	x	27	33.5	0	537	8.5		39.00
16	1/24/2010	x	15	34.9	0	383	10.0		32.20
17	1/25/2010	x	18	31.8	0	308	8.2	10.32	41.70
18	1/26/2010	x	39	31.6	0	281	9.0	84.50	18.40
19	1/27/2010	x	12	33.3	0	263	8.5	0.00	11.80
20	1/28/2010	x	1	34.0	0	248	9.0		4.55
21	1/29/2010	x	1	37.0	0	240	10.1	10.14	3.08
22	1/30/2010		-		-	239			
23	1/31/2010		-		-	235			
24	2/1/2010		-		-	229			
25	2/2/2010	x	n/a		n/a	250	11.2	10.15	n/a
26	2/3/2010	x	0		0	415			
27	2/4/2010	x	0		0	476	10.3	10.45	n/a
28	2/5/2010	x	2	31.5	0	497	10.8	10.10	6.28
29	2/6/2010	x	4	33.5	0	530	11.3	10.12	7.51
30	2/7/2010	x	2	33.5	0	455	11.4	10.15	5.42
31	2/8/2010	x	9	34.2	0	653	10.9	10.13	4.51
32	2/9/2010	x	5	33.2	0	867	11.0	10.88	4.40
33	2/10/2010	x	74	34.1	0	957	10.7	10.63	11.50
34	2/11/2010	x	31	34.0	0	945	10.3	10.61	8.46
35	2/12/2010	x	26	33.2	0	927	10.6	11.80	7.12
36	2/13/2010	x	23	33.9	0	916	10.6	10.74	5.72
37	2/14/2010	x	16	31.6	0	910	11.0	10.67	3.20
38	2/15/2010	x	7	34.7	0	904	10.7	10.77	2.32
39	2/16/2010	x	5	34.8	0	901	11.1	10.86	2.68
40	2/17/2010		-		-	901			
41	2/18/2010		-		-	913			
42	2/19/2010		-		-	917			
43	2/20/2010		-		-	922			
44	2/21/2010	x	n/a		n/a	935	11.3	100.80	4.91
45	2/22/2010	x	3	36.3	0	940	10.8	10.68	4.85
46	2/23/2010	x	3	35.3	0	955	10.7	10.95	2.72
47	2/24/2010	x	0		0	1047	10.6	10.94	3.04
48	2/25/2010	x	2	42.0	0	1216	10.3	11.00	5.78
49	2/26/2010	x	2	37.0	0	1053	10.9	10.67	10.39
50	2/27/2010	x	11	35.4	0	1027	11.4	10.10	5.23
51	2/28/2010	x	4	32.5	0	1112	11.3	10.29	4.33

	A	B	C	D	E	F	G	H	I
1	BatchDate	Days trapped	Chinook salmon		*O. mykiss*	RIP Flow (cfs)	Temp (C)	D.O. (mg/L)	Turbidity (NTU)
2			Count	Mean FL (mm	Count				
52	3/1/2010	x	2	35.0	0	966	11.1	10.49	3.18
53	3/2/2010	x	3	33.3	0	n/a	11.5	10.35	4.98
54	3/3/2010		-	-	-	806	-	-	-
55	3/4/2010		-	-	-	967	-	-	-
56	3/5/2010		-	-	-	843	-	-	-
57	3/6/2010		-	-	-	569	-	-	-
58	3/7/2010		-	-	-	454	-	-	-
59	3/8/2010	x	-	-	-	388	13.3	9.28	5.86
60	3/9/2010	x	8	46.6	0	330	12.3	9.15	5.60
61	3/10/2010	x	3	66.7	0	313	N/A	N/A	2.15
62	3/11/2010	x	1	-	0	300	11.3	9.64	2.55
63	3/12/2010	x	0	-	0	294	10.7	9.96	1.49
64	3/13/2010	x	2	62.0	0	296	11.8	10.03	1.41
65	3/14/2010		-	-	-	288			
66	3/15/2010		-	-	-	274			
67	3/16/2010		-	-	-	303			
68	**Grand Total**	**43**	**350**	**33.6**	0	-	-	-	-


1400
1200
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Flow (cfs)
80
70
60
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20
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0
Number of Chinook salmon
1/11/2010
1/18/2010
1/25/2010
2/1/2010
2/8/2010
2/15/2010
2/22/2010
3/1/2010
3/8/2010
3/15/2010
Daily Catch
RIP Flow

Sheet 2

BatchDate	Days trapped	Chinook salmon		*O. mykiss*	RIP Flow (cfs)	Temp (C)	D.O. (mg/L)	Turbidity (NTU)
		Count	Mean FL (mm	Count				
1/11/2010	1350			n	215			
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2/19/2010				-	917			
2/20/2010				-	922			
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		Count	Mean FL (mm	Count				
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2/28/2010	1350	4	32.5	0	1112	11.3	10.29	4.33
3/1/2010	1350	2	35.0	0	966	11.1	10.49	3.18
3/2/2010	1350	3	33.3	0		11.5	10.35	4.98
3/3/2010		-	-	-	806	-	-	-
3/4/2010		-	-	-	967	-	-	-
3/5/2010		-	-	-	843	-	-	-
3/6/2010		-	-	-	569	-	-	-
3/7/2010		-	-	-	454	-	-	-
3/8/2010	1350	-	-	-	388	13.3	9.28	5.86
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3/13/2010	1350	2	62.0	0	296	11.8	10.03	1.41
3/14/2010		-	-	-	288			
3/15/2010		-	-	-	274			
3/16/2010		-	-	-	303			
Grand Total	**43**	**350**	**33.6**	0	-	-	-	-

Total Fish Handle

of fish handled

- 85 Female
  Stanislaus: 41 (800)
  Tuolumne: 13 (200)
  Merced: 31 (350)
- 83 Male
  Stanislaus: 51
  Tuolumne: 13
  Merced:19

Merced River Fish Facility
247 salmon trapped
46 female spawned
235,086 eggs taken

Est for spawing escapement

typical #s

Adult/Grilse

alot of 10% or less 2 yrs.

