Seepage and Conveyance Technical Feedback Group Meeting

April 25, 2019

Preliminary draft – subject to change
Purpose of Today

• Provide updates on seepage monitoring, seepage projects, and the Seepage Management Plan (SMP)

• Questions
Agenda

• Introductions, Meeting Agenda
• SJRRP Updates
• Flow Bench
• Groundwater Monitoring
• Seepage Projects and SMP Updates
• Elevation Surveys
• Questions, Wrap-Up
SJRRP Project Updates

- Funding Constrained Framework
- Mendota Pool Bypass and Reach 2B
- Arroyo Canal and Sack Dam Improvements Project

Seepage ~ 300 cfs
Seepage ~ 500 to 900 cfs
Seepage ~ 1,300 to 1,500 cfs
Seepage ~ 1,500 cfs to 2,000 cfs
Seepage ~ 2,000 to 2,250 cfs
Seepage ~ 2,250 to 2500 cfs

Reach O Levees: 1,070** to 2,500 cfs

Mendota Pool Bypass and Reach 2B - 1,210 cfs to 2,500 cfs

Eastside Bypass Fish Passage Improvements

Arroyo Canal/Sack Dam Project

Estimated Channel Capacity (cfs)

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Factor Controlling Channel Capacity

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* The magnitude of flow that is addressed by seepage actions are approximate and subject to change.

**This channel capacity assumes that the weir boards will be removed from the Merced National Wildlife Refuge weirs. With boards in the weirs, capacity is 580 cfs.

Preliminary draft – subject to change
- **Water Year 2019:**
  - Wet Year Type
  - Flood control releases 3/15-4/5
  - Uncertain if flood control releases will resume
  - Currently operating Restoration Flows

Preliminary draft – subject to change
Recent Flows

- Flood flows released from Millerton March 15, 2019 – April 5, 2019

Friant Dam Releases Since March 2019

- Restoration Flows
- Flood Control Releases
- Restoration Flows
Appendix J (Operations)

• How do we transition from flood flows to Restoration Flows?

  – Ensure groundwater levels are draining, through either the 1:1 stage relationship or the drainage method
  – Monitor groundwater levels to ensure they are decreasing
  – Document in a Flow Bench Evaluation report
  – Refer to Section J.3 of the Seepage Management Plan (http://www.restoresjr.net/restoration-flows/seepage-projects/)

Preliminary draft – subject to change
I:1 Stage Relationship

A. Determine change in river stage from proposed flow change
B. Assume change in river stage = change in groundwater level
C. Add change in groundwater level to most recent observed groundwater level
Groundwater Level Method

Figure J-2 from SMP Appendix J

Note: The values 1-7 reference columns in the new Flow Bench report format.
Drainage Method

Figure J-3 from SMP Appendix J

Note: The values 1-7 reference columns in the new Flow Bench report format.
What is a Flow Bench?

- Sustained flows at a targeted flow rate
- Allows for observing response of groundwater table
Flow Bench

- Completed seepage easement at the downstream end of Reach 4A, right bank in November 2018
- Empirical evaluation of groundwater data to-date informed flow bench target
Flow Bench

- Flow bench was intended to assess seepage in Reach 3 and Reach 4A
  - Projected limitation was Reach 3
  - Targeted 520 cfs for flow bench in Reach 3
  - Restoration Flows were released past Sack Dam minus Arroyo Canal demands
Flow Bench (49B)

- Bench occurred from 2/10/19, 7am to 2/28/19, 2:30pm

MW-09-49B Flow Bench

Preliminary draft – subject to change
Flow Bench (R37)

- Bench occurred from 2/10/19, 7am to 2/28/19, 2:30pm
Flow Bench (W89)

- Bench occurred from 2/10/19, 7am to 2/28/19, 2:30pm
Analysis of Flow Bench

- No thresholds currently assigned at MW-17-225 and MW-18-80B, but had elevated groundwater levels
- On 2/28 the SJRRP communicated to the RA the need to reduce Restoration Flows
- Flow Bench Evaluation posted at: http://www.restoresjr.net/?wpfb_dl=2285
Monitoring Network

- 200+ wells
- Includes SJRRP, district, and landowner wells
- Some locations outfitted with dataloggers and real-time equipment
- Manual measurements taken monthly or more frequently as needed
Monitoring Network

• In process of updating the monitoring network
  – Re-assess monitoring frequency
  – Potentially abandon or transfer wells at executed seepage project locations and unresponsive locations
  – Evaluate additional (or replacement) monitoring locations (wells, gauges)
Real-Time Equipment

- 6 active real time locations
- Links and codes available at:
  
  http://www.restoresjr.net/restoration-flows/groundwater-monitoring/
5 MINUTE BREAK

Up Next: Seepage Project and SMP Updates
SEEPAGE PROJECTS AND SMP UPDATES
Seepage Projects

- 2 seepage easements executed since last SCTFG meeting
Seepage Projects

• 2 fee title acquisitions expected to close in 2019
Seepage Projects

• 7 seepage projects currently being prepared for appraisal
Seepage Projects

- 2 physical projects under consideration
Seepage Management Plan

• Planned SMP Updates:
  – Appendix C: Areas Potentially Vulnerable to Seepage Effects
  – Appendix E: Monitoring Network
  – Appendix H: Groundwater Level Threshold
    • Include recently installed wells
    • Update crop type
Importance of Elevation Data in SMP

- Managing to thresholds that are based on depth to water (DTW) measurements in wells
- Translating to field requires elevation data
Importance of Elevation Data in SMP

• **Flow Bench Evaluation**
  – Projected elevation of the water surface is compared to groundwater elevation in the well when evaluating potential flow changes.
Elevation Surveys

- Collected elevation data, February - April 2019
- Resurveyed the groundwater monitoring network and key staff gage locations
- Results provided 4/17, currently under review
Other Elevation Data

- Most recent LiDAR: Fall 2015
- Biannual subsidence surveys
  - Available at: http://www.restoresjr.net/science/subsidence-monitoring/
Next Steps for Elevation Data

• QAQC of
  – 263 wells surveyed
  – 24 staff gauges surveyed

• No revisions to the SMP at this time

• Determine an approach to account for elevation changes that does not require continued re-surveying of the network
WRAP-UP, QUESTIONS
Contact

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  – rstory@usbr.gov

• Seepage Concerns: Seepage Hotline
  – 916-978-4398
  – RestorationFlows@restoresjr.net