Seepage and Conveyance Technical Feedback Group

April 29, 2011
541 H Street
Los Banos, CA

Agenda

• Introductions and Technical Feedback Group (TFG) Purpose
• Action Item Review and Update
• 2011 Interim Flows
• Release of Draft PEIS/R
• Site Evaluation Process
• Site Specific Influences
• Information & Data Exchange
• Next Steps and Follow Through

TECHNICAL FEEDBACK GROUP OBJECTIVES
TFG Objectives

- Convey Interim and Restoration Flows while avoiding seepage impacts
- Identify potential projects that would avoid seepage impacts
- Identify locations for projects with potential for seepage impacts
- Set evaluation criteria for projects
- Develop a common understanding of the process, procedures and expectations for projects

Process & Decision-making

- Monthly Meetings
  - Focused on Seepage Project Handbook and identifying projects to avoid seepage impacts
- Additional topics and meetings identified and considered as we proceed
  - Update Charter in September 2011
- Reclamation and its partner agencies retain decision authority for Program implementation

Discussion Topics

<table>
<thead>
<tr>
<th>Projects Intro</th>
<th>Site Evaluation</th>
<th>Plan Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Data Collection</td>
<td>Project Types</td>
</tr>
<tr>
<td>Background</td>
<td>Investigations</td>
<td>Site-Specific</td>
</tr>
<tr>
<td>Purpose</td>
<td>Groundwater</td>
<td>Considerations</td>
</tr>
<tr>
<td>Potential Projects</td>
<td>Soil Salinity</td>
<td>Selection Criteria</td>
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<td></td>
<td>Conductivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Quality</td>
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ACTION ITEMS

Recently Closed Action Items

- Soil temperature operations
- Soil logs from hand augered boreholes for capillary fringe data

Soil Temperature – RMC Comments

- No short-term soil temperature issue
- Potential need for monitoring after Mendota Pool bypass is built
  - Watch Sack Dam gaging station temp sensor
  - Soil temp monitoring stations at well sites
  - UC Co-op yield comparison
### Soil Logs from Hand Auger Boreholes

#### Field Capacity

- **Field Capacity:** 28%
- **Soil Surface:**
- **Water Table:**
- **Anoxic Portion:**
- **Full Capillary Fringe:**
- **Pore Volume (% of Soil Volume):**
- **Saturated:**

#### Table 1: Soil Log Data

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Content (%)</th>
<th>Organic Matter (%)</th>
<th>pH</th>
<th>Temperature (°C)</th>
</tr>
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<tbody>
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<td>6.5</td>
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#### Table 2: Soil Log Data

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#### Table 3: Soil Log Data

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<th>Organic Matter (%)</th>
<th>pH</th>
<th>Temperature (°C)</th>
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#### Table 4: Soil Log Data

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<th>Water Content (%)</th>
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<th>pH</th>
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<td>Open Action Items</td>
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<td>Action</td>
<td>ID'ed Due Assigned</td>
<td>Status</td>
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<tr>
<td>-------------------------------------------------------</td>
<td>------</td>
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<td>--------------------</td>
<td>------------</td>
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<tr>
<td>1. Work Plan for additional tensiometer work to develop more data on capillary fringe.</td>
<td>1/14/11</td>
<td>Lee &amp; Green</td>
<td>1/14/11</td>
<td>February 2011</td>
</tr>
<tr>
<td>2. Provide draft of plans with the expected files for the graphs are based on.</td>
<td>1/14/11</td>
<td>Lee &amp; Green</td>
<td>1/14/11</td>
<td>Harrison Pending</td>
</tr>
<tr>
<td>3. Add river mile station to river profile to link wells to locations.</td>
<td>2/10/11</td>
<td>Harrison</td>
<td>2/10/11</td>
<td>Harrison Pending</td>
</tr>
<tr>
<td>4. Explore partnering on the cultural resources survey to expand the scope to go out beyond the levee to collect information that would help evaluate projects.</td>
<td>2/10/11</td>
<td>Harrison &amp; White</td>
<td>2/10/11</td>
<td>Discussions underway with DWR. Discussions underway with DWR.</td>
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<tr>
<td>5. Provide data to Reclamation regarding funding.</td>
<td>3/22/11</td>
<td>Houk</td>
<td>3/22/11</td>
<td>Complete</td>
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<tr>
<td>6. Check that right of first refusal is offered to landowner.</td>
<td>3/22/11</td>
<td>Mooney</td>
<td>3/22/11</td>
<td>Mooney</td>
</tr>
</tbody>
</table>