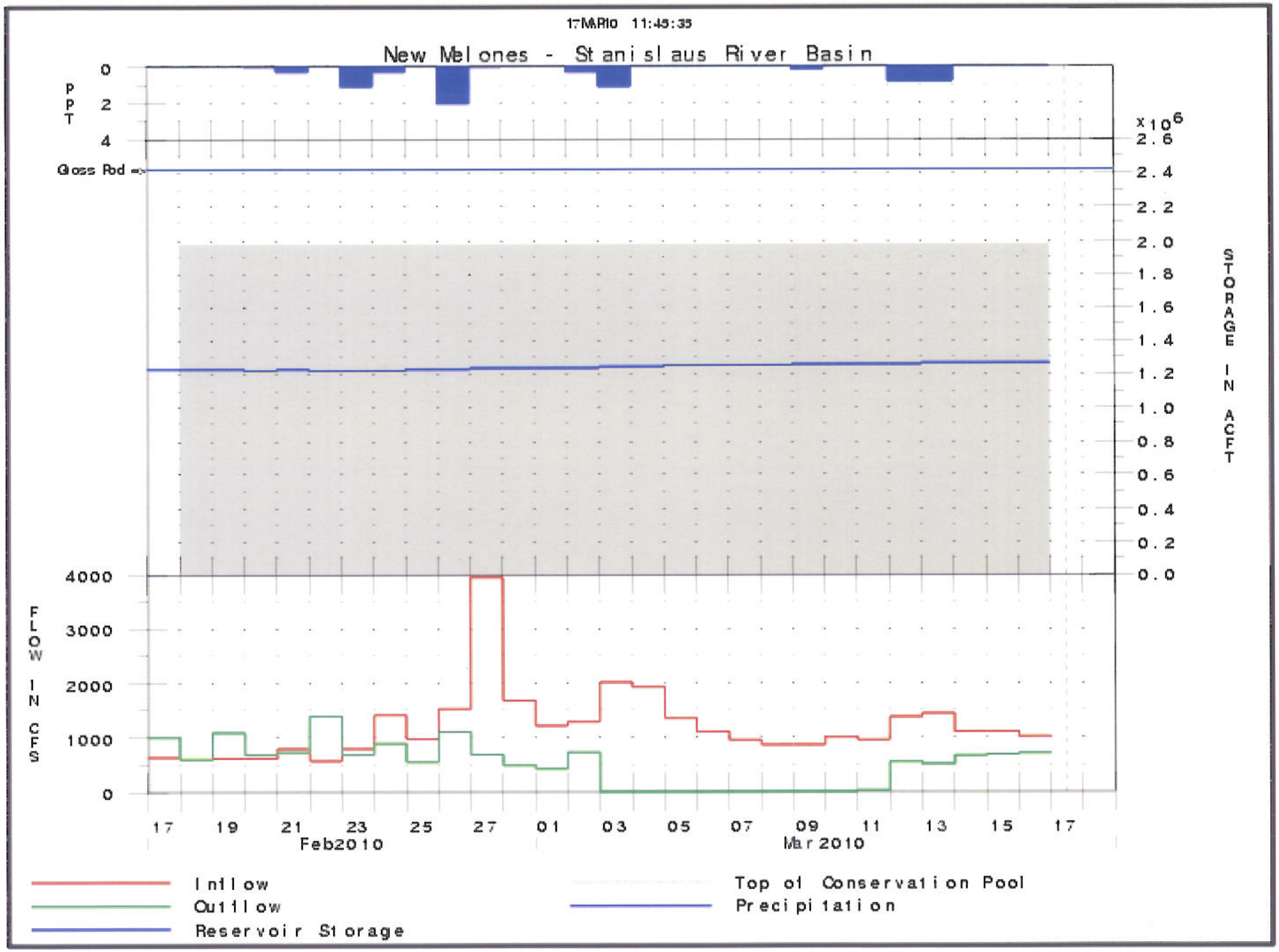
- Age 2 by Forklenght
  Jack: 69 cm
  Jill: 62 cm
- Stanislaus: 18 jacks, 6 jills, 26% grilse
- Tuolumne: 7 jacks, 2 jills, 35% grilse
- Merced: 5 jacks, 2 jills, 14% grilse
- MRFF: Data not analyzed
- SJR Basin (exclude MRFF): 30 jacks, 10 jills, 24% grilse

we get 1yr old back in carcass surveys occasionally

Adipose Fin Clip/CWT

- Stanislaus: 10 out of 92 fish
- Tuolumne: 2
- Merced: 13
- MRFF: Data not available

