Agenda

• Introductions
• Restoration Flows
• Unreleased Restoration Flows
• Recovered Water Account Balances
• 2016 Recapture/Recirculation
• Restoration Flows Guidelines v2.0
• WMG Project Updates
• Long-term Recapture/Recirculation of Restoration Flows EIS
• Adjourn
2016 RESTORATION FLOWS
2016 Restoration Year Actions

- First Restoration Flows in 2+ years
- Provisional Allocation due to South-of-Delta water supply shortfall
- Pulse flows to test juvenile salmon capture and transport
- Obstacles: Sand Removal, K-Rat, Mendota Pool maintenance
- Nearly half of allocation became URFs
- First flows below Sack Dam Aug 17
- Recapture in lower SJR pending
2016 Restoration Year Type

Current Forecast:
- Normal-Dry year type
- 1,260 TAF – 75% forecast from DWR
- 1,360 TAF – 75% forecast from NWS

(July 17, 2016)

2016: 387.2 TAF / 270.3 TAF
2016 Restoration Allocation

• Provisional Restoration Allocation 1/26/16:
  – 9,445 AF through February 29
  – RA schedule of 2,380 AF (extended 2/22/16)

• Full Restoration Allocations
  3/18/16: 261,400 AF  RA schedule 129,000
  4/14/16: 276,085 AF  RA schedule 144,224
  5/31/16: 266,932 AF  RA schedule 135,071
  7/7/16: 270,297 AF  RA schedule 131,861

• Final Restoration Allocation 10/1/2016:
  – Approximately 265,000 AF
  – RA schedule TBD
**Reach 2: 1,120 cfs**
- Due to seepage and levee stability challenges in Reach 2B caused by Restoration Flows
- SJRRP Reach 2B and Mendota Pool Bypass Project will allow for full conveyance of Restoration Flows

**Reach 4: 70 cfs (300 cfs in late 2016)**
- Due to requirement (per Settlement Act) to protect adjacent lands from damage resulting from Restoration Flows
Effects of Channel Constraints

Limits full release of Restoration Flows from Friant Dam

- Losses and diversions in Reaches 1 and 2 plus the flow that can be conveyed through Reach 2
- Constraints in Reach 4B due to potential Fresno Kangaroo Rat habitat sightings

URF Generation

- Restoration Flows that cannot be released from Friant Dam due to channel capacity constraints
- SJRRP is preparing for URFs by:
  - Completing environmental coverage
  - Securing agreements with Friant contractors to purchase/exchange URFs
  - Coordinating with Friant Dam Operations
- Managed to best achieve the Restoration Goal

Preliminary Draft, Subject to Revision
2016 UNRELEASED
RESTORATION FLOWS
2016 URF Sales

• **Total estimated URF Volume:** 139,294
  19 TAF for Exchanges, 114 for Sales, 6 in Reserve

  – **Tier 1:**
    • 85 TAF available late March
    • $60 / AF
    • Immediate delivery

  – **Tier 2:**
    • 4.5 TAF available late May (Block 1)
    • 19 TAF available in June (Block 2)
    • $150 / AF
    • Schedulable
    • Anticipate Block 3 ~ 12 TAF (schedulable or carryover)
• Reclamation wrapping up three exchange agreements
  – OCID
    • 3 TAF
    • Return to Millerton between 2018 and 2021
  – FID
    • 8 TAF
    • Return to Millerton between 2018 and 2021
  – AEWSD
    • 7 TAF
    • Return to Millerton or San Luis Reservoir between 2018 and 2021
RECOVERED WATER ACCOUNTING & BALANCES
• Implement a Recovered Water Account and program “… for the purpose of reducing or avoiding the impact” of Restoration Flows

• Monitor and record reductions in water deliveries that have not been replaced or offset

• “establish a baseline condition as of the Effective Date of this Settlement with respect to water deliveries for the purpose of determining such reductions.”
Reduction in Water Deliveries

• 7 Step process described in Restoration Flows Guidelines Appendix H

• Model considers:
  – Baseline w/o Restoration Flows
  – Holding contract requirements
  – Friant’s ability to take flood water (Water Use Curve)
  – Flood spills that would have occurred
  – Contract amount
## Friant-Wide Impacts (AF)

