

# San Joaquin River Restoration Program



## Reach 4B, Eastside Bypass, and Mariposa Bypass Channel and Structural Improvements Project

Landowner Meeting  
October 3, 2011



## Agenda

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- SJRRP General Program Update
- Action Items from Previous Meetings
- Field Activities and Access
- Reach 4B Project Initial Concepts
- State Lands Commission Update
- Landowner Information Sharing



## SJRRP Update

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- Draft Program EIS/R released to public April 2011
- Comment period closed on September 21, 2011
- Interim flows

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## Action Items

- Describe interaction between Program EIS/R and Reach 4B Project EIS/R
- Discuss process to determine required quantities of rearing habitat

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## Field Activities and Access

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- Review SJRRP surveys scheduled in next six months

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## Alternative Development Process

- Identify options
- Combine options into initial concepts
- Document initial concepts
- Refine initial concepts
  - Pre-design of concepts
  - Define alternatives
- Evaluate alternatives
- Select alternatives to move forward

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## Example Initial Concepts

- Bracket a range of potential actions that may take place to accomplish project goals/objectives
- Represent a range of potential environmental effects
- Will change with feedback - landowners and stakeholders can suggest additional potential actions or approaches
- A draft Initial Alternatives TM will provide an opportunity for reflection and comment
- A preferred alternative will be developed into plans and specifications after a ROD

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## Reach 4B Initial Concepts

Channel/Structure	Initial Concept 1 Main Channel Restoration	Initial Concept 2 Bypass Restoration	Initial Concept 3 Bypass All Pulse Flows	Initial Concept 4 Split Pulse Flows and Restore Both	Initial Concept 5 Split Pulse Flows and Isolate River
San Joaquin River Flows	Up to 4,500 cfs (all Restoration Flows)	At least 475 cfs of Flood Flows	Restoration Flows of at least 475 cfs	Base and fall pulse flows; some spring pulse flows	Base and fall pulse flows; some spring pulse flows
Bypass System Flows	Flood flows greater than 4,500 cfs	All flows up to capacity	Flow greater than 475 cfs	Flow greater than Reach 4B capacity	Flow greater than Reach 4B capacity
Fish Routing	SJR	Eastside Bypass Reach 2, Mariposa Bypass	SJR, Eastside Bypass Reaches 2 and 3	SJR, Eastside Bypass Reach 2, Mariposa Bypass	SJR
Habitat	SJR	Bypass	SJR and Bypass	SJR and Bypass	SJR
Reach 4B Headgates	Remove Headgate	Simple Gate	Construct gates and ladders with multi-level fish ladder entrances	Construct gates and ladders with multi-level fish ladder entrances	Construct gates and ladders with multi-level fish ladder entrances; fish screen at Sand Slough
Eastside Bypass Control Structure	No Change	No Change	Fish Passage	No Change	No Change
Mariposa Bypass Control Structure	No Change	Notch Center Bays	No Change	Notch Center Bays	No Change
Mariposa Drop Structure	No Change	Remove Drop Structure	No Change	Fish Passage	No Change

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## Overview of Levee Alignments

- Intention is to develop costs, impacts, and benefits for a range of levee setback alternatives
- Impacts to land owners, agricultural production, economy, air quality, fish habitat will all be considered
- These are not final alignments. The final alignment for whatever alternative is chosen will be altered to incorporate results from further analysis of the topography, canal realignments, land acquisition constraints, and habitat value.

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## Reach 4B1 Alignments

4 different alignment options developed for alternative analysis

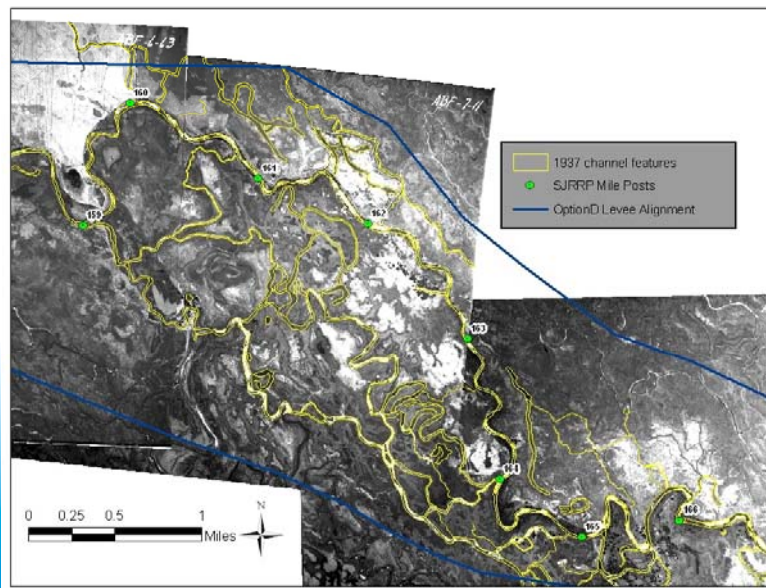
- A. **Existing** levee alignment with improvements and raising in several locations. Maximum capacity of about 1500 cfs.
- B. **Minimum** setback necessary to convey 4500 cfs and provide a minimal level of riparian habitat. One channel width is considered the minimum acceptable levee setback to allow for riparian shading, allow natural bank erosion processes, and minimize levee maintenance.
- C. **Intermediate** levee setback
- D. **Maximum** levee setback determined through analysis of topography and historical photo analysis

