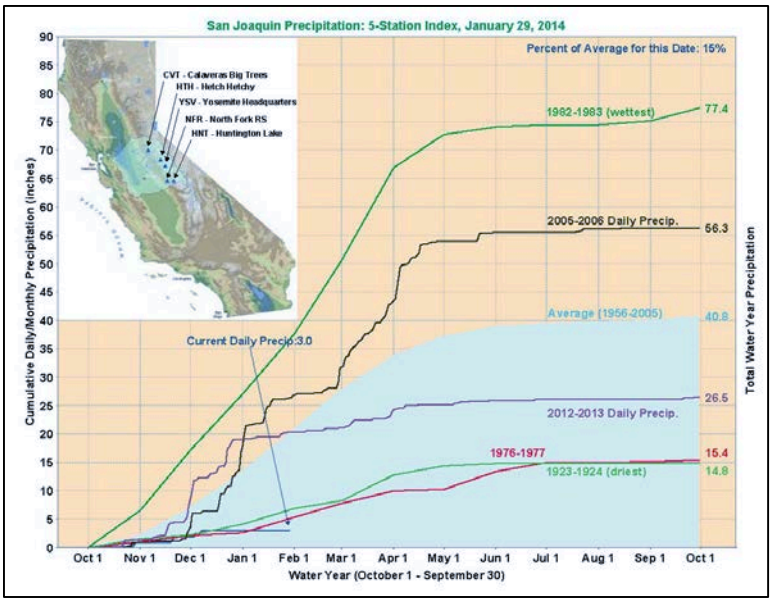
San Joaquin Restoration Program
Restoration Administrator Flow Recommendation

To: Alicia Forsythe
CC: Apurba Borah, Mario Manzo, Ron Jacobsma, Monty Schmitt
Date: January 31, 2014
From: Tom Johnson, Restoration Administrator
Subject: Recommendations for 2014 Restoration Flows

The following is a recommendation by the Restoration Administrator (RA) for the 2014 Restoration Flows, commencing February 2014, pursuant to the Restoration Flow Guidelines (RFG) and Exhibit B of the Settlement.

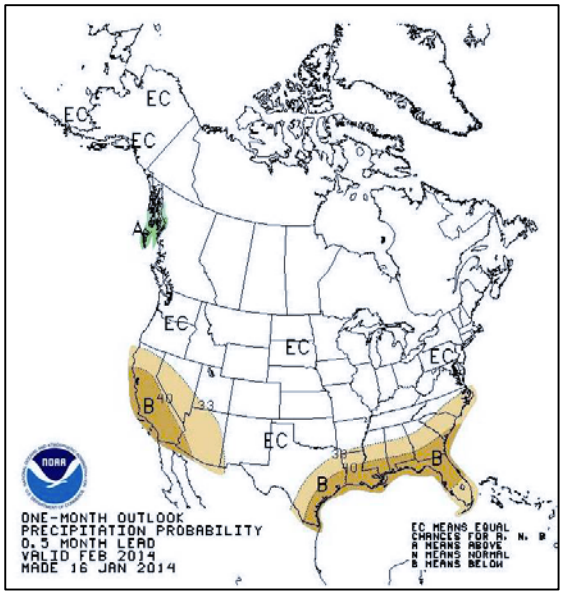
Background

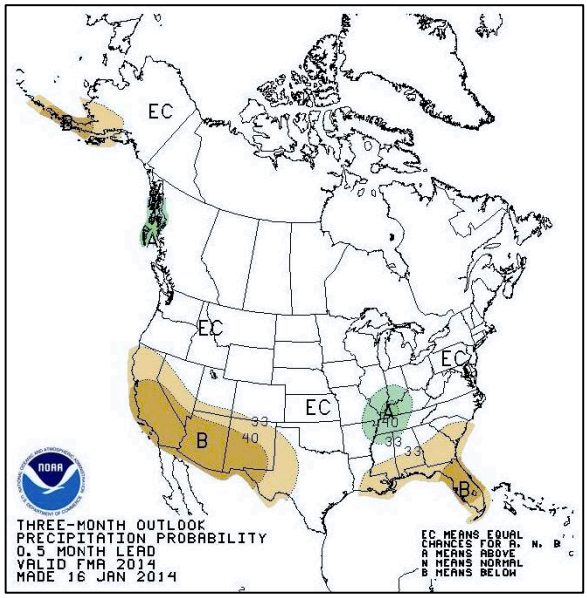
The winter of 2013-2014 is shaping up to be one of the driest in California history. The California Nevada River Forecast Center (NOAA)[1] reports an observed inflow to Millerton Reservoir of 42.8 TAF, less than 20% of normal. The San Joaquin Precipitation 5 – Station Index reports current daily precipitation of 3 inches, below the driest year of record.[2]



Of additional concern, the NOAA long-term forecast models show continued dry conditions for months into the future.[3,4]

[1] http://69.62.198.4/rawESP_WY.php?id=FRAC1
[2] http://cdec.water.ca.gov/cgi-progs/products/PLOT_FSI.pdf
[3] http://www.cpc.ncep.noaa.gov/products/predictions/30day/off14_prcp.gif
[4] http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead01/off01_prcp.gif