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Settlement Mitigation Tools

- Recirculation, recapture, reuse, exchange or transfer pursuant to Paragraph 16(a)
- Programs or projects undertaken or funded by a Federal or State of California Agency specifically to mitigate water delivery impacts of Restoration Flows
  - PL 111-11, Title X, Subtitle A, Part III Projects
- $10 water pursuant to Paragraph 16(b)(2)
Friant-Wide Offsets (AF)

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<td>URFs</td>
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RWA Credit Transfers

• Only Friant Contractors may have RWA credits
• Can transfer credits only to other Friant Contractors
• Provide Reclamation written notification of credit transfers
### RWA Balances

#### Calculated Impact

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#### Allocated Credits

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#### Recirculation

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#### Credit Transfers

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#### Credits Remaining

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RWA True Up

- Friant Contractors to review spreadsheet and provide edits by end of October 2016
- Updates to RWA impact model methodology to be addressed in spring/summer 2017
- In the mean time, all Friant Contractors will be able to participate in URF and 16(b) water programs.
2016 RECAPTURE & RECIRCULATION
Recapture and Recirculation

• Paragraph 16(a) of the Settlement authorizes and directs the Secretary to develop a plan for recirculation, recapture, reuse, exchange, or transfer of Restoration Flows (R&R Plan) to achieve the Water Management Goal

• Constraints:
  – No adverse impact on Restoration Goal, downstream water quality or fisheries
  – Cannot adversely impact contractual obligations
  – Subject to use of CVP facilities for SOD Project water
  – Subject to COA, including any agreement to resolve conflicts
2016 Recapture Locations

South-of-Delta Facilities

Lower San Joaquin River:
• Patterson Irrigation District
• Banta-Carbona Irrigation District

In the Restoration Area (Mendota Pool)
Mendota Pool Recapture

Restoration Flows Available
• Limited to flows originating at Friant Dam
• Less 5% operational loss
• Less flows conveyed past Sack Dam
• Less Exchange Contractor deliveries

Recapture Opportunities
• San Joaquin Exchange Contractors
Lower San Joaquin River Recapture

Restoration Flows at Merced River Confluence

- Releases from Sack Dam minus wet-up losses in Reach 4 and Eastside Bypass

Recapture Opportunities

- Patterson ID maximum ~40 cfs
- Banta-Carbona ID maximum ~65 cfs
- Limited by in-district use of facilities
- SJRRP obtained environmental coverage and temporary point of diversion
- Friant Contractors obtained agreements to cover wheeling costs
Recapture at the Delta Facilities

**Restoration Flows** remaining after any recapture on the lower San Joaquin River

**Recapture at CVP/SWP Pumps**
- Subject to use for SOD CVP (per Settlement Act)
- Subject to USBR and DWR compliance with BiOps and D-1641 objectives
- SJRRP PEIS/R provides project-level environmental coverage
## Stored 2013 Restoration Flows

<table>
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<tr>
<th>Entity</th>
<th>Amount originally stored</th>
<th>Amount Available in 2016</th>
<th>Amount Remaining</th>
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<tr>
<td>Meyers Water Bank</td>
<td>1,068</td>
<td>768</td>
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<tr>
<td>CCID</td>
<td>2,860</td>
<td>2,860</td>
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<tr>
<td>James ID</td>
<td>2,753</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>6,681 AF</strong></td>
<td><strong>3,628 AF</strong></td>
<td><strong>2,753 AF</strong></td>
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Allocated pro rata to Class 1 contractors
Recaptured 2016 Flows

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<th>Month</th>
<th>SJRRP*</th>
<th>Other Transfers to Exchange Contractors</th>
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<tbody>
<tr>
<td>July</td>
<td>1,148</td>
<td>4,409</td>
</tr>
<tr>
<td>August</td>
<td>2,945</td>
<td>8,569</td>
</tr>
<tr>
<td>September (thru 9/11/2016)</td>
<td>1,065</td>
<td>0</td>
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<tr>
<td><strong>Total</strong></td>
<td>5,158**</td>
<td>12,978</td>
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Projected recapture (remaining thru 2/28/2017) +32,000 0