Dave Mooney  
2011 INTERIM FLOWS

Current Status - Flood and Interim Flows
Near Hills Ferry

Hotline Calls

- Flood flows controlling, no hotline calls
- Several concerns raised regarding data collection during flood flows
- Site visits conducted
- Well locations staked
- Soil texture logged
- Salinity measurements made
- Monitoring well round #5 in Fall 2011

Ali Forsythe
RELEASE OF DRAFT PEIS/R
Draft PEIS/R

- Released April 22, 2011
- Restoresjr.net ➔ Program Docs
- If you would like to request a CD containing the document, please contact:
  Ms. Margaret Gidding
  916–978–5461
  mgidding@usbr.gov.

Copies available for public review

- Merced County, Los Banos Public Library, 1312 S. 7th Street, Los Banos
- Bureau of Reclamation, South-Central California Area Office, 1243 N Street, Fresno
- California Department of Water Resources, South Central Region Office, 3374 East Shields Avenue, Fresno
- Central Branch, 2420 Mariposa Street, Fresno
- Visalia Branch Library, 200 West Oak Avenue, Visalia

Public Hearings

- Visalia
  - Tuesday, May 24, 2011, 10 a.m.-12:30 p.m.
  - Lamp Liter Inn, Ballroom
  - 2300 West Mineral King Ave, Visalia, CA 93291
- Fresno
  - Tuesday, May 24, 2011, 6 p.m.-8:30 p.m.
  - Piccadilly Inn – University, Grand Ballroom
  - 4961 North Cedar Ave, Fresno, CA 93726
- Los Banos
  - Wednesday, May 25, 2011, 4 p.m.-8:30 p.m.
  - Merced County Fairgrounds, Germino Room
  - 403 “F” Street, Los Banos, CA 93635
- Sacramento
  - Thursday, May 26, 2011, 1:30 p.m.-4 p.m.
  - Holiday Inn Capitol Plaza, John Q. Ballroom
  - 300 J Street, Sacramento, CA 95814
Comment Period

- Comments due by June 21, 2011
- 60 day comment period
- Send written comments on the Draft PEIS/R to:
  Michelle Banonis
  SJRRP Natural Resources Specialist
  Bureau of Reclamation
  2800 Cottage Way, MP–170
  Sacramento, CA 95825
- or via email at PEISRComments@restoresjr.net.

Selected Chapters

- Chapter 10: Geology and Soils
- Chapter 11: Hydrology – Flood Management
- Chapter 12: Hydrology – Groundwater
- Chapter 13: Hydrology – Surface Water Supplies and Facilities Operations
- Chapter 14: Hydrology – Surface Water Quality
- Chapter 16: Land Use Planning and Agricultural Resources

SITE EVALUATION PROCESS

Katrina Harrison
Elements of the Seepage Project Handbook

• Introduction
• Site Evaluation
• Plan Formulation
• Data Collection
• Design
• Environmental Compliance
• Construction
• Financial Assistance

Site Evaluation Physical Processes

Salinity Sources

• Irrigation Water
• Fertilizer
• Natural Soil Minerals
• Shallow Groundwater Rise
**Groundwater Rise Sources**