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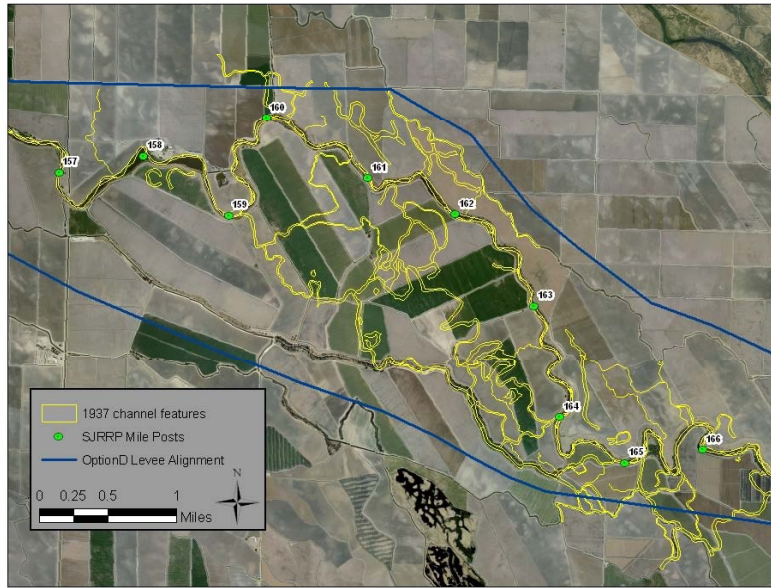