- MRFF fish can get confused


17MAR10 11:45:35
New Melones - Stanislaus River Basin
PPT
0
2
4
Gross Pod
x10^6
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
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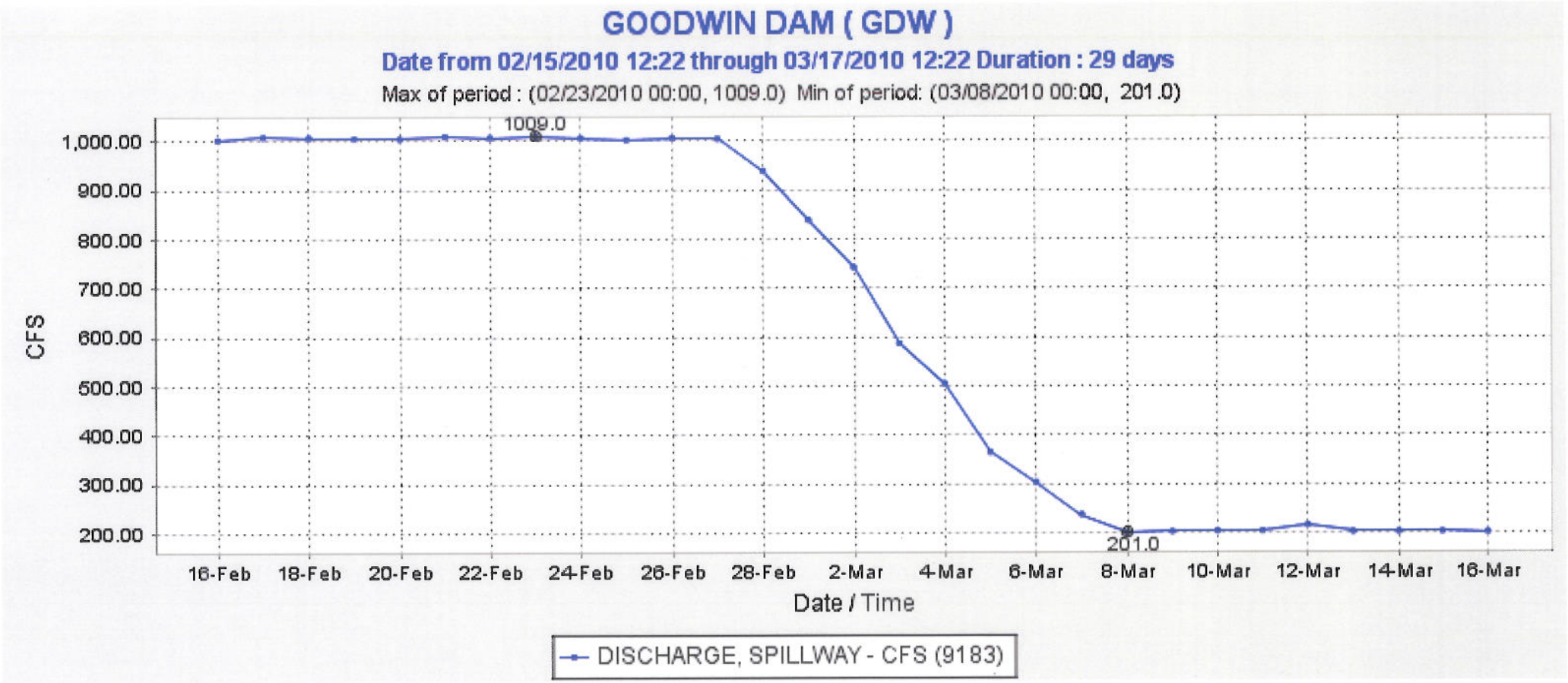
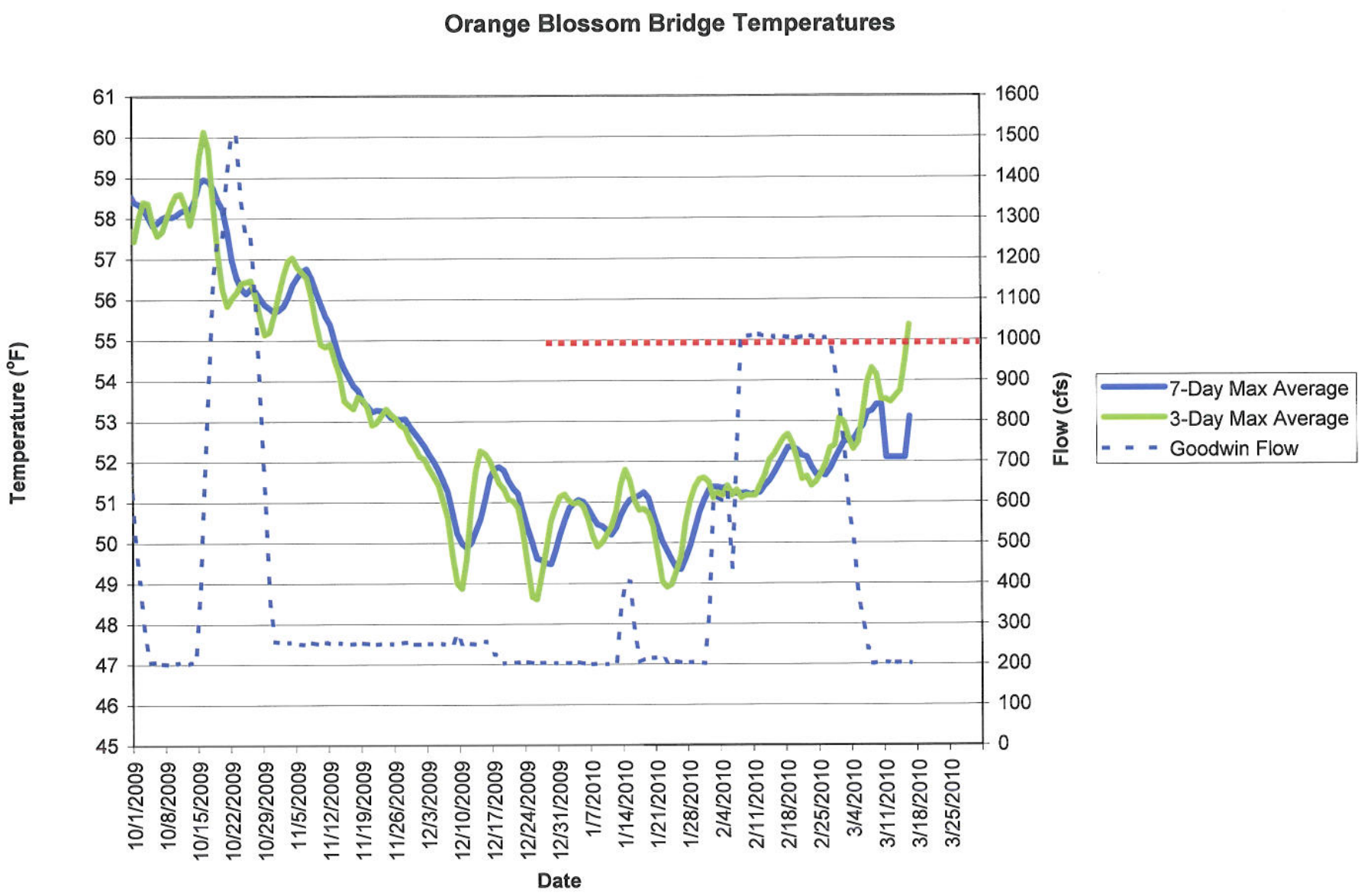
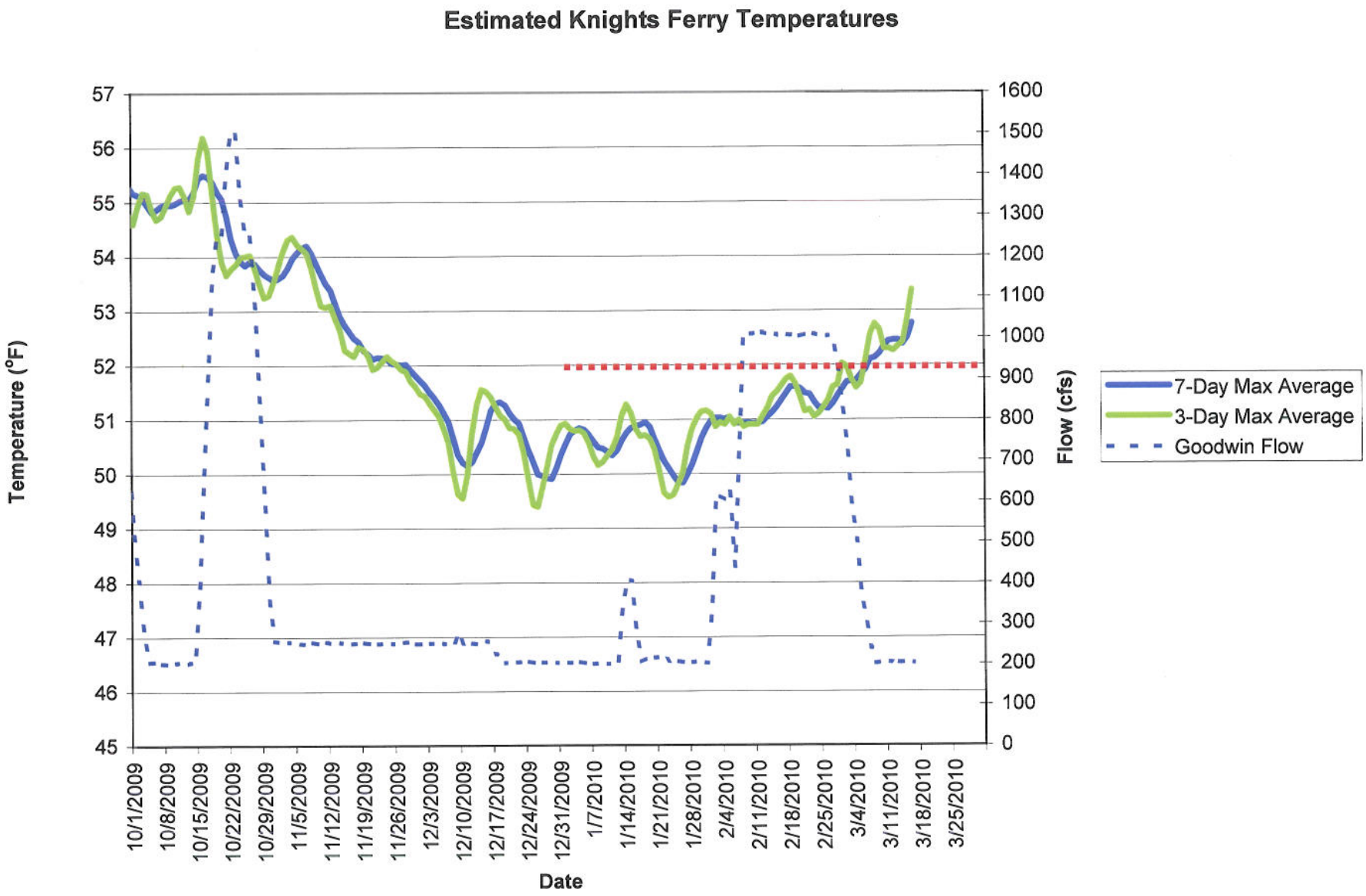
0.2
0.0
STORAGE IN ACFT
FLOW IN CFS
4000
3000
2000
1000
0
17
19
21
23
25
27
01
03
05
07
09
11
13
15
17
Feb2010
Mar2010
Inflow
Outflow
Reservoir Storage
Top of Conservation Pool
Precipitation