- Rainfall
- Irrigation
- Canal Seepage
- Flood Flow Seepage
- SJRRP Seepage

**Site Evaluation Process**

1) Records Review
2) Data Collection
3) Analysis
4) Reporting

**Existing Records Review**

Reclamation has:
- Precipitation Records
- Historic Aerial Photos

Reclamation may have:
- Soil Texture
- Soil Salinity Sampling
- Groundwater Monitoring
- Surface Water Monitoring

Landowner may have:
- Yield Data
- Irrigation Records
- Fertilizer Applications
- Aerial Photos
- Soil Texture
- Soil Salinity
- Infrastructure
Data Collection

- Salinity Sampling via hand augers
- EM 38
- Water Quality Sampling
- Staff Gages
- Monitoring Wells
- Hydraulic Conductivity Tests

Soil Salinity Sampling

EM 38 Readings

- Vertical and horizontal Electrical Conductivity
- Calibration to soil temperature
Hydraulic Conductivity Tests

Analysis

• Cross-sections
• Water surface vs. groundwater profiles
• Flow nets
  – Soil texture
  – Hydraulic conductivity
• Site-specific influences

Report

• Provides for landowner input – are we considering all relevant data?
• Gathers site-specific soil and water data together for future landowner use
• Sets initial alternatives for further analysis
SITE-SPECIFIC INFLUENCES

Purpose

- Initial screening step
- Identify list of Initial Alternatives

Site Specific Influences

- Infrastructure
- Soil texture
- Water quality of potential effluent
- Cultural resources
- Endangered species
- Historical hydrology
- Potential Crops
Infrastructure

• Effective existing tile drains
  – May lean towards tile drains as a project
• Lack of adjacent canals for tile drain effluent blending
  – May rule out tile drains as a project

Soil Texture

• Very fine soils
  – May decrease effectiveness or increase costs of drainage projects
• Sand stringers
  – May require further analysis or specialized solutions for drainage projects

Water Quality

• High EC drain water *(does this term need to be defined?)*
  – May not be allowed to enter San Joaquin River; may require drainage to irrigation district for blending
• Heavy Metals
  – May impact fish populations; may require drainage to irrigation district for blending
Cultural Resources

Endangered Species

- Excavation in BNLL habitat if there is State involvement
  - May be adverse effects to species; may not choose that project

Historical Hydrology

- Frequent flooding
  - Lands historically flooded may not be considered for tile drains
**Potential Crops**

- Lands unsuitable for permanent crops
  - Projects on these lands may not be designed to allow permanent crops

**Site Evaluation**

- Ensure all appropriate data has been considered
- List of Initial Alternatives
- Unreasonable projects screened out

**Projects Next Steps**

- Plan Formulation
- Selection Criteria
- Weighting
- Final Alternative(s)
Feedback on Project Types

- Are we missing any?
- Real Estate
  - Easements
  - Acquisition
- Physical
  - Tile drains
  - Slurry walls
  - Drainage ditches
  - Shallow well pumping
  - Conveyance improvements

Ideas to Solve Challenges

- Ownership
- Operations and Maintenance
- Water Discharge
- Water Rights
- Long-term Monitoring
- Cost-share
- Terms of an Agreement
Flood Flow Lessons

- What have we learned from flood flows?

![Graph showing flood flow data]

W75 (MW-10-75) is 1500 feet from the river channel.

NEXT STEPS AND FOLLOW-THROUGH

Patti Ransdell

- Feedback from Landowners on Draft Site Evaluation process & data – May 12

- Set Next Meeting Dates:
  - May 27
  - June 21
Milestones

Feb | Mar | Apr | May

- SMP
- Projects Intro
- Site Evaluation
- Plan Formulation

2/18 Draft SMP
3/11
3/15 2011 SMP
4/14
5/12
6/3

Action Items and Review

- Update Action Items
  - Revised Actions
  - New Actions

Contact

- Technical Feedback Group – David Mooney
  - 916-978-5458
  - dmmooney@usbr.gov

- Seepage Concerns – Seepage Hotline
  - 916-978-4398
  - interimflows@restoresjr.net