



# United States Department of the Interior

BUREAU OF RECLAMATION  
Central Valley Operations Office  
3310 El Camino Avenue, Suite 300  
Sacramento, California 95821

IN REPLY  
REFER TO:

CVO-400  
WTR-4.10

**DEC 06 2016**

VIA ELECTRONIC MAIL

Mr. Les Grober  
Deputy Director, Division of Water Rights  
State Water Resources Control Board  
P.O. Box 2000  
Sacramento, CA 95812

Subject: Monitoring and Reporting Program on Water Rights Order No. 90-5 (Water Rights)

Dear Mr. Grober:

For the month of November, the temperature control point was set at Balls Ferry, per the June 2016, Sacramento River Temperature Plan.

During November 2016, the average daily water temperature compliance of 56.0 °F or less was met at the Balls Ferry compliance point on the Sacramento River. During the month of November 2016, the average monthly water temperature was 52.7 °F at Balls Ferry.

Enclosed is the monitoring report for November 2016, under Order No. 90-5. The report contains the following data:

<b>Station</b>	<b>Description</b>
Shasta Inlets (R-1) “	Water Temperature Profile Turbidity, monthly, ntu
Shasta Dam (R-2) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Shasta Dam (R-2a)	Flow, average daily, cfs
Keswick (R-3) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Keswick (R-3a)	Flow, average daily, cfs
Spring Creek Power plant (R-4) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly Flow, average daily cfs

<b>Station</b>	<b>Description</b>
Control Point (R-5) Control Point	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Sacramento at Delta (R-6)	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
McCloud (R-7) “	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
Pit River (R-8) “	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
Lewiston (R-9)	Water Temperature, daily average, degrees F
Lewiston (R-9a)	Flow, average daily, cfs

Please contact Ms. Randi Field at 916-979-2066, should you have any questions regarding this data.

Sincerely,



Elizabeth Kiteck  
Chief Water Operations

Enclosures

cc: Mr. Kenneth Emanuel  
Division of Water Rights  
State Water Resources Control Board  
P.O. Box 2000  
Sacramento, CA 95812  
(w/encl)

Central Valley Operations Office  
 \*Data obtained from the California Data Exchange Center  
 \*\*Data calculated by the Central Valley Operations Office  
 \*\*\*Measurements taken by the Northern CA Area Office Personnel  
**Water Temperature Data in Degrees F**  
**November 2016**

Req. Sampling Frequency - Daily Average (Reading indicates daily average)							Req. Sampling Frequency - Monthly		
	Sta 2	Sta 3	Sta 4	Sta 5	Sta9	Sta10	Sta 6	Sta 7	Sta 8
Date	Shd*	Kwk*	Spp**	Bsf**	Lws*	Nfh*	Dlt***	Mss***	Pmn***
1	51.6	52.7	58.3	54.6	51.2	50.8			
2	51.5	52.1	57.7	53.6	50.9	50.8			
3	51.5	52.1	58.2	53.1	50.7	50.6			
4	51.5	52.4	58.1	53.3	50.8	51.2			
5	51.6	52.4	58.1	53.3	50.7	51.1			
6	51.3	52.5	57.7	54.0	51.4	51.9			
7	51.2	52.5	57.3	54.1	51.5	52.7			
8	51.0	52.1	58.2	54.0	51.3	52.7			
9	51.1	52.0	58.0	53.6	51.3	52.5			
10	51.4	52.4	58.0	53.5	51.2	52.4			
11	51.5	52.4	57.9	53.6	51.2	51.9			
12	51.6	52.4	57.9	54.1	51.6	52.8			
13	51.8	52.4	58.3	53.8	51.2	51.8			
14	51.6	52.2	57.9	53.7	51.5	52.3			
15	51.8	52.2	58.4	53.6	51.8	52.7			
16	52.0	52.1	58.0	52.4	50.4	49.8			
17	51.9	51.9	57.9	51.8	49.9	47.7	45.9		
18	52.0	52.0	57.9	51.7	49.8	47.3			
19	52.2	52.1	57.7	51.8	49.9	48.1			
20	52.7	52.1	57.5	52.4	50.0	49.1			
21	52.4	52.6	57.6	53.5	49.9	49.7			
22	52.3	52.6	57.1	52.3	49.4	48.5			
23	52.4	52.4	56.8	52.1	48.6	47.6			
24	52.6	52.5	56.6	51.4	48.4	46.6			
25	52.5	52.4	56.3	51.6	48.6	46.8			
26	52.5	52.5	56.0	50.7	48.5	46.8			
27	52.3	52.2	55.7	50.4	48.0	46.2			
28	52.6	52.1	55.6	51.6	48.1	46.7			
29	52.6	52.1	55.4	50.9	47.6	46.1			47.6
30	52.3	52.1	55.4	51.2	47.4	46.1			

Site Not Visited this Month

Control Point: 11/1-11/30 BSF @ 56.0 DAT

**Cross Channel Gate Operation:**

- November 01-06 open
- November 06-09 closed
- November 09-12 open
- November 12-15 closed
- November 15-25 open
- November 25-29 closed
- November 29-30 open