GOODWIN DAM (GDW)
Date from 02/15/2010 12:22 through 03/17/2010 12:22 Duration : 29 days
Max of period : (02/23/2010 00:00, 1009.0) Min of period: (03/08/2010 00:00, 201.0)
1009.0
201.0
1,000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
CFS
16-Feb
18-Feb
20-Feb
22-Feb
24-Feb
26-Feb
28-Feb
2-Mar
4-Mar
6-Mar
8-Mar
10-Mar
12-Mar
14-Mar
16-Mar
Date / Time
DISCHARGE, SPILLWAY - CFS (9183)


Orange Blossom Bridge Temperatures
Temperature (°F)
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
Flow (cfs)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
10/1/2009
10/8/2009
10/15/2009
10/22/2009
10/29/2009
11/5/2009
11/12/2009
11/19/2009
11/26/2009
12/3/2009
12/10/2009
12/17/2009
12/24/2009
12/31/2009
1/7/2010
1/14/2010
1/21/2010
1/28/2010
2/4/2010
2/11/2010
2/18/2010
2/25/2010
3/4/2010
3/11/2010
3/18/2010
3/25/2010
Date
7-Day Max Average
3-Day Max Average
Goodwin Flow

3/17/2010


Estimated Knights Ferry Temperatures
Temperature (°F)
57
56
55
54
53
52
51
50
49
48
47
46
45
Flow (cfs)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
10/1/2009
10/8/2009
10/15/2009
10/22/2009
10/29/2009
11/5/2009
11/12/2009
11/19/2009
11/26/2009
12/3/2009
12/10/2009
12/17/2009
12/24/2009
12/31/2009
1/7/2010
1/14/2010
1/21/2010
1/28/2010
2/4/2010
2/11/2010
2/18/2010
2/25/2010
3/4/2010
3/11/2010
3/18/2010
3/25/2010
Date
7-Day Max Average
3-Day Max Average
Goodwin Flow

3/17/2010

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

MARCH 2010

NEW MELONES LAKE DAILY OPERATIONS

RUN DATE: March 17, 2010

DAY	ELEV	STORAGE 1000 ACRE-FEET IN LAKE	STORAGE CHANGE	COMPUTED* INFLOW C.F.S.	RELEASE C.F.S. POWER	RELEASE C.F.S. SPILL	RELEASE C.F.S. OUTLET	EVAPORATION C.F.S.	EVAPORATION INCHES	PRECIP INCHES
		1,234.1								
1	972.96	1,235.7	+1.6	1,223	425	0	0	11	.04	.00
2	973.09	1,236.8	+1.1	1,289	728	0	0	21	.08	.01
3	973.57	1,240.7	+4.0	2,017	8	0	0	11	.04	.36
4	974.03	1,244.5	+3.8	1,928	7	0	0	5	.02	1.14
5	974.35	1,247.2	+2.7	1,359	8	0	0	13	.05	.00
6	974.61	1,249.3	+2.2	1,110	7	0	0	16	.06	.00
7	974.83	1,251.2	+1.8	948	7	0	0	21	.08	.00
8	975.03	1,252.8	+1.7	862	7	0	0	19	.07	.00
9	975.23	1,254.5	+1.7	857	7	0	0	11	.04	.00
10	975.46	1,256.4	+1.9	1,006	9	0	0	32	.12	.21
11	975.68	1,258.2	+1.8	951	14	0	0	13	.05	.00
12	975.87	1,259.8	+1.6	1,388	558	0	0	32	.12	.00
13	976.09	1,261.6	+1.8	1,436	503	0	0	8	.03	.85
14	976.19	1,262.5	+0.8	1,105	676	0	0	8	.03	.85
15	976.28	1,263.2	+0.8	1,102	698	0	0	24	.09	.00
16	976.35	1,263.8	+0.6	1,033	714	0	0	24	.09	.00
TOTALS			**+29.9**	**19,614**	**4,376**	**0**	**0**	**269**	**1.01**	**3.42**
ACRE-FEET			**+29,900**	**38,904**	**8,680**	**0**	**0**	**534**		

COMMENTS:
* COMPUTED INFLOW IS THE SUM OF CHANGE IN STORAGE, RELEASES AND EVAPORATION.

SUMMARY

RELEASE (ACRE-FEET)				PRECIPITATION	
POWER	8,680	OUTLET	0	THIS MONTH =	3.42
SPILL	0	TOTAL	8,680	JULY 1, 2009 TO DATE =	28.19

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

MARCH 2010 **TULLOCH RESERVOIR DAILY OPERATIONS** RUN DATE: 03/17/2010

DAY	ELEV	STORAGE ACRE-FEET RES.	STORAGE ACRE-FEET CHANGE	COMPUTED* INFLOW C.F.S.	NEW MELONES RELEASE	RELEASE - C.F.S. POWER	RELEASE - C.F.S. SPILL	RELEASE - C.F.S. OUTLET	EVAP C.F.S. (1)
		57,402							
1	501.54	56,983	-419	574	425	784	0	0	1
2	501.96	57,446	+463	914	728	678	0	0	3
3	502.31	57,837	+391	726	8	528	0	0	1
4	502.52	58,072	+235	576	7	457	0	0	1
5	502.33	57,860	-212	223	8	328	0	0	2
6	502.09	57,591	-269	152	7	286	0	0	2
7	501.89	57,369	-222	110	7	219	0	0	3
8	501.71	57,170	-199	92	7	189	0	0	3
9	501.39	56,817	-353	66	7	243	0	0	1
10	501.10	56,497	-320	93	9	250	0	0	4
11	500.76	56,127	-370	66	14	251	0	0	2
12	500.80	56,170	+43	705	558	679	0	0	4
13	500.30	55,628	-542	634	503	906	0	0	1
14	500.11	55,422	-206	762	676	865	0	0	1
15	499.91	55,207	-215	760	698	865	0	0	3
16	499.69	54,972	-235	753	714	868	0	0	3
TOTALS			**-2,430**	**7,206**	**4,376**	**8,396**	**0**	**0**	**35**
ACRE-FEET			**-2,430**	**14,293**	**8,680**	**16,653**	**0**	**0**	**69**

*COMPUTED INFLOW IS SUM OF CHANGE IN STORAGE, RELEASES, AND EVAPORATION.

