

Supplemental Environmental Assessment

Interim Flows Project – Water Year 2012

SAN JOAQUIN RIVER
RESTORATION PROGRAM

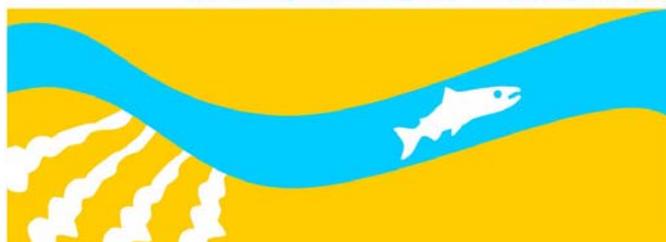


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List of Abbreviations and Acronyms

Act	San Joaquin River Restoration Settlement Act
ATR	Annual Technical Report
BA	Biological Assessment
Banks	Harvey O. Banks Pumping Plant
BNLL	Blunt Nose Leopard Lizard
BO	Biological Opinion
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CVP	Central Valley Project
Delta	Sacramento-San Joaquin Delta
D-1641	Water Rights Decision 1641
DMC	Delta Mendota Canal
DO	Dissolved Oxygen
DPS	Distinct Population Segment
DWR	Department of Water Resources
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FONNSI	Finding of No New Significant Impact
IS	Initial Study
Jones	C.W. Bill Jones Pumping Plant
MND	Mitigated Negative Declaration
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act

NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOP	Notice of Preparation
NRDC	Natural Resources Defense Council
NTU	Nephelometric Turbidity Unit
PEIS/R	Program Environmental Impact Statement/Report
RA	Restoration Administrator
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
ROD	Record of Decision
RPA	Reasonable and Prudent Alternative
Settlement	Stipulation of Settlement in <i>NRDC, et al. v. Kirk Rodgers, et al.</i>
SJR	San Joaquin River
SJRRP	San Joaquin River Restoration Program
State	State of California
SMND	Subsequent Mitigated Negative Declaration
SWP	State Water Project
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TAF	Thousand Acre-Feet
μ/L	Micrograms per Liter
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAMP	Vernalis Adaptive Management Plan
WY	Water Year

1.0 Introduction and Statement of Purpose and Need

1.1 Introduction

The San Joaquin River Restoration Program (SJRRP) was established in late 2006 to implement the Stipulation of Settlement in *NRDC, et al. v. Kirk Rodgers, et al.* (Settlement). As an initial action to guide implementation, the Settlement required that the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), modify releases from Friant Dam beginning in Water Year 2010 (WY 2010 or from October 1, 2009, to September 30, 2010). As described in the Settlement, water releases from Friant Dam prior to release of full Restoration Flows are referred to as Interim Flows. Reclamation, as the lead agency under the National Environmental Policy Act (NEPA), and the California Department of Water Resources (DWR), as the lead agency under the California Environmental Quality Act (CEQA) prepared an Environmental Assessment/Initial Study (EA/IS) to evaluate activities necessary to convey the flows in the San Joaquin River from Friant Dam to the Sacramento-San Joaquin Delta (Delta), and to conduct data collection and monitoring activities during Interim Flow releases during Water Year (WY) 2010. The Draft EA/IS for the WY 2010 Interim Flows Project was made available for public comment on June 3, 2009. Public and agency comments were reviewed and responses to comments were incorporated in the Final EA/IS for the WY 2010 Interim Flows Project. Reclamation approved the Finding of No Significant Impact (FONSI) and DWR adopted the Mitigated Negative Declaration (MND) on September 25, 2009. A Draft Supplemental EA for WY 2011 Interim Flows was prepared and made available for public comment and review on June 11, 2010 with the comment period ending on July 23, 2010. The Final Supplemental EA for WY 2011 Interim Flows and signed Finding of No Significant Impact was issued on September 21, 2010.

The intent of the Interim Flows Project is to allow data to be collected on flows, temperatures, fish needs, seepage losses, and water recirculation, recapture, and reuse. These data will be useful in evaluating channel characteristics and capacity, infiltration losses, levee stability and seepage, water temperature, fish management, and recapture conditions. This Supplemental EA is being prepared to extend the period of modified releases of water from Friant Dam for an additional year (WY 2012 or October 1, 2011 to September 30, 2012) in accordance with the flow schedule in Exhibit B of the Settlement, and in a manner consistent with Federal, State and local laws, and any agreements with downstream agencies, entities, and landowners. The Proposed Action includes continuation of activities necessary to convey the flows in the San Joaquin River from Friant Dam to the Delta, and to continue data collection and monitoring activities during Interim Flow releases consistent with the provisions and conditions described in the WY 2010 Interim Flows Final EA/IS and the Supplemental WY 2011 Interim Flows Final

1 EA. Authorization for implementing the Settlement, including release of WY 2012
2 Interim Flows, is provided in the San Joaquin River Restoration Settlement Act (Act)
3 (Public Law 111-11).

4
5 Although the WY 2010 Final EA/IS was a joint federal and state environmental
6 document, it has been determined that a Supplemental EA will be prepared to satisfy the
7 requirements of the National Environmental Policy Act (NEPA). DWR did not have the
8 same discretionary action necessary to implement WY 2011 Interim Flow releases as
9 described in the WY 2010 Final EA/IS, and will not have discretionary actions for WY
10 2012 Interim Flow releases. Therefore, there is not a California Environmental Quality
11 Act (CEQA) review requirement for DWR related to the release of WY 2012 Interim
12 Flows. Reclamation is preparing this Supplemental EA consistent with its lead role in
13 preparing and releasing the Program Environmental Impact Statement/Report (PEIS/R)
14 for the implementation of the Settlement and the San Joaquin River Restoration
15 Settlement Act (Act).

16
17 The WY 2011 Interim Flows Project, as approved and authorized, is currently underway.
18 The purpose of this Supplemental EA is to describe and analyze the effects of an
19 additional year of Interim Flows for WY 2012. This document extends the project
20 originally described in the Final EA/IS for the WY 2010 Interim Flows Project and the
21 Draft and Final Supplemental EA for the WY 2011 Interim Flows Project for one
22 additional year, but generally does not change other aspects of the project. This
23 Supplemental EA includes a review of the Final EA/IS for the WY 2010 Interim Flows
24 Project and the Draft and Final Supplemental EA for the WY 2011 Interim Flows Project
25 and synthesizes discussions/results where conditions have not changed, and evaluates
26 potential impacts due to implementation of WY 2012 Interim Flows in consideration of
27 changed conditions or new data/information that have occurred since the approval of the
28 Final Supplemental EA for WY 2011 Interim Flows. The results of this Supplemental EA
29 will provide the basis for determining whether a Finding of No Significant Impact
30 (FONNSI) can be issued or if additional environmental review such as an Environmental
31 Impact Statement is required.

32
33 Additionally, Reclamation will submit a petition for temporary transfer of water (less
34 than 1 year), pursuant to California Water Code Section 1725 et seq., to address the
35 release and redirection of WY 2012 Interim Flows. In acting on a water right petition,
36 the State Water Resources Control Board (SWRCB) must consider potential impacts to
37 other legal users of the water, and whether there would be any unreasonable effects from
38 the transfer on fish, wildlife, or other instream beneficial uses. This Supplemental EA
39 will be used to support Reclamation's petition to the SWRCB.

40 **1.2 Purpose and Need for the Proposed Action**

41 **1.2.1 Project Background**

42 In 1988, a coalition of environmental groups, led by the Natural Resources Defense
43 Council (NRDC), filed a lawsuit challenging renewal of long-term water service
44 contracts between the United States and Central Valley Project (CVP) Friant Division

1 contractors. After more than 18 years of litigation of this lawsuit, known as *NRDC, et al.*,
2 *v. Kirk Rodgers, et al.*, a settlement was reached. On September 13, 2006, the Settling
3 Parties, including NRDC, Friant Water Users Authority, and the U.S. Departments of the
4 Interior and Commerce, agreed on the terms and conditions of the Settlement, which was
5 subsequently approved by the U.S. Eastern District Court of California on October 23,
6 2006.

7
8 The Settlement establishes two primary goals:

- 9 • **Restoration Goal** – To restore and maintain fish populations in “good condition”
10 in the main stem San Joaquin River below Friant Dam to the confluence of the
11 Merced River, including naturally reproducing and self-sustaining populations of
12 salmon and other fish.
- 13 • **Water Management Goal** – To reduce or avoid adverse water supply impacts on
14 all of the Friant Division long-term contractors that may result from the Interim
15 Flows and Restoration Flows provided for in the Settlement.

16 The SJRRP will implement the Settlement and the Act. The “Implementing Agencies”
17 responsible for managing and implementing the SJRRP include the U.S. Department of
18 the Interior, through Reclamation and the U.S. Fish and Wildlife Service (USFWS), the
19 U.S. Department of Commerce through the National Marine Fisheries Service (NMFS),
20 and the State of California (State) Natural Resources Agency through DWR and the
21 California Department of Fish and Game (CDFG). The Settlement also stipulates the
22 appointment of a Restoration Administrator (RA), who is to make recommendations to
23 the U.S. Secretary of the Interior (Secretary), in consultation with a technical advisory
24 committee, to help meet the Restoration Goal.

25
26 The RA also consults with the Technical Advisory Committee on topics including how
27 River Restoration hydrographs are to be implemented; when Buffer Flows (two releases
28 of up to an additional 10 percent of the applicable hydrograph flows) may be needed; and
29 Interim Flows for data collection purposes.

30
31 The Settlement identifies the releases of both Interim Flows and Restoration Flows. The
32 Settlement stipulates the release of Interim Flows beginning no later than October 1,
33 2009, and continuing until full Restoration Flows begin on January 1, 2014, whichever
34 occurs first. The intent of the Interim Flows release is to enable collection of relevant data
35 on flows, temperatures, fish needs, seepage losses, and water recirculation, recapture, and
36 reuse. Full Restoration Flows are described in Exhibit B of the Settlement that was
37 provided as Appendix B of the Final EA/IS for the WY 2010 Interim Flows Project.

38
39 Specific issues related to the overall program objectives that were to be addressed
40 beginning in WY 2010 and will be continued into WY 2012, are identified as problem
41 statements or monitoring recommendations in the 2010 Annual Technical Report for WY
42 2010 Interim Flows, targeted actions in the Fisheries Implementation Plan 2009-2010,
43 actions presented in the Final 2011 Agency Plan, and the Seepage Monitoring and
44 Management Plan. Fishery issues associated with Interim Flows and prioritized for
45 investigations include water quality, water temperature, aquatic habitat, instream fish

1 passage, spawning habitat, and benthic macroinvertebrate communities. The
2 recommendations from these reports are briefly outlined below, and will be relevant to
3 studies performed during WY 2012 Interim Flows:
4

- 5 • Juvenile fall-run Chinook experimental survival and migration study to identify
6 areas contributing to smolt survival or mortality.
- 7 • Analysis of the Sand Slough Control Structure at the head of Reach 4B, the study
8 of downstream sedimentation, and its relation to groundwater elevations on
9 adjoining lands.
- 10 • Conduct flow record analysis, travel times, and restriction analyses.
- 11 • Implementation of the Steelhead Monitoring Plan for Interim Flow releases.
- 12 • Continuation and analysis of water temperature data collection.
- 13 • Identify a relationship between San Joaquin River flow and groundwater levels to
14 help guide Restoration Flow releases in managing the potential for adverse
15 effects, including seepage and channel capacity limitations.
- 16 • Identify San Joaquin River hydraulics, including channel geometry, sediment
17 mobilization thresholds and rates, and flow routing, sufficient to preserve flow
18 conveyance.
- 19 • Conduct a benthic macroinvertebrate assessment and hyporheic pot studies to
20 establish baseline measures to estimate the effect of Restoration Flows and other
21 SJRRP actions on the ecological integrity and water quality conditions, as
22 indicated by changes in assemblages in the Restoration Area.
- 23 • Identify and prioritize fish passage barriers in the Restoration Area.
- 24 • Quantify potential salmon spawning habitat availability.
- 25 • Evaluate adult salmon recruitment and passage.
- 26 • Evaluate smolt survival, outmigrants, and fry production.
- 27 • Determine water quality conditions at potential, spring-run Chinook salmon
28 holding pools. Monitor water quality with a focus on selenium, dissolved oxygen
29 (DO) levels, and total ammonia, and nitrogen.
- 30 • Document thermal response of upper San Joaquin River Basin water operations in
31 conjunction with environmental conditions; evaluate the relationship between
32 discharge from Millerton Reservoir and water temperatures in the San Joaquin
33 River, including support, development, and calibration of a temperature model to
34 simulate the relationships between water management operations and water
35 temperatures.

1 **1.2.2 Statement of Purpose and Need for Proposed Action**

2 NEPA regulations require a statement of “the underlying purpose and need to which the
3 agency is responding in proposing the alternatives, including the Proposed Action” (40
4 Code of Federal Regulations (CFR) 1502.13).

5
6 The purpose of the Proposed Action has not changed from WY 2010 to WY 2011, and
7 from WY 2011 to WY 2012 and is to implement the provisions of Paragraph 15 of the
8 Settlement pertaining to Interim Flows. The need for action is to support collection of
9 relevant data to guide future releases of Interim Flows and Restoration Flows under the
10 SJRRP. The two key objectives of the Proposed Action are as follows:

- 11
12 • Release of Interim Flows according to the Settlement and the Act, as limited by
13 downstream channel capacities, and consistent with Federal, State, and local laws,
14 and any agreements with downstream agencies and entities.
- 15 • Collect data to better evaluate flows, temperatures, fish needs, biological effects,
16 and seepage losses, and water recirculation, recapture, and reuse opportunities for
17 future Interim Flows and Restoration Flows.

18 **1.3 Need for a Supplemental EA**

19 **1.3.1 Environmental Review Background**

20 On June 3, 2009, Reclamation and DWR released the Draft EA/IS for the WY 2010
21 Interim Flows Project for public review and comment. The Draft EA/IS (State
22 Clearinghouse #2009061019) identified two alternatives: the No-Action Alternative and
23 the Proposed Action. On September 25, 2009, Reclamation signed the FONSI and DWR
24 signed the MND for the Proposed Action identified in the WY 2010 Final EA/IS. On
25 June 11, 2010, Reclamation released the Draft Supplemental EA for the WY 2011
26 Interim Flows Project. The Final Supplemental EA and FONSI for the WY 2011 Interim
27 Flows Project was released on September 21, 2010.

28
29 Interim Flow releases from Friant Dam began at 350 cubic feet per second (cfs) on
30 October 1, 2009. Interim flow releases were increased to 700 cfs on November 1, 2009,
31 and then reduced back to 350 cfs on November 11, 2009. Interim Flows during this
32 period reached downstream of Sack Dam (River Mile 182). Friant Dam releases were
33 decreased from 350 cfs back to riparian demand (approximately 120 cfs) on
34 November 21, 2009. Interim Flow releases resumed on February 1, 2010 at 350 cfs. On
35 March 1, 2010, Interim Flows increased to 500 cfs and were further increased to 800 cfs
36 on March 16, 2010. The next scheduled Interim Flow increase was to occur on March
37 25, 2010. However, on March 25, 2010, Reclamation determined that the surface and
38 groundwater system had not yet stabilized and delayed the flow increase to March 29,
39 2010. Reclamation increased Interim Flow releases from Friant Dam to 1,100 cfs on
40 March 29, 2010, followed by an increase on April 12, 2010, to 1,500 cfs. Subsequent
41 changes in releases, ranging from 1,100 cfs to 1,350 cfs were made between April 13 and
42 May 1, 2010, to achieve a 700 cfs flow downstream of Sack Dam. On May 1, 2010, the

1 Interim Flow release was increased from 1,350 cfs to 1,550 cfs, in order to provide 1,400
2 cfs at Gravelly Ford.

3
4 During fall WY 2011 Interim Flows, releases past Sack Dam were held at 80 cfs and then
5 subsequently reduced to 50 cfs to address downstream seepage concerns from
6 neighboring landowners. From February 1 through March 21, 2011, flows past Sack
7 Dam were held at or below 50 cfs due to groundwater elevation constraints in Reach 4.
8 This did not result in hydrologic connectivity of the upper reaches of the San Joaquin
9 River above the Merced River with the lower reaches below the Merced River. On
10 March 21, 2011 Interim Flow releases from Friant Dam ceased when reservoir storage
11 and inflow predictions resulted in the need to release flood flows from Millerton Lake
12 Reservoir. As of the date of the release of this Supplemental EA for the WY 2012
13 Interim Flows Project, flood flow releases are still continuing and will likely continue for
14 an additional undetermined time frame based on reservoir inflow predictions.

15
16 The WY 2012 Interim Flows will be consistent with the Settlement and are guided by
17 Reclamation's determination of water year type. For WY 2012 Interim Flows, all flows
18 will be limited such that adverse impacts to lands from seepage will be avoided or
19 reduced. Reclamation is prepared to reduce flows, when necessary, if information from
20 the groundwater monitoring network or from local landowners indicates that seepage or
21 related impacts may occur.

22
23 The original schedule indicated that Interim Flows from October 1, 2009 through
24 September 30, 2010 would proceed as evaluated in the WY 2010 Final EA/IS, and from
25 October 1, 2010 through September 30, 2011 under the Draft and Final Supplemental
26 EA for the WY 2011 Interim Flows Project. After such time, it was anticipated a Final
27 PEIS/R, Program Biological Assessment, Program Biological Opinion, and the related
28 Record of Decision (ROD) would be issued prior to October 1, 2011. Thus, the
29 environmental compliance and permitting for WY 2012 Interim Flows and beyond would
30 be obtained as part of the PEIS/R ROD and programmatic permitting process. Due to
31 unanticipated schedule changes, it is unlikely that finalization of the PEIS/R, issuance of
32 the ROD, and acquisition of all required permits for post-WY 2011 Interim Flows will
33 occur prior to September 30, 2011. Therefore, it is critical that an alternative
34 environmental review and permitting process be undertaken to allow for an additional
35 year of Interim Flows for WY 2012.

36
37 The Settlement requires a program of Interim Flows to begin no later than October 1,
38 2009 and are to continue until full Restoration Flows begin. The Interim Flows will be
39 used to collect data related to flows, temperatures, fish needs, seepage, recirculation,
40 recapture, and reuse. The Settlement states that if the highest priority channel
41 improvements are not completed as specified in subsequent years so as to allow full
42 Restoration Flows, Interim Flows will continue at timing and magnitude developed for
43 the specific water year type hydrograph, and will not exceed existing channel capacities.
44 Therefore, this Supplemental EA addresses an additional year of Interim Flows for WY
45 2012 (October 1, 2011 through September 30, 2012). The Supplemental EA has been
46 prepared using the existing Water Year 2010 Interim Flows Project - Final Environmental

1 Assessment and Finding of No Significant Impact/Initial Study and Mitigated Negative
2 Declaration and the Draft and Final Supplemental EA for the WY 2011 Interim Flows
3 Project to form the basis of the Supplemental EA and proposed FONSI. Therefore, these
4 documents are incorporated by reference in their entirety into this Supplemental EA.

5 **1.3.2 Statement of Purpose and Need for this Supplemental EA**

6 This document has been prepared to satisfy the NEPA requirements for implementation
7 of the WY 2012 Interim Flows and supporting the permitting effort. The purpose and
8 need for continuation of Interim Flows during WY 2012 is to implement the provisions of
9 Paragraph 15 of the Settlement as authorized and directed in the Act and as described
10 above in Section 1.2.2.
11

1

2 **1.4 Study Area**

3 The study area for this Supplemental EA is the same as that identified in the Final EA/IS
 4 for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the
 5 WY 2011 Interim Flows Project and includes areas that may be affected directly,
 6 indirectly, or cumulatively by the Proposed Action. The study area, shown in Figure 1-1,
 7 has been broadly defined to include the San Joaquin River upstream from Friant Dam, the
 8 Restoration Area, the San Joaquin River from the confluence with the Merced River to
 9 the Delta, the Delta, and portions of the CVP/State Water Project (SWP) water service
 10 areas, including the Friant Division. The Restoration Area, which is the San Joaquin
 11 River from Friant Dam to the confluence of the Merced River, is shown in Figure 1-2.
 12 The San Joaquin River and flood bypasses within the Restoration Area are described as a
 13 series of physically and operationally distinct reaches, as shown in Figure 1-2 and defined
 14 in Table 1-1. Table 1-1 also identifies the river reaches and bypasses included in the
 15 study area for this Supplemental EA.

16
 17
 18

**Table 1-1
 San Joaquin River Reaches and Flood Bypasses in the Restoration Area**

San Joaquin River Reaches and Flood Bypasses in Restoration Area				Restoration Area Reaches Included in Water Year 2012 Interim Flows Study Area
River or Bypass	Reach	Head of Reach or Bypass	Downstream End of Reach or Bypass	
San Joaquin River	1A	Friant Dam	State Route 99	✓
	1B	State Route 99	Gravelly Ford	✓
	2A	Gravelly Ford	Chowchilla Bypass Bifurcation Structure	✓
	2B	Chowchilla Bypass Bifurcation Structure	Mendota Dam	✓
	3	Mendota Dam	Sack Dam	✓
	4A	Sack Dam	Sand Slough Control Structure	✓
	4B1	Sand Slough Control Structure	Confluence with Mariposa Bypass	
	4B2	Confluence with Mariposa Bypass	Confluence with Bear Creek and Eastside Bypass	✓
	5	Confluence with Bear Creek and Eastside Bypass	Confluence with Merced River	✓
Chowchilla Bypass		Chowchilla Bypass Bifurcation Structure	Confluence with Fresno River and Eastside Bypass	
Eastside Bypass		Confluence with Fresno River and Chowchilla Bypass	Confluence with Bear Creek and San Joaquin River	✓
Sand Slough Bypass		Sand Slough Control Structure	Eastside Bypass	✓
Mariposa Bypass		Mariposa Bypass Bifurcation Structure	Confluence with San Joaquin River	✓

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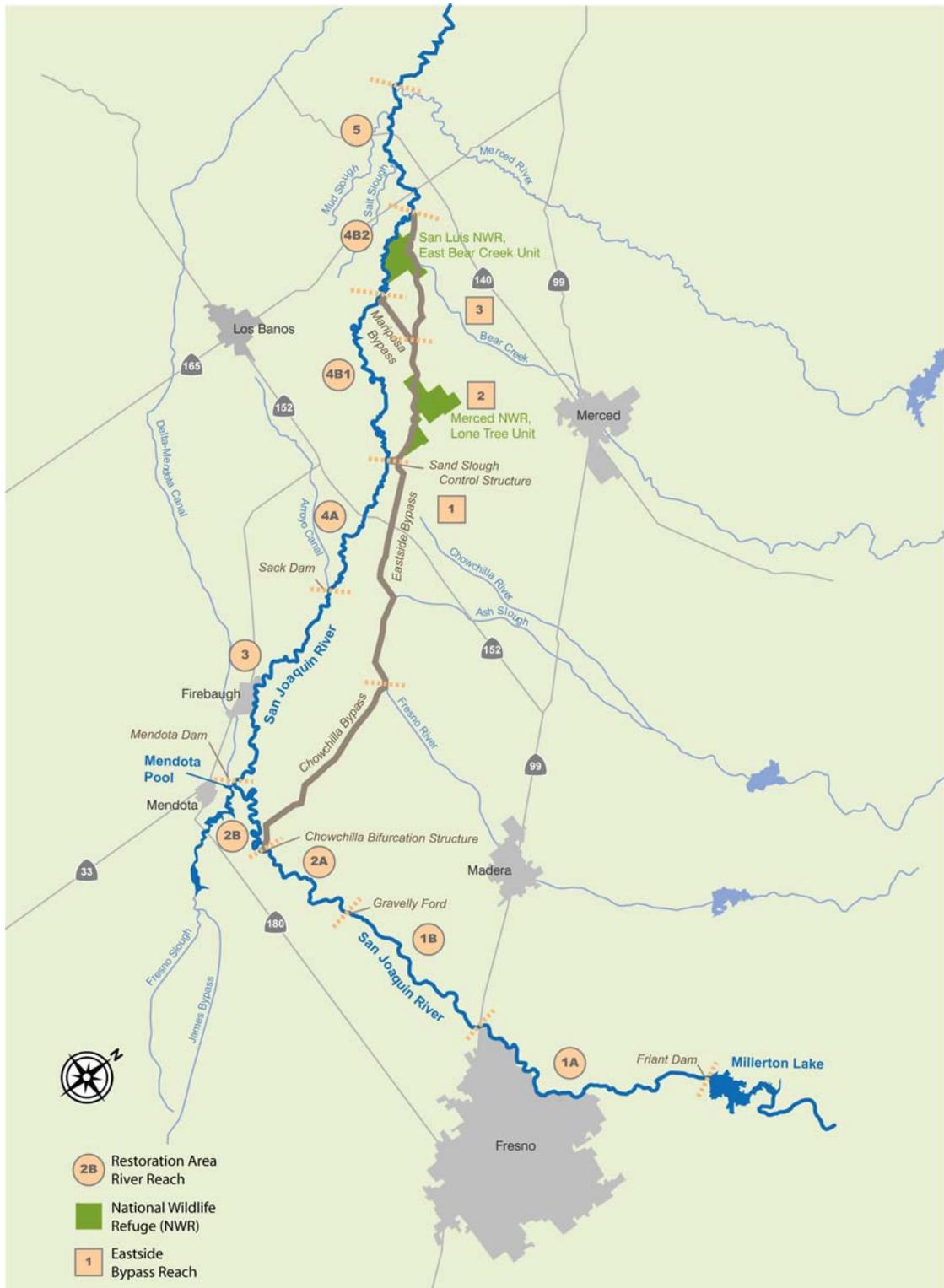


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Figure 1-1.
Water Year 2012 Interim Flows Study Area

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Figure 1-2.
San Joaquin River Reaches and Flood Bypass System in the Restoration Area

1 1.5 Document Organization

2 This document is divided into the following sections:

- 3 • **Section 1, Introduction and Statement of Purpose and Need**, introduces the
4 Proposed Action, and provides background information; describes the purpose of
5 and need for the Proposed Action; discusses the purpose of this Supplemental EA;
6 provides study area information; and describes document organization.
- 7 • **Section 2, Description of Alternatives**, describes the No-Action Alternative,
8 changes or new information made available since preparation of the Final EA/IS
9 for the WY 2010 Interim Flows Project and the Draft and Final Supplemental
10 EAs for the WY 2011 Interim Flows Project, and the Proposed Action analyzed in
11 this Supplemental EA.
- 12 • **Section 3, Affected Environment and Environmental Consequences**, describes
13 the similarities and differences between the environmental setting, the impact
14 analysis methodology, and the analytical results used for this Supplemental EA
15 from those presented in the Final EA/IS for the WY 2010 Interim Flows Project
16 and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
17 Project.
- 18 • **Section 4, Consultation and Coordination**, describes the public involvement in
19 the NEPA and CEQA review process for previous efforts and for this
20 Supplemental EA.
- 21 • **Section 5, List of Preparers**, presents agency staff and consultants directly
22 responsible for preparing or reviewing this document.
- 23 • **Section 6, Literature Cited**, lists references cited in this Supplemental EA.