## Reach 4B1 1937/8 Aerial

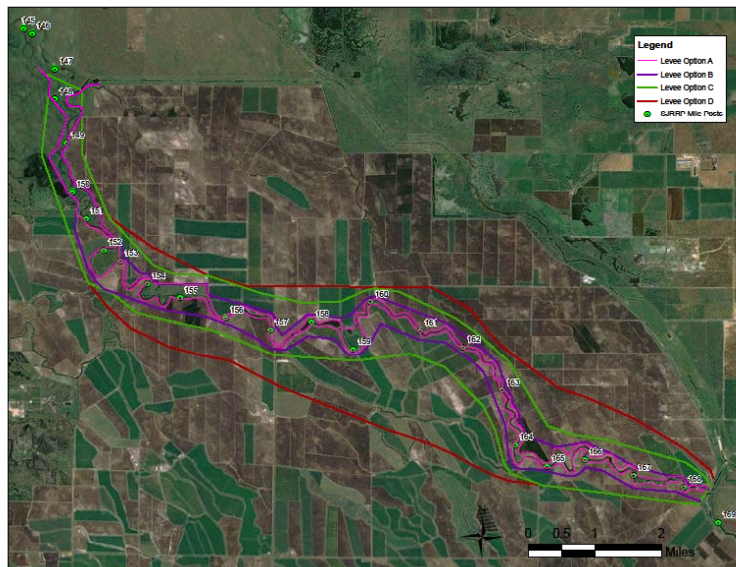




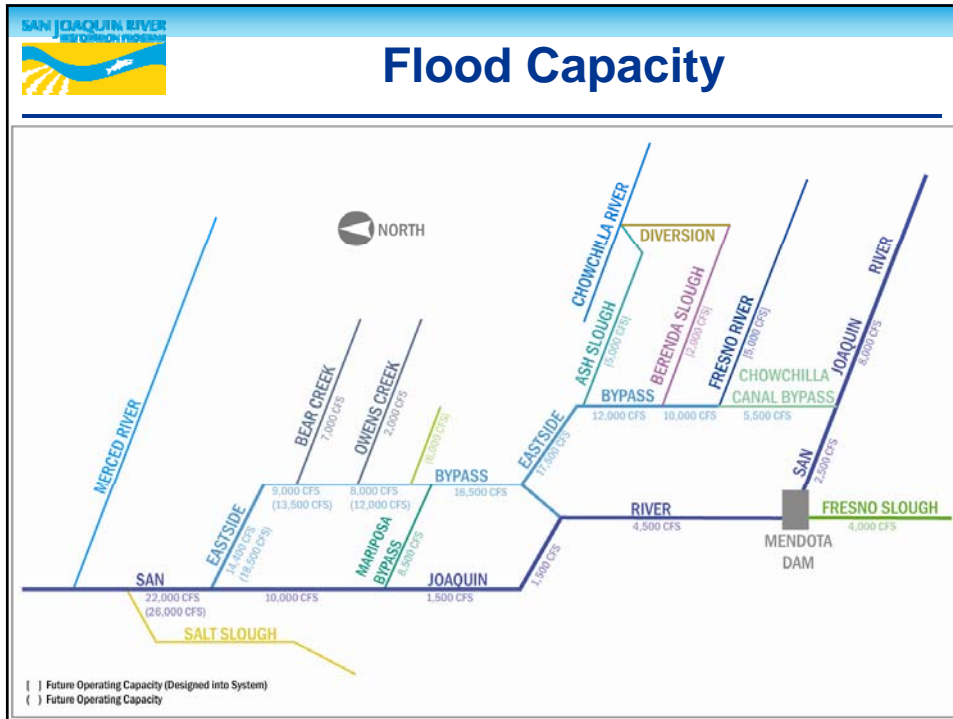
## Reach 4B1 2007 Aerial



## Reach 4B1 Levee Alignments







**SAN JOAQUIN RIVER FLOOD DIVERSION PROGRAM**

## Channel Design Features

- Reach 4B1
  - Levee, road, and canal removal
  - Side channel construction
  - Floodplain grading to prevent pooling of water against levees and fish stranding
  - Road crossing improvement or replacement
- Eastside Bypass
  - Low flow excavation
  - Road crossings
  - Side channel construction
  - Lower sill of control structures
  - Fill of borrow areas

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## Analysis Plan

- Generation of daily flow
  - 80 years of synthetic daily average flows were developed incorporating the effect of restoration flows
- Floodplain mapping
  - Habitat suitability calculated for each alternative based upon depth and velocity criteria for fry and juvenile salmon
- Sediment transport modeling
  - Assess areas of erosion and deposition to ensure sediment continuity and limit future sediment management