SUMMARY
RELEASE (ACRE-FEET)

POWER	16,653	OUTLET	0
SPILL	0	TOTAL	16,653

OAKDALE IRRIGATION DISTRICT
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
TRI DAMS PROJECT-CALIFORNIA

MARCH 2010

GOODWIN RESERVOIR DAILY OPERATIONS

RUN DATE: March 17, 2010

DAY	ELEV	STORAGE ACRE-FEET RES.	STORAGE ACRE-FEET CHANGE	TULLOCH RELEASE	RELEASE - C.F.S. RIVER OUTLET	RELEASE - C.F.S. RIVER SPILL	RELEASE - C.F.S. CANALS JOINT MAIN	RELEASE - C.F.S. CANALS SOUTH MAIN
		568						
1	360.41	566	-2	784	0	838	0	0
2	360.33	560	-6	678	0	742	0	0
3	360.22	552	-8	528	0	587	0	0
4	360.19	550	-2	457	0	505	0	0
5	360.08	543	-7	328	0	365	0	0
6	360.08	543	+0	286	0	304	0	0
7	360.00	537	-6	219	0	238	0	0
8	359.97	535	-2	189	0	201	0	0
9	360.00	537	+2	243	0	203	0	0
10	360.00	537	+0	250	0	204	0	0
11	360.00	537	+0	251	0	204	0	0
12	360.00	537	+0	679	0	216	427	0
13	359.97	535	-2	906	0	203	663	0
14	359.97	535	+0	865	0	203	619	0
15	359.97	535	+0	865	0	203	617	0
16	359.97	535	+0	868	0	202	617	0
TOTALS			**-33**	**8,396**	**0**	**5,418**	**2,943**	**0**
ACRE-FEET			**-33**	**16,653**	**0**	**10,747**	**5,837**	**0**

JOINT MAIN OPERATED BY SSJID AND OID.
SOUTH MAIN OPERATED BY OID.

SUMMARY
RELEASE (ACRE-FEET)

JOINT MAIN CANAL	5,837	OUTLET	0
SOUTH MAIN CANAL	0	SPILL	10,747
		TOTAL	16,584

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Trinity	1040	1122	1220	1305	1294	1285	1204	1107	1031	1015	1002	1013	1043
	Elev.	2268	2278	2286	2285	2284	2277	2267	2259	2257	2255	2257	2260
Whiskeytown	230	206	206	238	238	238	238	238	237	206	206	206	206
	Elev.	1199	1199	1209	1209	1209	1209	1209	1209	1199	1199	1199	1199
Shasta	2597	3022	3435	3442	3301	2912	2456	2119	1945	1844	1864	1994	2181
	Elev.	1009	1026	1026	1021	1004	982	964	954	948	949	957	968
Folsom	322	364	456	550	611	491	399	360	355	335	308	299	351
	Elev.	398	411	423	430	415	403	397	396	393	388	387	396
New Melones	1220	1206	1187	1072	932	828	722	615	535	540	552	566	580
	Elev.	969	967	952	933	917	900	881	865	866	868	871	874
San Luis	593	709	644	548	394	186	38	0	86	188	344	568	681
	Elev.	487	485	471	446	402	360	341	359	400	439	484	500
Total		6629	7148	7156	6770	5940	5056	4440	4188	4128	4276	4646	5042

Monthly River Releases (TAF/cfs)

Trinity	TAF	17	18	32	180	47	28	28	27	23	18	18	18
	cfs	300	300	540	2,924	783	450	450	450	373	300	300	300
Clear Creek	TAF	11	12	12	12	9	7	5	9	12	12	12	12
	cfs	200	200	200	200	150	120	85	150	200	200	200	200
Sacramento	TAF	180	200	399	449	625	688	553	366	338	238	200	200
	cfs	3250	3250	6700	7300	10500	11200	9000	6150	5500	4000	3250	3250
American	TAF	86	85	62	65	172	140	92	59	61	71	74	61
	cfs	1550	1386	1050	1050	2899	2281	1492	1000	1000	1200	1200	1000
Stanislaus	TAF	56	54	113	104	33	16	16	14	11	12	12	13
	cfs	1014	883	1894	1697	551	264	267	240	177	203	203	219

Trinity Diversions (TAF)

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Carr PP	1	1	29	6	37	73	72	49	1	17	11	5
Spring Crk. PP	25	8	0	0	30	65	65	40	22	11	11	0

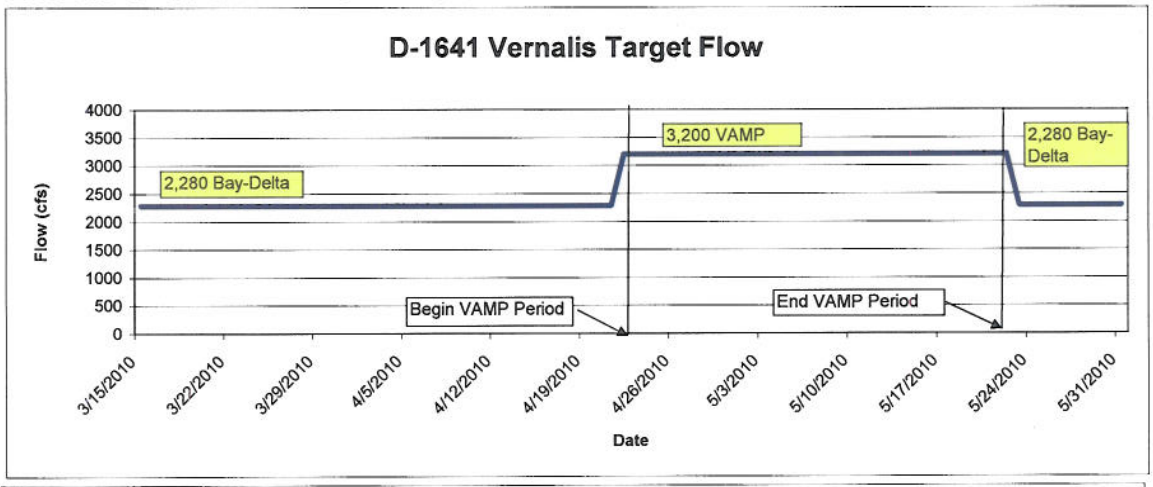
Delta Summary (TAF)