As a result of the dry conditions, the Restoration Allocation released by Reclamation on January 21, 2014 (Allocation), yielded a forecast of Critical – Low. The relevant section of the Allocation states:

> *Table 1 shows the 2014 San Joaquin River Water Year forecast breakdown at Millerton Lake. The latest DWR forecast is based on January 1, 2014 information while the NWS forecast is updated on January 15, 2014 including 38.5 thousand acre-feet (TAF) observed inflow. Since the 50% exceedance forecast is less than 1,831 TAF, the 90% exceedance forecast is used to determine the pattern year type. The pattern year type is critical low. Based on the method 1D (RFG, December 2013) for a critical low pattern year type, the DWR 90% forecast unimpaired runoff of 295 TAF is used to estimate the Restoration allocation, resulting in a* ***Critical Low Year*** *hydrograph for the SJRRP.*

Table 1-San Joaquin River Water Year Forecast at Millerton Lake

Forecast Source	90%	50%	10%
DWR, January 1, 2014	295 TAF	815 TAF	1,950 TAF
NWS, January 9, 2014	177 TAF	573 TAF	1,817 TAF
NWS, January 15, 2014	163 TAF	478 TAF	1,661 TAF

As of January 29, 2014, releases from Friant Dam are measured at 410 cfs, necessary to achieve a flow compliance target of 255 cfs at Gravelly Ford. Pursuant to the Allocation, on March 1 the Gravelly Ford compliance target will be reduced to 5 cfs; consequently, Friant Dam releases will be reduced to approximately 190 cfs.

Additional Considerations

In addition to receiving the Allocation and analyzing hydrologic conditions and forecasts, I have consulted with the Technical Advisory Committee (TAC), the resource agencies, Reclamation, and the Settling Parties with regards to potential recommendations, operational and biological implications, and water supply impacts. Several key considerations factored in the Restoration Flow recommendation.

1. Current hydrologic and forecast data strongly imply a continuation of very dry conditions. As a result, planning for continuation of the Critical – Low water year forecast appears to be prudent and justified. While precipitation could change the Allocation in the future, there is no current indication that a precipitation event would be timely to impact runoff forecasts and the associated Restoration Flow recommendation in February, perhaps even well into March or April.
2. Reclamation, supported by the resource agencies, intends to implement a trap and haul program for juvenile Chinook salmon in Reach 1. The minimal flow releases from Friant Dam for a Critical – Low water year provides a unique opportunity to gather information regarding juvenile Chinook salmon movement, temperature impacts on juvenile Chinook salmon, flow-stage conditions in the river, and testing trapping efforts in a Critical – Low type water year. Planning for this study is currently underway, and the target start date is approximately mid-February, pending permit approvals and logistic considerations. In general, lower river flows present an easier trapping scenario; as a To support the construction of collection weirs and maximize the effectiveness of the trapping effort, Restoration Program fisheries biologists with concurrence from the TAC believe reducing flows to levels necessary to meet Holding Contract obligations will improve the successful capture of juveniles for release downstream and therefore their survival.
3. A review of current, historic, and modeled longitudinal temperature profiles in Reaches 1 and 2 under low flow conditions indicate that thermal stress for juvenile Chinook salmon (in the form of higher water temperatures) is not likely to be a consideration at the trapping locations until mid-or late March, and possibly not until mid- or late-April. As of mid-or late March, the Critical-Low water year releases (Riparian Releases only) will be insufficient to affect water temperatures.

Options for RA Recommendation

Given the Critical – Low water year type, options for Restoration Flow recommendations are minimal. With no RA recommendation, a reduction in flows on March 1 will take place, pursuant to the Allocation and the Critical – Low Default Flow schedule. As an alternative, consideration was given to reducing flows earlier in February, with the objectives of a) presenting easier conditions for the setup and initiation of the experimental trapping program, b) providing the opportunity to conserve unreleased flows for human health and safety needs, and c) initiating credit in the Unreleased Restoration Flows account for future use that will be of greater benefit to achieving the Restoration Goal.

Several different early ramp down scenarios were discussed on various calls with TAC and resource agency biologists. The opportunity to conserve unreleased Restoration Flows to support the Restoration

Program in the future and improve water supplies in the region in this incredibly dry year was another consideration in developing a recommendation. Ultimately, it was the general consensus that an early reduction of flows, while not biologically beneficial in its own right, is biologically reasonable given the benefits to the juvenile trapping effort and the anticipated sufficient water temperatures in critical areas of the river until mid-or late April. This scenario became the basis for my recommendation.

RA Recommendation

The RA is recommending the following:

- Commence ramp down from Friant Dam releases of 410 cfs on February 1st.
- Ramp down of flows should proceed at a target rate of 50 cfs per day. Recognizing that operational limitations may make a precise flow change of 50 cfs difficult, a daily ramp of 45 – 60 cfs is acceptable as long as care is taken to make the daily ramping steps roughly equivalent.
- The flow reduction should halt at a release of 200 cfs to allow flows to stabilize at Gravelly Ford. This pause may take 2 to 5 days to allow stabilization. Once flows have stabilized, continue ramp down to a target flow of 5 cfs at Gravelly Ford.
- After March 1, flows will conform to the default flow schedules from Exhibit B.

This release pattern is shown graphically below: