BUREAU OF RECLAMATION

LTO Background and Updating the LTO No Action Alternative

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LTO Background

- Reclamation's mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public
- On September 30, 2021, Reclamation and California Department of Water Resources requested reinitiated consultation on the LTO with US Fish and Wildlife Services and the National Marine Fisheries Service.

  2021 Consultation on the Coordinated LTO of the CVP and SWP | BDO | Area Offices | California-Great Basin | Bureau of Reclamation (usbr.gov)

Collaboration and Outreach

- Reinitiation of consultation with four partner agencies: DWR, USFWS, NMFS, CDFW
- Six scoping meetings (Feb-Mar 2022)
  - Presented information about CVP, SWP, and NEPA Process
  - Attended by members of the public, landowners, and representatives from public agencies
  - Public Scoping Report
- Interested Party Meetings

Description of Alternatives

- No Action Alternative (NAA)
- Alt1 – Water Quality Control Plan
- Alt2 – Multi-Agency Consensus
- Alt3 – Modified Natural Hydrograph
- Alt4 – Risk Informed Operation

Updating the NAA

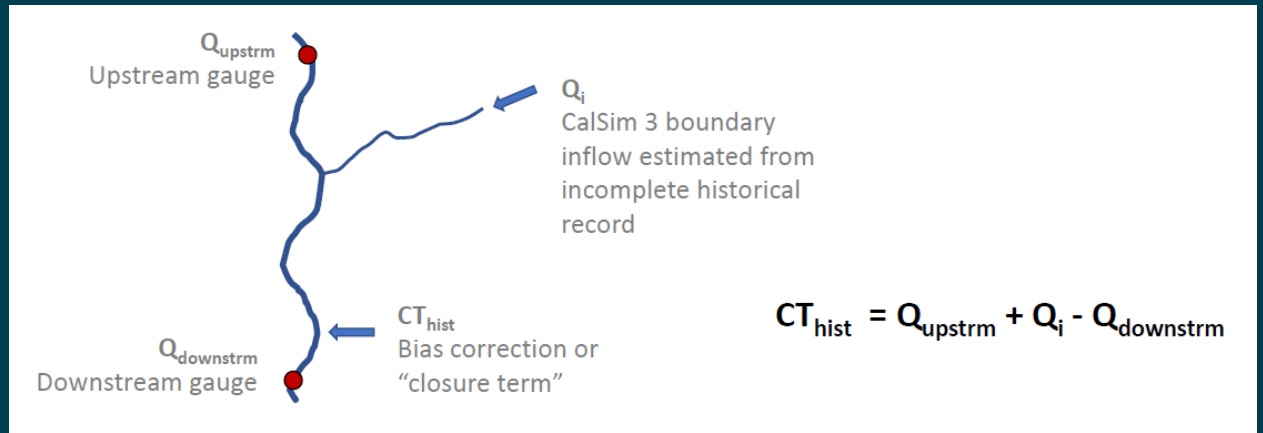
1. **Period extension to 2021, including extending and updating CalSim Hydro and DCD models**
2. **2022 Median climate change hydrology development**
3. **OMR implementation for consistency with PA. OMR implementation in NAA based on recent actual operations and observations.**
4. **Trinity Import Logic (import volume and timing logic)**
5. **Sac River Settlement Contractor demands (CVP vs water rights, NOD transfers, Redding)**
6. **SJRR release and recapture updates**
7. **Drought Actions, including allocation adjustments and TUCPs**
8. **Runoff forecasting updates (to improve climate change performance)**
9. DCC code improvement for operation under Biological Opinions.
10. Urban Demands updated to 2020 Urban Water Mgmt Plans
11. Upper American River module updates
12. Many other miscellaneous minor updates

Extending Simulation Period

- CalSim II includes hydrology of Water Years 1922 – 2003
- CalSim 3 (used in 2021 LTO) includes hydrology for Water Year 1922 – 2021
- Monthly inputs used by CalSim were updated:
  - Rim watershed inflows
  - Reservoir evaporation
  - Surface runoff from valley watersheds
  - Flow closure terms (bias corrections)
  - Agricultural, urban, and managed wetland water demands
  - Surface return flows and deep percolation of precipitation and irrigation to the underlying groundwater.