24 The appendices to the Final EA/IS for the WY 2010 Interim Flows Project and the Draft
25 and Final Supplemental EAs for the WY 2011 Interim Flows Project also pertain to this
26 Supplemental EA and are incorporated by reference with that document. Appendices to
27 this Supplemental EA, providing pertinent supporting information and data used while
28 preparing this document, are include as follows:
29

30 **Appendix A** –Final Environmental Assessment and Finding of No Significant
31 Impact/Initial Study and Mitigated Negative Declaration for the Water Year 2010 Interim
32 Flows Project

33 **Appendix B** – Water Year 2011 Interim Flows Project – Supplemental Draft and Final
34 Environmental Assessments and Finding of No Significant Impact

35 **Appendix C** – Restoration Administrator Spring 2011 Interim Flow Program Real-Time
36 Management Recommendations, April 23, 2011

37 **Appendix D** –Steelhead Monitoring Plan

38 **Appendix E** – 2009-2013 Interim Flow Release Program, Water Quality Monitoring Plan

39 **Appendix F** – 2010 Annual Technical Report

40 **Appendix G** – Seepage Monitoring and Management Plan

41 **Appendix H** – Mendota Pool Water Quality Response Plan

42 **Appendix I** - Draft San Joaquin River Underseepage Limiting Capacity Analysis

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2.0 Description of Alternatives

The NEPA No-Action Alternative and the Proposed Action are described in this section. The No-Action Alternative represents existing conditions in the San Joaquin River and existing operations at Friant Dam because of the immediate short-term nature of the Proposed Action. The Proposed Action is the implementation of the WY 2012 Interim Flows, including the release and potential downstream recapture of Interim Flows, the activities necessary to convey the flows in the San Joaquin River from Friant Dam to the Delta, and monitoring activities to be conducted during the WY 2012 Interim Flow releases. Additional details are provided in the following sections.

2.1 No-Action Alternative

The No-Action Alternative includes the continued operation of Friant Dam under existing conditions. Because the Draft and Final EA for the WY 2010 Interim Flows Project was prepared as a joint NEPA/CEQA document, the language and analysis provided here for the No-Action Alternative is prepared in a similar manner for consistency, although there is no discretionary action on the part of the State for the WY 2012 Interim Flows Project. Under CEQA Guidelines section 15125(a), the physical environmental conditions, as they exist at the time of the environmental analysis is commenced, “will normally constitute the baseline conditions by which a Lead Agency determines whether an impact is significant.” (See also CEQA Guidelines §15126.2(a).). Under NEPA, the affected environment is usually similar to or the same as the existing conditions used to determine the environmental impacts under CEQA. However, the Interim Flows in accordance with the flow schedule in Exhibit B of the Settlement and as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project are in effect now and are generally the same as the WY 2012 Interim Flows considered under this Supplemental EA. Thus, if the WY 2011 Interim Flows were used as the baseline physical conditions for the environmental analysis, then the analysis would show no changes between the baseline physical conditions and the Proposed Action, because they would be the same. For this reason, and because the WY 2011 Interim Flows are scheduled to end on September 30, 2011, the baseline for the analysis of potential environmental impacts associated with implementation of the WY 2012 Interim Flows assumes that WY 2011 Interim Flows are not in place and that the existing conditions (and No-Action Alternative) operations characterized in the WY 2010 Final EA/IS would be in place (see Sections 2 and 3 of the Final EA/IS for the WY 2010 Interim Flows Project for a more detailed discussion of the No-Action Alternative and existing conditions).

As described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, under the No-Action Alternative, Reclamation would continue to release a base flow from Friant Dam to meet the existing holding contract obligations to maintain a 5-cubic-foot-per-second (cfs) flow

1 at Gravelly Ford. Nonflood releases from Friant Dam typically range from 180 cfs to 250
2 cfs in summer and 40 cfs to 100 cfs in winter. Average simulated end-of month storage in
3 Millerton Lake and the average, simulated, daily San Joaquin River flows under the No-
4 Action Alternative are shown in Figures 2-1 through 2-6 of the Final EA/IS for the WY
5 2010 Interim Flows Project. These simulations have not changed for the No-Action
6 Alternative in this Supplemental EA.

7 **2.2 Proposed Action**

8 The release of Interim Flows during WY 2012 would be made according to the
9 Settlement and the Act, as limited by downstream channel capacities and potential
10 material adverse impacts from groundwater seepage, and consistent with Federal, State,
11 and local laws, and any agreements with downstream agencies, entities, and landowners.
12 Interim Flows would be released to the San Joaquin River from Friant Dam during WY
13 2012, from October 1, 2011 through September 30, 2012. The temporal and longitudinal
14 magnitude and timing of flow releases will be in accordance with Exhibit B of the
15 Settlement and based on recommendations from the Restoration Administrator (RA).
16 Recapture and recirculation of Interim Flows will occur to the maximum extent possible
17 within the constraints of the Settlement and existing regulations and requirements. The
18 Proposed Action is described in more detail below.

19 **2.2.1 Interim Flow Releases Under the Proposed Action**

20 Daily Interim Flow releases from Friant Dam would be based on the Restoration Year
21 type (water year type per Exhibit B) and associated flow schedule per Exhibit B and other
22 applicable Settlement provisions including recommendations by the RA. An example
23 Exhibit B Interim Flow schedule for the wet water year type is provided in Table 2-1, and
24 an example change in estimated maximum flows in a wet water year is provided in Table
25 2-2. These tables include water that would be released for water rights purposes and
26 other deliveries, in combination with implementation of the WY 2012 Interim Flows.

**Table 2-1.
Example Estimated Regulated Nonflood Flows from Friant Dam Under the Proposed Action in a Wet Year¹**

Begin Date	End Date	Estimated Flows Consisting of Interim Flows and Water Right Flows at Locations in the Restoration Area (cubic feet per second)									
		Head of Reach 1 ₂	Head of Reach 2A ₃	Head of Reach 2B ₄	Head of Reach 3 ₅	Head of Reach 4A	In Reach 4B1 ₆	In Reach 4B2	In Bypass System ₇	Head of Reach 5	Merced River Confluence ₈
10/1/2011	10/31/2011	350	195	115	715	115	0	115	115	115	415
11/1/2011	11/6/2011	700	575	475	1,075	475	0	475	475	475	775
11/7/2011	11/10/2011	700	575	475	1,075	475	0	475	475	475	775
11/11/2011	12/01/2011	350	235	155	755	155	0	155	155	155	555
12/02/2011	1/31/2012	350	235	155	755	155	0	155	155	155	155
2/1/2012	2/28/2012	350	255	175	775	175	0	175	175	175	675
3/1/2012	3/15/2012	500	375	285	885	285	0	285	285	285	785
3/16/2012	3/31/2012	1,500	1,375	1,225	1,300	1,225	0	1,225	1,225	1,225	1,700
4/1/2012	4/15/2012	1,620	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
4/16/2012	4/30/2012	1,620	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
5/1/2012	6/30/2012	1,660 ⁹	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
7/1/2012	8/31/2012	350	125	45	645	45	0	45	45	45	320
9/1/2012	9/30/2012	350	145	65	665	65	0	65	65	65	340

Notes:

- ¹ Example only. Actual Interim Flows may vary depending on a variety of factors. Flows may be lower under other water year types.
- ² Assumes up to 230 cubic feet per second diverted by instream water right holders (e.g., holding contracts), consistent with Exhibit B of the Settlement.
- ³ Assumes up to 200 cubic feet per second lost through infiltration, consistent with Exhibit B of the Settlement.
- ⁴ Estimated Water Year 2012 Interim Flows at the head of Reach 2B account for seepage losses experienced in Reach 2A, consistent with Exhibit B of the Settlement.
- ⁵ Assumes up to 600 cubic feet per second released to Reach 3 from the Mendota Pool for diversions at Sack Dam into the Arroyo Canal.
- ⁶ The Proposed Action does not include any activity in Reach 4B1.
- ⁷ Includes Eastside and Mariposa bypasses.
- ⁸ Assumes accretions from Mud and Salt sloughs in Reach 5, consistent with Exhibit B of the Settlement.
- ⁹ May-June flow would include a block of water for shaping for testing riparian recruitment recession flow.

**Table 2-2.
Example Change in Estimated Regulated Nonflood Flows Under the Proposed Action from
No-Action Alternative in Wet Years¹**

Begin Date	End Date	Change in Estimated Flows Under the Proposed Action at Locations in the Restoration Area (cubic feet per second)									
		Head of Reach 1 ²	Head of Reach 2A ³	Head of Reach 2B ⁴	Head of Reach 3 ⁵	Head of Reach 4A	In Reach 4B1 ⁶	In Reach 4B2	In Bypass System ⁷	Head of Reach 5	Merced River Confluence ⁸
10/1/2011	10/31/2011	190	190	115	115	115	0	115	115	115	115
11/1/2011	11/6/2011	570	570	475	475	475	0	475	475	475	475
11/7/2011	11/10/2011	570	570	475	475	475	0	475	475	475	475
11/11/2011	12/01/2011	230	230	155	155	155	0	155	155	155	155
12/02/2011	1/31/2012	230	230	155	155	155	0	155	155	155	155
2/1/2012	2/28/2012	250	250	175	175	175	0	175	175	175	175
3/1/2012	3/15/2012	370	370	285	285	285	0	285	285	285	285
3/16/2012	3/31/2012	1,370	1,370	1,225	700	1,225	0	1,225	1,225	1,225	1,225
4/1/2012	4/15/2012	1,470	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
4/16/2012	4/30/2012	1,470	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
5/1/2012	6/30/2012	1,470 ⁹	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
7/1/2012	8/31/2012	120	120	45	45	45	0	45	45	45	45
9/1/2012	9/30/2012	140	140	65	65	65	0	65	65	65	65

Notes:

- ¹ Example schedule only. Actual Interim Flows may vary depending on a variety of factors. Flows may be lower under other water year types.
- ² Assumes up to 230 cubic feet per second diverted by instream water right holders (e.g., holding contracts), consistent with Exhibit B of the Settlement.
- ³ Assumes up to 200 cubic feet per second lost through infiltration, consistent with Exhibit B of the Settlement.
- ⁴ Estimated Water Year 2012 Interim Flows at the head of Reach 2B account for seepage losses experienced in Reach 2A, consistent with Exhibit B of the Settlement.
- ⁵ Assumes up to 600 cubic feet per second released to Reach 3 from the Mendota Pool for diversions at Sack Dam into the Arroyo Canal.
- ⁶ The Proposed Action does not include any activity in Reach 4B1.
- ⁷ Includes Eastside and Mariposa bypasses.
- ⁸ Assumes accretions from Mud and Salt sloughs in Reach 5, consistent with Exhibit B of the Settlement.
- ⁹ May-June flow would include a block of water for shaping for testing riparian recruitment recession flow.

1 The actual daily WY 2012 Interim Flow releases (the resulting hydrograph) would be
2 subject to the application of flexible flow provisions described in Exhibit B and other
3 ramping and flow scheduling changes, as recommended by the RA. WY 2012 Interim
4 Flow releases would be ramped up slowly over time with flows held at constant levels to
5 allow surface water and groundwater conditions to stabilize before the next increase. As
6 described in Paragraph 15 of the Settlement, the RA makes recommendations to assist
7 Reclamation in implementing Interim Flows (see Appendix C of this Supplemental EA).
8 The WY 2012 ramping rate and stable flow durations may depend on RA
9 recommendations and real-time flow management decisions based on the monitoring
10 information and to avoid impacts. Maximum Interim Flow releases from Friant Dam in a
11 wet water year, with consideration of the Settlement's flexible flow periods that would
12 occur under the Proposed Action are shown in Table 2-3.

13
14 If WY 2012 is determined to be a wet year, Interim Flows would be ramped down over a
15 60-90 day period to collect data on the establishment of riparian vegetation at appropriate
16 elevations in the San Joaquin River channel. The precise timing and magnitude of the
17 riparian recruitment release shall be based on monitoring of meteorological conditions,
18 channel conveyance capacity, salmonid distribution (if applicable for WY 2012), and
19 other physical/ecological factors with the primary goal to understand relevant factors for
20 the establishment of native riparian vegetation while working within the constraints of the
21 flood control system. The total volume of Interim Flows used for riparian recruitment
22 during WY 2012 shall not exceed the total volume of Interim Flows allocated for that
23 year.
24

1
2
3

**Table 2-3.
Maximum Interim Flow Release from Friant Dam Under the Proposed Action**

Start Date	End Date	Maximum Interim Flow Release from Friant Dam Under the Proposed Action (cfs)¹
Oct. 1, 2011	Oct. 31, 2011	575
Nov. 1, 2011	Nov. 10, 2011	575
Nov. 11, 2011	Dec. 1, 2011	575
Dec. 2, 2011	Jan. 31, 2012	235
Feb. 1, 2012	Feb. 15, 2012	375
Feb. 16, 2012	Feb. 28, 2012	1,375
Mar. 1, 2012	Mar. 15, 2012	1,475
Mar. 16, 2012	Mar. 31, 2012	1,475
Apr. 1, 2012	Apr. 15, 2012	1,475
Apr. 16, 2012	Apr. 30, 2012	1,475
May. 1, 2012	May. 31, 2012	1,475
Jun. 1, 2012	Jun. 30, 2012	1,475
Jul. 1, 2012	Jul. 31, 2012	1,475
Aug. 1, 2012	Aug. 31, 2012	125
Sep. 1, 2012	Sep. 30, 2012	145

1. Includes 5 cfs of riparian releases. Includes both the fall and spring flexible flow periods as described in Exhibit B of the Settlement. Actual releases may be less. Total Interim Flows volume released from Friant Dam will not exceed 389,355 acre-feet in a wet year. WY 2012 may include a small pulse flow of up to 2,000 cfs release from Friant Dam for a 12-hour period. May-June flow would include a block of water for shaping for testing riparian recruitment recession flow.

1 Additional factors considered during implementation of the release of WY 2012 Interim
2 Flows include water supply demand; Mendota Dam operations; Sack Dam operations;
3 any agreements with landowners or other Federal, State, and local agencies; impacts to
4 special-status species; potential for seepage; levee stability; and real time management
5 strategies.

6 **2.2.2 Recapture and Recirculation**

7 The Proposed Action includes potentially recapturing¹ WY 2012 Interim Flows, to the
8 maximum extent possible, at locations along the San Joaquin River and/or in the Delta,
9 consistent with and limited by existing operating criteria, prevailing and relevant laws,
10 regulations, BO, and court orders in place at the time the water is recaptured. All
11 references to increases in exports at the Jones Pumping Plant and Banks Pumping Plant
12 as a result of the Project would fall within the allowable pumping criteria of the 2009
13 NMFS Operations BO and the 2008 USFWS' Operations BO in place at the time of
14 pumping.

15
16 Under the Proposed Action, the water released under WY 2012 Interim Flows that is
17 available for recapture and recirculation² is estimated to equal to the amount of water that
18 reaches the Mendota Pool at the downstream end of Reach 2B (e.g., the first location
19 where water can be recaptured and recirculated). Flows that reach the Mendota Pool are
20 not the same as those that reach the head of Reach 2B due to channel losses in Reach 2A.
21 Therefore, the overall quantity of water available for recapture and recirculation is
22 somewhat lower due to these losses. The estimated maximum water released for WY
23 2012 Interim Flows that could be available for recapture and recirculation under the
24 Proposed Action is shown in Table 2-5.

25
26 The furthest downstream location where WY 2012 Interim Flows could be recaptured
27 would be at the Jones and Banks pumping plants. The Proposed Action includes
28 potential recapture of Interim Flows at several diversion including: facilities downstream
29 of the Restoration Reach in the Delta, and in the San Joaquin River at the Banta-Carbona
30 Irrigation District facility and the West Stanislaus Irrigation District facility downstream
31 of the Stanislaus River confluence, and at the Patterson Irrigation District facility
32 between the Tuolumne and Merced River confluences; and, facilities within the
33 Restoration Reach including the East Bear Creek Unit of the San Luis National Wildlife
34 Refuge (East Bear Creek Unit) in Eastside Bypass Reach 3, the Lone Tree Unit of the
35 Merced National Wildlife Refuge (Lone Tree Unit) in Eastside Bypass Reach 2, Sack
36 Dam at the downstream end of Reach 3, and the Mendota Pool at the downstream end of
37 Reach 2B. WY 2012 Interim Flows recaptured along the San Joaquin River may provide
38 deliveries in lieu of Delta-Mendota Canal (DMC) supplies. Recirculation would be
39 subject to available capacity within CVP/SWP storage and conveyance facilities,
40 including the Jones and Banks pumping plants, California Aqueduct, DMC, San Luis
41 Reservoir, and related pumping facilities, and other facilities of CVP/SWP contractors.

¹ For the purposes of this document, recapture is defined as the point of redirection of Interim Flows downstream of Friant Dam.

² For the purposes of this document, recirculation is defined as the conveyance of recaptured water to the Friant Division long-term water contractors.

1 Available capacity is the capacity that is available after satisfaction of all statutory and
2 contractual obligations to existing water service or supply contracts, exchange contracts,
3 settlement contracts, transfers, or other agreements involving or intended to benefit
4 CVP/SWP contractors served water through CVP/SWP facilities. Under the Proposed
5 Action, recaptured water would be exchanged for a like amount of CVP water and/or
6 would be recirculated and held in storage in San Luis Reservoir. Reclamation is working
7 with the Friant Division long-term water contractors to prepare a separate Environmental
8 Assessment to determine possible mechanisms to either exchange or deliver to the Friant
9 Division long-term contractors recaptured water stored in San Luis Reservoir.

10
11 Table 2-4 provides an overview of each recapture location including the estimated range
12 for recapture, estimated timing of recapture, and whether or not the facility is screened. It
13 is important to note that at this time, the exact recapture rates, amounts, and timing at
14 each facility are not known and would depend upon a variety of conditions, including
15 water supply demand, operations of other facilities, impacts to endangered species,
16 potential for seepage, and real time management strategies. Therefore, the estimated
17 range for recapture at each facility is from zero to either the estimated maximum amount
18 of Interim Flows during the spring pulse time at the facility or the estimated facility
19 capacity. Additionally, to maintain the most flexibility in implementing the Project in
20 order to respond to study needs and to avoid potential seepage and endangered species
21 impacts, if any should arise based on Interim Flow monitoring, the Project includes all of
22 the potential points of diversion in Table 2-4. However, not all points may be used, nor is
23 there any priority in which they would be used.
24

Table 2-4. Overview of the Recapture Locations under the Proposed Project

Facility	Estimated Recapture Range (cfs)^{1,2}	Estimated Recapture Timing³	Facility Screened
Facilities within the Restoration Area			
Facilities within the Mendota Pool			
Main Canal	0 – 1,300	During Interim Flows	No
Outside Canal	0 – 300	During Interim Flows	No
Columbia Canal	0 – 200	During Interim Flows	No
Helm Ditch	0 – 10	During Interim Flows	No
Firebaugh Canal Water District Canal	0 – 300	During Interim Flows	No
Arroyo Canal	0 – 800	During Interim Flows	No
Lone Tree Unit of the Merced NWR	0 – 20	During Interim Flows	No
East Bear Creek Unit of the San Luis NWR	0 – <60	During Interim Flows	No
Facilities downstream of the Restoration Area			
Patterson Irrigation District	0 – 195	During Interim Flows ⁴	No
West Stanislaus Irrigation District	0 – 262	During Interim Flows ⁵	No
Banta-Carbona Irrigation District	0 – 204	During Interim Flows	Yes
Jones Pumping Plant	0 – 1,300	During Interim Flows	Yes
Banks Pumping Plant	0 – 1,300	During Interim Flows	Yes

Note: Additional points of diversion in Reclamation's petitions to the State Board allow for routing of Interim Flows into and through the Eastside and Mariposa bypasses.

cfs cubic feet per second

1. Estimated range for recapture at each facility is from zero to either the estimated maximum amount of Interim Flows during the spring pulse time at the facility or the estimated facility capacity in the event that the spring Interim Flows at the facility are estimated to be greater than the facility capacity.
2. Assumes a Wet Year Type. All based on Background Report maximum capacity except refuges.
3. Dependent on other regulations (i.e. pumping restrictions, etc).
4. WY 2012 Interim Flows would only be diverted after the proposed fish screen is functional and operationally compliant, which is currently targeted for summer 2011.
5. WY 2012 Interim Flows would only be diverted by West Stanislaus ID with authority to take listed species under the Endangered Species Act.