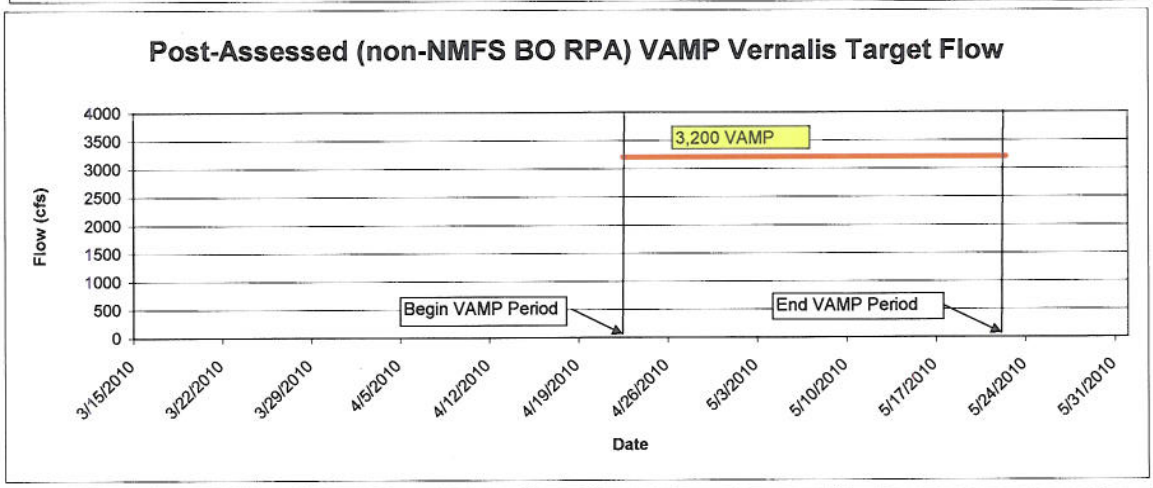
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Tracy	150	60	51	52	53	130	180	256	220	205	253	134
USBR Banks	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	7	7	6.4	6.4	6.4	4.9	5.6	6.4	7	8.4	9.2	9.2
Total USBR	157	67	57	59	59	135	186	262	227	213	262	143
Total Export	307	167	96	99	84	160	261	332	447	418	515	277
COA Balance	0	-115	-115	-115	-115	-115	-115	-115	-115	-115	-115	-115
Old/Middle River Std.												
Old/Middle R. calc.	-3,824	-1,655	-478	-475	-1,185	-2,233	-3,529	-4,535	-5,590	-5,445	-6,491	-3,500
Computed DOI	16137	11403	10439	7255	7094	4002	2993	3026	3872	3866	5336	11176
Excess Outflow	4737	0	185	146	0	0	0	17	878	370	1838	6670
% Export/Inflow	25%	17%	11%	13%	10%	24%	43%	54%	65%	65%	65%	29%
% Export/Inflow std.	45%	35%	35%	35%	35%	65%	65%	65%	65%	65%	65%	65%

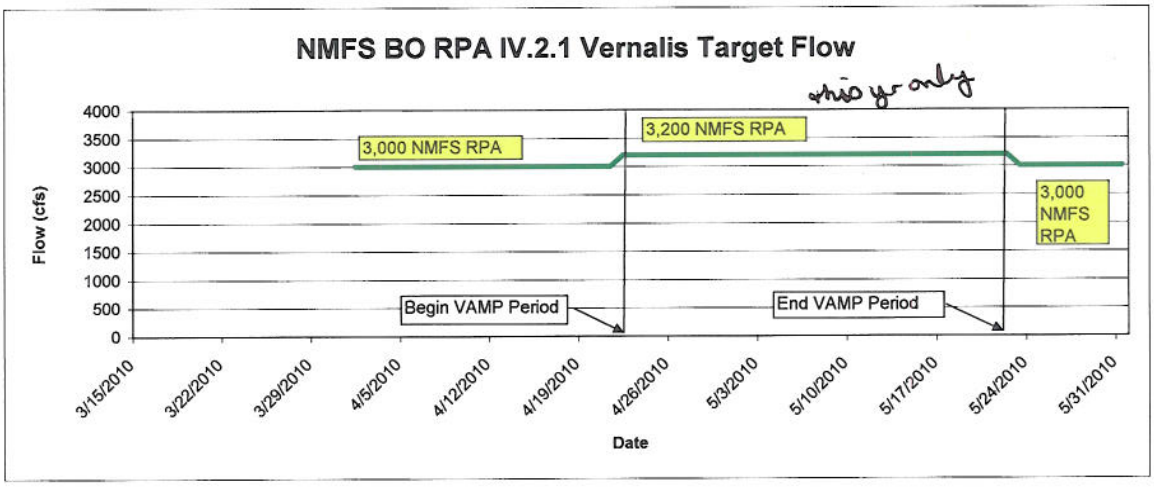
Hydrology

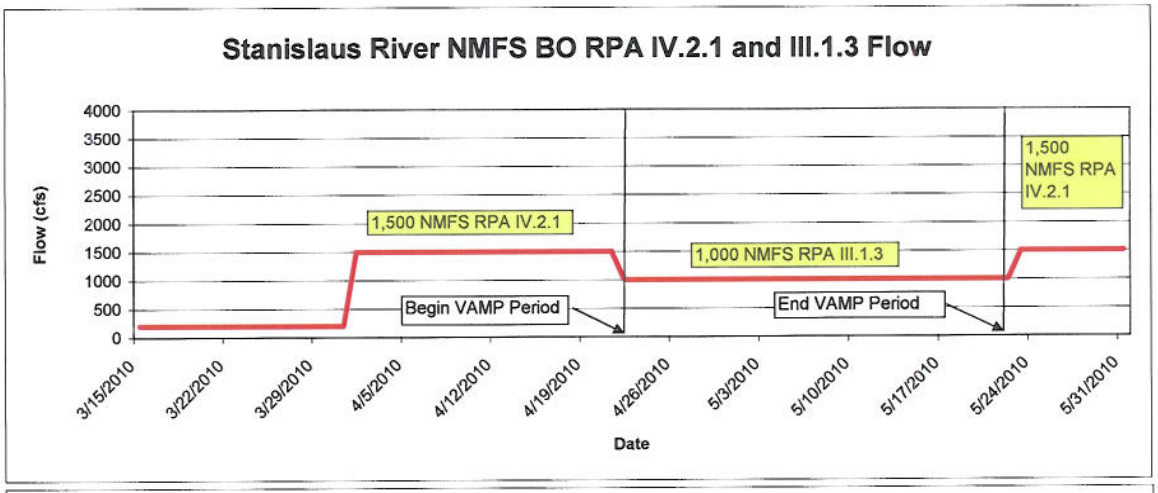
	Clair Engle	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	884	4,373	1,314	618
Year to Date + Forecasted % of mean	73%	79%	48%	58%

