Agenda

• Purpose
• SJRRP Overview
• Seepage Management Plan
• Seepage Project Handbook
• Stakeholder Perspective
• Seepage Project Status
Purpose

• Kick-off an independent review of the San Joaquin River Restoration Program (SJRRP)’s Seepage Management Plan (SMP)

• Objectives
  – Hear SMP concerns directly from stakeholders
SJRRP Overview Purpose

- Big picture context and background for peer reviewers

- How does the SMP fit into the rest of the SJRRP?
150 miles of River
Historically Dry Reaches
Water Supply Facilities
Agriculture
Sand and Gravel Mining
Flood Control
Urban Areas
SJRRP Steps

- Release Flows
- Construction
- Fish Reintroduction
- Water Management

Reach 2 in July 2009
Reach 2 in November 2009
Restoration Flow Schedule

- Flexible flow periods
- Restoration Administrator
- Interim Flow monitoring program
- All flows released up to “then existing” channel capacity
Seepage Management Plan

- “Then existing” channel capacity includes seepage.
- The Seepage Management Plan influences flows, one of the 3 pieces of the Restoration Goal.
- SMP was developed in collaboration with landowners and other members of the SCTFG
- Peer review to independently check
- Revisions to SMP in late 2012 based on peer review recommendations
SEEPAGE MANAGEMENT PLAN
Purpose and Objective

• The SMP describes
  – Monitoring and operating guidelines to reduce Restoration/Interim flows to address adverse material impacts (per Public Law 111-11)
  – Identify projects to increase flows while avoiding seepage impacts
• Meant to be dynamic and adaptive
• Objective: convey Restoration/Interim flows while avoiding seepage impacts
Seepage Management Plan

- Seepage Impacts
- Locations of Known Risks
- Operations Conceptual Model
- Monitoring Program
- Thresholds
- Triggers, Site Visit, and Response
- Site Evaluation and Projects
Seepage Impacts

- Waterlogging of Crops (disease, anoxia, temp)
- Root-zone Salinity
- Levee Instability
Locations of Known Risks

• Primarily properties close to the river in Reaches 3, 4A, and the downstream end of 2A
  • Landowner and District Anecdotal Information
  • Observed Surface Ponding
  • Ground Surface Elevation
  • Groundwater Levels
  • Surface Water Stage
  • Analytical Tools

Preliminary draft – subject to change
a) Determine increase in river stage from proposed flow increase

b) Assume increase in river = increase in groundwater

c) Add increase in groundwater to most recent observed groundwater level
Monitoring Program

- Groundwater Elevation
- River Stage
- Hydraulic Conductivity
- Soil Salinity
- Water Quality
- Soil Texture
Thresholds

• Thresholds identify potential problems so that Reclamation can establish operating criteria to manage flows

• Three thresholds methods:
  – Agricultural Conditions
  – Historical Data
  – Drainage Direction
## Thresholds - Agricultural Method

- Root Zone
- Capillary Rise
- Irrigation
- Ground Surface

### Crop Type vs. Root Zone (ft)

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Root Zone (ft)</th>
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</thead>
<tbody>
<tr>
<td>Tomato</td>
<td>3</td>
</tr>
<tr>
<td>Annual</td>
<td>4</td>
</tr>
<tr>
<td>Vines, etc.</td>
<td>6</td>
</tr>
<tr>
<td>Almond</td>
<td>9</td>
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Preliminary draft – subject to change
Thresholds – Historical Data

- CCID Well Database
- DWR Well Database
- 75th percentile or CCID average
Thresholds – Drainage Direction

- Gaining Reaches
- Baseline
- Groundwater Elevation
- River Stage

Preliminary draft – subject to change
Triggers, Site Visit, and Response

• Monitoring Data
• Triggers
  – Flow Bench Evaluations
  – Daily Evaluations
  – Hotline Intake
• Site Visit
• Response
Seepage Projects

• Land was broken up into Seepage Parcel Groups to organize potential seepage locations

• Projects are chosen by priority – worst-case parcel groups are started first

• Seepage Project Handbook describes the process
Iterative Approach to Increase Flows while Avoiding Impacts

- Flow Bench Evaluation
- Daily Flow Evaluation
- Seepage Hotline
Seepage Project Handbook Purpose

• Goal: increase channel capacity while avoiding seepage impacts

• Objectives of the SPH include:
  – Establish a process for implementing seepage projects, including estimated timelines and lists of potential activities;
  – Delineate expectations and deliverables for input
  – Develop strategies to overcome challenges to increased flow.