2 Implementing the Proposed Action could increase flows entering the Delta from the San
3 Joaquin River. Delta export facilities would continue to operate consistent with existing
4 operating criteria, and prevailing and relevant laws, regulations, BOs, and court orders in
5 place at the time the water is recaptured. Water recirculation via the CVP/SWP facilities

1 would be possible using south-of-Delta facilities. No additional agreements would be
2 required to recapture flows in the Restoration Area. However, recirculation of recaptured
3 water to the Friant Division could require mutual agreements between Reclamation,
4 DWR, Friant Division long-term contractors, and other south-of-Delta CVP/SWP
5 contractors. Reclamation would assist in developing these agreements. As previously
6 described, recirculation would be subject to available capacity within CVP/SWP storage
7 and conveyance. Furthermore, implementation of the WY 2012 Interim Flows would
8 remain consistent with the RPAs as required by the USFWS Delta Smelt BO of the
9 Operating Criteria and Plan for the Continued Operations of the Central Valley Project
10 and State Water Project (USFWS Operations BO) (USFWS 2008) and the NMFS
11 Biological and Conference Opinion on the Long-Term Operations of the Central Valley
12 Project and State Water Project (NMFS Operations BO) (NMFS 2009), respectively or as
13 amended by court action³. Continued implementation of the RPAs would avoid jeopardy
14 of protected species, including Central Valley steelhead on the Stanislaus River and
15 Delta, and spring- and winter-run Chinook salmon, green sturgeon, and Delta smelt in the
16 Delta.

17
18 Recaptured water available for transfer to Friant Division long-term contractors would
19 range from zero to the quantity of water under Interim Flows that reaches the Mendota
20 Pool and would vary based upon the water year type. During a Critical-Low water year,
21 the quantity of water available for recapture and transfer to the Friant Division long-term
22 contractors would be zero, because there are no WY 2012 Interim Flow releases under
23 this water year type. During Wet years, the water available for recapture and transfer to
24 the Friant Division long-term contractors would range between zero and 321 thousand
25 acre-feet (TAF) (as shown in Table 2-5). Reclamation would identify actual delivery
26 reductions to Friant Division long-term contractors associated with the release of WY
27 2012 Interim Flows.

28
29 ***Screened Diversions***

30 As described in Table 2-4, the Proposed Action would potentially utilize three existing
31 screened recapture facilities downstream of the Merced River confluence. These are the
32 Banta-Carbona Irrigation District's (BCID) facility on the San Joaquin River, the CVP
33 Jones Pumping Plant, and the SWP Banks Pumping Plant. The BCID facility is
34 described in more detail below. All proposed recapture at the facilities would occur
35 within the facilities' operating criteria, including Biological Opinions in place at the time
36 of recapture and no additional take would occur beyond that already allowed. Any
37 increase in diversions at these facilities would occur within the allowable diversion rates
38 in the applicable Biological Opinion.

39
40 BCID facility on the San Joaquin River is located at River Mile 63.5, about five miles
41 north of Vernalis. The facility is the primary source of water for BCID and has been
42 operational for approximately 5 years. The BCID holds water rights at this location and
43 uses all of its pre-1914 water rights in order to irrigate lands within the district. The

³ If conditions change as challenges to the USFWS and NMFS Operations BOs move forward, Reclamation will release WY 2012 Interim Flows in compliance with the regulations and legal requirements in place at that time

1 BCID has a contract with Reclamation for 20,000 acre-feet (AF)/year of CVP water.
2 CVP water is used as a supplemental supply to the district's pre-1914 water supply for
3 agricultural purposes (Reclamation 2010). BCID's current size is 14,000 acres and its
4 annual water needs are 47,000 AF (Reclamation 2010). The BCID facility includes a 204
5 cubic feet per second (cfs) fish screen facility. The facility was constructed prior to
6 NMFS' most recent fish screen design criteria. It consists of a vee-shaped screen located
7 within the leveed canal and 18 panel screens installed vertically in a vee configuration
8 with 9 panels to a side. Each panel is 6 feet, 1 inch tall and 11 feet and 6 inches wide. The
9 fish pass the screens and are pumped through a Hidrostral fish pump to the fish return
10 pipeline on the north levee. This pipeline returns fish back to the river downstream of the
11 diversion point. NMFS's October 26, 2000 Biological Opinion, Proposed Fish Screen
12 and Fish Bypass Facility at the Banta-Carbona Irrigation District Canal (NMFS 2000)
13 authorizes incidental take of steelhead as a result of the operation of the BCID facility
14 based on the percent of flow diverted into the facility. The proposed recapture at this
15 facility would change the current operations in that BCID would divert some of the
16 Project's flows at its facility in lieu of deliveries via the Delta-Mendota Canal. All
17 proposed recapture would occur within the facilities operating criteria, including
18 operations under the facilities' 2000 Biological Opinion issued by NMFS. No additional
19 take would occur beyond that currently allowed at the facility.
20

21 *Unscreened Diversions*

22 Recapturing water downstream of the Restoration Reach at the unscreened diversions
23 could increase fish entrainment risks. Both the Patterson Irrigation District and West
24 Stanislaus Irrigation District facilities are currently unscreened. With regard to the
25 Patterson Irrigation District facility, a fish screen that will meet NMFS and CDFG criteria
26 for protecting salmonids is currently being constructed and will be ready for service in
27 the summer of 2011. Recapture at Patterson Irrigation District facility would occur only
28 after the screen is operationally compliant with NMFS criteria. The West Stanislaus
29 Irrigation District facility is currently unscreened and will remain unscreened during WY
30 2012. This facility would only be used for the diversion of WY 2012 Interim Flows with
31 West Stanislaus Irrigation District's authority to take listed species under the Endangered
32 Species Act. Such authority is not being proposed for WY 2012, but may be proposed at
33 some time in the near future as a separate project. Interim Flows would not be diverted at
34 this facility until Endangered Species Act authorization is complete.
35

36 All recapture actions will be conducted in a manner consistent with Federal, State and
37 local laws, and any agreements with downstream agencies, entities, and landowners. No
38 additional steelhead take beyond that currently allowed or allowed at the time of
39 recapture, if different from current take levels would occur at these facilities.
40

41 The purpose of the Interim Flows Project is to collect relevant data concerning flows,
42 temperatures, fish needs, seepage, recirculation, recapture, and reuse. The Proposed
43 Action includes the conveyance of Interim Flows through the upper San Joaquin River
44 system from Friant Dam to at least the Merced River confluence. However, Reclamation
45 recognizes that for a variety of reasons, including the need to avoid seepage and potential
46 endangered species impacts (reaches 3, 4, 5), all or a portion of the flows may need to be

1 recaptured before flows reach the confluence of the Merced River (i.e. Mendota Dam and
 2 Sack Dam). Although this has the potential to reduce the amount of data collected in the
 3 lower reaches (reaches 3, 4, and 5), it would not inhibit the ability to collect data in the
 4 upper reaches (reaches 1 and 2) where spawning habitat for reintroduced salmon would
 5 be present. The purpose of the Project would be fulfilled as valuable data would continue
 6 to be collected in the upper reaches.

7
 8 ***New Melones Releases and Recaptured Interim Flows***

9 Water recaptured under the Proposed Action would be limited to the amount of water
 10 released from Friant Dam under the Proposed Action minus losses. Water to be released
 11 from New Melones Reservoir to meet Delta water quality objectives is not part of the
 12 Proposed Action and would not be considered part of the recaptured flows.

13
 14
 15 **Table 2-5.**
 16 **Estimated Maximum Water Available for Recapture and Recirculation**
 17 **Under the Proposed Action**

Start Date	End Date	Example Interim Flow and Riparian Release Amount at the Head of Reach 2B (cfs) ¹	Riparian Release Amount at Head of Reach 2B (cfs)	Interim Flows at Mendota Pool Available for Transfer (cfs) ²
Oct. 1, 2011	Oct. 31, 2011	115	5	110
Nov. 1, 2011	Nov. 6, 2011	475	5	470
Nov. 7, 2011	Nov. 10, 2011	475	5	470
Nov. 11, 2011	Dec. 1, 2011	155	5	150
Dec. 2, 2011	Jan. 31, 2012	235	5	230
Feb. 1, 2012	Feb. 28, 2012	175	5	170
Mar. 1, 2012	Mar. 15, 2012	285	5	280
Mar. 16, 2012	Mar. 31, 2012	1,225	5	1,220
Apr. 1, 2012	Apr. 15, 2012	1,300	5	1,295
Apr. 16, 2012	Apr. 30, 2012	1,300	5	1,295
May. 1, 2012	Jun. 30, 2012	1,300	5	1,295
Jul. 1, 2012	Aug. 31, 2012	45	5	40
Sep. 1, 2012	Sep. 30, 2012	65	5	60
Total amount of Interim Flows available for Recapture and Recirculation (Acre-feet)				321,055

1. Includes 5 cfs of riparian releases that must be maintained past Gravelly Ford.
 2. This does not include constraints in flow releases, which would result in a change for recapture potential, as a result of the Draft San Joaquin River Underseepage Limiting Capacity Analysis, March 2011. This table assumes the maximum available for recapture per the Settlement hydrographs in Exhibit B.
 Key: cfs = cubic feet per second
 TAF = thousand acre-feet
 WY = Water Year

2.2.3 Settlement Flow Schedules

The quantity of water to be released from Friant Dam as WY 2012 Interim Flows under the Proposed Action is defined by the hydrologic year type classifications provided in Exhibit B, consistent with the Restoration Flow Guidelines (included in Appendix C of the Final EA/IS for the WY 2010 Interim Flows Project), and direction by Reclamation on management of Interim Flows (see Appendix C in the Draft EA for the WY 2011 Interim Flows Project). The allocated annual quantity will be applied to the hydrographs in Exhibit B and reduced, as appropriate, within the limits of channel capacity (see Table 2-6), anticipated infiltration losses, and diversion capacities. Reductions in flow could be made, in consideration of water supply demands, presence of special-status species, potential seepage, levee stability, and groundwater effects, along with real time management strategies as described in the Seepage Monitoring and Management Plan (Appendix G). Information related to levee underseepage is being assessed and may additionally limit flow releases (see Section 2.2.5 Additional Implementation Considerations, Draft San Joaquin River Underseepage Limiting Capacity Analysis).

**Table 2-6.
Estimated Water Year 2012 Maximum Interim Flow Capacity by Reach**

Reach	Estimated Deliveries ¹ (cfs)	Infiltration Losses ¹ (cfs)	Maximum Flow in Reach, Including Levee Underseepage Constraints ^{2,3,4} (cfs)
1	230	0	To be updated
2A	0	200	1,060
2B	0	0	810
3 ⁵	0	0	1,900 ⁸
4A	0	0	630
4B1 ⁶	0	0	0
4B2	0	0	990
5 ⁷	0	0	1,690
Mariposa Bypass	0	0	1,300
Eastside Bypass Reach 1	0	0	600
Eastside Bypass Reach 2	0	0	600
Eastside Bypass Reach 3	0	0	600

Sources: *McBain and Trush 2002; RMC 2003, 2007*

Notes:

- ¹ Loss estimates incorporated into flow targets, as defined in Exhibit B of the Settlement. Includes infiltration losses in Reach 2, and water right diversions in Reach 1.
- ² Includes reduction in flows based on potential for levee underseepage based on analysis performed for Draft San Joaquin River Underseepage Limiting Capacity Analysis, March 2011. These flow constraints will be further reviewed and updated prior to the spring pulse of WY 2012 Interim Flows in April 2012, and may be higher depending on the results.
- ³ Nonflood conditions.
- ⁴ Does not include potential discontinuous local flow such as agricultural and natural drainage.
- ⁵ Flows in Reach 3 include both Water Year 2012 Interim Flows and irrigation delivery flows to Arroyo Canal.
- ⁶ The Proposed Action does not include any activity in Reach 4B1.
- ⁷ Includes return flows and drainage
- ⁸ Flow includes 1,300 cfs Interim Flow releases in reach plus 600 cfs delivery to San Luis Canal Company.

Key:
cfs = cubic foot per second

1 For the reasons described in the WY 2010 Final EA/IS and the Final WY 2011
 2 Supplemental EA, Settlement provisions related to buffer flow and purchased water
 3 provisions are not being considered for WY 2012 Interim Flows, and therefore are not
 4 included in the Proposed Action.

5 **Restoration Year Type Classification**

6 Exhibit B of the Settlement identified water year types based on the percentages of years
 7 from 1922 through 2005 with relative inflows. The SJRRP has developed a correlation
 8 between these data and the complete range of potential unimpaired inflow to Millerton
 9 Lake, as shown in Table 2-7. The need for and continued development of the year type
 10 classification system was described in Appendix C of the Final EA/IS for the WY 2010
 11 Interim Flows Project.

12
 13 **Table 2-7.**
 14 **Restoration Year Types as Defined in Exhibit B of the Settlement**

Restoration Year Type ¹	Range of Unimpaired Inflow to Millerton Lake (acre-feet per year)	Percentage of Years from 1922 Through 2005 ²
Wet	Greater than 2,500,000	20 percent
Normal-Wet	Greater than 1,450,000 to 2,500,000	30 percent
Normal-Dry	Greater than 930,000 to 1,450,000	30 percent
Dry	Greater than 670,000 to 930,000	15 percent
Critical High	400,000 up to 670,000	5 percent
Critical Low	Less than 400,000	

Notes:

¹ A water year begins October 1 and ends September 30 of the following calendar year.

² The water year types in Exhibit B of the Settlement were identified based on these data. The SJRRP has developed a correlation between these data and the range of unimpaired inflow to Millerton Lake, as shown in the table

15
 16 The Restoration year type for Interim Flow releases in 2011 and 2012 would be
 17 determined using information considered in making water supply allocations, including
 18 the DWR Bulletin 120 forecast (finalized in May 2009, May 2010, and May 2011).
 19 Reclamation makes an initial water year determination on or before February 20 each
 20 year. Adjustments to that declaration are made to reflect updated information on the
 21 water year, including snow survey information and inflows to Millerton Reservoir.
 22 Although the final declaration of water year type is not made until June, Reclamation has
 23 a declaration beginning in late February which it operates under. The Restoration year
 24 type is currently a wet year. Unless this year type changes as a result of changes in
 25 inflows to Millerton Lake, the Restoration year type for releases in fall 2011 would be a
 26 wet year; the Restoration year type for Interim Flows releases in 2012 would be based
 27 upon the initial water year determination made in February 2012 and finalized in June
 28 2012. Releases before June 2012 would be based on information considered in making
 29 water supply allocations, including the DWR Bulletin 120 forecast, as described above.

Timing and Magnitude of Restoration Flow Releases

The RA may recommend additional changes in specific release schedules, such as ramping rates, to smooth the transition through the hydrograph. Implementing these recommended changes would be considered to the extent that they would not alter the total amount of water required to be released pursuant to the applicable hydrograph; would not result in additional water delivery reductions to Friant Division long-term contractors; and could be accomplished consistent with channel capacity limitations, measures to reduce or avoid seepage to adjacent lands, and any agreements established to support implementation of the Proposed Action. Alternative release schedules considered to date were described in Appendix C of the Final EA/IS for the WY 2010 Interim Flows Project. The Wet year flow schedule identifies the estimated maximum effects associated with WY 2010 Interim Flow releases, which is to be reduced, as appropriate, by the limits of channel capacity and other factors such as monitoring, to reduce or avoid seepage to adjacent lands. The release schedule also is subject to change based on recommendations from the RA (see Appendix C of this Supplemental EA) and changes, if any, in the water year type. This methodology is applicable to the implementation of WY 2012 Interim Flows and is used to determine potential impacts in this Supplemental EA.

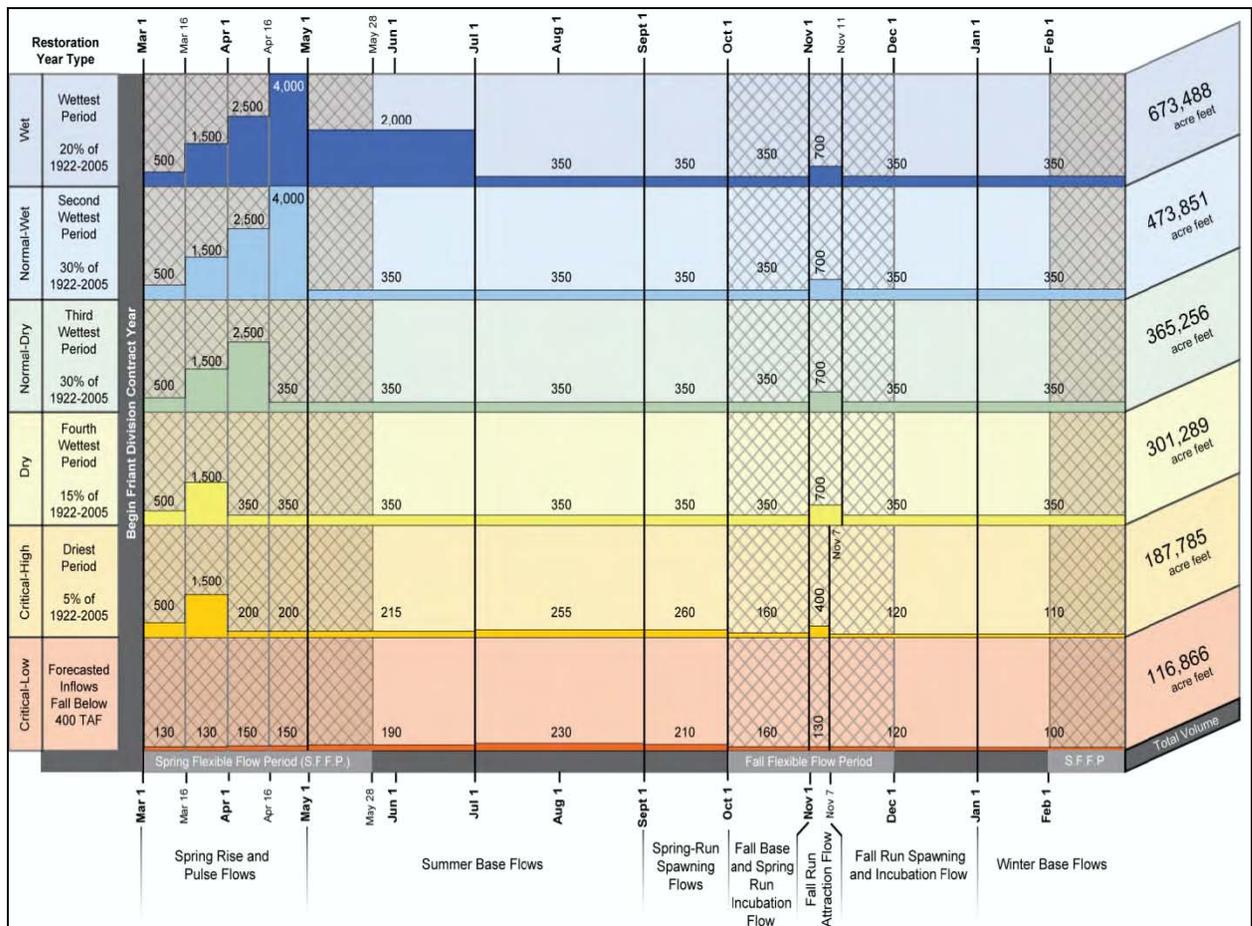


Figure 2-1.
Restoration Flow Schedules by Restoration Year-Type,
as Specified in Exhibit B of the Settlement

19
 20
 21
 22

1

2 **Flow Modifications**

3 The Settlement defines several potential modifications to flow schedules to help achieve
4 the Restoration Goal. These modifications include flexible flow periods, a spring pulse,
5 buffer flows, and the acquisition and release of additional water. Because Chinook
6 salmon will not be reintroduced to the river during WY 2012⁴, and because the purpose
7 of WY 2012 Interim Flows is to collect relevant data, WY 2012 Interim Flows would not
8 include applying buffer flows or releasing additional water.

9

10 WY 2012 Interim Flow releases would be less than full Restoration Flows identified in
11 Exhibit B of the Settlement because of limited downstream channel capacities; potential
12 material adverse effects from groundwater seepage; requirements of Federal, State, and
13 local laws; and potential conditions in any agreements with downstream agencies,
14 entities, and landowners. WY 2012 Interim Flows could include RA recommendations to
15 apply flexible flow periods to create additional data collection opportunities. Applying
16 flexible flow periods would be considered to the extent that they would not alter the total
17 amount of water required to be released pursuant to the applicable hydrograph, and would
18 not result in additional water delivery reductions to Friant Division long-term contractors.
19 As described in the Settlement, the RA will recommend the shape (ramping schedule and
20 maximum flows) and timing of flows subject to flood control needs, channel conveyance
21 capacity, Settlement stipulations, and permit requirements. The Proposed Action includes
22 a spring pulse consistent with the Settlement flow schedule, as constrained by existing
23 channel capacity. The spring pulse, as presented in Exhibit B of the Settlement, could be
24 scheduled within the spring flexible flow period (between February 1 and May 28, 2012),
25 and would include a release from Friant Dam of up to 2,000 cfs for a 12-hour period.
26 Total spring pulse volumes depend on the water year type; drier years have lower
27 allocated spring pulse volumes.

28

29 A report of San Joaquin River Interim Flow Unsteady Hydraulic Modeling was prepared
30 on August 25, 2009 (Appendix D of the Draft EA for the WY 2011 Interim Flows
31 Project). The primary objective of the hydraulic modeling was to identify the
32 appropriate hydrographs that would not exceed a 1,300 cfs threshold at the Chowchilla
33 Bifurcation Structure for flows of no greater than 1,300 cfs into Reach 2B. Results of the
34 hydraulic modeling indicated that that all hydrographs at 2,000 cfs, 12 hours and below
35 would not exceed the 1,300-cfs threshold at the Bifurcation Structure. Therefore, a 12-
36 hour, 2,000 cfs pulse flow to test gravel mobilization in Reach 1 during the WY 2012
37 Interim Flows Project is being considered during the spring pulse period.

38 **2.2.4 Flow Considerations by Reach**

39 The Final EA/IS for the WY 2010 Interim Flows Project described the river reaches and
40 flood bypasses within the Restoration Area as a series of physically and operationally
41 distinct reaches, with channel capacity constraints, estimated gains, and estimated

⁴ The Settlement schedule identifies the reintroduction of Chinook salmon by December 31, 2012. WY 2012 Interim Flows would be between October 1, 2011 and September 30, 2012, which is outside of the timing of this release target date. If Chinook salmon are scheduled to be released prior to the conclusion of WY 2012, Reclamation will coordinate with NMFS.

1 infiltration losses. Considerations within each reach and below the Merced River
2 confluence were described in detail in Section 2.2.2 of the Final EA/IS for the WY 2010
3 Interim Flows Project.

4
5 The release of WY 2012 Interim Flows would begin on October 1, 2011 when WY 2011
6 releases should be 350 cfs. Flows would gradually and incrementally be increased above
7 350 cfs according to the Exhibit B flows schedules, consistent with recommendations of
8 the RA, and based on best-available data. The maximum release for WY 2012 Interim
9 Flows in fall 2011 would be 700 cfs between November 1 and November 11 and then
10 reduced to 350 cfs. Flows would remain at 350 cfs until January 31, 2012. As described
11 in the Act, WY 2012 Interim Flows could be reduced, in consideration of conditions
12 revealed through monitoring and management actions such as those incorporated in the
13 Proposed Action operations, and as described in more detail in the Seepage Monitoring
14 and Management Plan presented in Appendix G. Beginning February 1, 2012, Interim
15 Flows would be gradually increased from releases from Friant Dam. During this spring
16 period, flows would be gradually and incrementally increased based on the information
17 collected on channel capacities and changes in the shallow groundwater elevations during
18 the fall release period and consistent with Exhibit B of the Settlement, the
19 recommendations of the RA, and best available data. The maximum spring Interim Flow
20 release for WY 2012 would be 1,660 cfs. This flow quantity would be based on existing
21 channel capacities as defined by channel conveyance, seepage, and levee stability.

22
23 The release of WY 2012 Interim Flows would be managed to avoid interfering with
24 maintenance and operations of the San Joaquin River Flood Control Project. This
25 includes operations of the Chowchilla Bypass Bifurcation Structure, Sand Slough Control
26 Structure, Eastside Bypass Bifurcation Structure, and Mariposa Bypass Bifurcation
27 Structure, as well as San Joaquin River Flood Control Project levee maintenance.
28 Specifically, under the Proposed Action, no change in flood operations at the Chowchilla
29 Bypass Bifurcation Structure would occur. Releases of flood flows to the San Joaquin
30 River would be unchanged from existing operations, which are based on the estimated
31 capacity of the portion of Reach 2B below the Chowchilla Bypass Bifurcation Structure.
32 In periods when flood flows would satisfy part or all of the flow targets identified in
33 Exhibit B of the Settlement (as modified by channel capacity), WY 2012 Interim Flows
34 would not be released in addition to flood flows. Also, the release and conveyance of
35 flood flows would have a higher priority over WY 2012 Interim Flows to channel
36 capacity in all reaches. The Lower San Joaquin Levee District (LSJLD) regularly
37 conducts operation and maintenance (O&M) activities to maintain channel capacity
38 within the San Joaquin River Flood Control Project. These O&M activities would
39 continue under the Proposed Action, and could occur more frequently.

40
41 Each of the river reaches and flood bypass structures within the Restoration Area along
42 with the segments of the Project Area below the confluence with the Merced River are
43 described in detail in the Final EA/IS for the WY 2010 Interim Flows Project and are not
44 repeated in this Supplemental EA because they have not changed.

1 **2.2.5 Additional Implementation Considerations**

2 Additional implementation considerations, such as potential environmental, regulatory, or
3 legal issues, could further limit the release of WY 2012 Interim Flows and are
4 summarized below.

5
6 ***Draft San Joaquin River Underseepage Limiting Capacity Analysis***

7 Analysis for the SJRRP Interim Flows Project has been an informational effort to gather
8 and analyze data. As part of this learning process, analysis and data collection has been,
9 and is being performed to study flows, temperatures, fish needs, biological effects,
10 seepage, and water recirculation, recapture, and reuse opportunities. This analysis has
11 included efforts to identify seepage concerns, channel capacities, and levee stability.
12

13 In March 2011, the Draft San Joaquin River Underseepage Limiting Capacity Analysis
14 (Draft SJR Underseepage Analysis) was released and is available in Appendix I. This
15 evaluation looks at the potential impact of Interim Flows on underseepage and saturation
16 adjacent to levees. Underseepage occurs when water from a river moves through layers
17 of pervious material below a levee's foundation and seepage extends to both the river and
18 land-side of the levee (USACE, 2000). This seepage may result in saturation of the
19 ground surface and can lead to levee instability.
20

21 The results of the Draft SJR Underseepage Analysis are intended for discussion and
22 further refinement. The SJRRP Implementing Agencies are looking at the preliminary
23 results and anticipate having a final analysis complete prior to the scheduled spring pulse
24 of WY 2012 Interim Flows. This final analysis will assist in determining the maximum
25 flows to be released into reaches of the San Joaquin River in order to avoid or minimize
26 underseepage concerns. Reclamation will hold WY 2012 Interim Flow releases to the
27 flow constraints identified in the Draft SJR Underseepage Analysis (and as summarized
28 by reach in Table 2-8 below) and as identified by then-existing channel capacity. Due to
29 the limited data that is currently available for determinations of channel capacity and
30 levee stability, Reclamation would limit the release of WY 2012 Interim Flows to those
31 flows that would remain in-channel and consistent with the Draft SJR Underseepage
32 Analysis. As data is collected and further modeling is performed in reaches 2 through 5
33 of the San Joaquin River and the flood bypasses, the Draft SJR Underseepage Analysis
34 will be updated with the most current numbers in order to produce the final analysis,
35 which will be publically released. Once the Final San Joaquin River Underseepage
36 Limiting Capacity Analysis is complete, this document will be utilized to identify
37 constraints and areas of further data collection. This additional data collection will consist
38 of observations and analysis of levee stability and channel capacity as well as stream
39 gaging measurements to compare flow discharge with water surface elevation.
40

1
2 **Table 2-8. Summary of Flow Capacity in Each Reach Where the Outside Ground**
3 **Elevation is Within One Foot of the In-Channel Capacity Discharge⁵**

Reach	Capacity Flow (cfs)
Reach 2A	1,060
Reach 2B	810
Reach 3	2,140
Reach 4A	630
Reach 4B2	990
Reach 5	1,690
Eastside Bypass	600

4
5 It is important to recognize that channel capacity constraints along the San Joaquin River
6 vary by reach. Flows in Reaches 2A and 2B are generally limited by existing channel
7 capacities, whereas flows in Reaches 3, 4A, 4B2, and the Eastside Bypass are most
8 typically constrained by potential seepage to neighboring lands.

9 ***Groundwater Elevation Constraints***

10 Groundwater elevation constraints in Reach 4A limited the release of Interim Flows past
11 Sack Dam in WY 2011. This is based on groundwater thresholds that were established in
12 coordination with landowners during the Seepage Conveyance and Technical Feedback
13 meetings (see Section 2.2.6 Environmental Commitments, Seepage Monitoring and
14 Management Plan for further information). During fall WY 2011 Interim Flows, releases
15 past Sack Dam were held at 80 cfs and then subsequently reduced to 50 cfs to address
16 downstream seepage concerns from neighboring landowners. Starting on February 1,
17 2011, flows were commenced again for the spring Interim Flow releases and were held to
18 no greater than 50 cfs past Sack Dam. Starting on March 21, 2011, flood flows
19 commenced and WY 2011 Interim Flows will not resume again until flood flows cease.
20 For the implementation of WY 2012 Interim Flows, it is possible that flows past Sack
21 Dam would again be constrained by potential seepage concerns from neighboring
22 landowners and that flows may again be limited to reduce or avoid groundwater impacts
23 as a result of the release of Interim Flows.

24 ***Mendota Dam and Pool Maintenance***

25 During WY 2012, Central California Irrigation District (CCID) is scheduled to perform
26 routine maintenance on the Mendota Pool and Dam. This will include the need to drain
27 Mendota Pool for routine inspection and potential maintenance of the dam. Mendota
28 Pool is typically drained every other year, from mid-November to mid-January for
29 regular maintenance activities. In order to accommodate this activity, Reclamation would
30 make real-time flow adjustments as necessary to allow the work to proceed. This would
31 involve reducing or stopping Interim Flow releases from Friant Dam upon notification of
32 the start of work by CCID. Interim Flows would resume when the work is complete.

⁵ In-channel capacity discharge consists of flows that maintain a water surface elevation at or below the elevation of the landside levee toe (i.e., the base of the levee).

1 **Arroyo Canal Fish Screen and Sack Dam Fish Passage Project**

2 The Arroyo Canal Fish Screen and Sack Dam Fish Passage Project (Arroyo Canal/Sack
3 Dam) may require real-time adjustments in flow to accommodate potential construction
4 in the summer or fall of 2012. This project would involve the installation of a fish screen
5 at the Arroyo Canal intake to minimize the risk of fish entrainment and would also
6 involve the construction of a fish ladder or fish bypass at Sack Dam, which would
7 involve modifications or replacement of the dam. This project may require reductions in
8 WY 2012 Interim Flows at Friant Dam or recapture at Mendota Pool or points upstream
9 of the Arroyo Canal/Sack Dam Project area in order to allow construction activities to
10 occur.

11 **Flood Bypass and Structure Maintenance**

12 Routine maintenance activities, such as vegetation removal, sand removal, levee
13 reinforcement and other activities may occur in WY 2012. Work by the Lower San
14 Joaquin Levee District (LSJLD) that is associated with the Eastside, Mariposa, or
15 Chowchilla Bypasses and associated structures may warrant the reduction or redirection
16 of flows either through lessened Interim Flow releases at Friant Dam or through recapture
17 opportunities at Mendota Pool. Interim Flows activities will be coordinated with LSJLD
18 when needed for flood bypass and associated structure maintenance.

19 **Implementation Coordination**

20 Implementing the WY 2012 Interim Flows would require coordination with Federal,
21 State, and/or local agencies, as well as landowners, for the release and conveyance of
22 flows through some reaches of the San Joaquin River and bypass system, and/or the
23 potential diversion of flows. WY 2012 Interim Flows would be constrained by any
24 agreements in place at the time of release. Reclamation has initiated discussions with
25 numerous entities that would be involved, through coordination, in implementing the
26 Proposed Action. Anticipated coordination to be accomplished as part of the Proposed
27 Action would be the same as described in the Final EA/IS for the WY 2010 Interim
28 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
29 Project.

30 **Fish Species Coordination**

31 Informal consultations on fish species with USFWS and National Marine Fisheries
32 Service (NMFS) are ongoing to comply with the Federal Endangered Species Act (ESA)
33 and Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA). The
34 ESA listed species include winter- and spring-run Chinook salmon, delta smelt, green
35 sturgeon, and Central Valley steelhead. Species subject to consultation per the
36 MSFCMA include starry flounder and all four races of Chinook salmon. Implementation
37 of the Proposed Action could increase Delta inflow as much as 1,300 cfs and increase
38 Delta exports, when such conditions comply with existing operating Criteria, consistent
39 with prevailing and relevant laws, regulations, BOs, and Court orders in force at the time
40 the water is recaptured. Recapture of WY 2012 Interim Flows at the Jones and Banks
41 pumping plants would be subject to existing or future regulatory requirements and would
42 comply with current NMFS and USFWS operations BOs.

43

1 Reclamation will coordinate with NMFS and USFWS to ensure that potential adverse
2 effects on listed species will be avoided or minimized. This will be accomplished by
3 continually providing and discussing streamflow, recapture operations, and water quality
4 data summaries. During periods when WY 2012 Interim Flows pass the confluence of the
5 Merced River, specific streamflow and water quality measurements that will be addressed
6 include DO, water temperature, pH, turbidity, streamflow, and specific conductivity at
7 locations on the San Joaquin River just upstream and downstream from the confluence
8 with the Merced River and in the Merced River. Monitoring results for additional
9 constituents, including selenium, ammonia, and boron, will be available every 2 to 4
10 weeks and will be reviewed when available. Sources of these data are identified in the
11 Draft Monitoring Plan for Physical Parameters Technical Memorandum (TM) (SJRRP
12 2008a), Surface Water Ambient Monitoring Program (SWAMP), and the Interim Flow
13 Release Program Water Quality Monitoring Plan (Appendix E) that were described in the
14 Final EA/IS for the WY 2010 Interim Flows Project, and the Grassland Bypass Project as
15 described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
16 Final Supplemental EAs for the WY 2011 Interim Flows Project.

17
18 In the event that WY 2012 Interim Flows cause effects that are greater than anticipated
19 and in consultation with the fishery agencies, Reclamation will work with the agencies to
20 modify WY 2012 Interim Flow releases as needed to avoid or minimize effects. Possible
21 modifications include reducing flow releases, upstream diversions of flows to avoid
22 downstream effects, or constraining flows to the upper San Joaquin River (upstream of
23 the confluence with the Merced River). This coordination between the agencies and
24 Reclamation's commitment to modify flows based on real time conditions would ensure
25 that the effects of the WY 2012 Interim Flows would remain at levels that may affect but
26 are not likely adversely affect listed species.

27 **2.2.6 Environmental Commitments**

28 Environmental commitments are measures or practices adopted by a project proponent to
29 reduce or avoid adverse effects that could result from project operations. The following
30 sections describe the environmental commitments that would be conducted in
31 coordination with WY 2012 Interim Flows implementation to avoid any potentially
32 adverse environmental consequences.

33 ***Vehicular Traffic Detour Plan***

34 As described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
35 Final Supplemental EAs for the WY 2011 Interim Flows Project convenient and parallel
36 vehicular traffic detours would be provided for public routes that would be closed
37 because of inundation by WY 2012 Interim Flows. A detour plan has been prepared and
38 approved by Fresno and Madera Counties and is in the final stages of approval for
39 Merced County for the placement of detour signage. Detour signage and appropriate
40 plans are targeted for implementation in 2011.

41 ***Recreation Outreach Program***

42 The Recreation Outreach Program implemented for the WY 2010 and 2011 Interim
43 Flows would continue during implementation of the Proposed Action, beginning in
44 summer 2011 and extending through the WY 2012 Interim Flows period, ending in

1 September 2012. The purpose of the recreation outreach program would be to inform
2 recreating public, as well as agencies and organizations that serve the recreating public,
3 of changes in river flows that would occur as a result of the Proposed Action, and of the
4 potential effects associated with those changes, including recreational boating,
5 swimming/wading, fishing, and hunting hazards. The program also informs the public of
6 similar alternative river boating and fishing opportunities in the area, such as those
7 available on the lower Kings River below Pine Flat Lake and alternative
8 swimming/wading opportunities, such as those available at Millerton Lake.

9
10 The Recreation Outreach Program employs a variety of methods and media to share
11 information with the recreating public, such as messages posted on the SJRRP Web site
12 and Web sites of agencies and organizations providing recreation access, facilities, and
13 services in Reach 1; signage at public and private access points and facilities in Reach 1;
14 and verbal messages delivered as part of regular recreation programs offered by agencies
15 and organizations, such as the Public Canoe Program conducted by the San Joaquin River
16 Parkway and Conservation Trust.

17
18 Outreach targets both English-speaking and non-English-speaking residents. Additional
19 measures, such as roving contacts and other methods that agencies may suggest, could be
20 used to target audiences that may not be reached by other means, such as young adults
21 and those recreating on the river in undeveloped areas. Central to the Recreation
22 Outreach Program is coordination with agencies and organizations that provide recreation
23 access, facilities, and services in Reach 1, where most recreation in the Restoration Area
24 takes place. Specifically, this includes coordinating with the following public and
25 nonprofit agencies and organizations: the San Joaquin River Parkway and Conservation
26 Trust; San Joaquin River Conservancy; Fresno County; City of Fresno Parks, After
27 School, Recreation and Community Services Department; and CDFG. Coordination
28 would also include private entities that provide public recreation access and facilities at a
29 few locations in Reach 1.

30 ***Seepage Monitoring and Management Plan***

31 The Seepage Monitoring and Management Plan (Appendix G) describes the monitoring
32 and management guidelines included in the Final EA/IS for the WY 2010 Interim Flows
33 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
34 Project which also apply to the Proposed Action, as related to groundwater or levee
35 seepage. Some portions of the Restoration Area have historically experienced
36 groundwater seepage to adjacent lands associated with elevated flows. Groundwater
37 seepage has the potential to cause water logging of crops and salt mobilization in the crop
38 root zone. Similarly, some portions of the Restoration Area have experienced levee
39 instability resulting from through-levee and under-levee seepage during periods of
40 elevated flows. The WY 2010 and WY 2011 Interim Flows Project Seepage Monitoring
41 and Management Plan included flow monitoring, groundwater elevation monitoring,
42 levee patrols, and landowner contact. Reclamation began implementation of the Seepage
43 Monitoring and Management Plan for the WY 2010 and WY 2011 Interim Flows Project,
44 and would continue implementing this plan for the WY 2012 Interim Flows.

45

1 Since 2007, Reclamation has actively pursued agreements to access private lands for site
2 specific data collection on geologic conditions related to seepage and other physical
3 parameters. However, some landowners have actively denied access to their property for
4 this purpose. As part of the SJRRP, monitoring wells have been, and will continue to be,
5 installed on private and public lands at several transects along the San Joaquin River in
6 the Restoration Area to identify groundwater level responses to river flows. Reclamation
7 and DWR monitor groundwater levels in installed wells. Groundwater levels observed in
8 these and other wells monitored by Reclamation, DWR, and local districts would be used
9 in determining when to reduce flow releases from Friant Dam, as required by the Act.
10 Following installation of each monitoring well, groundwater elevations thresholds have
11 been developed in consideration of nearby land uses, known groundwater and subsurface
12 conditions, and other information available or provided by landowners. In general,
13 groundwater depth thresholds are classified in three ranges: an acceptable level at which
14 groundwater levels are not expected to affect agricultural production; a potential buffer
15 zone indicating an increased likelihood that seepage could affect agricultural production
16 without flow modification; and a threat zone representing groundwater levels that affect
17 agricultural production. The threat zone is determined based in part on the rooting depth
18 associated with any crops located near the monitoring well. The Proposed Action
19 includes flow reductions in response to groundwater levels observed in the buffer or
20 threat zones. If groundwater levels at a monitoring well exceed an identified threshold,
21 WY 2012 Interim Flows would be reduced or diverted.

22
23 During WY 2011, Reclamation convened a group of landowners and water users to create
24 the Seepage Conveyance and Technical Feedback Group (SCTFG). The SCTFG meets
25 monthly to discuss technical issues, monitoring results, and to provide recommendations
26 for the setting of thresholds based on land use and crop type. The information gathered
27 in this group has been used to manage real-time conditions for groundwater elevations
28 and to make required revisions to the Seepage Monitoring and Management Plan.

29
30 Existing groundwater monitoring well locations, groundwater thresholds, and recent
31 groundwater elevations at all of the wells that are part of the SJRRP's Seepage
32 Monitoring and Management Plan are provided in the SJRRP's Groundwater Atlas. The
33 Groundwater Atlas is updated periodically and posted on the SJRRP's website, which can
34 be located at <http://www.restoresjr.net/flows/Groundwater/index.html>.

35
36 Condition 9 of Corrected Order Water Right (WR) 2010-0029-DWR for the WY 2011
37 Interim Flows Project requires Reclamation to conduct a daily evaluation of groundwater
38 levels and flow and stage levels when flows are greater than 475 cfs in Reaches 2A and 3
39 and post the evaluation results to a publicly available website. In the event that
40 groundwater elevations create seepage conditions, Reclamation shall reduce or redirect
41 flows to the last known flow volume that did not result in seepage conditions until
42 Reclamation determines that increasing flows would not create seepage conditions (i.e.,
43 seepage is caused by an activity not related to Interim Flows).

44
45 During fall WY 2011 Interim Flows, releases past Sack Dam were held at 80 cfs and then
46 subsequently reduced to 50 cfs to address downstream seepage concerns from

1 neighboring landowners. Starting on February 1, 2011, flows were commenced again for
2 the spring Interim Flow releases and were held to no greater than 50 cfs past Sack Dam.
3 Starting on March 21, 2011, flood flows commenced and flow bench evaluations have
4 ceased until such time as flood flows stop. The seepage management plan uses existing
5 groundwater elevations and extrapolates stage changes to estimate future groundwater
6 depths. Prediction accuracy has generally been conservative at about 0.5 feet error.

7 ***Steelhead Monitoring Plan***

8 On February 11, 2011, the SJRRP Fisheries Management Workgroup prepared and
9 Reclamation submitted to NMFS a Plan for the Detection and Relocation of
10 *Oncorhynchus mykiss* (Central Valley steelhead) above the Merced River Confluence
11 during the SJRRP Water Year 2011 Spring Interim Flow Releases (Steelhead Monitoring
12 Plan or SMP). The Plan was prepared for the purpose of monitoring steelhead in the San
13 Joaquin River at the confluence of the Merced River between February 1 and June 1,
14 2011.

15
16 During the spring Interim Flows, releases from Friant Dam were scheduled to range from
17 a low of 350 cubic feet per second (cfs) up to 1,660 cfs, depending on the water year type
18 designation. Between February 1 and March 20, 2011, Interim Flows were held at or
19 below 50 cfs below Sack Dam due to groundwater elevation constraints in Reach 4. This
20 did not result in hydrologic connectivity of the upper reaches of the San Joaquin River
21 above the Merced River with the lower reaches below the Merced River. Because there
22 was no connectivity from the release of Interim Flows, the risk of straying of steelhead
23 did not exist and the Plan was not implemented.

24
25 Reclamation began releasing flood flows from Friant Dam into the San Joaquin River on
26 March 21, 2011. These flood flows have continued to date and are expected to continue
27 through the implementation period of the Plan. The Plan applies to Interim Flows and is
28 not implemented in flood flow conditions. Reclamation will monitor conditions in the
29 future, as flood flows are reduced, and determined in coordination with NMFS if the Plan
30 should be implemented at that time. Reclamation will continue to utilize and adapt the
31 SMP to current conditions and will implement the plan between mid-December 2012 and
32 June 2012, and in coordination with NMFS.

33 ***2009-2013 Interim Flow Release Program, Water Quality Monitoring Plan***

34 The SJRRP's Interagency Streamflow and Water Quality Monitoring Subgroup prepared
35 the Interim Flow Release Program, Monitoring Plan (Monitoring Plan)⁶ to monitor water
36 quality changes that may occur. The primary objective of the Monitoring Plan is to obtain
37 high quality data to support the SJRRP. Data collection and analysis would provide a
38 broad range of uses including, but not limited to, fisheries. Fisheries resources in the area
39 associated with existing native species and proposed reintroduction of Chinook salmon
40 stand to benefit from the knowledge of general trends in water quality, flow and
41 temperature. The Monitoring Plan describes monitoring activities including real-time,
42 grab, and composite sampling using autosamplers that will make measurements of

⁶ As described in the Settlement, Interim Flows may occur through 2013 and, thus, the Water Quality
Monitoring Plan was prepared to address the entire Interim Flows timeframe.

1 physical conditions including flow, depth, temperature, specific conductance (salinity),
2 pH, DO, turbidity, and chlorophyll.

3
4 **Real Time Management.** Real time management allows the SJRRP to adapt to the
5 uncertainty associated with Chinook salmon and native fish population restoration by
6 adjusting to new information and taking advantage of a variety of strategies and
7 techniques that are adjusted, refined, and/or modified based on an improved
8 understanding of system dynamics. Results of the monitoring and evaluation will be used
9 to redefine problems, reexamine goals, and/or refine conceptual and quantitative models,
10 to ensure efficient learning and adaptation of management techniques. Table 2-9 shows
11 the real-time water quality monitoring physical parameters.

12
13 The sampling frequency and analytical parameters were based on the 2009, 2010, and
14 2011 Interim Flow Water Quality Monitoring and recommendations from the SJRRP
15 Streamflow and Water Quality Monitoring Subgroup, which consists of the Regional
16 Board, California Department of Fish and Game, DWR, U.S. Environmental Protection
17 Agency (USEPA), and NMFS.
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**Table 2-9.
Real-Time Monitoring Physical Parameters**

Temperature	
Method	Digital thermometer (YSI 6600 sonde)
Range	-5 to +45°C
Resolution	0.01°C
Accuracy	± 0.15°C
Salinity – Specific Conductance	
Method	Conductivity meter (YSI 6600 sonde)
Range	0 to 100 mS/cm
Resolution	0.001 to 0.1 mS/cm (range-dependent)
Accuracy	± 0.5%, ±0.1 mS/cm
Dissolved Oxygen	
Method	Digital probe (YSI 6600 sonde)
Range	0 to 50 mg/L
Resolution	0.01 mg/L
Accuracy	0 to 20 mg/L: ± 2% of reading or 0.2% mg/L 20 to 50 mg/L%: ± 6% of reading
pH	
Method	Digital probe (YSI 6600 sonde)
Range	0 to 14 units
Resolution	0.01 unit
Accuracy	± 0.2% unit
Turbidity	
Method	Turbidity meter (YSI 6600 sonde)
Range	0 to 1,000 NTU
Resolution	0.1 NTU
Accuracy	± 5% of reading or 2 NTU
Depth	200 feet
Chlorophyll	
Method	Digital sensor (YSI 6600 sonde)
Range	0 to 400 µg/L
Resolution	0.1 µg/L Chlorophyll; 0.1% fluorescence
Depth	200 feet
<i>Source: Source: SJRRP</i> Key: °C = degrees Celsius; µg/L = micrograms per liter; mg/L = milligrams per liter; mS/cm = milliSiemens per centimeter; NTU = Nephelometric turbidity unit	

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Interim Flow water will be tracked and sampled at several sites along the river as specified in the Order and for the benefit of fishery management using sensors to collect real-time measurements of physical conditions (Table 2-10).

