




Restoration Goal Technical Feedback Meeting

Seepage Management

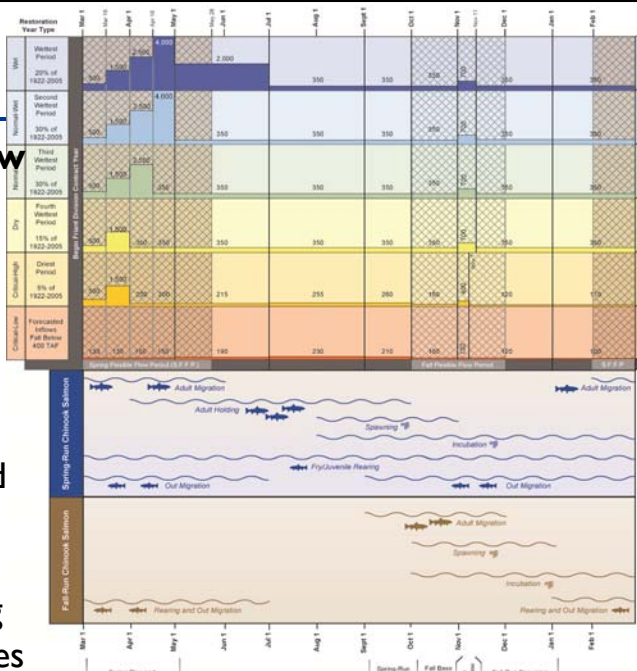
September 20, 2012

Preliminary draft – subject to change



Restoration Flow Schedule

- Flexible flow periods
- Restoration Administrator
- All flows released up to “then existing” channel capacity including seepage and levees



Preliminary draft – subject to change



Purpose and Objective

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

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Seepage Management Plan

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


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SAN JOAQUIN RIVER RESTORATION PROGRAM

Groundwater Seepage Impacts

- Waterlogging
- Salinity



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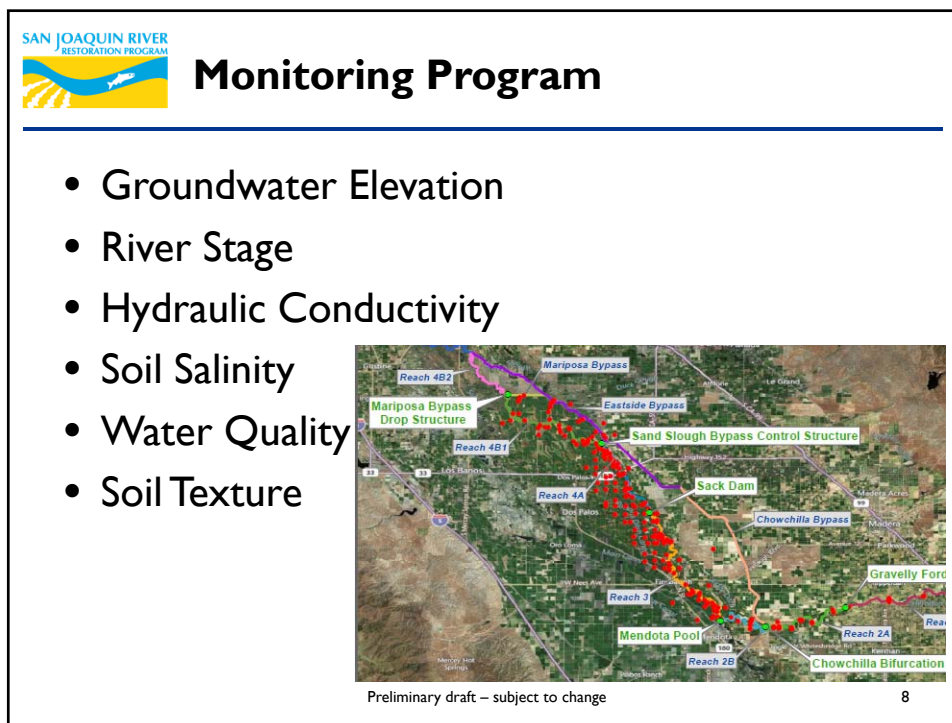
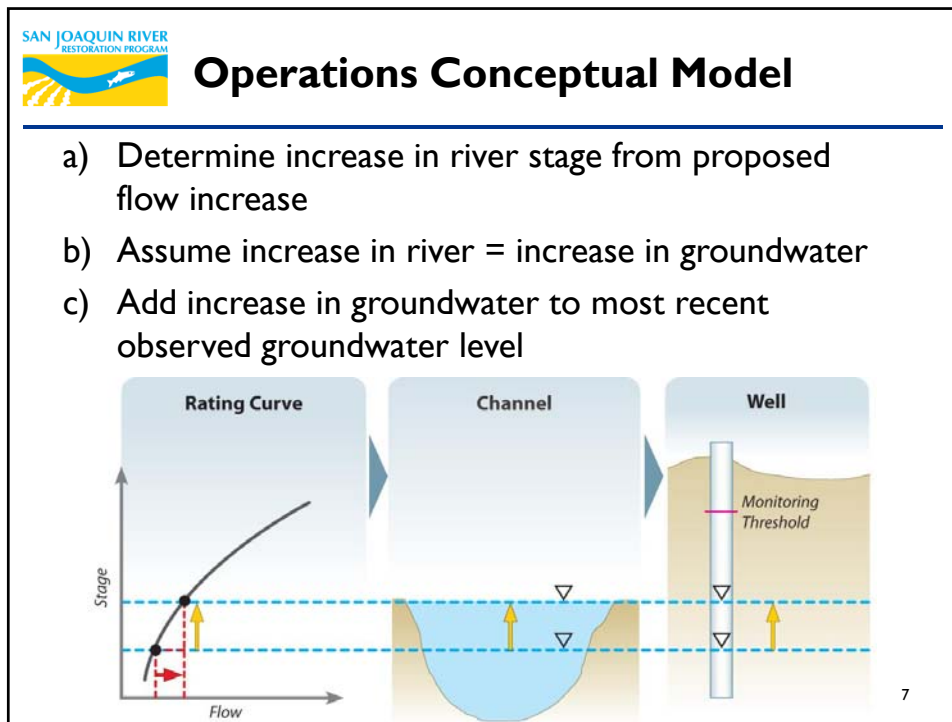
SAN JOAQUIN RIVER RESTORATION PROGRAM