**Measurements taken by the Northern CA Area Office Personnel  
November 2016**

<b>TEMPERATURE</b>					
Sampling Frequency					
Every two weeks May 1 through November 30.					
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
	11/1/2016	11/15/2016	11/29/2016		
Lake Elev	Temperature	Temperature	Temperature	Temperature	Temperature
MSL	Degrees F	Degrees F	Degrees F	Degrees F	Degrees F
(400 Feet Upstream of Dam)					
	Time: 9:45	Time: 10:00	Time: 11:20		
625	46.3	46.3	46.4		
650	46.4	46.4	46.5		
675	46.4	46.5	46.7		
700	46.5	46.8	47.1		
725	46.9	47.3	47.8		
750	47.5	48.0	48.6		
775	48.2	48.9	50.0		
800	49.3	50.7	53.9		
825	52.7	54.8	55.2		
850	56.9	56.4	55.7		
875	59.7	57.5	56.8		
900	61.1	59.0	58.1		
925	63.1	61.2	58.2		
950	63.1	62.0	58.2		
975	63.1	62.0	58.2		
1000		62.3	58.2		
1025					
1050					
Lake Surface	63.1 @ 997.45'	62.3 @ 999.7'	58.2 @ 1003.49'		

<b>TURBIDITY</b>					
Sampling Frequency					
Monthly, except weekly May 1 through Sep 30, when turbidity at Station 2 is equal to or greater than 10 NTU					
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
	11/1/2016	11/15/2016	11/29/2016		
Lake Elev	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
MSL	ntu	ntu	ntu	ntu	ntu
(400 Feet Upstream of Dam)					
	Time: 9:45	Time: 10:00	Time: 11:20		
625	6.5	6.3	6.8		
650	6.2	6.3	7.0		
675	6.3	6.5	6.8		
700	6.4	6.4	6.2		
725	6.1	5.6	5.0		
750	5.4	4.5	3.8		
775	4.4	3.2	2.5		
800	2.9	2.0	2.0		
825	1.2	1.7	1.8		
850	0.7	2.2	1.7		
875	0.7	1.4	1.5		
900	0.7	0.6	0.7		
925	0.8	0.7	0.7		
950	0.7	0.6	0.7		
975	0.8	0.6	0.7		
1000		0.5	0.6		
1025					
1050					
Lake Surface	0.7 @ 997.45'	0.5 @ 999.7'	0.5 @ 1003.49'		

Central Valley Operations Office  
 Measurements taken by the Northern CA Area Office Personnel

**Summary of Turbidity and Dissolved Oxygen Water Sampling  
 November 2016**

Turbidity Measurements, NTU

Sampling Frequency

Monthly, except weekly from May 1 through September 30, when turbidity at Station 2 is equal to or greater than 10 NTU.

**Station**

	R-2	R-3a	R-4	R-5	R-6	R-7	R-8	
	Shasta Dam		Spring					
	Discharge	Keswick	Creek PP		Sacramento	McCloud	Pit	
Day	at Bridge	Discharge	Discharge	Clear Creek	River (DLT)	River	River	
3				4.4		Site Not Visited this Month		
4	2.8							
9			1.5					
17					1.1			
18		5.5						
22				3.6				
28		0.8						
29								3.1

Dissolved Oxygen, mg/l

Sampling Frequency

Every two weeks from May 1 through September 30; samples to be taken before 1000 hours.

**Station**

	R-2	R-3	R-5	
	Shasta Dam			Hour
	Discharge	Keswick		Time Sample
Day	at Bridge	Discharge	Clear Creek	Taken
3			10.6	10:22
4	8.0			10:15
18		9.8		13:24
22			10.1	9:20
28		11.1		14:50

Control Point: 11/1-11/30 BSF @ 56.0 DAT

**SHASTA LAKE, DAM AND POWERPLANT**

**QG**

**GENERATION RELEASE, CFS**

**WATER YEAR OCTOBER 2016 TO SEPTEMBER 2017**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6,289	4,929										
2	6,463	4,805										
3	6,942	4,257										
4	6,469	4,132										
5	6,546	3,985										
6	5,865	4,666										
7	4,953	4,429										
8	6,060	4,387										
9	6,069	3,948										
10	5,860	3,670										
11	6,325	4,016										
12	6,275	4,279										
13	5,812	4,781										
14	6,180	4,605										
15	5,544	4,948										
16	6,164	5,005										
17	6,027	4,610										
18	5,192	4,023										
19	4,812	4,247										
20	5,304	4,378										
21	5,789	4,357										
22	5,733	4,673										
23	5,549	4,642										
24	5,367	4,159										
25	4,817	4,461										
26	4,817	4,341										
27	4,791	4,427										
28	4,057	4,238										
29	3,861	4,423										
30	5,475	4,779										
31	4,387											
<b>TOTAL</b>	<b>173,794</b>	<b>132,600</b>										
<b>MEAN</b>	<b>5,606</b>	<b>4,420</b>										
<b>MAX</b>	<b>6,942</b>	<b>5,006</b>										
<b>MIN</b>	<b>3,861</b>	<b>3,670</b>										