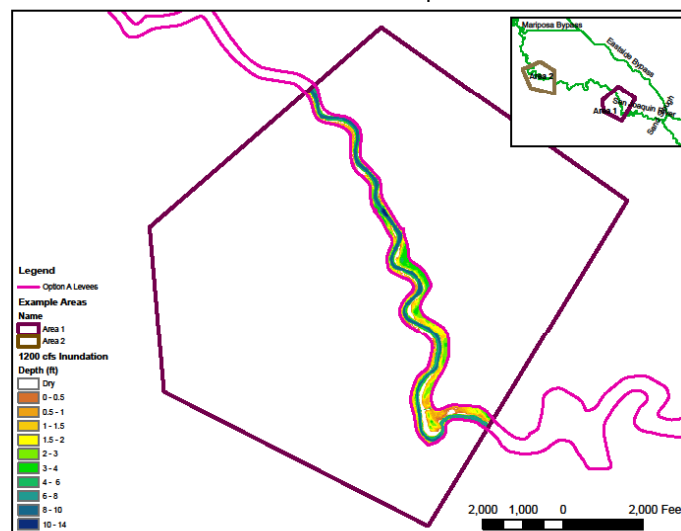
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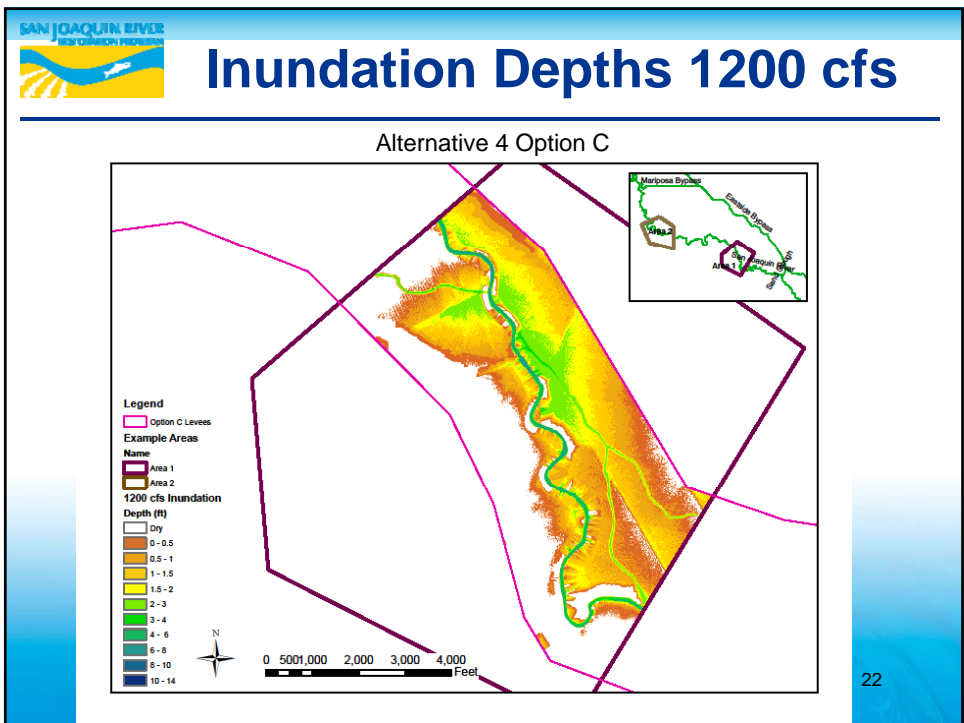
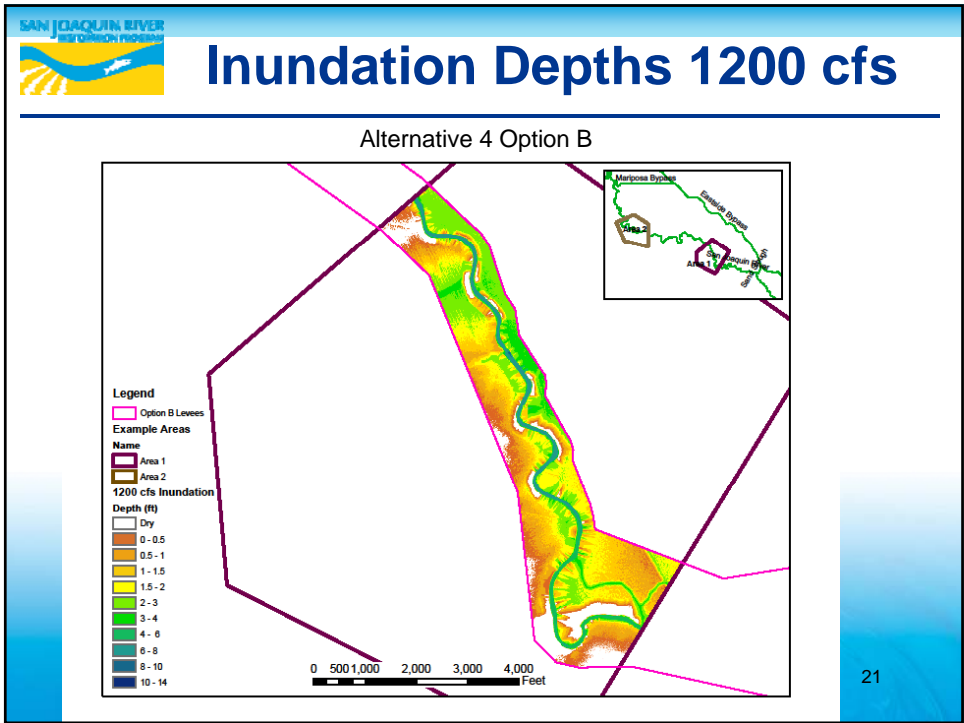