Locations of Known Risks

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

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Thresholds


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

- Three thresholds methods:
 - Agricultural Conditions
 - Historical Data
 - Drainage Direction

Currently limited by the threshold in MW-10-95.
Last week: 3.0 feet bgs in field

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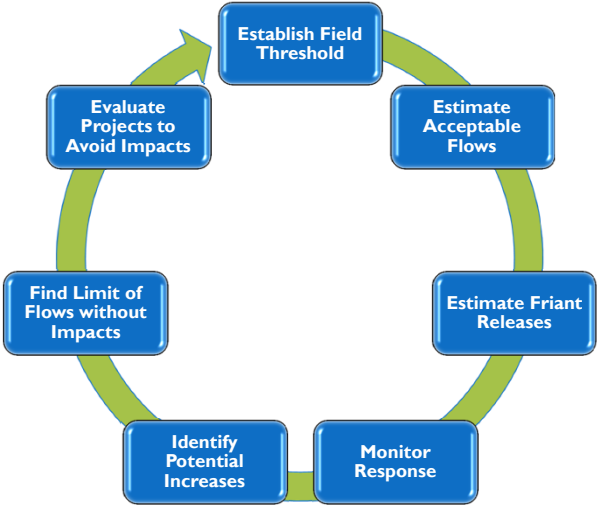


Iterative Approach to Increase Flows while Avoiding Impacts

- Flow Bench Evaluation

- Daily Flow Evaluation

- Seepage Hotline



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            graph TD
            A[Establish Field Threshold] --> B[Estimate Acceptable Flows]
            B --> C[Estimate Friant Releases]
            C --> D[Monitor Response]
            D --> E[Identify Potential Increases]
            E --> F[Find Limit of Flows without Impacts]
            F --> G[Evaluate Projects to Avoid Impacts]
            G --> A
            
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Seepage Projects

- Land was broken up into 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

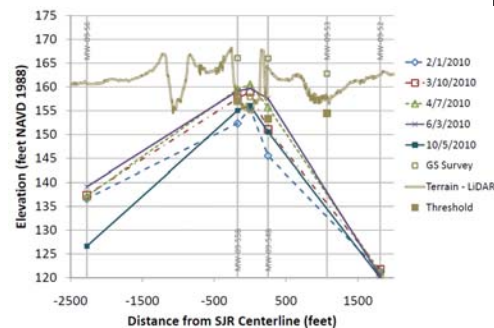
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Lateral Gradient of the Water Table

- How far from the river do we expect the potential for seepage impacts?
- SJRRPGW model developed by USGS
- Maximum lateral extent of river's influence