**WATER YEAR TOTALS**

<b>TOTAL</b>	<b>306,394</b>	
<b>DAILY MEAN</b>	<b>5,023</b>	
<b>DAILY MAX</b>	<b>6,942</b>	<b>10/03/2016</b>
<b>DAILY MIN</b>	<b>3,670</b>	<b>11/10/2016</b>

**KESWICK DAM, RESERVOIR, AND POWERPLANT**

**QT**

**TOTAL RELEASE, CFS**

**WATER YEAR OCTOBER 2016 TO SEPTEMBER 2017**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7,368	4,950										
2	7,366	5,147										
3	7,349	5,023										
4	7,021	4,831										
5	7,013	4,841										
6	6,764	4,841										
7	6,751	4,841										
8	6,756	4,840										
9	6,751	4,854										
10	6,510	4,866										
11	6,505	4,866										
12	6,537	4,866										
13	6,545	4,865										
14	6,542	4,863										
15	6,519	4,779										
16	6,515	4,865										
17	6,519	4,866										
18	6,232	4,864										
19	6,222	4,866										
20	6,225	4,862										
21	5,770	4,865										
22	5,495	4,864										
23	5,493	4,864										
24	5,444	4,866										
25	5,346	4,861										
26	4,888	4,814										
27	4,887	4,815										
28	4,889	4,810										
29	4,889	4,816										
30	4,864	4,816										
31	4,864											
<b>TOTAL</b>	<b>190,839</b>	<b>145,987</b>										
<b>MEAN</b>	<b>6,166</b>	<b>4,866</b>										
<b>MAX</b>	<b>7,368</b>	<b>5,147</b>										
<b>MIN</b>	<b>4,864</b>	<b>4,779</b>										

**WATER YEAR TOTALS**

<b>TOTAL</b>	<b>336,826</b>	
<b>DAILY MEAN</b>	<b>5,522</b>	
<b>DAILY MAX</b>	<b>7,368</b>	<b>10/01/2016</b>
<b>DAILY MIN</b>	<b>4,779</b>	<b>11/15/2016</b>

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

RUN DATE: December 5, 2016

**LEWISTON DAM, LAKE, AND JUDGE FRANCIS CARR POWERPLANT**

**QR**

**RELEASE TO RIVER, CFS**

**WATER YEAR OCTOBER 2016 TO SEPTEMBER2017**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	466	313										
2	461	320										
3	440	319										
4	440	317										
5	448	316										
6	450	316										
7	450	314										
8	446	302										
9	447	311										
10	449	303										
11	463	304										
12	465	304										
13	455	302										
14	451	321										
15	447	311										
16	445	310										
17	408	313										
18	330	314										
19	301	313										
20	301	312										
21	300	313										
22	302	311										
23	305	309										
24	306	307										
25	305	311										
26	317	313										
27	321	311										
28	309	311										
29	308	311										
30	309	310										
31	308											
<b>TOTAL</b>	<b>11,953</b>	<b>9,342</b>										
<b>MEAN</b>	<b>386</b>	<b>311</b>										
<b>MAX</b>	<b>466</b>	<b>321</b>										
<b>MIN</b>	<b>300</b>	<b>302</b>										

**WATER YEAR TOTALS**

<b>TOTAL</b>	<b>21,295</b>	
<b>DAILY MEAN</b>	<b>349</b>	
<b>DAILY MAX</b>	<b>466</b>	<b>10/01/2016</b>
<b>DAILY MIN</b>	<b>300</b>	<b>10/21/2016</b>



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

RUN DATE: December 5, 2016

**WHISKEYTOWN DAM, LAKE, AND SPRING CREEK POWERPLANT**

**QG**

**GENERATION RELEASE, CFS**

**WATER YEAR OCTOBER 2016 TO SEPTEMBER 2017**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	746	18										
2	349	14										
3	276	530										
4	454	481										
5	309	519										
6	808	14										
7	1,036	14										
8	398	31										
9	292	471										
10	292	654										
11	365	183										
12	417	180										
13	380	23										
14	14	166										
15	362	35										
16	417	86										
17	658	164										
18	1,086	170										
19	802	193										
20	730	135										
21	295	14										
22	16	336										
23	14	511										
24	14	238										
25	14	311										
26	19	171										
27	191	280										
28	14	344										
29	14	14										
30	14	14										
31	989											
<b>TOTAL</b>	<b>11,786</b>	<b>6,314</b>										
<b>MEAN</b>	<b>380</b>	<b>210</b>										
<b>MAX</b>	<b>1,086</b>	<b>654</b>										
<b>MIN</b>	<b>14</b>	<b>14</b>										

**WATER YEAR TOTALS**

<b>TOTAL</b>	<b>18,099</b>	
<b>DAILY MEAN</b>	<b>297</b>	
<b>DAILY MAX</b>	<b>1,086</b>	<b>10/18/2016</b>
<b>DAILY MIN</b>	<b>14</b>	<b>10/14/2016</b>