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**Table 2-10.
Real Time Water Quality Monitoring Sites.**

River Mile	Location	Operating Agency	CDE C	Stage	Flow	EC	Temperature	DO	Turbidity	Chlorophyll	pH
268.0	Millerton Lake	Reclamation	MIL	C	C						
267.6	San Joaquin River at Friant Dam (bottom of spillway)	Reclamation	FWQ			C	C	C	C	C	C
266.0	San Joaquin River below Friant Dam (Lost Lake Park)	USGS	SJF	C	C	C	C				
255.2	San Joaquin River at Highway 41	Reclamation	H41	C		C	C				
240.7	San Joaquin River at Donny Bridge	Reclamation	DNB	C	C	C	C				
227.6	San Joaquin River at Gravelly Ford	Reclamation	GRF	C	C	C	C	C	C	C	C
216.0	San Joaquin River below bifurcation	Reclamation	SJB	C	C	C	C	C	C	C	C
211.8	San Joaquin River at San Mateo Road	Reclamation	SJN	C	C						
202.1	San Joaquin River near Mendota (below Mendota Dam)	USGS	MEN	C	C						
181.5	San Joaquin River near Dos Palos (below Sack Dam)	DWR	SDP	C	C	C	C	C	C	C	C
168.4	San Joaquin River at top of Reach 4B	DWR	SWA	C	C	C	C	C	C	C	C
N/A – Flood Bypass	San Joaquin River below the Eastside Bypass Structure	DWR	ESB	C	C	P	P	P	P	P	P
125.1	San Joaquin River at Fremont Ford Bridge	USGS	FFB	C	C	C	C	P	P	P	P
118.3	San Joaquin River at Hills Ferry (above Merced River)	USGS	SMN	C	C	C	C	C	P	P	P
118.0	San Joaquin River near Newman (below Merced River)	USGS	NEW	C	C						
107.2	San Joaquin River near Crows Landing	USGS	SCL	C	C	C	C				

Source: SJRRP

Notes: C- continuous measurements; P – Proposed Location, to be installed

4
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1 **Mendota Pool Water Quality Response Plan**

2 Condition 26 of Corrected Order Water Right (WR) 2010-0029-DWR for the WY 2011
3 Interim Flows Project requires Reclamation to implement a water quality response plan
4 that addresses 1) the contribution of Interim Flows to high salinity conditions in the
5 DMC, Mendota Pool, and Fresno Slough; 2) an identification of the different entities and
6 individuals that may contribute to or play a role in the response to high salinity
7 conditions; 3) the current legal and contractual roles and responsibilities of those entities;
8 and 4) possible response mechanisms, including those that are under the control of
9 Reclamation and those that are the responsibility of other entities and individuals. The
10 Mendota Pool Water Quality Response Plan (WQRP) is included as Appendix H.

11
12 The WQRP requires daily operations calls when electrical conductivity (EC)
13 concentrations, as measured at canal intakes, begin to reach current thresholds or when
14 total dissolved solids (TDS) levels approach 450 ppm at Check 20 of the Delta-Mendota
15 Canal (DMC), which is located just before the DMC enters Mendota Pool. Operators
16 will discuss and Reclamation will choose an appropriate action at the daily operations
17 call. Response actions to water quality in Mendota Pool may include the following:
18

19 **1) Suspend Mendota Pool Group Pump-In**

20 The Mendota Pool Pump-in EIS and the Agreement for the Mendota Pool Transfer
21 Pumping Project requires shutting down Mendota Pool Group pumps when the electrical
22 conductivity at the discharge to Mendota Pool from the DMC is 90 µmhos/cm above EC
23 measurements for 3 days. If the Mendota Pool Group wells are shut off for this reason,
24 they would not be turned back on until the EC at the canal intakes returns to a level that is
25 no more than 30 µmhos/cm above the DMC inflow. This action is the responsibility of
26 the San Joaquin River Exchange Contractors (Exchange Contractors) and the Mendota
27 Pool Group. The Exchange Contractors track salinity levels at canal intakes. Exchange
28 Contractors will notify operators at the daily operations call when salinity levels at canal
29 intakes approach this threshold. When notified by the Exchange Contractors, the
30 Mendota Pool Group will shut down pumps.
31

32 **2) Suspend DMC Pump-In**

33 The DMC Pump-in EA requires shutting off the DMC pump-in program when measured
34 water quality at Check 20 on the DMC exceeds 450 parts per million (ppm) TDS in a
35 single day. The wells may resume pumping after the average TDS is below 450 ppm for
36 3 days. This action is the responsibility of the San Luis and Delta Mendota Water
37 Authority to determine when TDS at Check 20 exceeds 450 ppm, and the responsibility
38 of Two-Year Exchange Agreement and Warren Act Contract holders to shut off pumps.
39

40 **3) Water Supplies through Firebaugh Wasteway**

41 Another response action involves supplying Exchange Contractor water deliveries
42 through Interim Flows diverted to avoid material adverse flooding or seepage impacts,
43 and supplying downstream Interim Flow targets and/or San Luis Canal Company (SLCC)
44 deliveries through the Firebaugh Wasteway. This action is the responsibility of
45 Reclamation. Following the application of the preceding response actions, as required in
46 their environmental documentation, the Exchange Contractors will notify Reclamation at

1 the daily operations call if salinity levels continue to exceed thresholds. Reclamation will
2 evaluate salinity levels and determine if a downward trend will put salinity levels below
3 thresholds within the next day. If not, Reclamation will direct SLDMWA to shut down
4 the DMC and push flows through Firebaugh Wasteway. Reclamation will specify the
5 amount of Interim Flows through Firebaugh Wasteway, and flows for SLCC through
6 Firebaugh Wasteway. Reclamation will also manual sample discharge to the San Joaquin
7 River from the Firebaugh Wasteway during this action, as needed.
8
9 Reclamation would continue to implement the Mendota Pool Water Quality Response
10 Plan for WY 2012.
11

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2 **2.2.7 Public Draft 2010 Annual Technical Report**

3 The Public Draft 2010 Annual Technical Report presents an incremental update for
 4 monitoring and analysis results from 2010 and builds on a draft released in August 2010
 5 which reported on the first half of 2010. The ATR along with the 2011 Agency Plan are
 6 SJRRP annual reporting and planning documents. These documents play a role in
 7 development of SJRRP adaptive management, which links monitoring and analysis
 8 efforts to the decision making processes they are designed to support, forming the
 9 scientific basis for San Joaquin River operations downstream from Friant Dam. The ATR
 10 tracks long-term strategies for SJRRP implementation in problem statements and
 11 identifies information needs as uncertainties to be resolved in order to implement the
 12 Settlement. The ATR allows the Implementing Agencies to present to stakeholders the
 13 status and results of technical work to address SJRRP needs. Table 2-11 below outline
 14 the components of the SJRRP flow-related monitoring and management plan, as outline
 15 in the Spring 2010 Annual Technical Report. Reclamation will continue to work towards
 16 these objectives and report progress in yearly ATRs.

17

18

19

**Table 2-11.
 Components of the SJRRP Flow-Related Monitoring and Management**

Component	Objectives	Monitoring Parameters	Indicators	Potential Actions	
				Immediate	Long-Term
Flow	Comply with Friant Dam releases, Settlement monitoring location flow requirements, State Water Resources Control Board (SWRCB), Division of Water Rights, Order WR 2009-0058-DWR, and identify recapture quantities	Surface water stage and flow rate	Volumes and rates of Restoration Flows at seven specified monitoring locations	Report to RA, begin negotiations for purchased water from willing sellers	Release purchased water from willing sellers and evaluate enforcement actions in case of increased diversions
Seepage	Reduce or avoid impacts from shallow groundwater due to increased river flow and stage	Groundwater elevation, visual inspection/patrol, landowner contact	Groundwater level relative to thresholds	Change releases/redirect flows through bypasses	Evaluate easements, compensate for damage, pursue engineering solutions
Channel Capacity	Identify channel capacity constraints and opportunities	Water surface elevation, landowner input, bed material composition	River stage, sand deposition, known constraints	Reduce flows, monitor, and remove obstructions and debris	Evaluate flow, removal of sediment and vegetation, and evaluate channel work
Temperature	Measure temperature from Millerton Lake to the Merced River confluence	Water temperature in Millerton Lake and at various locations along the SJR	Real-time temperature data from stream gaging stations	Continue to study temperatures and collect data	Evaluate temperature in relation to redd, juvenile, and adult fish survival

Source: Public Draft Spring 2010 Annual Technical Report

1

2 **2.2.8 WY 2011 Interim Flows Monitoring**

3 Below is a list of monitoring activities that have been, or are scheduled for WY 2011.
4 This information will help to information WY 2012 Interim Flows and future anticipated
5 SJRRP activities.

6 ***SJRRP Daily Seepage and Flow Bench Evaluation***

7 Condition 9 of Corrected Order Water Right (WR) 2010-0029-DWR for the WY 2011
8 Interim Flows Project requires Reclamation to conduct a daily evaluation of groundwater
9 levels and flow and stage levels when flows are greater than 475 cfs in Reaches 2A and 3
10 and post the evaluation results to a publicly available website. In the event that
11 groundwater elevations create seepage conditions, Reclamation shall reduce or redirect
12 flows to the last known flow volume that did not result in seepage conditions until
13 Reclamation determines that increasing flows would not create seepage conditions (i.e.,
14 seepage is caused by an activity not related to Interim Flows).

15

16 During fall WY 2011 Interim Flows, releases past Sack Dam were held at 80 cfs and then
17 subsequently reduced to 50 cfs to address downstream seepage concerns from
18 neighboring landowners. Starting on February 1, 2011, flows were commenced again for
19 the spring Interim Flow releases and were held to no greater than 50 cfs past Sack Dam.
20 Starting on March 21, 2011, flood flows commenced and flow bench evaluations have
21 ceased until such time as flood flows stop. The seepage management plan uses existing
22 groundwater elevations and extrapolates stage changes to estimate future groundwater
23 depths. Prediction accuracy has generally been conservative at about 0.5 feet error.

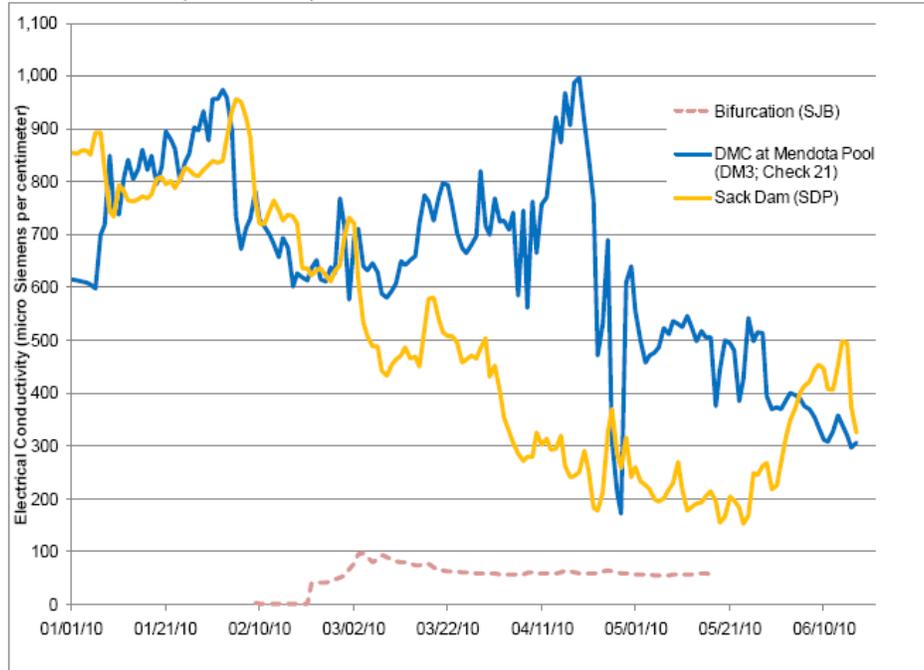
24 ***Water Quality Monitoring Results***

25 The water quality monitoring program for the 2011 SJRRP Interim Flows includes 16
26 real-time monitoring stations and seven sites where water samples are measured monthly
27 for total suspended solids, nutrients, total and dissolved carbon, bacteria, trace elements,
28 and pesticides based on recommendations by the Regional Water Quality Control Board
29 (RWQCB) and the SJRRP Fisheries Management Workgroup (FMWG). A wide range of
30 constituents and parameters are monitored via grab samples and laboratory analysis.
31 These constituents are addressed in the SJRRP Spring 2010 Annual Technical Report
32 (March 2011).

33

34 The California Data Exchange (CDEC) electrical conductivity sensor at stream gage
35 DM3 recorded a spike in Mendota Pool salinity due to the introduction of Sacramento-
36 San Joaquin Delta (Delta) water from the Delta-Mendota Canal (DMC) that has higher
37 salinity water than Friant Dam. From April 22 through 28, 2010 recaptured SJRRP flows
38 and low irrigation demands at Mendota Pool reduced Delta deliveries. Seepage drainage
39 water returned to the DMC resulted in EC levels that would not permit the Mendota Pool
40 pump-in program (Figure 2-10). The water delivered to the Mendota Pool from the DMC
41 did not thoroughly mix with low-salinity releases from Friant Dam and resulted in higher
42 salinity water in Fresno Slough and the irrigation canal headworks, than desired by
43 irrigators. Reclamation, the San Luis and Delta-Mendota Water Authority, and the San
44 Joaquin River Exchange Contractors Water Authority adjusted operations to close the

1 DMC at Check 21, meet Arroyo Canal demands through the Firebaugh Wasteway, and
2 dilute high salinity in Mendota Pool/Fresno Slough with low salinity San Joaquin River
3 water. Reclamation met demands at Mendota Pool with deliveries from Friant Dam.
4 Water quality monitoring included telemetered EC readings and grab samples.
5



6
7 **Figure 2-2. Electrical Conductivity of Surface Water at the Chowchilla Bifurcation**
8 **station, Sack Dam, and the Delta Mendota Canal at Mendota Pool**
9

10 The SJRRP Fisheries Management Workgroup developed the Water Quality and Fish
11 Report as an assessment of SJRRP water quality monitoring in terms of sampling
12 frequency, sampling locations, sampling methods, and detection levels. This review
13 interprets water quality monitoring results for possible effects to Chinook salmon and
14 other fish native to the San Joaquin River. Some notable findings and recommendations
15 include:

- 16
- 17 • Bifenthrin in sediment samples at concentrations with potential to cause mortality
18 in certain organisms and transfer up the food web via bioaccumulation.
- 19 • A total of 42 water quality samples with copper exceeding the EPA aquatic-life
20 chronic benchmark for invertebrates, and 30 samples exceeding the acute
21 benchmark for invertebrates.
- 22 • Storm inflow monitoring could potentially reveal toxic concentrations from
23 surface runoff
- 24 • Tissue samples or semi-permeable membranes could help address uncertainty
25 regarding bioaccumulation and food web transfer.
- 26 • Some laboratory detection limits are above concentrations of sub-lethal effects
27 (parts per trillion range), which have been shown to affect growth, swimming
28 behavior, reproduction, and immune system response in aquatic fish and
29 invertebrates.

1
2 Reclamation and the other implementing agencies, including DFG, USFWS, and NMFS
3 will continue to coordinate on the recommendations from the 2010 Annual Technical
4 Report to ensure needed reporting requests are met.

5 ***Blunt-Nosed Leopard Lizard (BNLL) Reasonable and Prudent Measures***

6 Based on conclusions issued in the September 28, 2010 concurrence and Biological
7 Opinion (BO) from United States Fish and Wildlife Service (USFWS) for WY 2011
8 Interim Flows, BNLL could be adversely affected in the Eastside and Mariposa bypasses.
9 Non-discretionary actions required of Reclamation by the BO, or reasonable and prudent
10 measures (RPMs), include reporting updates being submitted to USFWS at appropriate
11 intervals during project implementation, seepage monitoring, and management of
12 invasive plant species. The RPMs recommended are abbreviated and listed below, as
13 well as an outline of Reclamation's compliance with the BO for WY 2011 Interim Flows:
14

- 15 • **Reclamation shall submit a progress report every month during**
16 **implementation. The updates shall detail any changes to the project**
17 **footprint and BNLL habitat directly or indirectly affects by the Proposed**
18 **Action, resulting in take.**

19 Compliance: Reclamation has weekly Streamflow, Water Quality, and Adaptive
20 Management (SFWQ) meetings with federal and state agencies to discuss flow
21 scheduling, real-time flow conditions, monitoring results, water quality results,
22 and adaptation to flow conditions as needed. In these meetings, Reclamation has
23 committed to discussing potential effects to BNLL as flows exceed 800 cfs
24 (which was determined to be the 2011 flow baseline in the Eastside and Mariposa
25 Bypasses where WY 2010 flows peaked). During WY 2011, fall Interim Flows,
26 releases past Sack Dam were limited to 80 cfs. Therefore, the flows in the
27 Eastside Bypass were minimal and did not exceed the 800 cfs threshold for
28 BNLL. In February and March 2011, flows past Sack Dam were limited to 50 cfs
29 past Sack Dam and flows in the Eastside Bypass did not reach the threshold for
30 BNLL. Flood releases, which are not part of the SJRRP WY 2011 Interim Flows
31 Project, commenced on March 21, 2011. Flood releases have ranged between
32 2,500 cfs and 7,500 cfs out of Friant Dam from March 2011 through the time of
33 the preparation of this Supplemental EA. While SFWQ meetings have continued
34 and data continues to be collected where possible, the SJRRP does not have
35 control over flows moving through the Eastside or Mariposa Bypasses and has not
36 reported for potential effects to BNLL since flood flows began. Reclamation
37 takes notes at the SFWQ meetings and distributes these notes to the invitees,
38 which includes USFWS staff. These notes are utilized for the RPM reporting
39 requirement.

- 40 • **Reclamation shall continue to implement the Seepage Monitoring and**
41 **Management Plan for WY 2010 Interim Flows, which carries forward into**
42 **WY 2011.**

43 Compliance: Reclamation has continued to implement activities called for in the
44 Seepage Monitoring and Management Plan, as needed, to help to reduce or avoid
45 material seepage impacts associated with the release of Interim Flows.

1 Additionally, Reclamation has convened Seepage Conveyance Technical
2 Feedback meetings with landowners, water users, and the public. These meetings
3 discuss technical issues, seepage thresholds, and other items related to the
4 refinement of groundwater elevations associated with Interim Flow releases. The
5 Seepage Monitoring and Management Plan has been adaptively managed to
6 respond to environmental and anthropogenic variations.

- 7 • **Reclamation shall monitor, control, and manage the following invasive**
8 **species along the San Joaquin River and the flood bypass system, before and**
9 **after WY 2011 Interim Flows and as specified in the Invasive Vegetation**
10 **Monitoring and Management Plan (Appendix F of the WY 2010 Interim**
11 **Flows EA): red sesbania, salt cedar, giant reed, Chinese tallow, and sponge**
12 **plant.**

13 Compliance: Reclamation monitored invasive vegetation along the San Joaquin
14 River and the flood bypass system prior to commencing Interim Flows in WY
15 2010. This information was documented and made into an extensive GIS layer to
16 assist in assessing the extent and coverage of invasive species. Reclamation is
17 currently working on an agreement to have invasive vegetation monitored,
18 documented, and managed in the summer of 2011, during lower flows in the San
19 Joaquin River.

20 With the implementation of the above RPMs for the WY 2011 Interim Flows, USFWS
21 determined that the level of anticipated take was not likely to jeopardize the continued
22 existence of BNLL. Reclamation does not propose the continued implementation of
23 these RPMs for WY 2012 as flood releases in the bypass had the potential to change the
24 baseline for BNLL. If BNLL were present in the Eastside Bypass prior to the release of
25 non-SJRRP flood flows in 2011, the impacts of the release of up to 7,500 cfs of flood
26 flows down the Eastside Bypass would be a substantially greater impact to BNLL than
27 the Proposed Action for WY 2012 Interim Flows. As a result, any BNLL that may have
28 been present within the flood bypass system would have moved out of the channel or
29 have been inundated. Therefore, the potential for presence of BNLL in the Eastside
30 Bypass for WY 2012 Interim Flows is unlikely and greatly reduced as a result of the non-
31 discretionary release of flood flows.

32 ***2011 Interim Flows Monitoring Activities and Studies***

33 A variety of data collection, monitoring activities, and studies were conducted or are
34 being conducted during the WY 2011 Interim Flows. These data collection and
35 monitoring activities will provide detailed information that will be used to validate the
36 hydraulic models and sediment transport analyses which support planning and design.
37 The data will assist the SJRRP in identifying and addressing fisheries and flow-related
38 issues that are linked to the physical processes of the river system under current and
39 future anticipated restoration conditions. The data collection and monitoring activities
40 for the WY 2011 Interim Flows are outlined in the Final 2011 Agency Plan. The list
41 below provides a general overview of these studies and monitoring:
42

43 **Real-time network monitoring of physical and water quality parameters.** Real-time
44 data sensors will continue to take real-time or incremental measurements of parameters in
45 the San Joaquin River such as temperature, dissolved oxygen, flow stage, electrical

1 conductivity, pH, turbidity, chlorophyll, organic and inorganic compounds, selenium,
2 boron, nutrients, bacteria, trace elements, total organic carbon, and other minerals.

3
4 **Water surface profile surveys.** Complete water surface profile surveys at flows up to
5 1,500 cfs in Reaches 1, 2, and 3. Survey at higher flood releases, if possible. Reaches
6 4A, 4B2, 5, and the Eastside Bypass have been surveyed previously, but need additional
7 data.

8
9 **Bathymetric surveys.** Reaches 4A, 4B2, 5, and the Eastside Bypass have been
10 surveyed, but additional bathymetric survey data needs to be gathered in these reaches.

11
12 **Cross sectional surveys.** Re-surveys Reaches 1A, 2A, 2B, and 3 in WY 2011 to capture
13 the before and after effects of spring and fall Interim Flows.

14
15 **Temperature monitoring for Millerton cold water pool.** Temperatures at Millerton
16 Lake's cold water pool are to be collected at the base of Friant Dam from a temperature
17 profile string and other locations within Millerton Reservoir. These temperatures will be
18 compared to instream river temperatures.

19
20 **Monitoring of spawning gravel quality and quantity.** A review of previous studies
21 will help to determine if the methods and data prepared thus far are appropriate for
22 making determinations on spawning gravel quality and quantity. This study will evaluate
23 the extent of existing habitat types, identify abundant types and which are inadequate to
24 meet the Settlement's salmonid population goals, provide detailed habitat information
25 sufficient to direct and guide restoration activities, and evaluate the effectiveness of
26 restoration actions.

27
28 **Historical and Water Year 2010 flow gage record analysis.** The study will synthesize
29 historical and WY 2010 flow gage data for each reach of the SJR to improve estimates of
30 actual losses in each reach. In addition, this study will present a discussion of
31 uncertainties in the estimated losses.

32
33 **Flow travel time from Friant Dam and tributaries to Gravelly Ford.** Using WY
34 2010 daily flow data from the Millerton Lake and Gravelly Ford stream gages, this study
35 will help to inform how Friant Dam releases and inflows from tributaries influence flows
36 at Gravelly Ford.

37
38 **Sediment and hydraulics monitoring and analysis.** This will consist of vegetation data
39 collection, hydraulic modeling, sediment data collection, bathymetric surveys, water
40 operations modeling and the development of a Sediment Management Plan.

41
42 **Lateral gradient of water table.** Utilization of the WY 2011 Interim Flows seepage
43 operations conceptual model to perform a study that updates seepage thresholds, a
44 description of conditions indicating seepage from the SJRRP, providing a procedure to
45 assess the range and extent of potential impacts from existing flows, and a description of
46 the limitations that future flows would impose.

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46

Terrain comparison between wells and fields. Analysis of ground elevations, from surveys and LiDAR data, will be used to determine new thresholds that account for the differences between ground surface elevations at wells and in the field.

Changes in salinity conditions resulting from Interim Flows. This study will perform soil salinity monitoring at various stages of crop planting and development and will establish baseline salinity measurements in seepage-prone areas.

Flow restrictions due to seasonal groundwater conditions. Flow constrictions due to potential seepage impacts will be identified and prioritized in order to determine solutions for potential drainage issues.

Monitoring well network optimization. Monitoring wells will be included in an atlas and will aid decisions to install more wells or decommission existing wells.

Effects of sand mobilization on high-flow water surface elevations. Results from this study will provide information that can be used to assess channel capacity and related issues in the sand bed portions of the Restoration reach.