Extending Simulation Period

- Rim inflows
  - Hydrology of the foothill and mountainous “rim” watersheds that surround the Central Valley are input into CalSim as boundary inflows.
  - Extended using observed streamflow records
- Closure Terms
  - CalSim 3 uses closure terms to adjust surface water supplies using historical streamflow data as a reference
  - Serve as bias corrections of rim inflows and/or rainfall runoff so that simulated and recent observed streamflow data are more consistent



Extending Simulation Period

- Water Demands
  - CalSimHydro – preprocessing tool used to develop water demand inputs for CalSim 3. Used to simulate water use for non-ponded agricultural crops, rice, and managed wetlands. This tool was extended through WY 2021 by updating land use, climate data (precipitation), and evapotranspiration
- Secondary Models
  - Secondary models that rely on CalSim II outputs were also extended to WY 2021 (e.g., DSM2, HEC-5Q, USRDOM, etc.)

2022 Median Climate Development

- Climate change represents the most significant and least well-understood threat to Reclamation's operations in California
- The impacts of climate change on water management in California were analyzed as part of the 2021 LTO of the CVP and SWP.
- Climate change impact representing 2022±15 climate conditions were analyzed by updating CalSim 3 meteorologic and hydrologic boundary conditions for Long Term Operations.
- For more information, please see Session 16: USBR 2022MED Hydrology Development: Detrending Methodology

Old and Middle River

- For the 2019 BiOp modeling assumptions, actions triggered by fish salvage were estimated to cover all of March – May (OMR Index > -3,500 cfs)
- Based off the operational experience and the expertise of fish biologists
- For the 2021 LTO, the modeling assumptions were changed to match the methodology used for Alternative 2
- Cameron will present in more detail on OMR in the next talk.

Trinity Import Logic

- For the 2019 BiOp, Trinity Import logic balanced relative storage of Shasta and Trinity
- Updated logic uses Water Supply (storage and future inflow) in the Trinity Basin to determine volumes of Trinity Import
- Import volumes may be tempered depending on storage in Shasta

Sacramento River Settlement Contractor demand updates

- City of Redding diversion improvements (Left Bank vs Right Bank, diversion priorities)
- Settlement Contractor diversions take Sacramento River water first, then Tributary water
- Revised factors for Settlement Contractor water use efficiency to match Reclamation reported diversions
- Implemented transfers of unused Settlement Contractor water to CVP water service contractors
- Miscellaneous improvements to Tributary diversion locations and priorities

San Joaquin River Restoration Program (SJRRP) release and recapture updates

- Dynamic calculation of SJRRP water year type based on unimpaired inflow to Millerton
- Calculation of restoration flow schedule basic on dynamic SJRRP water year types
- Ensure that the Millerton release is no less than the restoration reach flow target
- Added recapture of SJRRP flows when Millerton is spilling
- Diversion of 16b flood flows at Friant-Kern and Madera Canals
- Improved calculation of volume of SJRRP flows that can be recaptured in the Delta in April and May

Drought Actions

- TUCPs included in the NAA, Alt4, and Alt2 sensitivity.
  - Plug for Ryan's talk in Session 21 (Thursday morning)
- M&I allocation reduced to 25% in Critically Dry years.

Runoff forecast

- dll not doing a great job in the forecasting.
- Jacobs process tool.
  - Steve Micko, Kunxuan.
- Perturbing historical record using same perturbation methods as climate change.
  - Section 16 This afternoon.

Collaborators

- Derya Sumer
- Nancy Parker
- Andy Draper
- Rob Leaf
- Amanda Becker
- Cameron Koizumi
- Kunxuan Wang
- Steve Micko
- More!

Questions?