* Includes 5% loss at Mendota Pool,
**Allocated pro rata to Class 1 contractors
Process

✔ Kickoff Meeting Aug 23 created recommended topics for revision and prioritized tasks
  • Small Workgroup will meet Oct 4 through Nov to draft specific revisions
  • Version 2.0 will be approved in January 2017
  • Remaining revision topics will be readdressed in Summer and Fall of 2017
Priority Revision Areas

• Forecasting
  – Exceedance % (Option 1D)
  – Merge SJRRP and SCCAO forecasting techniques

• Flexible Flow Provisions for Restoration Administrator
  – Moving flows within and between seasons (transfers within the hydrograph)
  – Test for non-impact to Friant water supply
  – Adjustment of base flows
  – Flexibility with Unreleased Restoration Flows
Other Revision Areas (2017+)

• Recovered Water Account
  – Adjust impact calculation to include URFs
  – Clarify Warren Act Contracts, non-CVP

• Gravelly Ford Flow Compliance

• Buffer Flows

• Flood Flow Management
WATER MANAGEMENT GOAL PROJECTS
Canal Capacity Restoration

Friant Kern Canal
• Project on hold to determine next steps

Madera Canal
• Feasibility Report and NEPA analysis underway
• Settling Party draft - October 2016
• Public Draft EA - Spring 2017
FKC Reverse Flow Pump-Back Project

- $2.3M in drought funding announced in February 2015
- Additional $1M drought funding announced in 2016
- Financial Assistance Agreement awarded to FWA in August 2016
Groundwater Financial Assistance

Tulare ID - Cordeniz Basin Construction & Exchange Program

- 80-acre basin
- Groundbreaking: December 2015
- Complete: May 2017
Groundwater Financial Assistance

Pixley ID - Joint Groundwater Bank
- 560-acre bank with 4.5 mile pipeline to new FKC turnout
- Financial Assistance approved; Revised Draft EA - early 2017

Porterville ID - In-Lieu Project
- Area 1: 1,450 acres connected to Wood-Central Ditch
- Area 2: 720 acres connected to FKC
- Financial Assistance awarded 9/15/16, Enviro. Complete

Shafter-Wasco ID - Madera Avenue Intertie
- 270-acre groundwater recharge basin at Kimberlina Rd.
- Financial Assistance in review, award date 11/2016
- Draft EA public comment period ends 9/20/16
LONG-TERM RECAPTURE AND RECIRCULATION OF RESTORATION FLOWS EIS
Introductions

• Bureau of Reclamation, SJRRP
  – Kellye Kennedy, NEPA Project Manager

• CDM Smith
  – NEPA Consultant Team
  – Chris Park, Project Manager
Overview

• Initial Alternatives Under Consideration
• Preliminary Evaluation of Initial Alternatives’ capacity to Recapture and Recirculate
• Next Steps and Schedule
Alternative 1 – No Action

• Reflects conditions if no further Federal action was taken to expand recapture and continue recirculation over the long-term

• Includes elements analyzed at a project level in the PEIS/R and other ongoing efforts
Alternative 2 – Continue Existing Recirculation Actions

- Adds Recirculation to the Friant Contractors via exchange and/or transfer
Alternative 3 – Maximize Use of Existing Facilities

- Adds Recapture at West Stanislaus Irrigation District, Patterson Irrigation District, and Banta Carbona Irrigation District
Alternative 4 – Expand Existing Facilities

- Improvements to expand recapture at existing local diversion facilities
- Expanded recirculation through exchanges that may require new facilities or complex agreements
- Use of local storage with CCWD or MWD

Storage
- San Luis Reservoir
- Local storage with CCWD or MWD

Recapture
- Restoration area
- Delta
- Lower San Joaquin River at expanded existing facilities

Recirculation
- Direct delivery
- Direct delivery using expanded facilities
- Exchanges
- Transfers
Alternative 5 – Construct New Facilities

- Development of a new facility on the Lower San Joaquin River to recapture up to 500 cfs plus the use of existing facilities (similar to Alternative 3)
- Same Recirculation as Alternative 4
- Storage in Groundwater Banks
Alternatives Development

