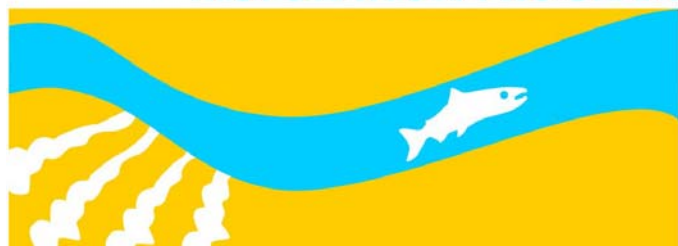


**Appendix A**

# **Problems Statements**

**Draft  
Annual Technical Report**

**SAN JOAQUIN RIVER  
RESTORATION PROGRAM**





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## Abbreviations and Acronyms

Act	San Joaquin River Restoration Settlement Act
ATR	Annual Technical Report
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
SJRRP	San Joaquin River Restoration Program
TAC	Technical Advisory Committee
WY	water year

# 1 **1.0 Introduction**

2 This appendix presents problem statements identified for the fall 2009 Interim Flows.  
3 Problem statements describe specific needs to be addressed in the next year for the San  
4 Joaquin River Restoration Program (SJRRP) related to the overall program objectives.  
5 The problem statements presented in this appendix are focused on addressing issues  
6 related to the flow, seepage, and channel capacity.

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1 **2.0 Problem Statement - San Joaquin**  
2 **River Long-Term Losses and**  
3 **Diversions**

4 *Identify the volume of losses and diversions in order to release the*  
5 *necessary volume to meet Gravelly Ford flow targets.*

6 Exhibit B of the Settlement presents assumptions for riparian releases in Reach 1  
7 upstream of Gravelly Ford. By developing a better understanding of flow  
8 accretions/depletions in Reach 1 of the San Joaquin River, the U.S. Department of the  
9 Interior, Bureau of Reclamation (Reclamation), will be able to better estimate the volume  
10 of water required to be released from Friant Dam to meet flow targets at Gravelly Ford.

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1 **3.0 Problem Statement – San Joaquin**  
2 **River Long-Term Gain and Loss**  
3 **Management**

4 *Identify the volume of water required to support the acquisition of*  
5 *water to meet unexpected seepage losses downstream of Gravelly*  
6 *Ford.*

7 The Settlement includes provisions to acquire additional water to make up for unexpected  
8 seepage losses downstream of Gravelly Ford to meet the Restoration flow targets. By  
9 developing a better understanding of flow accretions/depletions in Reaches 2 through 5 of  
10 the San Joaquin River, the Reclamation, will be able to better estimate the volume of  
11 water required for acquisition to meet future flow requirements. Results from the 1999  
12 Pilot Project indicated that approximately 6,000 acre-feet of water percolated into the  
13 channel bed of Reach 2A at the beginning of the flow release (DeFlicht and Cain 1999).  
14 The Water Year (WY) 2010 Interim Flows period provides an opportunity to collect data  
15 to estimate the volume of water needed to reach a steady-state condition in Reach 2A,  
16 and to confirm the seepage losses identified in Exhibit B of the Settlement for steady-  
17 state conditions.

18 The Technical Advisory Committee (TAC) prioritized Reach 2A over downstream  
19 reaches for flow accretion/depletion assessment. However, information will be collected  
20 from the gaging network or manual measurements at all appropriate locations to evaluate  
21 flow accretions and depletions not only in Reach 2A, but throughout Reaches 2B, 3, 4,  
22 and 5.

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1 **4.0 Problem Statement – San Joaquin**  
2 **River Flow- Seepage Management**

3 *Identify a relationship between San Joaquin River flow and*  
4 *groundwater levels, help guide Restoration Releases in managing the*  
5 *potential for adverse impacts, including seepage and channel capacity*  
6 *limitations.*

7 The Restoration Flows schedule was developed on the premise that Exhibit B of the  
8 Settlement presented valid assumptions for surface water accretions through Salt and  
9 Mud sloughs, and depletions as infiltration and evaporative losses in Reach 2. However,  
10 Exhibit B of the Settlement acknowledges the potential for surface water gains and losses  
11 in other reaches of the San Joaquin River that were considered to be negligible, for  
12 simplicity. The relationship between surface water flow in the river and groundwater is  
13 variable by reach, but in general, it is believed that increases in flow in the river will  
14 cause groundwater levels to rise along the San Joaquin River. Monitoring surface water  
15 and groundwater at Gravelly Ford and downstream will assist in quantifying and  
16 verifying the assumptions presented in Exhibit B of the Settlement. Monitoring  
17 parameters will meet the SJRRP need to determine whether seepage losses, due to  
18 infiltration into the channel bed (and/or downstream surface or underground diversions)  
19 increase beyond the levels assumed in the hydrographs contained in Exhibit B of the  
20 Settlement. Monitoring groundwater levels along Reaches 1 through 5 will provide data  
21 to better understand how to manage Interim Flows to reduce the potential for San Joaquin  
22 River flow and stage to result in groundwater seepage and adverse impacts. This  
23 information could be used to update the Draft Seepage Management Plan (SJRRP  
24 2009b).

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1 **5.0 Problem Statement – San Joaquin**  
2 **River Channel Capacity Management**

3 *Identify San Joaquin River hydraulics, including channel geometry,*  
4 *sediment mobilization thresholds and rates, and flow routing,*  
5 *sufficient to preserve flow conveyance.*

6 Section 10004, Paragraph (h)(2)(B) of the San Joaquin River Restoration Settlement Act  
7 (Act) states that the Secretary is authorized to release Interim Flows to the extent that  
8 such flows would not exceed existing downstream channel capacities. By monitoring San  
9 Joaquin River sediment bed load and sediment mobilization, Reclamation will develop a  
10 better understanding of the thresholds and rates responsible for mobilizing and depositing  
11 sediment and potentially resulting in changes in San Joaquin River channel capacity. The  
12 need for management actions may result from changes in channel capacity that arise, or  
13 are identified during the release of Interim Flows.

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## 1 **6.0 Problem Statement – Fisheries**

2 The problem statement(s) associated with meeting the objectives identified in the Draft  
3 Fisheries Management Plan (SJRRP 2009) by the Fisheries Management Work Group are  
4 under development. Future versions of the Annual Technical Report (ATR) are  
5 anticipated to include descriptions of the problem statement(s).

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1 **7.0 References**

2 DeFlicht, D., and J. Cain. 1999. San Joaquin River Riparian Flow Release Pilot Project.  
3 Prepared for Friant Water Users Authority and the Natural Resources Defense  
4 Council.

5 San Joaquin River Restoration Program (SJRRP). 2009a. Draft Fisheries Management  
6 Plan: A Framework for Adaptive Management in the San Joaquin River  
7 Restoration Program. Available at <<http://restoresjr.net/>>.

8 San Joaquin River Restoration Program (SJRRP). 2009b. Draft Seepage Management  
9 Plan.

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