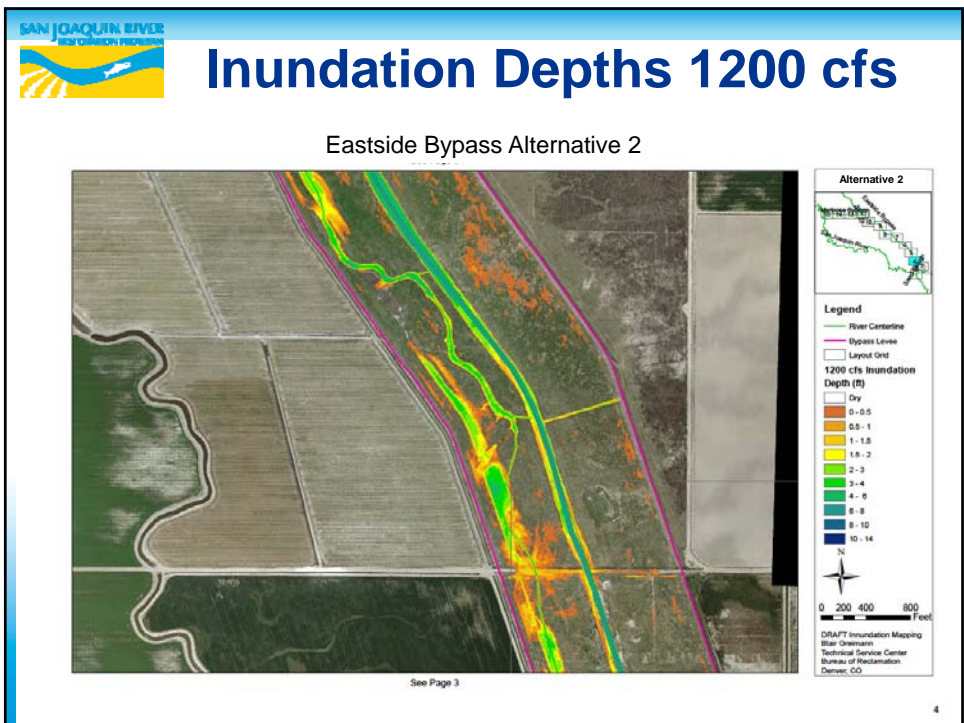
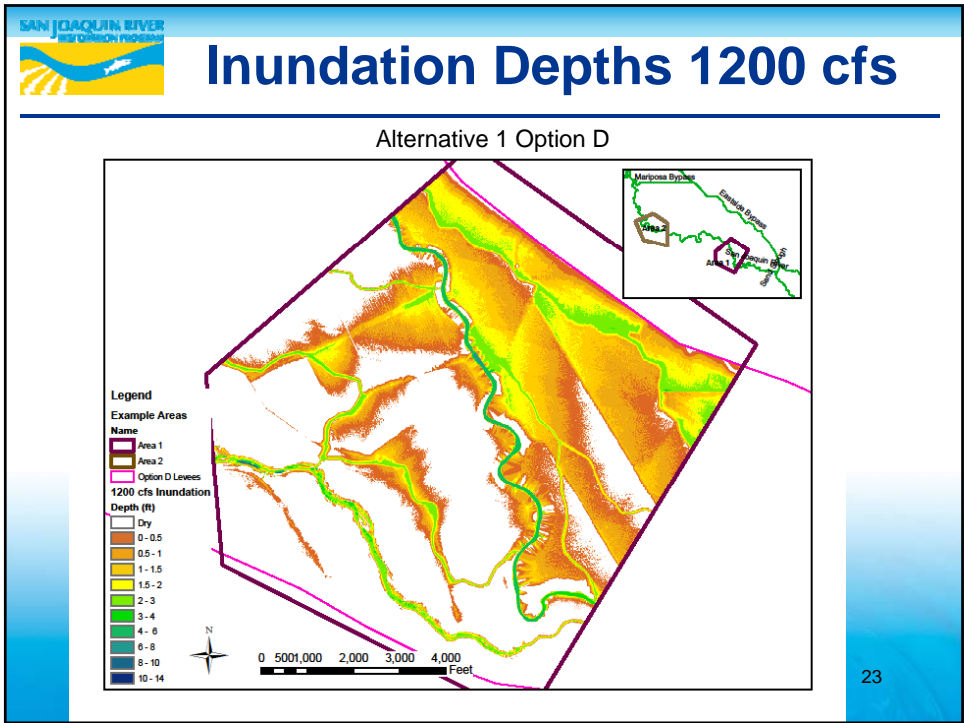
## Inundation Depths 1200 cfs