1. Conduct Public Scoping
2. Develop Initial Alternatives
3. Evaluate Alternatives
4. Select Alternatives for EIS

Screening Criteria

- Public Scoping Report November 2015
- Initial Alternatives TM March 2016
- Project Description TM
Preliminary Evaluation of Initial Alternatives

• Criteria
  – Completeness
  – Effectiveness
  – Efficiency
  – Acceptability
Completeness and Effectiveness

Completeness
• Evaluates the degree to which each alternative addresses the recapture, recirculation and storage capacities necessary to achieve the Purpose and Need of the EIS

Effectiveness
• Measures how effective each alternative supports the recapture and recirculation of Restoration Flows.
1. **Estimate Delta and San Joaquin River Recapture**
   - Use CalSim
   - Develop monthly estimates of recapture for each alternative

2. **Estimate available water for recirculation**
   - Subtract amount to address changes in CVP and/or SWP supplies

3. **Estimate amount recirculated**
   - Spreadsheet Postprocessor (Recirculation calculator)
   - Estimates conveyance and storage capacity and monthly demands
   - Evaluates recaptured water recirculated under each alternative

Modeling Approach

---

Preliminary Draft, Subject to Revision
Delta Recapture

• Calculate available Restoration Flows entering the Delta
• Develop constraints to simulate real operations logic
  – OMR
  – SJR IE Ratio
  – D-1641 EI Ratio
  – Delta water quality
  – Surplus conditions (no recapture)
  – Use both Banks and Jones Pumping

• Develop CalSim models for each alternative
SJR Recapture

• Calculate available Restoration Flows below Merced confluence

• Develop constraints for recapture
  – Available capacity to move water from SJR to DMC
  – Available capacity in the DMC to O’Neill and/or San Luis Reservoir
  – No constraint regarding water quality (potential impacts will be analyzed in EIS to identify if modified operations are necessary)
Recirculation

- Tool includes priorities for how to recirculate the recaptured water
  - Direct delivery with FKC pumpback
  - Other direct delivery options
  - Exchanges
  - Transfers
  - Storage in San Luis Reservoir
  - Other storage
- Priorities will likely vary during implementation, these concepts helped identify if alternatives have adequate capacity
Total Recapture

Average Annual Recaptured Water (TAF)

- Wet
- Normal-Wet
- Normal-Dry
- Dry
- Critical High

Alternatives 1 and 2
Alternative 3
Alternative 4
Alternative 5
Delta Recapture
San Joaquin River Recapture

Average Annual Recaptured Water (TAF)

- Wet
- Normal-Wet
- Normal-Dry
- Dry
- Critical High

Alternatives 1 and 2
Alternative 3
Alternative 4
Alternative 5
Recirculation Summary
Alternative 1

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<th>All Years</th>
<th>Wet</th>
<th>Normal -Wet</th>
<th>Normal -Dry</th>
<th>Dry</th>
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<td>53</td>
<td>78</td>
<td>69</td>
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<tr>
<td>Total Direct Delivery</td>
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<td>57</td>
<td>76</td>
<td>58</td>
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Values are average annual (in TAF)

Alternative 2 has the same values because all water can be delivered using direct delivery through Friant-Kern Canal pumpback
## Recirculation Summary

### Alternative 3

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<td>66</td>
<td>107</td>
<td>102</td>
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<td>Total Direct Delivery</td>
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Values are average annual (in TAF)
## Recirculation Summary
### Alternative 4

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Values are average annual (in TAF)
# Recirculation Summary

## Alternative 5

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<th>Normal -Dry</th>
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Values are average annual (in TAF)
Conclusions

• Direct delivery has adequate capacity to recirculate the recaptured water under all alternatives
  – Retain exchanges and transfers to provide flexibility for limited implementation cost

• San Luis Reservoir has adequate capacity to store water under all alternatives
  – Remove other storage options from further consideration
Next Steps

• Apply remaining evaluation criteria
  – Efficiency (cost)
  – Construction-related effects
  – Fisheries impacts
  – Water quality

• Complete Alternatives Evaluation and Project Description TM
  – Expected for public release in early 2017
Questions?
NEXT MEETINGS
Next Meetings

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