• Appendix K of the SMP
Seepage Project Process

1. Site Evaluation: 6 mo.
   - Site Visit
   - Prepare Methods Report
   - Review Methods Report
   - Landowner Provides Site Data
   - Prepare Site Evaluation Report
   - Review Site Evaluation Report
   - Final Site Evaluation Report

   - Appraisal Level Design and Costing
   - Plan Formulation Meeting
   - Environmental Compliance
   - Prepare Project Report
   - Review Project Report
   - Final Project Report

3. Financial Assistance: Varies
   - Meeting
   - Supply DUNS Number
   - Completed Form SF-424
   - Reclamation Contracting
   - Signed Financial Agreement
   - Invoicing
   - Reporting
   - Close-Out

4. Design: Varies
   - Design Data Collection
   - Final Design
   - Prepare Final Design Report
   - Review of Final Design Report
   - Final Design Report

5. Bid, Award, Construction: Varies
   - Bid, Award
   - Pre-Construction Meeting
   - Pre-Construction Survey
   - Construction

Contact

Contact the Seepage Hotline to schedule further discussion or a site visit.
Phone: 916-978-4398
Email: interimflows@restoresjr.net

Preliminary draft – subject to change
Project Report

• Design for selected project:
  – Easements
  – Acquisition
  – Slurry Walls
  – Seepage Berms
  – Interceptor Lines
  – Land Terrain Changes
  – Conveyance Improvements
  – Shallow Groundwater Pumping

Preliminary draft – subject to change
Design and Construction

• **Goal:** Allow SJR flows up to 4500 cfs past the property without seepage impacts

• **Site Conditions**

• **Project Agreement**
Seepage Project Approach

• Address projects with the worst potential seepage first
• All projects will be built to 4500 cfs
• Each project expected to take 1-2 years
• Multiple projects worked on at the same time
Stakeholder Perspective

• Individual Presentations
  – Exchange Contractor Representative
  – Landowner Representative
  – Peter Vorster, The Bay Institute
  – Bill Luce, Friant Water Authority
CONCLUSION AND NEXT STEPS
Conclusion

• Seepage Management Plan Objective: Conveyance of the maximum Interim or Restoration Flows while avoiding material adverse seepage impacts

• Two areas of SMP:
  – Flow Operations
  – Seepage Projects
Objective of Peer Review

• “The objective of the Seepage Management Plan (SMP) Peer Review is to provide Reclamation with confirmation of the processes described in the SMP and, where appropriate, guidance on revisions to the document to increase the document’s technical accuracy.”
Top 5 Peer Review Questions

• Overall, does the SMP maximize flows while avoiding seepage impacts?
• Are operations predictions, methods and accuracy reasonable?
• Are agricultural thresholds reasonable?
• How do we reasonably account for historical conditions that may impair groundwater even in the absence of SJRRP flows?
• Are there missing components or other refinements to the SMP necessary?
Peer Review Process

- Peer Review Kickoff presentations – Sept. 13
- Peer Review check-in call – late Sept.
- Panel conducts review; prepares report – by Oct. 31
- Peer Review findings presentation – 1st week of Nov.
- SCTFG review report; discuss findings – mid/late Nov.
- Reclamation revises SMP – Dec./Jan.

All dates are tentative
SCTFG Review of SMP

- Comments due by October 12

- Peer review recommendations will be incorporated along with SCTFG comments in late 2012
SEEPAGE PROJECTS
Seepage Project Approach

• Split potential areas of impact into seepage parcel groups
• Prioritize parcel groups based on most at-risk properties
• Initiate first tier of priority parcel groups

<table>
<thead>
<tr>
<th>Flow</th>
<th># Projects</th>
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<tr>
<td>300 cfs</td>
<td>3</td>
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<tr>
<td>700 cfs</td>
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<tr>
<td>1,300 cfs</td>
<td>7</td>
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<tr>
<td>2,000 cfs</td>
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</tr>
<tr>
<td>4,500 cfs</td>
<td>69</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
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Priority Parcel Groups and Projects Initiated