Sand storage in Reach 1. This study will provide information that can be used to assess the potential for fine sediment intrusion into spawning riffles in Reach 1A and the effects of sand depletion on vertical stability of the sand bed portions of the Restoration reach.

Additional water level recorders. Up to an additional six water level recorders should be installed at key locations in Reaches 1 and 2 to supplement existing stream gages. Data from the recorders will be compared to routing model results and adjustments will be made to the models, as necessary, to better match the data.

Evaluation of law enforcement needs and regulatory changes to limit harvest. A Recreational Impact Study will occur which will identify existing potential sources of unlawful take of fish and physical disturbance within the Restoration area. DFG will draft special fishing regulations for the lower San Joaquin River, which, if passed, would be in effect by the beginning of 2012.

Spawning area bed mobility. A study will occur that will monitor at collect data at up to two riffles where modeling suggests bed mobilization would occur at flows less than 3,500 cfs. The results of this study will provide information on the ability to condition potential spawning bed material through heightened discharge events, ability of mature salmon to excavate a redd into the bed, and the quantity of suitable spawning gravel.

Effect of scour and deposition on incubation habitat in Reach 1A. Monitoring will assess fine sediment infiltration into artificial redds. This study will aid in the understanding of accumulation of fine sediment in a gravel framework of a salmon red and its resultant influence on subsurface flow.

1 **Juvenile salmonid survival and migration.** This study will identify and characterize
2 three limiting factors for juvenile Chinook salmon survival, including predation,
3 entrainment, and physical habitat. This study will deploy telemetry receivers in Reaches
4 1 through 5, tag juvenile fall run Chinook salmon, release the salmon, and download and
5 process the resulting data.

6
7 **Floodplain inundation.** Using aerial imagery, 1D hydraulic model inundation mapping,
8 and 2D modeling for habitat mapping to estimate habitat areas for different flows prior to
9 channel improvements. The study will help fill in data gaps to aid in the quantification of
10 the amount and quality of floodplain inundation related to discharge.

11
12 **Water quality study.** This study will focus specifically on parameters that could directly
13 affect fish, including the monitoring of selenium levels, DO levels, total ammonia
14 nitrogen, and general parameters at holding pools.

15
16 **Effect of altered flow regime on channel morphology in Reach 1A.** Through the
17 deployment of scour chains at riffles and the measurement of the mobility of particles in
18 those areas, changes in pertinent channel boundary features will be made that will inform
19 future predictions.

20
21 **Temperature monitoring for adult migration.** This study will evaluate potential
22 thermal barriers and identify potential warm water sources along the San Joaquin River
23 that could affect adult migration.

24
25 **Adult passage study.** This study will evaluate lower reaches of the Restoration Area to
26 help validate draft conceptual models of stressors and limiting factors for Chinook
27 salmon to build the ecosystem diagnosis and treatment model framework.

28
29 **Hyporheic pot study.** Hyporheic pot samplers will be placed in potential spawning areas
30 agreed upon by the Fisheries Management Workgroup. These pots will assess substrate
31 characteristics, water quality, and invertebrate assemblages to better determine expected
32 value of redd environments to salmon.

33
34 **Hills Ferry Barrier evaluation.** The study to determine the efficacy of Hills Ferry
35 Barrier in preventing salmon and steelhead from straying up the San Joaquin River
36 started in the fall of 2010. Methods were under development in 2010 and will be
37 reported with the study results.

38
39 **Temperature modeling.** Using temperature data collected from DFG during Fall 2009
40 and Spring 2010 and the SJR5Q water temperature model, results will be used to
41 determine potential Interim Flows hydrographs and to be used as a scheduling tool for
42 future SJRRP actions.

43
44 **Fall-run Chinook experimental captive rearing study.** The study will test captive
45 rearing culture practices on fall-run Chinook salmon prior to working with listed spring-
46 run Chinook. Fall-run Chinook salmon efggs will be transferred to an interim facility for

1 experimental rearing where they will be reared until ready to spawn, and then spawned.
2 Fish will be monitoring and studied during their growth.

3
4 **Temperature tolerance study.** Fall-run Chinook salmon will be tested for thermal
5 tolerance in a controlled laboratory environment to evaluate gene expression under
6 different thermal regimes. This will aid in the understanding and predicting changes in
7 wild populations facing thermal stress.

8
9 **Benthic macroinvertebrate SWAMP bioassessment.** Reconnaissance surveys of
10 Reaches 1 through 5 of the Restoration area will be conducted, physical habitat will be
11 characterized and selected sampling reaches, and benthic macroinvertebrates will later be
12 collected and analyzed. This will aid in evaluating the impact of SJRRP actions on
13 ecological integrity and water quality conditions.

14
15 **Egg survival study.** This study will aid in determining salmon egg survival under current
16 spawning conditions in the Restoration Area. This will include the construction of
17 artificial redds to include salmon eggs and document the impacts of conditions on the
18 survival of the eggs.

19
20 **Monitor intragravel dissolved oxygen concentrations in the San Joaquin River.**
21 Continuous dissolved oxygen monitoring will be installed at a riffle location. The study
22 will provide continuous DO data during the different flow rates of Interim Flows.

23
24 **Reach 1A mechanical disturbance to enhance bed mobility.** At several locations in
25 the upper reaches of the San Joaquin River, river bed material will be disturbed
26 mechanically to expose the finer underlying material to mobilizing flows and loosening
27 the surface structure. This would be compared to undisturbed areas. This would provide
28 information about bed characteristics.

29
30 **Reach 1A gravel augmentation.** Cross sections spanning the fine gravel layer of the
31 streambed will be measured with a flow profiler in order to build a quantitative model of
32 the entrainment process to assess its relevance to restoration designs. This would provide
33 potential management alternatives for increasing the quantity of spawnable areas.

34
35 **Migration cues.** DSM2 modeling will be used to simulate hydrodynamics, water
36 quality, and particle tracking in order to identify the proportion of water coming from
37 different sources to provide a quantitative assessment of the volume of water from Friant
38 Dam and San Joaquin tributaries to assess the Settlement flows and their influence on
39 adult migratory cues.

40 ***Fall-Run Chinook Above Hills Ferry Barrier in Winter 2010***

41 During the winter of 2010, California Department of Water Resources (DWR) Staff
42 observed salmon below Sack Dam and reported the finding to DFG. DFG followed up
43 on monitoring these fish. These fish were confirmed to be fall-run Chinook salmon that
44 had made it past Hills Ferry Barrier. Below is a bulleted list presenting a general time
45 frame of events related to their movement upstream and monitoring efforts:

- 1 • **November 15, 2010:** Salmon observed below Sack Dam and reported to DFG.
- 2 • **November 16, 2010:** DFG biologists confirm that the salmon are fall-run
3 Chinook salmon. Attempts are made to trap the fish, but without success.
- 4 • **November 17, 2010:** San Luis Canal Company (SLCC) coordinates with DFG to
5 make the fish ladder at Sack Dam operational.
- 6 • **November 18, 2010:** DFG staff confirms that there are at least 5 salmon below
7 Sack Dam and observations were made of 3 salmon moving up the ladder. One
8 female fall-run Chinook is captured, floy tagged, acoustically tagged, and fin
9 clipped for genetic sampling. This fish is released above Sack Dam.
- 10 • **November 22, 2010:** DFG tracks the tagged fish to an area directly below
11 Mendota Dam. DFG observes other salmon at the base of the dam.
- 12 • **November 23, 2020:** DFG and DWR place a trammel net at the base of Mendota
13 Dam. Two male and two female fall-run Chinook salmon are captured, floy
14 tagged, and fin clipped. One female salmon is sonic tagged. All fish are released
15 upstream of Mendota Dam.
- 16 • **November 30, 2010:** Portable acoustic receivers are deployed in Reach 1 and at
17 the Chowchilla Bifucation Structure. No fish are detected with the receivers.
18 More salmon are observed below Mendota Dam. Electrofishing efforts are made
19 and one fall-run Chinook is captured, floy tagged, fin clipped, and released above
20 the dam. The female captured on November 18th with the acoustic tag is detected
21 in a backwater area at the base of Mendota Dam.
- 22 • **December 7, 2010:** Reclamation staff observes a fisherman catching a salmon
23 with a hook and line downstream of Mendota Dam. The salmon is acquired by
24 Reclamation staff, floy tagged, and released above Mendota Dam.
- 25 • **December 8, 2010:** A trammel net is set at the base of Mendota Dam. One male
26 fall-run Chinook is captured, floy tagged, acoustically tagged, fin clipped, and
27 placed in a 450-gallon live fish transporter. Another male Chinook, in poor
28 condition, is collected with a dip net and returned to the river. Salmon carcasses
29 are observed in a small drainage canal that runs parallel to Arroyo Canal, east of
30 Los Banos. One live male Chinook salmon is found in the canal, captured, floy
31 tagged, acoustically tagged, fin clipped, and placed in the 450 gallon live fish
32 transporter. Both salmon in the transporter are released near the base of Friant
33 Dam.
- 34 • **December 13, 2010:** DFG and DWR staff use kayaks and portable acoustic
35 receivers to track salmon in Reach 1. The male Chinook salmon that was
36 captured at the base of Mendota Dam is located approximately 5 miles
37 downstream of Friant Dam (where it had been released the prior week). The other
38 male salmon, that was found in the canal, is found as a carcass at the base of
39 Friant Dam's spillway.
- 40 • **December 14, 2010:** DFG attempts to track salmon in kayaks between Friant
41 Dam and Highway 41. No salmon are observed.

1 **2.2.9 Restoration Administrator 2011 Spring Interim Flow Program Real-**
2 **Time Management Recommendations**

3 On April 13, 2011, the RA provided draft recommendations for the WY 2011 Interim
4 Flow Program, for the spring flow period. Because WY 2011 was designated as a “wet”
5 water year type, the recommendations include potentially initiating riparian recruitment
6 flows later in the spring after the conclusion of flood releases, which would likely be after
7 May or June 2011. Further, the recommendations also focus on preparing for Chinook
8 salmon reintroduction by the end of 2012 and the commencement of full Restoration
9 Flows beginning no later than January 1, 2014. Recommended objectives for the spring
10 2011 Interim Flow releases include the following:

- 11
- 12 • Identifying preliminary biological management targets for water temperatures,
13 water depths, ramping rates, and seasonal floodplain inundation;
- 14
- 15 • Identifying real-time data needs that would be required to implement instream
16 flow management such as measuring water temperature, water surface elevations,
17 groundwater elevations, predicted meteorological conditions, reservoir inflow,
18 and reservoir water temperatures;
- 19
- 20 • Testing the ability of the existing reservoir water temperature, river water
21 temperature, surface water-groundwater models, flow routing models, and
22 floodplain inundation models to accurately predict the ability to manage and meet
23 downstream fish management targets over a wide range of environmental
24 conditions;
- 25
- 26 • Testing the ability of the existing analytical tools to provide flexibility in
27 adjusting variation in basin hydrologic conditions, to serve as the basis for
28 revising instream flow release strategies in near real-time, and to provide a
29 reliable accounting of water allocations, both in the past and near future. The
30 analytical tools must be capable of showing that the Interim Flow
31 recommendations conform with the constraints and requirements of the
32 Settlement Agreement;
- 33
- 34 • Identifying the lag times that occur between making changes to the instream flow
35 releases at Friant Dam and the resulting changes in conditions at various
36 downstream management locations;
- 37
- 38 • Determine the flexibility in managing releases on a daily and weekly time step for
39 accommodating changing environmental conditions;
- 40
- 41 • Determine the coordination procedures between the RA and Program
42 Implementing Agencies needed to effectively develop, implement, and monitor
43 real-time Interim Flows; and
- 44
- 45 • If 2011 is a wet water year type, develop a release hydrograph that likely could be
46 capable of naturally recruiting riparian vegetation on target surfaces.

1

2 The RA continues to coordinate with the Implementing Agencies and the TAC to work
3 toward the implementation of these recommendations and toward future
4 recommendations made for WY 2012

1

2 **2.3 Relationship to Related Projects**

3 ***Hills Ferry Barrier***

4 As described in the WY 2010 Final EA/IS and the Supplemental WY 2011 Final EA, the
5 Hills Ferry Barrier is a resistance weir consisting of panels aligned perpendicular to the
6 flow of the river with evenly spaced pipes that allow water, small fish, and particles to
7 pass but prevent larger fish such as adult Chinook salmon from passing upstream. The
8 barrier has been operated by DFG on the San Joaquin River since 1992. The SJRRP is
9 currently conducting an evaluation of the Hills Ferry Barrier to assess the effectiveness of
10 the barrier in blocking the upstream passage of Chinook salmon and steelhead into the
11 San Joaquin River.

12

13 The barrier is usually installed and operated from mid-September through December each
14 year. The barrier is staffed 24 hours a day to visually monitor its success, remove
15 accumulated debris and assist boaters in passing the structure. The barrier has been highly
16 effective at redirecting salmon, but is not without limitations. The barrier's effective
17 sustained flow capacity is 1,000 cfs, with the ability to withstand short-duration flows up
18 to 1,500 cfs. Flows greater than 1,750 cfs will totally submerge the barrier. Interim Flows
19 for the fall will begin October 1 and continue through December 1, 2011 with Friant Dam
20 releases ranging from 350-700 cfs. Flows at the barrier are not expected to reach 1,000
21 cfs during the typical barrier operation period in WY 2012.

22

23 The Hills Ferry Barrier has not been operated in the spring when juvenile salmon and
24 steelhead are emigrating from the downstream tributaries. The opportunity for these
25 juveniles to access the San Joaquin River upstream of the Merced River has been
26 extremely low due to inhospitable water flow and water quality conditions. However,
27 Interim Flows will likely provide conditions that could allow emigrating juvenile salmon
28 and steelhead to stray upstream of the Merced River. The need to maintain a barrier at
29 Hills Ferry during the spring is to be evaluated by CDFG as part of the SJRRP fishery
30 investigations.

31 ***San Joaquin River Tributary Flows & VAMP***

32 The Merced, Tuolumne, and Stanislaus rivers are the three main tributaries to the San
33 Joaquin River. Releases from major reservoirs on these tributaries are made in response
34 to multiple operational objectives, including flood management, downstream diversions,
35 instream fisheries flows, instream water quality flows, and releases to meet water quality
36 and flow objectives at Vernalis as part of requirements under Water Right Decision 1641
37 (D-1641) including the Vernalis Adaptive Management Program (VAMP). VAMP was
38 an experimental program to determine how salmon survival rates change in response to
39 alterations in flow releases (primarily from tributary reservoirs), and alterations in
40 CVP/SWP export levels that are based on flow conditions in the San Joaquin River at
41 Vernalis.

42

1 VAMP expired in 2010. In February 2011, the SJRGA issued a Notice of Intent to Adopt
2 a Negative Declaration (ND) for the One-Year Extension of the SJRA in 2011. This
3 would allow for a pulse flow for a 31-day period at Vernalis during April and May, with
4 the exact timing determined by the San Joaquin River Technical Committee. Further,
5 this action would identify other flows through the CVPIA water acquisition plan, with
6 concurrence by USFWS, to facilitate migration and attraction of anadromous fish,
7 including fall attraction flows and other flows needed by the adaptive management study.
8 Reclamation is working with the SJRGA to implement a VAMP-like action for 2011.
9 Although the NMFS Operations BO and RPAs state that agreements for VAMP-like
10 conditions will be pursued, the future of VAMP is uncertain, and Reclamation and SJRA
11 participants are discussing the future approach for a VAMP-like action beyond 2011.
12

13 The State Water Resources Control Board issued a Revised Notice of Preparation on
14 April 2, 2011 for the review of the 2006 Water Quality Control Plan for the San
15 Francisco Bay/Sacramento-San Joaquin Delta Estuary. This includes the review and
16 update of water quality objectives, including flow objectives, and the program of
17 implementation of the Bay-Delta Plan. The environmental documents that will be
18 prepared by the SWRCB will: establish narrative flow objectives to support migratory
19 fish populations for the San Joaquin River and the tributaries to the San Joaquin River:
20 the Stanislaus, Tuolumne, and Merced Rivers; meet the narrative objectives by providing
21 flow conditions that approximate the timing and magnitude of natural flows, from 20 to
22 60 percent of natural flows, depending on the assessment of the competing uses for
23 water; a proposed implementation framework that recognizes the need and use of
24 adaptive management for flow needs; establishing southern Delta salinity objectives and
25 narrative water level and circulation objectives to protect agricultural uses in the Delta;
26 and a program of implementation to achieve salinity and circulation objectives.
27

28 No decisions on the future of a VAMP-like action have been made at the time of
29 preparation of this BA. Reclamation is continuing negotiations for the near-term with the
30 SJRGA. However, because of the requirements in the NMFS Operations BO and
31 because of the reasonably foreseeable modifications proposed by the SWRCB on the
32 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin
33 Delta Estuary, it is reasonable to assume that a VAMP-like action would occur in the
34 future. Reclamation would operate within all existing regulatory requirements related to
35 future VAMP-like actions.

36 ***NMFS and USFWS Operations Biological Opinions***

37 On December 15, 2008 the USFWS issued the USFWS Operations BO. The USFWS
38 Operations BO concluded that the proposed CVP and SWP project operations were likely
39 to jeopardize the continued existence of delta smelt (USFWS 2008). The USFWS
40 developed a reasonable and prudent alternative (RPA) to: (1) reduce/prevent entrainment
41 of delta smelt at Jones and Banks pumping plants; (2) provide adequate habitat conditions
42 for migration and spawning in the Delta; (3) provide adequate habitat for larval and
43 juvenile rearing; and (4) provide habitat suitable for successful recruitment of juvenile
44 delta smelt to adulthood.
45

1 On June 4, 2009 NMFS issued the NMFS Operations BO. The 2009 NMFS Operations
2 BO concluded that the proposed operations were likely to jeopardize the continued
3 existence of the following:

- 4
- 5 • Sacramento River Winter-run Chinook Salmon
- 6 • Central Valley Spring-run Chinook Salmon
- 7 • Central Valley Steelhead
- 8 • Southern Distinct Population Segment of North American Green Sturgeon
- 9 • Southern Resident Killer Whales

10 The NMFS Operation BO stated that the SWP and CVP have “both directly altered the
11 hydrodynamics of the Sacramento-San Joaquin River basins and have interacted with
12 other activities affecting the Delta to create an altered environment that adversely
13 influences salmon and green sturgeon population dynamics. The altered environment
14 includes changes in habitat formation, species composition, and water quality, among
15 others” (NMFS 2009). The opinion further concluded that the SWP/CVP operations are
16 not likely to jeopardize the continued existence of Central California Coast steelhead.
17 NMFS developed an RPA in accordance with ESA requirements. NMFS indicated that
18 based on the analyses presented in the biological opinion that the “RPA cannot and does
19 not, however, include all steps that would be necessary to achieve recovery.”
20 Consequently, NMFS included focused actions designed to compensate for a particular
21 stressor (NMFS 2009).

22 Reclamation provisionally accepted the USFWS and NMFS Operation BOs and
23 respective RPAs. Several urban and agricultural water suppliers have filed suit
24 challenging the BOs, which are currently pending⁷.

25

26 On March 25, 2010, NMFS issued a determination that Reclamation’s anticipated
27 operations, as shown in the figures and tables within that memorandum, were consistent
28 with specific actions of the RPA. The WY 2012 Interim Flows Project will be operated
29 to comply with applicable USFWS and NMFS Operation BO RPAs, or requirements as
30 amended by court action. The RPAs included in the USFWS and NMFS Operations BOs
31 address conditions within the Stanislaus River and downstream that affect the Central
32 Valley steelhead distinct population segment (DPS), and conditions within the Delta that
33 affect the steelhead DPS, the southern green sturgeon DPS, the winter-run and the spring-
34 run Chinook salmon ESUs, and delta smelt.

35

36 ***Federal Energy Regulatory Commission (FERC) ruling on Tuolumne River (Project***
37 ***No 2299-065)***

38 The *1995 New Don Pedro Settlement Agreement* contains instream flow requirements on
39 the Tuolumne River for the anadromous fishery downstream from the project (FERC
40 2009). NMFS, USFWS, and CDFG, as well as several non-governmental organizations,

⁷ If conditions change as challenges to the USFWS and NMFS Operations BOs move forward, Reclamation will comply with the regulations and legal requirements in place at that time.

1 have sought to modify the requirements to provide flow and related conditions they
2 believe are necessary to protect threatened Central Valley steelhead and Chinook salmon
3 Essential Fish Habitat (EFH). The Federal Energy Regulatory Commission ruling could
4 result in increased flow releases from Don Pedro Reservoir that would increase flows in
5 the San Joaquin River downstream from its confluence with Tuolumne River, and thus,
6 could affect flow conditions within the San Joaquin River during WY 2012. In such an
7 event, the Reclamation would work with the fish agencies to evaluate resulting changes
8 in flows to ensure that listed species are not adversely affected by the Proposed Action.
9 The most recent flow schedule for 2010-2011 is available at
10 http://tuolumnerivertac.com/FERC%20FLows_2010_2011.pdf.

11
12 Specific flow conditions that are being addressed and could change as a result of a FERC
13 decision include:

- 14
- 15 • Spawning flow – October 1 to March 31
- 16 • Attraction pulse flows - Fall
- 17 • Outmigration flows - Spring
- 18 • Oversummering flow - June 1 through September 30

19 The November 20,2009 Final Report of the Presiding Judge on Interim Measures
20 recommends additional studies to determine the effects of increased stream flow releases
21 and other modifications of operations on the viability of fall-run Chinook salmon and
22 steelhead populations in the lower Tuolumne River.
23

1 **3.0 Affected Environment and** 2 **Environmental Consequences**

3 Detailed descriptions of the physical environment and existing conditions that could be
4 affected by the Proposed Action, as well as the environmental consequences resulting
5 from implementation of the Proposed Action or the No-Action Alternative consistent
6 with NEPA and CEQA Guidelines are included in Sections 3 and 4, respectively, of the
7 Final EA/IS for the WY 2010 Interim Flows Project (Appendix A). The following
8 sections summarize the changes to the affected environment and environmental
9 consequences analyses considered in the Final EA/IS for the WY 2010 Interim Flows
10 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
11 Project that would potentially result from implementation of the WY 2012 Interim Flows.
12 Although this document is a Supplemental EA for the purposes of complying with
13 NEPA, CEQA-related language and impact determinations are included in this section for
14 consistency with the Final EA/IS for the WY 2010 and WY 2011 Interim Flows Projects
15 and to allow direct reference and comparison between the documents.

16 **3.1 Changes to the Affected Environment**

17 The study area (discussed in Section 1) is broadly defined to evaluate potential
18 environmental effects of the Proposed Action. The geographic areas where effects may
19 occur differ according to resource category; therefore, resource-specific descriptions of
20 the affected environment are generally prepared to support the environmental
21 consequences analyses. For implementation of the Interim Flows Project in WY 2012,
22 the affected environment descriptions would not vary substantially from those presented
23 in the WY 2010 Final EA/IS. Table 3-1 summarizes the changes, if any, to the resource-
24 specific affected environment descriptions presented in the Final EA/IS for the WY 2010
25 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011
26 Interim Flows Project.

**Table 3-1.
Summary of Changes to the Affected Environment and Environmental Consequences Analyses
from the WY 2010 Final EA/IS**

Resource Topic	Changes to Affected Environment	Environmental Consequences Analysis
Aesthetics	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project . The vividness, intactness, and unity of the three geographic subareas considered in the WY 2010 Final EA/IS remains the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the WY Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to aesthetics.
Agricultural Resources	There are no changes to the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project.	Recaptured water available for transfer to Friant Division long-term contractors would range from zero to the quantity of water under Interim Flows that reaches the Mendota Pool and would vary based upon the water year type. Although recapture opportunities could be constrained during some times under certain hydrologic conditions, it is unlikely that this limitation would result in conversion of agricultural lands to non-agricultural uses. Therefore, as discussed below and for the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, impacts to Agricultural Resources are less than significant.
Air Quality	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The existing air quality conditions in the area, determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing sources, considered in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project remains the same. Additionally, the ambient air quality conditions and existing sensitive receptors remain unchanged.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the continuation of the Interim Flows through WY 2012 would result in less than significant impacts to air quality.