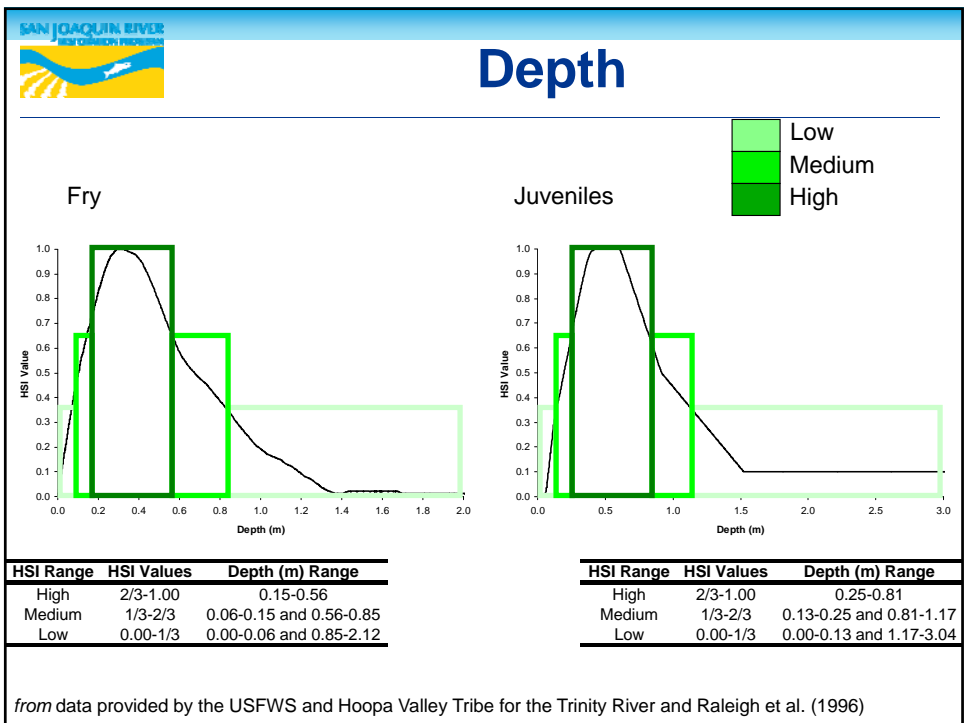
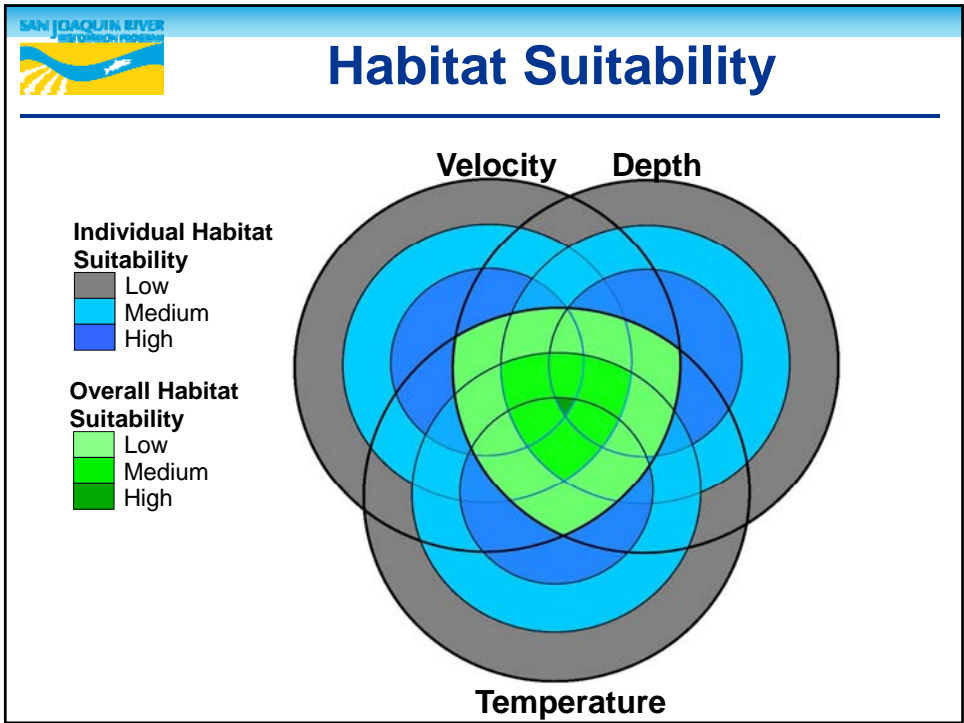
Alternative 4 Option A