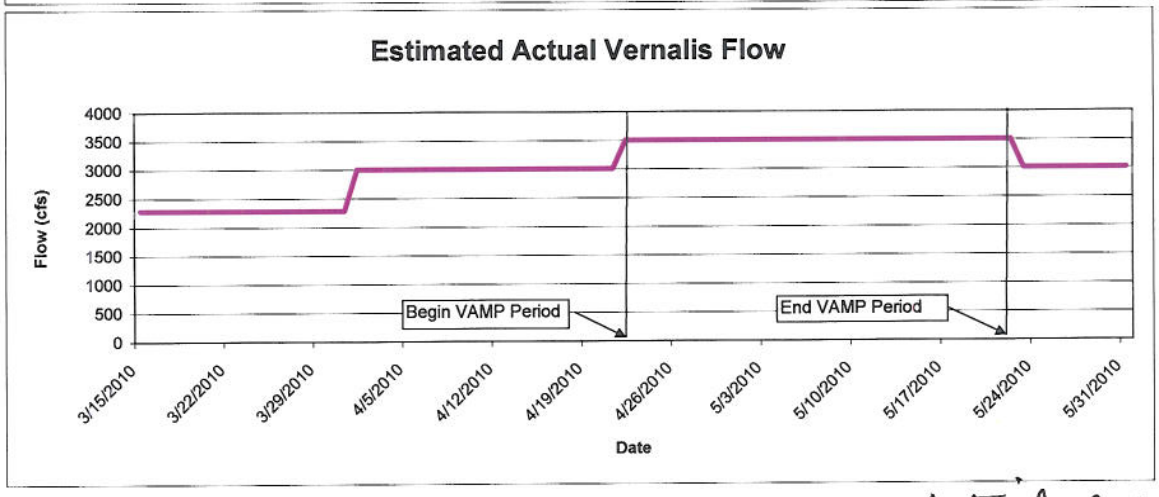
DRAFT VAMP Flow Estimates











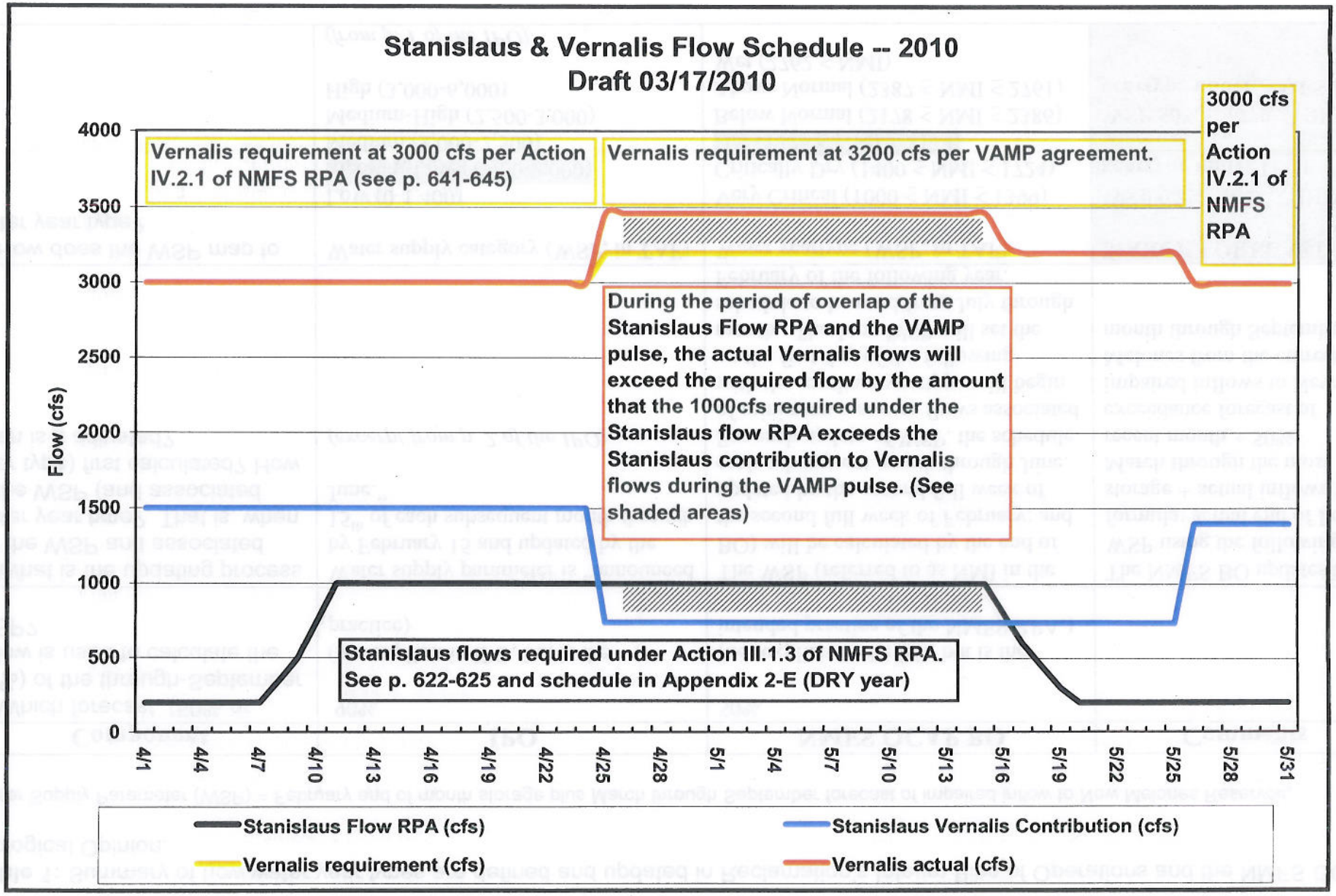
4450? Won't know until later due to uncertainty

Peak time + trailing end during those periods.

Table 1: Summary of how water year types are defined and updated in Reclamation's Interim Plan of Operations and the NMFS OCAP Biological Opinion.

Water Supply Parameter (WSP) = February end of month storage plus March through September forecast of impaired inflow to New Melones Reservoir.

Component	IPO	NMFS OCAP BO	Comments
1. Which forecast (50% or 90%) of the through-September inflow is used to calculate the WSP?	90% (not explicit in IPO, but is the practice)	50% (not explicit in the BO, but is the intended practice of the NMFS RPA.)	
2. What is the updating process for the WSP and associated water year type? That is, when is the WSP (and associated year type) first calculated? How often is it adjusted?	Water supply parameter is "announced by February 15 and updated by the 15th of each subsequent month through June." *(excerpt from p. 2 of the IPO)*	The WSP (referred to as NMI in the BO) will be calculated by the end of the second full week of February; and updated by the second full week of each subsequent month through June. For each update of WSP, the schedule of minimum instream flows associated with the resultant yeartype will begin on the first day of the following month. The June WSP will set the schedule to be used from July through February of the following year.	The NMFS BO updates the WSP using the following formula: actual end of Feb storage + actual inflows from March through the most recent month + 50% exceedance forecast of impaired inflows to New Melones from the current month through September.
3. How does the WSP map to water year type?	Water supply category (WSP, in TAF) Low (0-1,400) Medium-Low (1,400-2,000) Medium (2,000-2,500) Medium-High (2,500-3,000) High (3,000-6,000) *(from p. 1 of the IPO)*	Water yeartype (WSP, in TAF) Very Critical (1000 ≤ NMI ≤ 1399) Critically Dry (1400 ≤ NMI ≤ 1724) Dry (1725 ≤ NMI ≤ 2177) Below Normal (2178 ≤ NMI ≤ 2386) Above Normal (2387 ≤ NMI ≤ 2761) Wet (2762 ≤ NMI)	**MARCH FORECAST** **WSP 90%: 1644 (DRY yeartype under IPO)** **WSP 50%: 1779 (DRY yeartype under NMFS BO)**