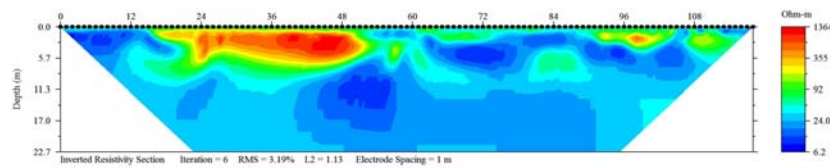
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Paleochannels

- Do former SJR river channels change the expected extent of seepage impacts?
- Use geophysical methods to identify sand stringer location, depth and width
- Model influence on seepage projects



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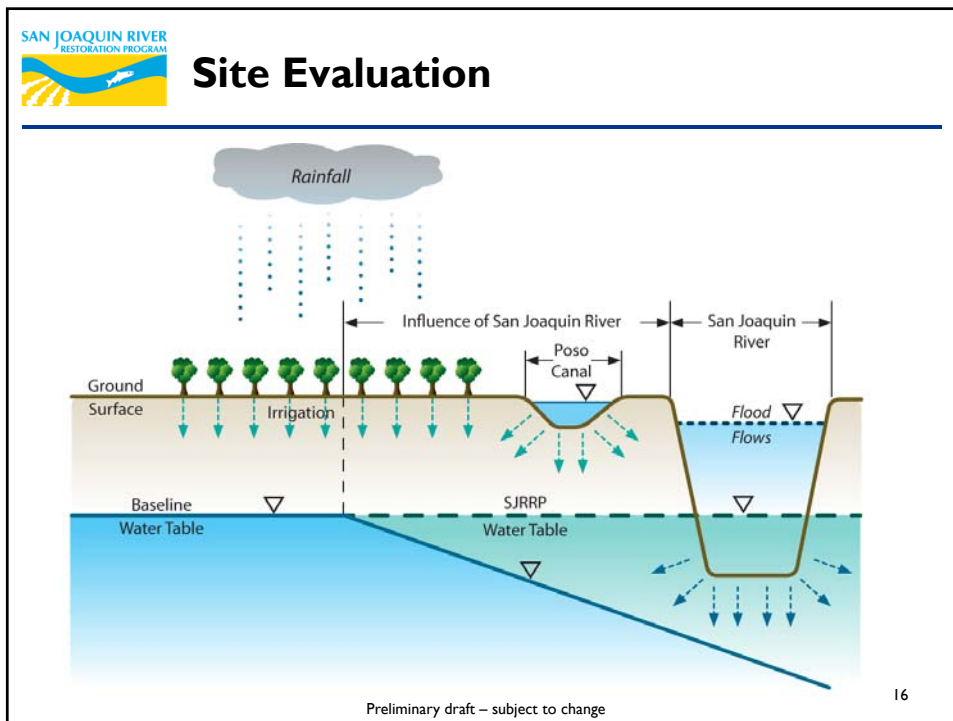
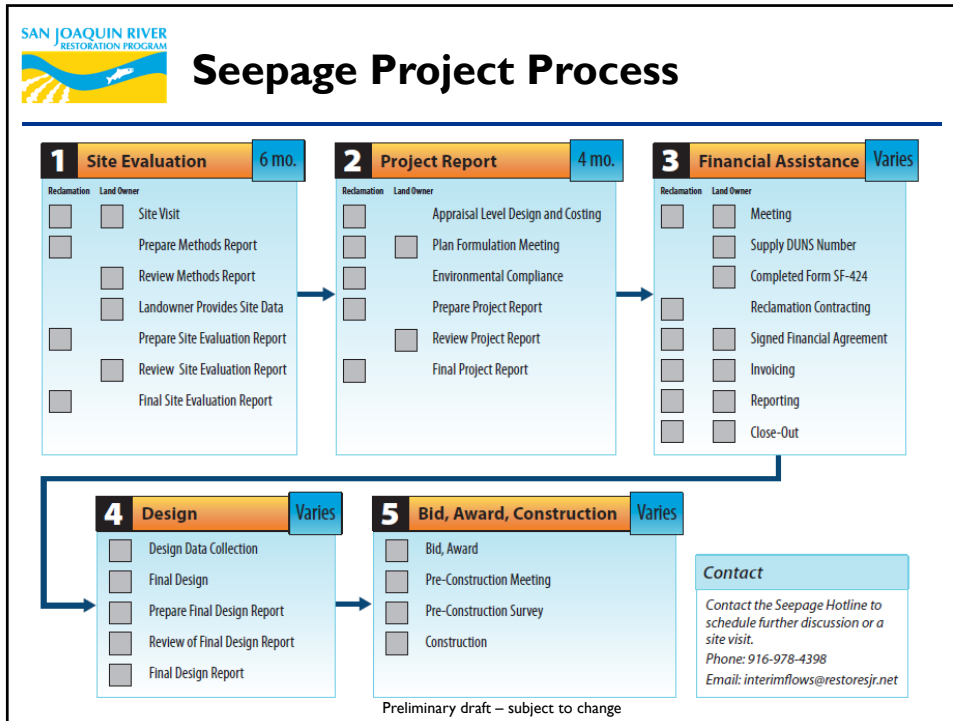