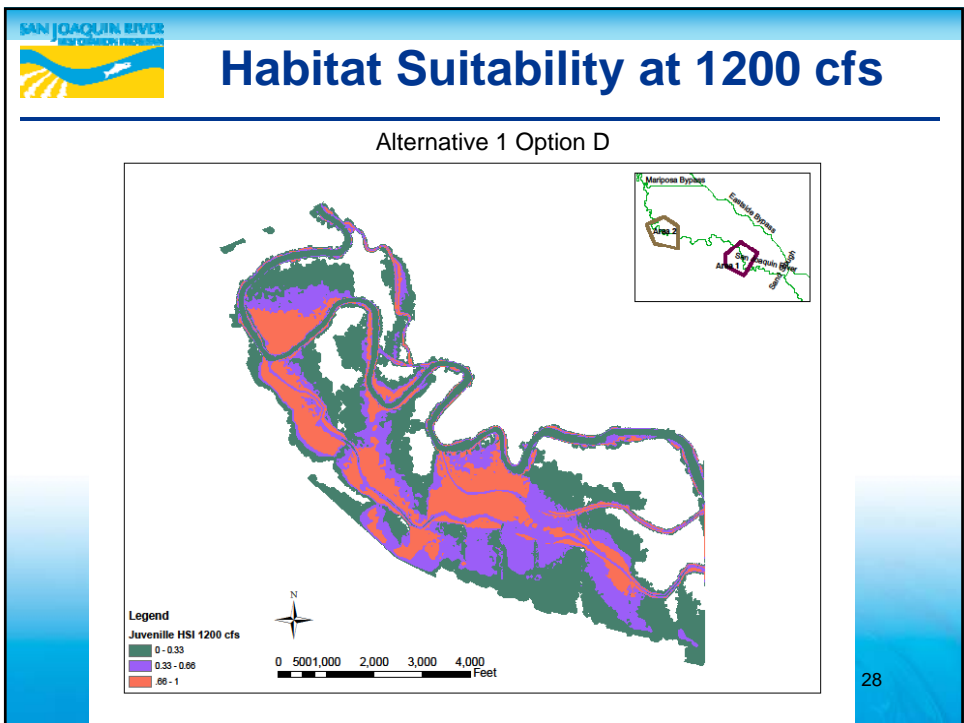
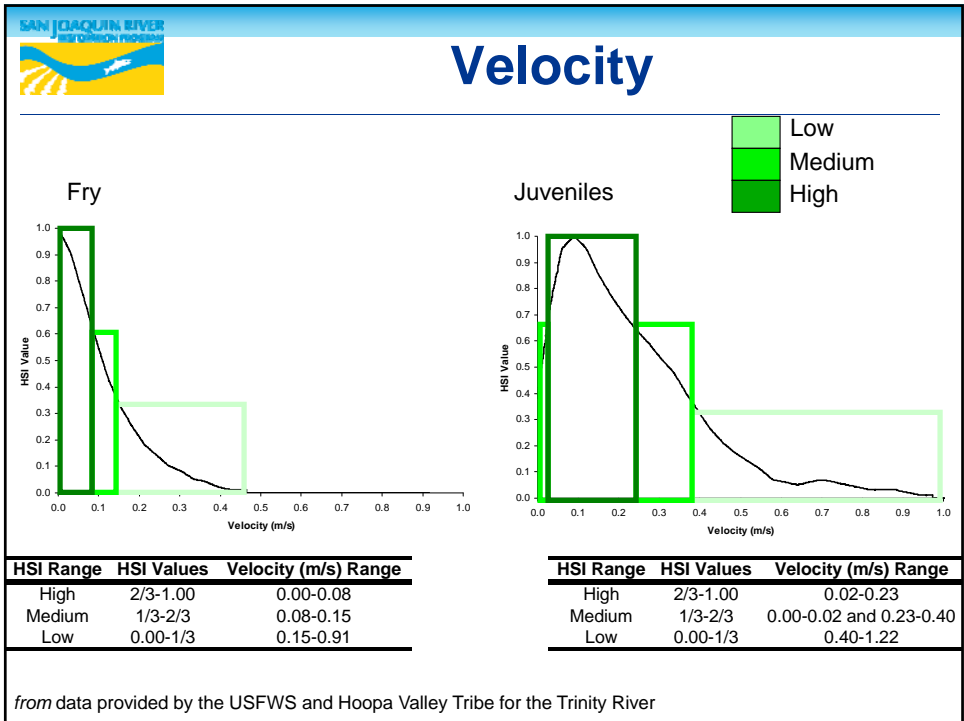


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## Future Work

- Complete 2D hydraulic simulations of Reach 4B1 and Eastside Bypass
- Compute relative Habitat Suitability for each alternative and flow
- Use daily flows to compute “habitat duration” for each alternative and flow
- Use sediment transport model to compute areas of erosion and deposition and modify design if necessary

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## Seepage

- Increasing flows in the river channel and bypass may increase the shallow groundwater table and potentially impact agriculture on adjacent lands
- Reclamation will hold flows below thresholds until the implementation of projects allows for higher releases
- The design for Reach 4B will incorporate measures to avoid potential seepage impacts
- Pre-design will identify measures for each alternative to address potential seepage based on long-term actions identified in the Seepage Management Plan

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## Potential Long-Term Seepage Options

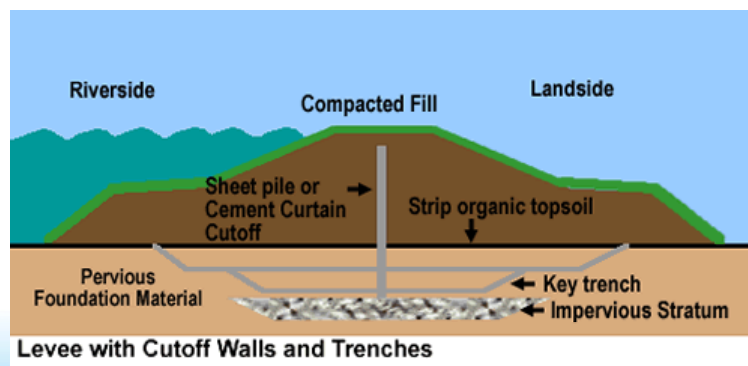
- Non-structural options
  - Easements
  - Land acquisitions
- Structure options
  - Slurry walls
  - Seepage berms
  - Interceptor drains
  - Channel conveyance improvements
- Future options (not developed yet)

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## Structural Option – Slurry Walls



Optional cut-off wall materials are low strength concrete, cement-bentonite slurry, etc.