Stanislaus & Vernalis Flow Schedule -- 2010
Draft 03/17/2010
Vernalis requirement at 3000 cfs per Action IV.2.1 of NMFS RPA (see p. 641-645)
Vernalis requirement at 3200 cfs per VAMP agreement.
3000 cfs per Action IV.2.1 of NMFS RPA
During the period of overlap of the Stanislaus Flow RPA and the VAMP pulse, the actual Vernalis flows will exceed the required flow by the amount that the 1000cfs required under the Stanislaus flow RPA exceeds the Stanislaus contribution to Vernalis flows during the VAMP pulse. (See shaded areas)
Stanislaus flows required under Action III.1.3 of NMFS RPA. See p. 622-625 and schedule in Appendix 2-E (DRY year)
Flow (cfs)
4000
3500
3000
2500
2000
1500
1000
500
0
4/1
4/4
4/7
4/10
4/13
4/16
4/19
4/22
4/25
4/28
5/1
5/4
5/7
5/10
5/13
5/16
5/19
5/22
5/25
5/28
5/31
Stanislaus Flow RPA (cfs)
Stanislaus Vernalis Contribution (cfs)
Vernalis requirement (cfs)
Vernalis actual (cfs)

Schedule of Stanislaus and Vernalis flows from 4/1 /2010 - 5/31/2010
Version: 3/17/2010 by Barb Byrne, NMFS

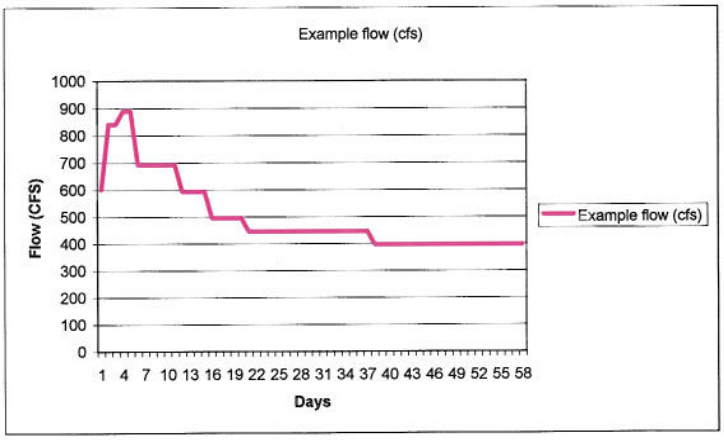
Date	Stanislaus Flow RPA (cfs)	Stanislaus Vernalis Contribution (cfs)	Vernalis requirement (cfs)	add'l Stan flow to Vernalis (cfs)	Vernalis actual (cfs)
1-Apr-10	200	1500	3000	0	3,000
2-Apr-10	200	1500	3000	0	3,000
3-Apr-10	200	1500	3000	0	3,000
4-Apr-10	200	1500	3000	0	3,000
5-Apr-10	200	1500	3000	0	3,000
6-Apr-10	200	1500	3000	0	3,000
7-Apr-10	200	1500	3000	0	3,000
8-Apr-10	350	1500	3000	0	3,000
9-Apr-10	500	1500	3000	0	3,000
10-Apr-10	750	1500	3000	0	3,000
11-Apr-10	1,000	1500	3000	0	3,000
12-Apr-10	1,000	1500	3000	0	3,000
13-Apr-10	1,000	1500	3000	0	3,000
14-Apr-10	1,000	1500	3000	0	3,000
15-Apr-10	1,000	1500	3000	0	3,000
16-Apr-10	1,000	1500	3000	0	3,000
17-Apr-10	1,000	1500	3000	0	3,000
18-Apr-10	1,000	1500	3000	0	3,000
19-Apr-10	1,000	1500	3000	0	3,000
20-Apr-10	1,000	1500	3000	0	3,000
21-Apr-10	1,000	1500	3000	0	3,000
22-Apr-10	1,000	1500	3000	0	3,000
23-Apr-10	1,000	1500	3000	0	3,000
24-Apr-10	1,000	1500	3000	0	3,000
25-Apr-10	1,000	740	3,200	260	3,460
26-Apr-10	1,000	740	3,200	260	3,460
27-Apr-10	1,000	740	3,200	260	3,460
28-Apr-10	1,000	740	3,200	260	3,460
29-Apr-10	1,000	740	3,200	260	3,460
30-Apr-10	1,000	740	3,200	260	3,460
1-May-10	1,000	740	3,200	260	3,460
2-May-10	1,000	740	3,200	260	3,460
3-May-10	1,000	740	3,200	260	3,460
4-May-10	1,000	740	3,200	260	3,460
5-May-10	1,000	740	3,200	260	3,460
6-May-10	1,000	740	3,200	260	3,460
7-May-10	1,000	740	3,200	260	3,460
8-May-10	1,000	740	3,200	260	3,460
9-May-10	1,000	740	3,200	260	3,460
10-May-10	1,000	740	3,200	260	3,460
11-May-10	1,000	740	3,200	260	3,460
12-May-10	1,000	740	3,200	260	3,460
13-May-10	1,000	740	3,200	260	3,460
14-May-10	1,000	740	3,200	260	3,460
15-May-10	1,000	740	3,200	260	3,460
16-May-10	800	740	3,200	60	3,260
17-May-10	600	740	3,200	0	3,200
18-May-10	450	740	3,200	0	3,200
19-May-10	300	740	3,200	0	3,200
20-May-10	200	740	3,200	0	3,200
21-May-10	200	740	3,200	0	3,200
22-May-10	200	740	3,200	0	3,200
23-May-10	200	740	3,200	0	3,200
24-May-10	200	740	3,200	0	3,200
25-May-10	200	740	3,200	0	3,200
26-May-10	200	1,400	3,000	0	3,000
27-May-10	200	1,400	3,000	0	3,000
28-May-10	200	1,400	3,000	0	3,000
29-May-10	200	1,400	3,000	0	3,000
30-May-10	200	1,400	3,000	0	3,000
31-May-10	200	1,400	3,000	0	3,000

Sam flint 4/22 – 5/15
7% leeway for 3200 cfs Req.

Pulses in rive coordinated
Use Stern verbatim
New Melones
M-need Byrne up with set out water?

usually flint.
this yr no adj.
said we would not use NMFS

tributary contribution important
Stan would be on hook for nearly all of
New Melones paids April to contribute nearly
nothing.

DRAFT Hydrograph Template

Hours	Flow Percent Increase or Decrease from Base	Percent of Pulse period	Example flow (cfs)
0	0	0%	600
1	40%	4%	840
2	0%		840
3	6%	4%	889
4	0%		889
5	-22%	11%	692
6	0%		692
7	0%		692
8	0%		692
9	0%		692
10	0%		692
11	-14%	7%	593
12	0%		593
13	0%		593
14	0%		593
15	-17%	9%	494
16	0%		494
17	0%		494
18	0%		494
19	0%		494
20	-10%	30%	445
21	0%		445
22	0%		445
23	0%		445
24	0%		445
25	0%		445
26	0%		445
27	0%		445
28	0%		445
29	0%		445
30	0%		445
31	0%		445
32	0%		445
33	0%		445
34	0%		445
35	0%		445
36	0%		445
37	-11%	37%	395
38	0%		395
39	0%		395
40	0%		395
41	0%		395
42	0%		395
43	0%		395
44	0%		395
45	0%		395
46	0%		395
47	0%		395
48	0%		395
49	0%		395
50	0%		395
51	0%		395
52	0%		395
53	0%		395
54	0%		395
55	0%		395
56	0%		395
57	0%		395