Seepage Management Plan Status

- Written with input from the Seepage and Conveyance Technical Feedback Group
- Recent updates
 - Locations of Known Risks
 - Background Data
 - Seepage Project Handbook
- Peer Review – by approximately Oct. 31, 2012
- Reclamation revises SMP – Dec./Jan.

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SAN JOAQUIN RIVER RESTORATION PROGRAM

Project Report

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




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SAN JOAQUIN RIVER RESTORATION PROGRAM

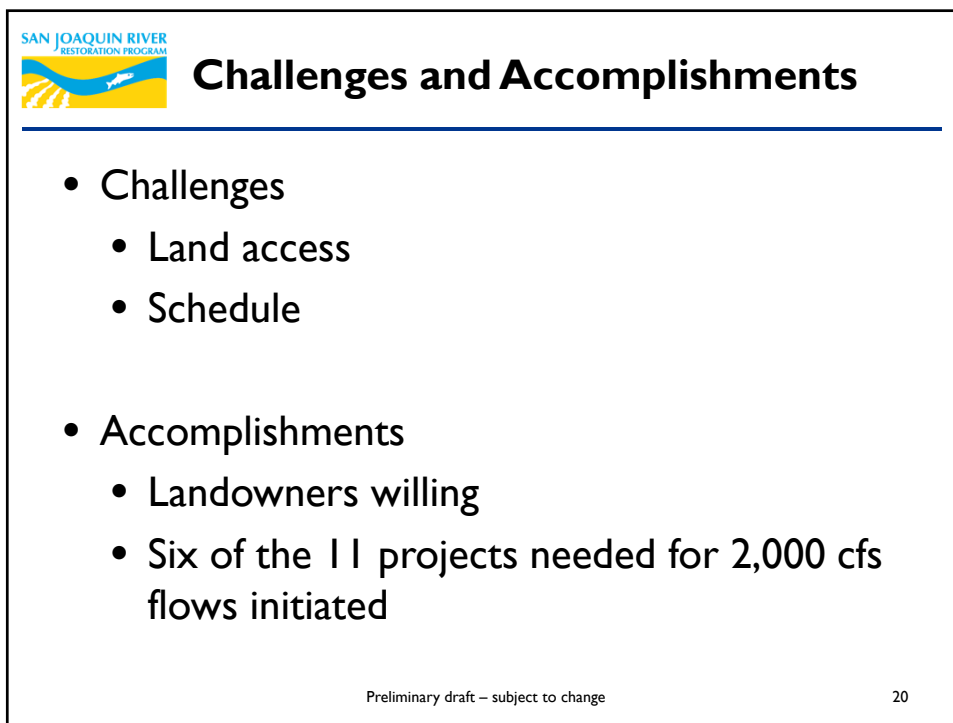
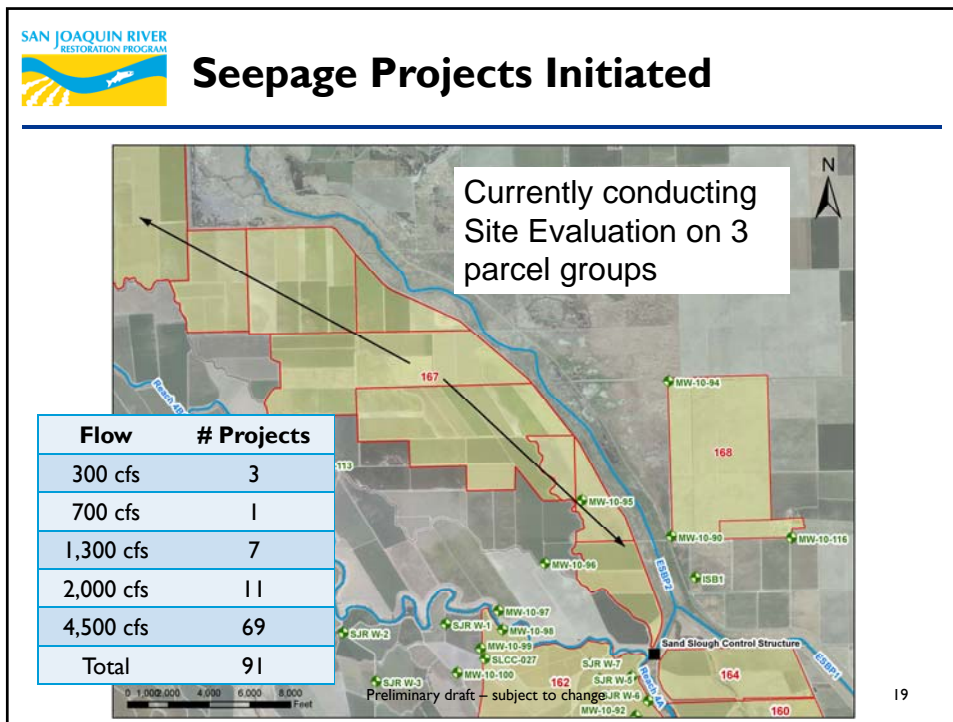
Design and Construction