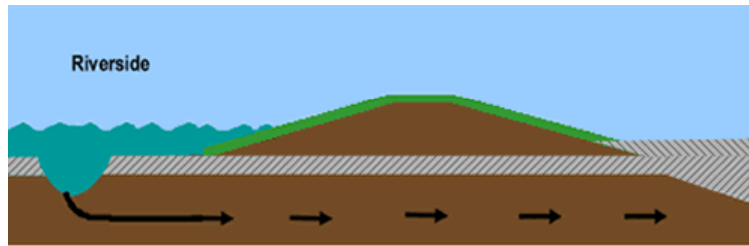
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## Structural Option – Seepage Berms



Levee with Landside Seepage Berms

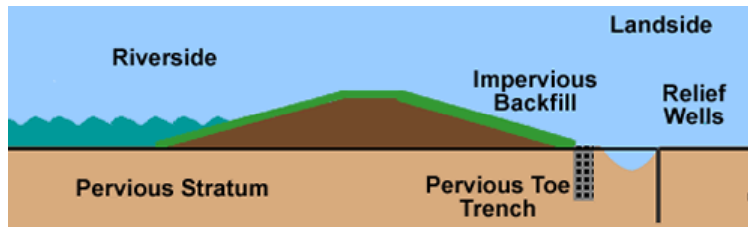
Seepage berm material added to outside face of levee to increase weight on toe of levee, reduce seepage potential, and increase the distance to 'daylight' of the phreatic water surface through the levee

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## Structural Option – Interceptor Drains



Levee with Pervious Toe Trench & Collector Pipe

Optional toe drain trench/collector tile drain for pumping out the collected seep water. Optional relief wells shown as a supplemental design (listed above as an Operational option).

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## Information Requests

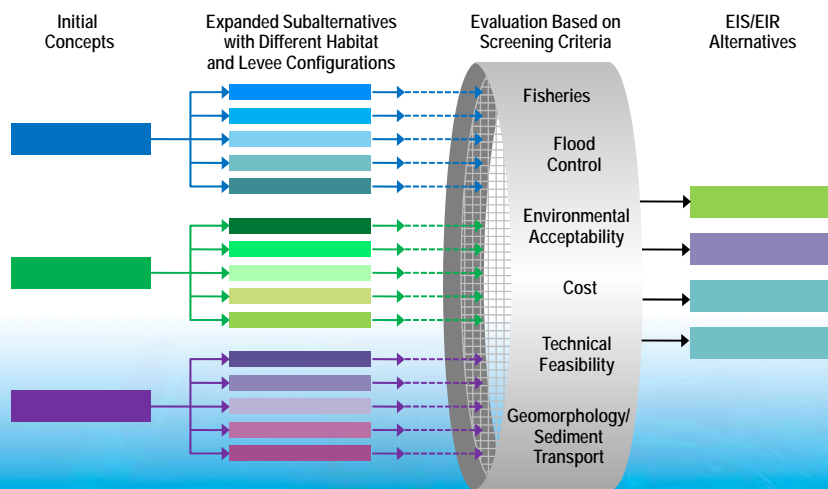
- Crossing use: frequency and types of use for Reach 4B and bypass crossings
- Traffic monitoring: potential locations for baseline traffic monitoring

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## Alternative Evaluation



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## Next Steps

### Formulate Alternatives

- Comment on concepts
- Review Initial Alternatives TM

### Field Work/Surveys

- Identify locations for traffic, noise, and air quality surveys
- Provide local knowledge and feedback
- Provide land access

### Evaluate Alternatives

- Comment on screening criteria
- Provide feedback on how well alternatives meet screening criteria

### Draft Project Description

- Review project description

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## Reach 4B Schedule

Title	Date
Formulate Alternatives	June to November 2011
Initial Alternatives TM	October 2011
Evaluate Alternatives	October/November 2011
Draft Project Description	December 2011
Draft EIS/R for Public Review	June 2012
Final EIS/R for Public Review	March 2013
ROD/NOD/Findings	June 2013

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## Questions?

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- Any questions on the Reach 4B Project or schedule?



## Rearing Habitat

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- Action item from last meeting
- Meeting participants asked about the necessary rearing habitat to support fish
- USFWS representative will help answer questions



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## Landowner Information Sharing

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- Questions?
- Topics for discussion?
- Upcoming meetings?

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## Contact Information

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### Reach 4B Project:

**Michelle Banonis**  
**Bureau of Reclamation**  
**Office: (916) 978-5457**  
**Cell: (916) 675-2936**  
**E-mail: [Mbanonis@usbr.gov](mailto:Mbanonis@usbr.gov)**

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