Parcel Group 167
- Site visits conducted on March 9, August 9
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review
- Conducting Site Evaluation
Priority Parcel Groups and Projects Initiated

Parcel Group 168
- Site visits conducted April 9, August 9
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review
- Conducting Site Evaluation
Priority Parcel Groups and Projects Initiated

Parcel Group 164
- Site visits conducted March 14, August 9
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review
- Conducting Site Evaluation
Priority Parcel Groups and Projects Initiated

Parcel Group 159
- Site visit to be scheduled soon
- Additional wells recently drilled
- Working on records review
Parcel Group 154
- Site visit occurred May 3
- Additional wells to be installed starting Sept. 17
- Preparing Methods TM
Parcel Group 101-103, 111, 112, 115, 142
• Site visit conducted April 3
• Additional wells to be installed starting Sept. 17
• Methods TM with landowner for review
Parcel Group 87
• Site visit conducted March 1
• Additional wells to be installed starting Sept. 17
• Methods TM with landowner for review
Priority Parcel Groups and Projects Initiated

Parcel Group 14, 21, 24, 26
- Site visit conducted on March 28
- Additional wells to be installed starting Sept. 17
- Landowner reviewing Methods TM
Priority Parcel Groups and Projects Initiated

Parcel Group 14, 21, 24, 26
• Site visit conducted on March 28
• Additional wells to be installed starting Sept. 17
• Landowner reviewing Methods TM
Challenges and Accomplishments

• Challenges
  • Land access
  • Schedule

• Accomplishments
  • Six of the 11 projects needed for 2,000 cfs flows initiated
  • Site Evaluations underway for 3 projects
Contact

• Technical Feedback Group – Katrina Harrison
  – 916-978-5465
  – kharrison@usbr.gov

• Seepage Concerns – Seepage Hotline
  – 916-978-4398
  – interimflows@restoresjr.net
Mendota Pool Bypass and Reach 2B Channel Improvements Project

Expand capacity to 4,500 cfs, bypass Mendota Pool

- Draft EIS/R – late 2013
- Final EIS/R – mid 2014
- Construction start date – late 2015

Preliminary draft – subject to change
Reach 4B, Eastside Bypass and Mariposa Bypass Channel and Structural Improvements Project

- Draft EIS/R – mid 2013
- Final EIS/R – late 2014
- Construction Start Target – no earlier than late 2015

Convey 4,500 cfs

- Increase capacity of old river channel to convey 475 CFS
- Modify Sand Slough Control Structure to allow fish passage
- Improve ability of 4B headgates to allow flow routing and fish passage
- Create low flow channel in the Bypasses
- Allow fish passage at bifurcation structures in Mariposa and Eastside Bypasses

Preliminary draft – subject to change
Flow Bench Evaluations

- Reclamation performs Flow Bench Evaluations prior to increasing flows.
- Flow Bench Evaluations include:
  - Conveyance Capacity
  - Groundwater Telemetry
  - Groundwater Manual Measurements
  - Flow Stability
  - Groundwater Projections
  - Mendota Pool Operations
  - Feedback
    - Landowners (Seepage Hotline)
    - Levee District
    - CCID
    - SLCC
- Reclamation documents evaluations at:
  http://www.restoresjr.net/flows/FlowScheduling/flow_scheduling.html
Groundwater Predictions – Drainage Method

a) If irrigation ongoing

b) Compare monitoring threshold elevation to water surface elevation in SJR at proposed flow level
Triggers – Daily Flow Evaluations

• Reclamation performs daily evaluations when flows exceed 475 cfs

• Daily Flow Evaluations Include
  – Conveyance Capacity
  – Groundwater Telemetry
  – Mendota Pool Operations
  – Landowner Feedback (Seepage Hotline)

• Reclamation documents evaluations at
  http://www.restoresjr.net/flows/FlowScheduling/flow_scheduling.html
Triggers – Seepage Hotline Process

• Hotline Intake: A landowner calls the seepage hotline or sends an email
  (916) 978-4398
  interimflows@restoresjr.net

• Site Visit: Reclamation views the problem and meets with the landowner

• Response: Reclamation identifies a course of action