- Goal: Allow SJR flows up to 4500 cfs past the property without seepage impacts
- Worst-case areas first



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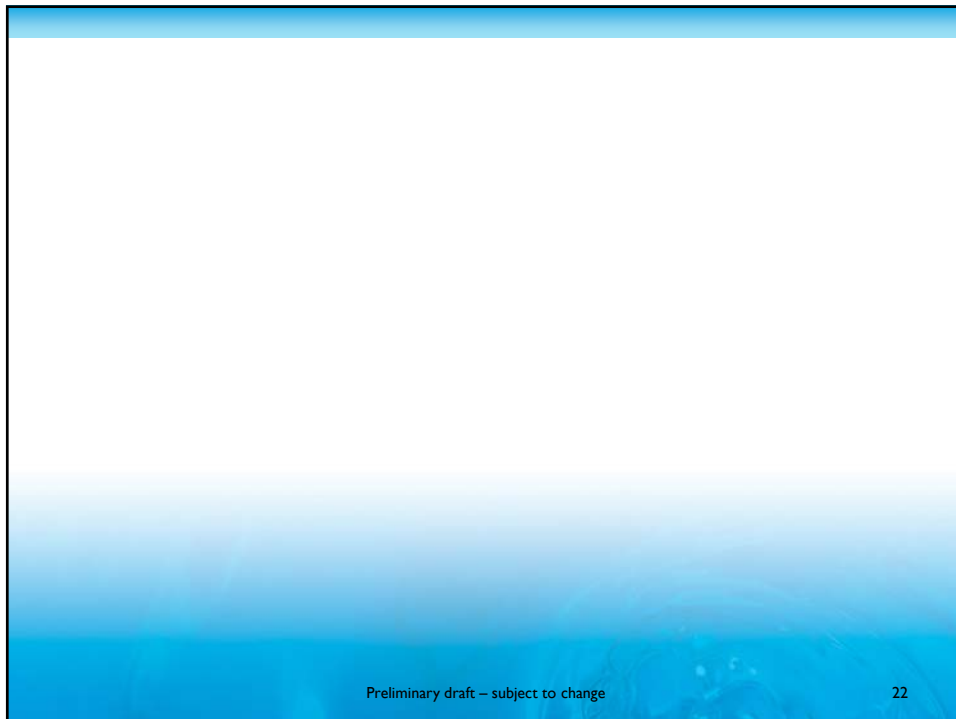
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Contact

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Restoration Area


- 150 miles of River
- Historically Dry Reaches
- Water Supply Facilities
- Agriculture
- Sand and Gravel Mining
- Flood Control
- Urban Areas

The map illustrates the San Joaquin River system from Turlock in the north to Fresno in the south. Key features include the Hills Ferry Barrier, Sack Dam, Mendota Dam, and Friant Dam. Reaches are labeled 1A through 5, and various basins (BPs) like Chowchilla BP, Eastside BP, and Mariposa BP are also shown. Major cities and agricultural areas are marked along the river's path.



Triggers, Site Visit, and Response

- Monitoring Data
 - Flow Bench Evaluations
 - Daily Evaluations
 - Hotline Intake
- Site Visit
- Response



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