Table 3-1. *continued*

Resource Topic	Changes to Affected Environment	Environmental Consequences Analysis
Biological Resources – Terrestrial Resources	Implementation of the Reasonable and Prudent Measures (RPMs) from the USFWS Biological Opinion issued for WY 2011 Interim Flows are being implemented. This does not substantively change the affected environment from those conditions considered in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. See Section 3.1.1 for additional details.	Environmental impacts to terrestrial species will not change. For the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action would not result in significant impacts to terrestrial resources (including listed, special-status, native, or migratory wildlife species) or their habitats. See Section 3.2.2 below for additional details and analysis.
Biological Resources – Fish	The project is the same as that assessed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, which includes all actions identified for Interim Flows in Exhibit B of the Settlement hydrographs. However, WY 2010 and WY 2011 included a time from mid-November to January 31 that would not include releases of Interim Flows. For WY 2012, a 350 cfs release would be made, consistent with channel limitations and downstream constraints, during this time frame. See Section 3.1.2 for additional details.	As Hills Ferry Barrier is removed in mid-December and VAMP or VAMP-like tributary flows begin on March 15, there may be an impact to Central Valley steelhead as a result of possible straying. This 350 cfs flow would be within hydrologic conditions previously described for 350 cfs base flows from October 1 to October 31, February 1 to February 28, and July 1 through September 30 and as analyzed for WY 2010 and 2011 Interim Flows. However, Reclamation would implement the Steelhead Monitoring Plan from December 1 through March 15, which calls for several options, alone or in combination, to collect, transport, and document potential strays. With the implementation of the Steelhead Monitoring Plan and with coordination/consultation with NMFS, there would be no significant impacts to Central Valley steelhead as a result of the Proposed Action. See Section 3.2.2 below for additional details and analysis.
Cultural Resources	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The prehistoric and historic-era archaeological sites, Traditional Cultural Properties, Sites of Religious and Cultural Significance, architectural properties (e.g., buildings, bridges, and structures), and/or historic properties (as defined by the National Historic Preservation Act) remains the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to cultural resources.

Table 3-1. *continued*

Resource Topic	Changes to Affected Environment	Environmental Consequences Analysis
Geology and Soils	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The geology and seismicity, land subsidence, and salt conditions considered by geologic provinces, physiographic regions, and other large-scale areas in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same reasons as described in these documents, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to geology and soils.
Hazards and Hazardous Materials	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The hazards and hazardous material existing conditions considered by anthropogenic hazards, West Nile virus (WNV), Valley Fever, school safety, oil and gas wells, wildland fire, and aircraft safety, remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same reasons as described, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to hazards and hazardous materials.
Hydrology and Water Quality	Additional information has been provided on flow schedules, consistent with Exhibit B of the Settlement, which includes the release of Interim Flows between November 11, 2011 and January 31, 2012. This could result in minor changes to the affected environment for Hydrology and Water Quality from the conditions considered in the WY Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. See Section 3.1.3 for additional details.	WY 2012 Interim Flows would involve 350 cfs releases from Friant Dam between November 11, 2011 and January 31, 2012. This is consistent with Exhibit B of the Settlement and would not result in new or more severe impacts from those analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The release scheduled from November 11 through February 1 would be limited to 350 cfs and would be constrained to the same impact assessment as flows between October 1 and October 31, February 1 and February 28, and July 1 through September 30 in WY 2010 and 2011 Interim Flows. As discussed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action would not result in substantial alteration to hydrology and water quality conditions in the Restoration Area. Therefore, the Proposed Action would result in less than significant impacts to Hydrology and Water Quality. See Section 3.2.2 below for additional details and analysis.

Table 3-1. *continued*

Resource Topic	Changes to Affected Environment	Environmental Consequences Analysis
Land Use and Planning	There are no changes in the affected environment from those considered in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The Land Use and Planning conditions (included with Agricultural Resources description) remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to land use and planning.
Mineral Resources	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The mineral resource characteristics of the region remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, the continuation of the Interim Flows through WY 2012 would result in no impacts to mineral resources.
Noise	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The existing noise and vibration conditions in and surrounding the Restoration Area and in the San Joaquin River from Merced to the Delta remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to noise.
Population and Housing	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The population and housing trends for the three-county Restoration Area and the five-county Friant Division Water Contractors Service Areas (Friant Division Service Area) remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, the continuation of the Interim Flows through WY 2012 would result in no impacts to population and housing.

Table 3-1. *continued*

Resource Topic	Changes to Affected Environment	Environmental Consequences Analysis
Public Services	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The utilities and public service systems within the Restoration Area, including fire protection services, law enforcement services, and emergency services, as well as utilities and public service systems addressed to some degree in other resource section affected environments remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to public services.
Recreation	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The recreation facilities, activities, and opportunities remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to recreation.
Transportation/Traffic	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The transportation, traffic, and infrastructure (e.g., roadway, railroad, and utility crossings) conditions remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to transportation and traffic.
Utilities and Service Systems	There are no changes in the affected environment from those described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. The Utilities and Service Systems (included with the Public Services description) remain the same.	Implementation of the Proposed Action or the No-Action Alternative would not result in any new significant effects or substantial increase in the severity of effects previously analyzed in Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project. Therefore the continuation of the Interim Flows through WY 2012 would result in no impacts or less than significant impacts to utilities and service systems.

1 **3.1.1 Biological Resources – Terrestrial Resources**

2 The Biological Opinion (BO) issued by USFWS for the WY 2011 Interim Flows Project
3 issues forth Reasonable and Prudent Measures (RPMs) for BNLL that could occur in the
4 Eastside and Mariposa Bypasses. Because inundation occurs seasonally and has varied in
5 magnitude between years, BNLL could have been present in areas that would be
6 inundated by Interim Flows in normal years. However, because the baseline conditions
7 from WY 2011 to WY 2012 vary greatly - WY 2011 baseline conditions consisted of
8 generally low-flow conditions and a relatively dry channel, whereas baseline conditions
9 for WY 2012 consist of coming off the end of a large flood release of up to 7,500 cfs out
10 of Friant Dam - then it is unlikely that individuals from existing populations outside of
11 the levees moved into the Eastside Bypass channel this year.

12 **3.1.2 Biological Resources – Fish**

13 WY 2012 Interim Flows will continue from October 1, 2011 through September 30,
14 2012, consistent with the Exhibit B Settlement hydrographs and in coordination with
15 downstream limitations and channel capacity constraints. This would include a 350 cfs
16 flow release from Friant Dam from November 11, 2011 through January 31, 2012. Hills
17 Ferry Barrier is scheduled to be removed in mid-December 2011. It is estimated that
18 VAMP-like flows will occur in the lower San Joaquin River tributaries from March 15,
19 2012 through April 30, 2012. As a result, the critical timing for Central Valley steelhead
20 in relation to possible straying in the San Joaquin River could occur between mid-
21 December of 2011 through March 15, 2012. Reclamation will adapt the Steelhead
22 Monitoring Plan for this timeframe and will monitor Central Valley steelhead that could
23 make it past the Merced River confluence. This plan includes several options, including
24 electrofishing at partial barriers and false upstream migration pathways, utilization of
25 large fyke traps, or the use of weirs below false attraction locations and structures to
26 detect, trap, and relocate Central Valley steelhead. Each year, the California Department
27 of Fish and Game (DFG) obtains 4(d) permit coverage for their operations at Hills Ferry
28 Barrier. Reclamation will coordinate with DFG for the implementation of monitoring
29 activities. Reclamation would coordinate with NMFS prior to the implementation of the
30 Steelhead Monitoring Plan and in the event that steelhead are detected in the Restoration
31 Area.

32 **3.1.3 Hydrology and Water Quality**

33 WY 2012 Interim Flows will include flows released from Friant Dam between October 1,
34 2011 and September 30, 2012. This will include flows, as defined by the Exhibit B
35 Settlement hydrographs and as constrained by downstream capacity and seepage
36 limitations. Interim Flows releases, assuming a wet water year type, starting on October
37 1, 2011 will be 350 cfs and will continue until October 31, 2011. On November 1, 2011,
38 flows will increase to 700 cfs and will last until November 10, 2011. On November 11,
39 2011, flows will decrease to 350 cfs and will continue through February 28, 2012. On
40 March 1, 2012, flows will increase to 500 cfs, will increase again to 1,500 cfs on March
41 16, 2012, then increase again to 1,620 cfs from April 1, 2012, and reach a maximum flow
42 of 1,660 cfs on May 1, 2012. Flows will decrease on July 1, 2012 to 350 cfs and remain
43 at this level through September 30, 2012. These flows would be subject to flexible flow
44 provisions and other ramping and flow schedule revisions, as recommended by the RA.

1 The WY 2012 ramping rate and stable flow durations will depend on RA
2 recommendations and real-time flow management decisions based on the available
3 monitoring information.

4
5 The flow schedule presented for WY 2012 Interim Flows is different than WY 2010 and
6 2011 because a 350 cfs flow from November 11 through January 31 is presented. For
7 WY 2010 and 2011 there was no scheduled Interim Flow release for this period. The
8 Interim Flow release during this time frame is consistent with Exhibit B of the Settlement
9 hydrograph and would provide important additional information related to temperature,
10 flows, sediment mobility, and water quality.

11 **3.2 Environmental Consequences Analysis**

12 This section presents the environmental consequences and analysis of cumulative effects
13 potentially resulting from implementation of the Proposed Action. Because the No-
14 Action Alternative has not changed from the conditions described in the WY 2010 Final
15 EA/IS, the analysis of the potential impacts associated with the No-Action Alternative for
16 each resource area remains unchanged and is not repeated here.

17
18 The following sections summarize information and findings from the Final EA/IS for the
19 WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY
20 2011 Interim Flows Project relevant to implementation of the Proposed Action. Section
21 3.2.1 includes a discussion of the resource topics that would not result in any new
22 significant effects or substantial increase in the severity of effects previously analyzed in
23 the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
24 Supplemental EAs for the WY 2011 Interim Flows Project. Section 3.2.2 describes those
25 resource topics potentially affected by new information provided here for the WY 2012
26 Interim Flows Project and describes any changes in significance determinations from
27 those presented in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft
28 and Final Supplemental EAs for the WY 2011 Interim Flows Project.

29 **3.2.1 Resource Topics Not Requiring Further Evaluation**

30 The environmental consequences analyses and impact determinations for the Proposed
31 Action from the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
32 Final Supplemental EAs for the WY 2011 Interim Flows Project were reviewed with the
33 current/new available information described above in Section 2. Based upon this review,
34 it was determined that the following resource topics would not result in any new or more
35 significant effects due to implementation of a second year of Interim Flows during WY
36 2012.

37 ***Aesthetics***

38 Although the Proposed Action could result in changes to the visual setting, for the same
39 reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the
40 Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the
41 continuation of the Interim Flows through WY 2012 would not have a substantial effect
42 on a scenic vista, not substantially damage scenic resources, not substantially degrade the

1 existing visual character or quality of Millerton Lake, the Restoration Area, the San
2 Joaquin River below the Merced River confluence to the Delta, or their surroundings, or
3 create a new source of substantial light or glare. Therefore, impacts to Aesthetics are less
4 than significant.

5 ***Air Quality***

6 Although the Interim Flows Project emissions would not exceed SJVAPCD thresholds,
7 ground-clearing activities using large mechanical equipment for vegetation removal
8 could result in emissions of PM₁₀ and PM_{2.5} and, thus, these activities would be subject to
9 SJVAPCD Regulation VIII: Fugitive PM₁₀ Prohibitions. However, for the same reasons
10 as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
11 Final Supplemental EAs for the WY 2011 Interim Flows Project and as adopted for this
12 Supplemental EA, the Proposed Action includes implementing measures necessary to
13 comply with SJVAPCD Regulation VIII: Fugitive PM₁₀ Prohibitions; therefore, project-
14 generated operational emissions would not conflict with or obstruct implementation of an
15 applicable air quality plan, violate an air quality standard, contribute substantially to an
16 existing or projected air quality violation, or result in a cumulatively considerable net
17 increase of any criteria pollutant for which the Proposed Action region is nonattainment
18 under an applicable Federal or State ambient air quality standard. For the same reasons
19 as described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
20 Final Supplemental EAs for the WY 2011 Interim Flows Project, there would be less than
21 significant impacts to Air Quality.

22 ***Cultural Resources***

23 Although some ground-disturbing activities and operational changes (e.g., timing and
24 magnitude of reservoir elevation fluctuations; magnitude and duration of flows) could
25 occur, for the same reasons as described in the Final EA/IS for the WY 2010 Interim
26 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
27 Project, the Proposed Action would not cause a substantial adverse change in the
28 significance of a historical or archeological resource, not directly or indirectly destroy a
29 unique paleontological resource/site or geologic feature, or likely disturb any human
30 remains. Therefore, impacts to Cultural Resources are less than significant.

31 ***Geology and Soils***

32 For the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows
33 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
34 Project, the Proposed Action would not involve conditions that could result in seismic
35 activity or related ground failure or landslides. Although the Proposed Action would
36 alter the timing and magnitude of reservoir elevation fluctuations and magnitude and
37 duration of instream flows, for the reasons as described in the Final EA/IS for the WY
38 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011
39 Interim Flows Project, potential changes to downstream stream erosion characteristics
40 and localized changes in downstream geomorphologic characteristics would be less than
41 significant. Additionally, the Proposed Action would not increase the risk of landslides,
42 lateral spreading, liquefaction, or collapse, would not increase risks to life or property due
43 to the presence of expansive soils within the region, and would not involve temporary or

1 long-term installation or use of wastewater disposal systems. Therefore, impacts to
2 Geology and Soils are less than significant.

3 ***Hazards and Hazardous Materials***

4 Although the Proposed Action could involve application of herbicidal chemicals to
5 control and manage nonnative invasive plant species, for the same reasons as described in
6 the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
7 Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action would
8 not create a significant hazard to the public or the environment. Therefore, Hazards and
9 Hazardous Materials impacts would be less than significant.

10 ***Land Use and Planning***

11 For the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows
12 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
13 Project, implementation of the Proposed Action involves release of Interim Flows, which
14 could temporarily disrupt local circulation through the inundation of local roads.
15 However, for the same reasons as described in the Final EA/IS for the WY 2010 Interim
16 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
17 Project and as adopted for this Supplemental EA, the Proposed Action includes
18 preparation and implementation of a detour plan. Therefore, for the same reasons as
19 described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
20 Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action
21 would not physically divide and established community, not conflict with any applicable
22 land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an
23 environmental effect, and not conflict with any applicable habitat conservation plan or
24 natural community conservation plan. Implementation of the Proposed Action would
25 have less than significant impacts to Land Use and Planning.

26 ***Mineral Resources***

27 Implementation of the Proposed Action would not result in the loss of availability of
28 known resources that would be of value to the region or the residents of the state, and
29 would not result in the loss of availability of a locally important mineral resource
30 recovery site. Therefore, for the same reasons as described in the Final EA/IS for the
31 WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY
32 2011 Interim Flows Project, there would be no impacts to Mineral Resources.

33 ***Noise***

34 Although the Proposed Action does not involve any construction-related activities, it does
35 involve plant survey and removal activities involving some mechanical equipment.
36 However, for the same reasons as described in the Final EA/IS for the WY 2010 Interim
37 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
38 Project, the noise-related impacts due to these activities would be temporary in nature and
39 would not result in the exposure of persons to or generation of noise levels in excess of
40 applicable standards, exposure of persons to or generation of excessive groundborne
41 vibration or groundborne noise levels, a substantial permanent increase in ambient noise
42 levels, or a substantial temporary or periodic increase in ambient noise levels.
43 Additionally, the Proposed Action would not be located within an airport land use plan or

1 in the vicinity of a private airstrip where people residing or working in the project area
2 could be exposed to excessive noise levels. Therefore, for the same reasons as described
3 in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
4 Supplemental EAs for the WY 2011 Interim Flows Project, there would be less than
5 significant impacts to Noise.

6 ***Population and Housing***

7 Implementation of the Proposed Action would not directly or indirectly induce
8 substantial population growth in an area, displace substantial numbers of existing homes
9 or people. Therefore, for the same reasons as described in the Final EA/IS for the WY
10 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011
11 Interim Flows Project, there would be no impacts to Population and Housing.

12 ***Public Services***

13 For the same reasons as described in the Final EA/IS for the WY 2010 Interim Flows
14 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
15 Project, the Proposed Action has the potential to increase recreational opportunities on
16 the San Joaquin River from Friant Dam downstream to the Delta, which could result in
17 slightly increased demand on emergency services (e.g., fire and police protection) and
18 parks and related public facilities. However, for the same reasons as described in the
19 Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
20 Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action would
21 not result in substantial adverse physical impacts associated with the provision of new or
22 physically altered governmental facilities, or the need for new or physically altered
23 governmental facilities in order to maintain acceptable service ratios, response times, or
24 other performance objectives for the public services of fire protection, police protection,
25 schools, parks, or other public facilities. Therefore, the Proposed Action would result in
26 less than significant impacts on Public Services.

27 ***Recreation***

28 Implementation of the Proposed Action has the potential to increase some recreational
29 opportunities (e.g., boating and fishing) on the San Joaquin River from Friant Dam
30 downstream to the Delta; however, uninformed recreationalists (e.g., boaters, swimmers,
31 waders, anglers, and hunters) could be affected by increased spring and early summer
32 flows in the San Joaquin River. For the same reasons as described in the Final EA/IS for
33 the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the
34 WY 2011 Interim Flows Project and as adopted for this Supplemental EA, the Proposed
35 Action includes implementation of a Recreation Outreach Program. The purpose of the
36 Recreation Outreach Program is to inform recreating public, as well as agencies and
37 organizations that serve the recreating public, of changes in river flows that would occur
38 as a result of the Proposed Action, and of the potential effects associated with those
39 changes, including recreational boating, swimming/wading, and fishing hazards.
40 Therefore, for the same reasons as discussed in the Final EA/IS for the WY 2010 Interim
41 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
42 Project, the Proposed Action would not result in an increase in the use of existing
43 neighborhood and regional parks or other recreational facilities such that substantial
44 physical deterioration of the facility would occur or be accelerated, and would not include

1 construction or expansion of recreational facilities. Impacts to Recreation would be less
2 than significant.

3 ***Transportation/Traffic***

4 Implementation of the Proposed Action has the potential to increase recreational
5 opportunities on the San Joaquin River from Friant Dam downstream to the Delta, which
6 could result in slightly increased traffic. Additionally, for the same reasons as described
7 in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
8 Supplemental EAs for the WY 2011 Interim Flows Project, implementation of the
9 Proposed Action involves release of Interim Flows, which could temporarily disrupt local
10 circulation through the inundation of local roads. However, for the same reasons as
11 described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
12 Final Supplemental EAs for the WY 2011 Interim Flows Project and as adopted for this
13 Supplemental EA, the Proposed Action includes preparation and implementation of a
14 detour plan. Therefore, for the same reasons as discussed in the Final EA/IS for the WY
15 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY 2011
16 Interim Flows Project, the Proposed Action would not cause an increase in traffic which
17 is substantial in relation to the existing traffic load and capacity of the street system,
18 exceed, either individually or cumulatively, a level of service standard, result in a change
19 in air traffic patterns, substantially increase hazards due to a design feature or
20 incompatible uses, result in inadequate emergency access, result in inadequate parking, or
21 conflict with adopted policies, plans, or programs supporting alternative transportation.
22 Implementation of the Proposed Action would have less than significant impacts to
23 Transportation/Traffic.

24 ***Utilities and Service Systems***

25 Because the Proposed Action does not involve generation or treatment of wastewater or
26 solid waste, demands for related facilities would not increase. Therefore, for the same
27 reasons as discussed in the Final EA/IS for the WY 2010 Interim Flows Project and the
28 Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed
29 Action would not result in impacts to Utilities and Service Systems. Although the
30 Proposed Action would involve reoperation of Friant Dam, and therefore change the
31 distribution of water supplies (e.g., recapture and recirculation), the Proposed Action
32 would not increase demand on water supplies or require new or expanded entitlements.
33 Therefore, Utilities and Service System impacts would be less than significant.

34 **3.2.2 Resource Topics Potentially Affected by the Proposed Action**

35 The environmental consequences analyses and impact determinations from the Final
36 EA/IS for the WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs
37 for the WY 2011 Interim Flows Project were reviewed with the current/new available
38 information described above in Section 2. Based upon review of the Final EA/IS for the
39 WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY
40 2011 Interim Flows Project, it was determined that the following resource topics could
41 potentially result in changed effects (e.g., environmental consequences) due to
42 implementation of Interim Flows during WY 2012. A discussion of the project elements
43 with the potential to result in changed environmental conditions is provided as they relate

1 to specific resource topics. Additionally, a discussion of the potential cumulative effects
2 by resource topics is also included.

3 ***Biological Resources – Terrestrial Species***

4 The BNLL is associated with alkali scrub habitat or other sparsely vegetated habitats with
5 sandy soils. BNLLs use the burrows of small rodents for shelter, predator avoidance, and
6 behavioral thermoregulation. They are not expected to be found in riverine or riparian
7 habitats in the Proposed Action area, but could be found in portions of the Eastside and
8 Mariposa bypasses.

9
10 The Eastside and Mariposa bypasses cut through upland habitats that could provide
11 suitable habitat for BNLL. They are known to occur adjacent to the Eastside Bypass on
12 the Merced NWR (CNDDDB 2010). BNLL surveys conducted by California State
13 University's Endangered Species Recovery Program in 2009 and by the California
14 Department of Water Resources in 2010 during the active season for BNLL did not result
15 in the findings of any BNLL in accessible lands within and adjacent to the Eastside and
16 Mariposa Bypasses.

17
18 The Eastside and Mariposa bypasses are periodically inundated by flood flows, which
19 likely reduce the suitability of habitat for BNLL within these areas. WY 2010 Interim
20 Flows inundated comparable areas of the bypass when flows entering Reach 4 were about
21 700 cfs. Further, non-SJRRP flood releases up to 7,500 cfs from Friant Dam occurred in
22 WY 2011, which included large flow releases to the Eastside and Mariposa Bypasses. If
23 BNLL were present within these facilities before or during flood releases, it is likely the
24 species would have migrated out of the channel or had burrows inundated by water. The
25 flood releases were made starting on March 21, 2011 and are still continuing as of the
26 release of this document (June 2011). Flood releases have the potential to continue into
27 late June or July of 2011 and would take 2-3 weeks to evacuate out of the system.
28 Another factor that may also continue to inundate the bypass channels into the summer
29 could be tributary inflows into the San Joaquin River which may continue flows down the
30 bypasses for a later period of time. As BNLL are typically most active between April 15
31 and July 15, this would have the potential to decrease the probability of their presence in
32 the Eastside and Mariposa Bypasses for WY 2012 as the species would need to move in
33 from another location and would not currently be present in areas of inundated potential
34 BNLL habitat. Therefore, the potential for presence of BNLL in the Eastside Bypass for
35 WY 2012 Interim Flows is unlikely and greatly reduced as a result of the non-
36 discretionary release of flood flows.

37 ***Biological Resources – Fish***

38 Implementing the WY 2012 Interim Flows Project would increase flows in the section of
39 the San Joaquin River from Friant Dam to the Delta. Segments of the San Joaquin River
40 upstream from the Merced River were often dry prior to WY 2010 Interim Flows. The
41 WY 2012 Interim Flows would occur from October 1, 2011 through September 30, 2012.
42

43 Increased flows in the San Joaquin River downstream from the Merced River confluence
44 should improve overall conditions for migrating adult and juvenile steelhead with the

1 potential to improve water quality, and provide slightly higher water velocities. Improved
2 conditions would likely reduce or prevent migration delays by both adults and juveniles.

3
4 It is not anticipated that WY 2012 Interim Flows would affect the migratory behavior of
5 steelhead. Historic streamflow conditions upstream from the Merced River confluence
6 during the spring averaged 119 cfs to 13,050 cfs, with peak flows reaching 59,000 cfs in
7 1997 under flood conditions. During nonflood conditions in WY 2012, Interim Flows
8 could increase flows by an average of up to 220 cfs at this location beginning on
9 February 1, 2012. The average annual flows under the Proposed Action are within 7
10 percent of the average flow expected at this time and location under existing conditions.
11 This small increase is not anticipated to trigger any change to Central Valley steelhead
12 migration patterns in the San Joaquin River basin. Also, WY 2012 Interim Flows would
13 not be released if natural flows approach channel capacity.

14
15 Increased flows upstream from the Merced River confluence may potentially trigger adult
16 Central Valley steelhead, primarily those migrating toward the Merced River, to stray
17 into the San Joaquin River upstream from the confluence. Straying could reduce the
18 Merced River population. However, the Hills Ferry Barrier operations would continue in
19 fall (during the WY 2012 Interim Flows) to prevent the unwanted upstream migration of
20 Central Valley steelhead just past the Merced River confluence during mid-September
21 through early December, when the barrier is operational. Reclamation would implement
22 the Steelhead Monitoring Plan (see Appendix D) and revise the monitoring dates in the
23 plan to correspond to the date that Hills Ferry Barrier is removed (mid-December) to the
24 estimated time VAMP-like flows would begin (March 15).

25
26 The Hills Ferry Barrier is a type of resistance weir commonly used to exclude and/or trap
27 anadromous fish in rivers. This barrier consists of panels aligned perpendicular to the
28 flow of the river with evenly spaced pipes that allow water, small fish, and particles to
29 pass but prevent larger anadromous fish such as Chinook salmon from passing upstream.
30 Operated by DFG since 1992, the Hills Ferry Barrier is typically installed in mid-
31 September and operated until it is removed in early December. DFG currently operates
32 the Hills Ferry Barrier near the town of Newman, approximately 300 feet upstream from
33 the confluence with the Merced River (in Reach 5).

34
35 The barrier's main purpose is to redirect upstream-migrating adult fall-run Chinook
36 salmon into suitable spawning habitat in the Merced River and prevent migration into the
37 mainstem San Joaquin River upstream, where conditions are currently unsuitable for
38 Chinook salmon. Central Valley steelhead migrate during fall and winter in a manner
39 similar to migration by fall-run Chinook salmon, and they have a similar body type;
40 therefore, maintenance of the Hills Ferry Barrier would continue for the purpose of
41 redirecting Chinook salmon during the fall WY 2012 Interim Flow period, through
42 December 1, 2011, when the barrier is removed. The barrier is expected to be equally
43 effective in redirecting any Central Valley steelhead.

44
45 NMFS permits the take of Federally listed threatened species for rescue and salvage by
46 various State and nongovernmental agencies through the ESA Section 10a(1)A and 4(d)

1 rules. In the unlikely event that ESA-listed anadromous fish, including Central Valley
2 steelhead, stray into San Joaquin River reaches above the Merced River, these fish could
3 be salvaged under these authorities. Additionally, DFG applies annually for an ESA
4 Section 4(d) research permit and accompanying take limit for Central Valley steelhead
5 from NMFS for operation of the Hills Ferry Barrier, which includes the release of any
6 captured steelhead below the barrier. If Central Valley steelhead are encountered at or
7 above the Hills Ferry Barrier during fall WY 2012 Interim Flows, the Central Valley
8 steelhead would be released downstream in suitable reaches, as would be required by
9 permit. Salvaged fish will likely have genetic samples (i.e., fin clips) taken. Such
10 recovery would be conducted under and consistent with DFG's ESA Section 4(d)
11 research permit. An ESA Section 4(d) research permit application for the 2012 operation
12 of Hills Ferry Barrier will be submitted to NMFS by DFG. The 4(d) coverage from
13 October 1, 2011 through December 31, 2011 would be covered under an existing permit.
14 In October 2011, an application for a new permit that covers actions starting on January
15 1, 2012 will be sent to NMFS for review.

16
17 The Proposed Action includes implementation of the Steelhead Monitoring Plan that was
18 developed by the Fisheries Management Workgroup in February 2011 (Appendix D) to
19 check for Central Valley steelhead in the Restoration Area during spring Interim Flows.
20 WY 2012 Interim Flows will continue from October 1 through September 30, 2012,
21 consistent with the Exhibit B Settlement hydrographs. Hills Ferry Barrier is scheduled to
22 be removed in mid-December of 2011. It is estimated that a VAMP-like flow will occur
23 in the lower San Joaquin River tributaries from March 15th through April 30th. As a
24 result, the critical timing for Central Valley steelhead monitoring within the Restoration
25 Area would occur from mid-December through March 15th, as it is anticipated that
26 steelhead would be attracted to tributary flows in the lower reaches. Reclamation will
27 coordinate with the appropriate agencies to implement this plan and report results. The
28 Steelhead Monitoring Plan calls for the implementation of up to three options to monitor
29 for steelhead that could make it past Hills Ferry Barrier. The first option calls for the
30 utilization of electrofishing at partial barriers and false upstream migration pathways such
31 as Mud Slough, Salt Slough, Newman Wasteway, and drop structures at the mouth of the
32 Eastside Bypass, Mariposa Bypass, and Sand Slough control structure. The second
33 option would utilize large fyke trap(s) above the Merced River confluence and below
34 false attraction and entrainment points. The third option would involve the use of weirs,
35 with or without traps at false attraction locations and existing structures to detect, trap,
36 and relocate Central Valley steelhead. The three options presented here may be used
37 singularly or in combination, depending on physical river conditions and in coordination
38 with NMFS and the SJRRP Fisheries Management Workgroup. All captured Central
39 Valley steelhead would be tagged and transported downstream of the mouth of the
40 Merced River in transport tanks. In the event a steelhead is encountered in the
41 Restoration Area, NMFS will be notified immediately.

42
43 In the absence of a monitoring plan and management plan, the impacts to Central Valley
44 steelhead may result in potential straying during the time when steelhead would be
45 migrating. However, because of measures adopted to prevent straying of Merced River
46 adult steelhead into the San Joaquin River upstream from the confluence, implementing

1 the WY 2012 Interim Flows would not result in significant impacts to Central Valley
2 steelhead. The Proposed Action would not exacerbate straying conditions for steelhead
3 during that period as the 350 cfs base flow from mid-December 2011 to January 31, 2012
4 would be within hydrologic conditions previously described for 350 cfs base flows from
5 October 1 to October 31, February 1 to February 28, and July 1 through September 30
6 and as analyzed for WY 2010 and 2011 Interim Flows.

7 Reclamation will coordinate with NMFS and USFWS to ensure that impacts to listed
8 species will be avoided or minimized. This will be accomplished by providing and
9 discussing streamflow, including the contribution of Interim Flows to that metric, and
10 water quality data summaries. During periods when WY 2012 Interim Flows pass the
11 confluence of the Merced River, Reclamation will hold weekly conference calls with
12 NMFS and USFWS to discuss monitoring results and identify any potential impacts that
13 could require changes in Interim Flows.

14 Recapture of Interim Flows will only occur in compliance with regulatory requirements,
15 including the NMFS and USFWS Operations BOs, or the requirements in place at the
16 time of recapture. Additionally, no diversion of Interim Flows into unscreened facilities
17 downstream of the Restoration Area will occur.

18 In the event that WY 2012 Interim Flows are anticipated to cause impacts that are greater
19 than analyzed, in consultation with the fishery agencies, Reclamation will work with the
20 agencies to modify WY 2012 Interim Flow releases as needed to avoid or minimize
21 impacts. Possible modifications include reducing flow releases, upstream diversions of
22 flows to avoid downstream impacts, or constraining flows to the upper San Joaquin River
23 (upstream of the confluence with the Merced River). This coordination between the
24 agencies and Reclamation's commitment to modify flows based on real time conditions
25 would ensure that the impacts of the WY 2012 Interim Flows would be less than
26 significant.

27 The Proposed Action is not expected to result in any measureable changes later in time to
28 water levels, riparian vegetation, or other habitat conditions for listed species.
29 Because WY 2012 Interim Flows would be confined within the existing channel, would
30 not increase flood flow levels, would last for only a single year, and would fall within the
31 range of and be timed to be similar to historical flows, implementation of Interim Flows
32 in WY 2012 would not result in adverse changes in conditions affecting fish species or
33 their habitats in the Restoration Area, and would not result in cumulative effects.
34 Therefore, for the same reasons as described in the Final EA/IS for the WY 2010 Interim
35 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
36 Project, the Proposed Action would not result in substantial adverse effects to fish
37 resources (including listed, special-status, native, or migratory fish species) or their
38 habitats. Implementation of the Proposed Action would result in less than significant
39 impacts to Fish Biological Resources.

40 ***Hydrology and Water Quality***

41 The flow schedule presented for WY 2012 Interim Flows is different that WY 2010 and
42 2011 because a 350 cfs flow release from Friant Dam will occur from November 11,

1 2011 through January 31, 2012. For WY 2010 and 2011 there was no scheduled Interim
2 Flow release for this period. The Interim Flow release during this time frame is consistent
3 with Exhibit B of the Settlement hydrograph and would provide important additional
4 information related to temperature, flows, sediment mobility, and water quality. Flows
5 releases made from November 11, 2011 through January 31, 2012 would be the same as
6 350 cfs “base flow” releases during other times of the year during WY 2010 and 2011
7 Interim Flows. The impacts associated with this change are not a significant adverse
8 impact as this would be the same flow regime that was scheduled to occur from October
9 1 through October 31, February 1 through February 28, and July 1 through September 30
10 during the WY 2010 and 2011 Interim Flows Projects.

11
12 Flow releases during this time frame would be limited to 350 cfs and would continue to
13 be constrained by downstream channel constraints such as capacity and seepage
14 concerns. The timing for this release does not have the potential to change the
15 environmental impacts discussed in the Final EA/IS for the WY 2010 Interim Flows
16 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
17 Project. Reclamation would continue to coordinate with landowners and stakeholders to
18 ensure that Interim Flows do not cause significant impacts. For the same reasons as
19 described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
20 Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed Action
21 would result in less than significant impacts to Hydrology and Water Quality.

22 **3.2.3 Mandatory Findings of Significance**

23 Although this document is a Supplemental EA under NEPA and does not require that
24 findings of significance be made, this section is included here for consistency with the
25 Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
26 Supplemental EAs for the WY 2011 Interim Flows Project. Under Section 15065(a) of
27 the CEQA Guidelines, a finding of significance is required if a project “has the potential
28 to substantially degrade the quality of the environment.” Section XVII of the CEQA
29 Checklist (Appendix G to the CEQA Guidelines [14 CCR secs. 15000-15387]) includes
30 the following questions related to Mandatory Findings of Significance:

- 31
32 a) **Does the project have the potential to substantially degrade the quality of the**
33 **environment, substantially reduce the habitat of a fish or wildlife species,**
34 **cause a fish or wildlife population to drop below self-sustaining levels,**
35 **threaten to eliminate a plant or animal community, reduce the number or**
36 **restrict the range of an endangered, rare, or threatened species, or eliminate**
37 **important examples of the major periods of California history or prehistory?**

38 As presented in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
39 Final Supplemental EAs for the WY 2011 Interim Flows Project and the resource
40 discussion above, implementing the Proposed Action would not substantially reduce the
41 habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-
42 sustaining levels, threaten to eliminate a plant or animal community, or reduce the
43 number or restrict the range of an endangered, rare, or threatened species. The Proposed
44 Action could cause a significant adverse effect by accelerating the spread of several
45 invasive plant species already present along the San Joaquin River, but this effect would

1 be less than significant with mitigation. Therefore, this impact would be less than
2 significant. The Proposed Action could cause a significant adverse impact to migrating
3 Central Valley steelhead between December 1, 2011 and March 15, 2012 due to false
4 attraction from flows. However, with the implementation of the Steelhead Monitoring
5 Plan, the impact would be less than significant. The release of WY 2012 Interim Flows
6 could result in the entombment of BNLL within the Eastside or Mariposa Bypasses.
7 With the implementation of the same RPMs required by the USFWS BO for WY 2011
8 Interim Flows, BNLL would be monitored and reported on and impacts to BNLL would
9 be less than significant.

10
11 **b) Does the project have impacts that are individually limited, but cumulatively**
12 **considerable? (“Cumulatively considerable” means that the incremental**
13 **effects of a project are considerable when viewed in connection with the**
14 **effects of past projects, the effects of other current projects, and the effects of**
15 **probable future projects.)**

16 CEQ regulations that implement NEPA provisions define “cumulative effects” as “the
17 impact on the environment which results from the incremental impact of the action when
18 added to other past, present, and reasonably foreseeable future actions regardless of what
19 agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR
20 1508.7). Cumulative effects can result from individually minor, but collectively
21 significant, actions over time, and can differ from indirect impacts (40 CFR 1508.8).
22 Cumulative effects are caused by the incremental increase in total environmental effects
23 when an evaluated project is added to other past, present, and reasonably foreseeable
24 future actions. Cumulative effects can thus arise from causes that are totally unrelated to
25 the project being evaluated, and the analysis of cumulative effects considers the life cycle
26 of the effects, not the project at issue. These effects can be either adverse or beneficial.
27 Cumulative impacts are defined in the State CEQA Guidelines (14 CCR Section 15355)
28 as “two or more individual effects which, when considered together, are considerable or
29 which compound or increase other environmental impacts.” A cumulative impact occurs
30 from “the change in the environment which results from the incremental impact of the
31 project when added to other closely related past, present, and reasonably foreseeable
32 probable future projects. Cumulative impacts can result from individually minor but
33 collectively significant projects taking place over a period of time” (14 CCR Section
34 15355(b)).

35
36 No past, current, or probable future projects were identified in the project vicinity that,
37 when added to project-related impacts, would result in a significant cumulative impact,
38 and that would be cumulatively considerable. Projects considered in the cumulative
39 analysis include: WY 2010 and 2011 Interim Flows Project, SJRRP, and the Friant-Kern
40 and Madera Canals Capacity Correction Project. Although land development activities
41 are occurring adjacent to the San Joaquin River, these activities would be conducted
42 outside of the river corridor and would not be affected by Interim Flow releases.
43 Implementation of releases during WY 2012 would not result in any net increase in water
44 allocations to federal or state water contractors such that no land-based cumulative effects
45 would be anticipated to occur.

46

1 Although the WY 2010 and 2011 Interim Flows Project and SJRRP are related to
2 implementation of the WY 2012 Interim Flows, they would not overlap with the
3 Proposed Action. As discussed in the Final EA/IS for the WY 2010 Interim Flows
4 Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
5 Project, the only potential for cumulative effects between the WY 2010 and 2011 (and
6 similarly, WY 2012) Interim Flows releases and the SJRRP PEIS/R would be Friant
7 Division water supplies. Under the WY 2012 Interim Flows, recirculation of recaptured
8 water to the Friant Division could require mutual agreements between Reclamation,
9 DWR, Friant Division long-term contractors, and other south-of-Delta CVP/SWP
10 contractors. Reclamation is working with the Friant Division long-term water contractors
11 to prepare a separate Environmental Assessment to determine possible mechanisms to
12 either exchange or deliver to the Friant Division long-term contractors recaptured water
13 stored in San Luis Reservoir. Potential reductions in the amount of water delivered to
14 agricultural users resulting from the ability to recapture water (e.g., if capacity in
15 CVP/SWP storage conveyance facilities is limited) could occur under the Proposed
16 Action. Although reductions in agricultural water deliveries are possible, occurrence of
17 delivery reductions under the Proposed Action would be reduced or avoided through
18 recapture, recirculation, and other means consistent with and as described in the
19 Settlement to limit adverse water supply impacts on the Friant Division long-term
20 contractors.

21
22 The SJRRP was developed to reduce resource conflicts and to aid in fish and wildlife
23 protection. Although the individual resource discussions consider the impacts of
24 implementing the WY 2012 Interim Flows (e.g., one year of Interim Flow releases), the
25 SJRRP PEIS/R will evaluate the program-level and cumulative effects of the future
26 potential implementation of the SJRRP, including the project-level and cumulative
27 effects of both Interim Flows and Restoration Flows.

28
29 Additionally, consideration of the potential cumulative effects of the WY 2010 and 2011
30 Interim Flows Project with Friant-Kern and Madera Canals Capacity Correction Project
31 was addressed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft
32 and Final Supplemental EAs for the WY 2011 Interim Flows Project. The continued
33 release of Interim Flows during WY 2012 would not overlap with the Friant-Kern and
34 Madera Canals Capacity Correction Project spatially or temporally. Because the Friant-
35 Kern and Madera Canals Capacity Correction Project would not be completed until after
36 the Proposed Action is implemented, and the Proposed Action would result in no net
37 change in Millerton Lake water storage, there would be no cumulative effects between
38 the Proposed Action and the Friant-Kern and Madera Canals Capacity Correction Project.
39 If permitting and environmental work for the Friant-Kern and Madera Canals Capacity
40 Correction Project were accelerated to include a construction and completion timeframe
41 that overlaps with WY 2012 Interim Flows, then the cumulative impacts of implementing
42 the canal project(s) with releases of WY 2012 Interim Flows at the same time would be
43 assessed in further environmental documentation.

44
45 Therefore, as discussed in Final EA/IS for the WY 2010 Interim Flows Project and the
46 Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project and as

1 described above, the Proposed Action would result in less than significant cumulative
2 effects.

3 **c) Does the project have environmental effects that will cause substantial**
4 **adverse effects on human beings, either directly or indirectly?**

5 As discussed in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
6 Final Supplemental EAs for the WY 2011 Interim Flows Project and discussed in this
7 Supplemental EA, no project-related environmental effects were identified that would
8 cause substantial adverse effects on human beings, either directly or indirectly. The
9 impact would be less than significant.

10 **3.2.4 Indian Trust Assets**

11 As described in the Final EA/IS for the WY 2010 Interim Flows Project and the Draft and
12 Final Supplemental EAs for the WY 2011 Interim Flows Project, the proposed Action
13 would not affect Indian Trust Assets.

14 **3.2.5 Socioeconomic Effects and Environmental Justice**

15 As described in the the Final EA/IS for the WY 2010 Interim Flows Project and the Draft
16 and Final Supplemental EAs for the WY 2011 Interim Flows Project, and as discussed
17 under the resource-specific discussions above, the proposed Action would have limited
18 socioeconomic effects and would not result in Environmental Justice effects (e.g.,
19 disproportionately burden minority groups, low-income populations, or Native American
20 Tribes).

21 **3.2.6 Mitigation Measures**

22 The following mitigation measures were implemented as part of the Final EA/IS for the
23 WY 2010 Interim Flows Project and the Draft and Final Supplemental EAs for the WY
24 2011 Interim Flows Project to avoid or minimize potential environmental impacts. These
25 mitigation measures also would be implemented during WY 2012 Interim Flow releases
26 to reduce the potential environmental impacts of the Proposed Action to less-than-
27 significant levels.

- 28 • **Mitigation Measure Bio-1: *Implement an Invasive Vegetation Management***
29 ***Plan.*** Reclamation shall monitor red sesbania, salt cedar, giant reed, Chinese
30 tallow, and sponge plant along affected portions of the San Joaquin River and
31 bypass system (before and after WY 2010 Interim Flows, and during WY 2012
32 Interim Flows) and control and manage these species as specified in the Invasive
33 Species Monitoring and Management Plan included as Appendix F of the WY
34 2010 Final EA/IS.

35 The Environmental Commitments described in the Final EA/IS for the WY 2010 Interim
36 Flows Project and the Draft and Final Supplemental EAs for the WY 2011 Interim Flows
37 Project and in Section 2 of this document will continue during implementation of the WY
38 2012 Interim Flows. Therefore, the Proposed Action would result in no new significant
39 impacts or a substantial increase in the severity of impacts previously analyzed in the the
40 Final EA/IS for the WY 2010 Interim Flows Project and the Draft and Final
41 Supplemental EAs for the WY 2011 Interim Flows Project. Therefore, for the same
42 reasons as described in the Final EA/IS for the WY 2010 Interim Flows Project and the

3.0 Affected Environment and Environmental Consequences

- 1 Draft and Final Supplemental EAs for the WY 2011 Interim Flows Project, the Proposed
- 2 Action would result in less than significant impacts with mitigation incorporated.
- 3

1 **4.0 Consultation and Coordination**

2 This section reviews agency consultation and coordination that occurred before and
3 during preparation of this Supplemental EA, and reviews the steps in the NEPA review
4 process that follow release of this Supplemental EA. A description of the overall SJRRP
5 outreach activities is provided in Section 5 of the WY 2010 Final EA/IS.

6 **4.1 Consultation and Coordination for WY 2010 Final** 7 **EA/IS**

8 In accordance with NEPA/CEQA review requirements, the Draft EA/IS for the WY 2010
9 Interim Flows was distributed for agency and public review and written comment for a
10 30-day period, as specified in the NOI and the Notice of Availability. Notice of release of
11 the Draft EA/IS was provided to all individuals on the SJRRP public notification mailing
12 list, which is updated automatically when individuals access the public Web site
13 (www.restoresjr.net) and place themselves on the mailing list. The Draft EA/IS
14 distribution provided interested parties with an opportunity to express their views
15 regarding the significant environmental effects and other aspects of the Proposed Action,
16 and also provided information pertinent to permits and approvals to decision makers at
17 Reclamation, DWR, other Implementing Agencies, and CEQA responsible and trustee
18 agencies.

19
20 After the public comment period closed, Reclamation and DWR (WY 2010 only)
21 prepared written responses to comments. Based on the Final EA and all public comments,
22 Reclamation determined that the impacts of the Proposed Action did not warrant
23 preparation of an EIS, as documented in the FONSI signed on September 25, 2009 for
24 WY 2010 Interim Flows.

25 **4.2 Consultation and Coordination for WY 2011 Draft and** 26 **Final Supplemental EA**

27 In accordance with NEPA, the Draft Supplemental EA for the WY 2011 Interim Flows
28 Project was distributed on June 3, 2010 for agency and public review and written
29 comment. The comment deadline ended on July 20, 2010. Notice of release of the Draft
30 Supplemental EA was provided to all individuals on the SJRRP public notification
31 mailing list, which is updated automatically when individuals access the public Web site
32 (www.restoresjr.net) and place themselves on the mailing list. The Draft EA/IS
33 distribution provided interested parties with an opportunity to express their views
34 regarding the significant environmental effects and other aspects of the Proposed Action,
35 and also provided information pertinent to permits and approvals to decision makers at
36 Reclamation.
37

1 After the public comment period closed, Reclamation prepared written responses to
2 comments. Based on the Draft and Final Supplemental EA and all public comments,
3 Reclamation determined that the impacts of the Proposed Action did not warrant
4 preparation of an EIS, as documented in the FONSI signed on September 21, 2010 for
5 WY 2011 Interim Flows.

6 **4.3 Current Steps in the NEPA Review Process**

7 In accordance with NEPA review requirements, this Supplemental EA is being
8 distributed for agency and public review and written comment for a 30-day period, as
9 specified in the press release. Notice of release of this Supplemental EA will be provided
10 to all individuals on the SJRRP public notification mailing list. The Supplemental EA
11 distribution provides interested parties with an opportunity to express their views
12 regarding the significant environmental effects and other aspects of the Proposed Action,
13 and also provides information pertinent to relevant permits and approvals.
14

15 After the public comment period closes, Reclamation will prepare written responses to
16 comments, as needed, and attach the comment letters and responses as an appendix to the
17 Final Supplemental EA. If, based on the Final Supplemental EA and all public comments,
18 Reclamation decides that the impacts of the Proposed Action do not warrant preparation
19 of an EIS, the FONSI will be signed by Reclamation.
20

21 Additionally, as part of the ESA Section 7 requirements for the Proposed Action, a list of
22 Federal threatened and endangered species, species proposed for listing, and species that
23 potentially occur within the study area was obtained from USFWS and NMFS.
24 Reclamation is engaging in consultation with USFWS and NMFS on the WY 2012
25 Interim Flows. A BA has been prepared by Reclamation and has been provided to
26 USFWS and NMFS for review.

1 **5.0 List of Preparers**

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