

Temperature Monitoring of the Cold Water Pool in Millerton Lake

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Observations

Water temperatures in Millerton reservoir are significantly warmer than previous years. Reservoir water levels are very low and winter inflows are lower than normal. As a result, the cool water pool in Millerton is not cooling as rapidly as it normally does. The drought conditions, if they persist, will result in a smaller volume of cool water for spring and summer San Joaquin River releases. January 2014 cool water pool temperatures are 2.4 °F warmer than January 2013 temperatures.

Concerns

River outlet release temperatures for 2014 will likely be higher than normal and could impact operations at the fish hatchery and other fishery related studies.

Current temperature monitoring of Millerton reservoir inflows are inadequate because the temperature logger is located in the tailwater pool of the Kerckhoff No. 2 Powerplant which is not being used because of dry conditions. Ideally, a temperature logger to measure release temperatures from Kerckhoff No. 1 Powerhouse would be installed to provide accurate inflow temperatures during low flow conditions. This site is about 10 miles upstream from the current location and could be affected by instream warming.

Data Files Available (The ZIP file is 37MB):

FBELEV380.ALLEXTDATA.xlsx –contains water temperature record at River Outlet Intake Elevation 380 from 2005 to present. This file also contains a time-series temperature graphs for years 2005-2013.

Friant ALL AGPM.xlsx – contains daily temperature profile data collected in the forebay to Friant Dam. The AGPM format can be used for data visualization. This file contains forebay temperature profile plots for years 2005-2013.

FKCANAL Temps.xlsx -contains hourly water temperature record for water delivered to Friant-Kern Canal, 2004 to present.

Madera CANAL Temps.xlsx -contains hourly water temperature record for water delivered to Madera Canal, 2004 to present .

WORM FARM Temps.xlsx contains hourly water temperature record for Worm Farm return flows to San Joaquin River, 2004 to present.

SJRTW WQ 2013.xlsx - contains 15-min water quality database queries for water delivered to San Joaquin River below Friant Dam, Calendar year 2013. Contains Flow, Temperature, Specific conductance, and reservoir elevation.

HEADWATER Temps.xlsx - contains hourly water temperature record for water released from Kerckhoff PP No. 2 to the headwaters of Millerton Reservoir, June 2005 to Jan 2014.

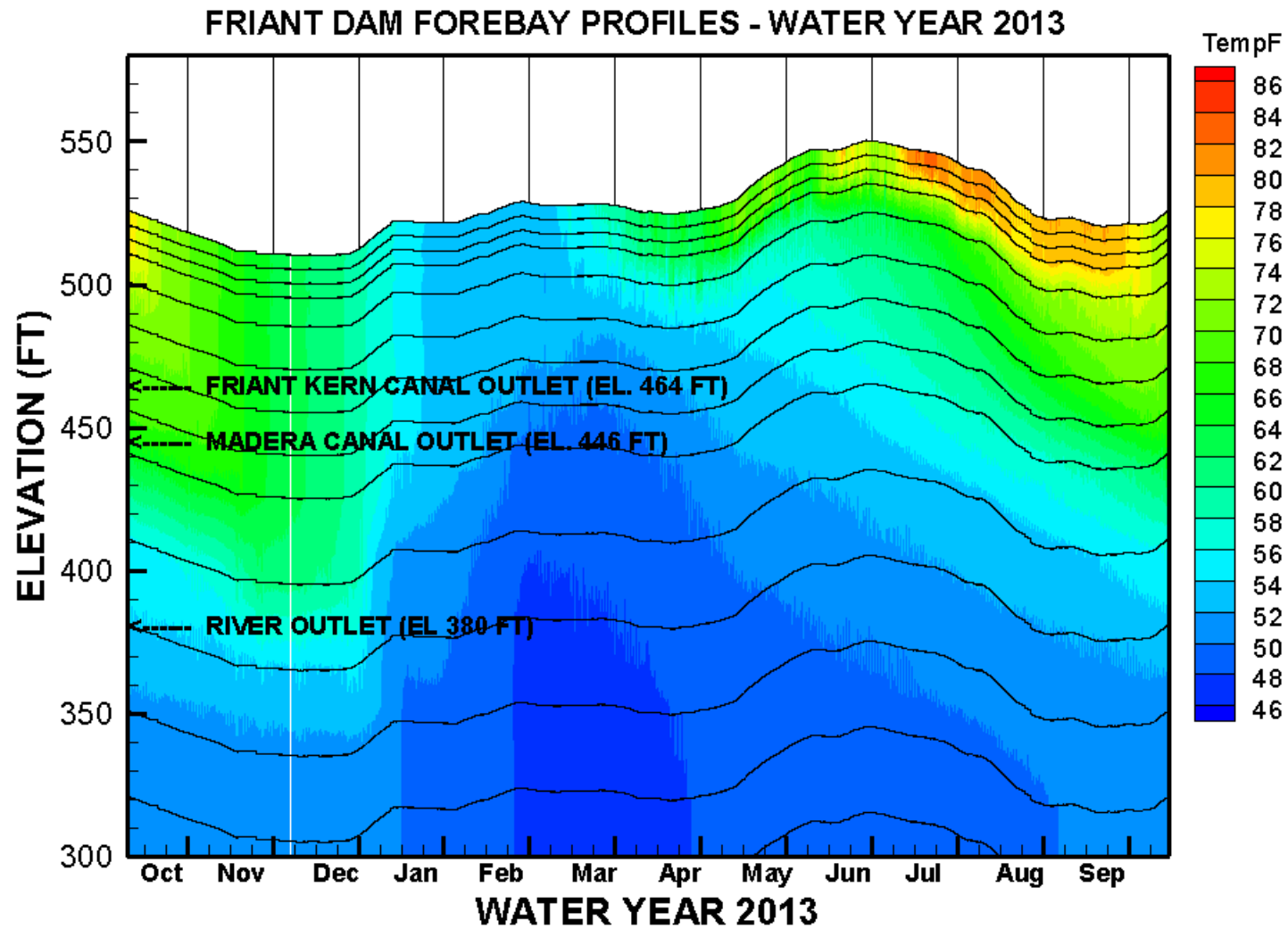


Figure 1. Friant Dam forebay water temperature profile data for water year 2013. Black lines are temperature logger data points.

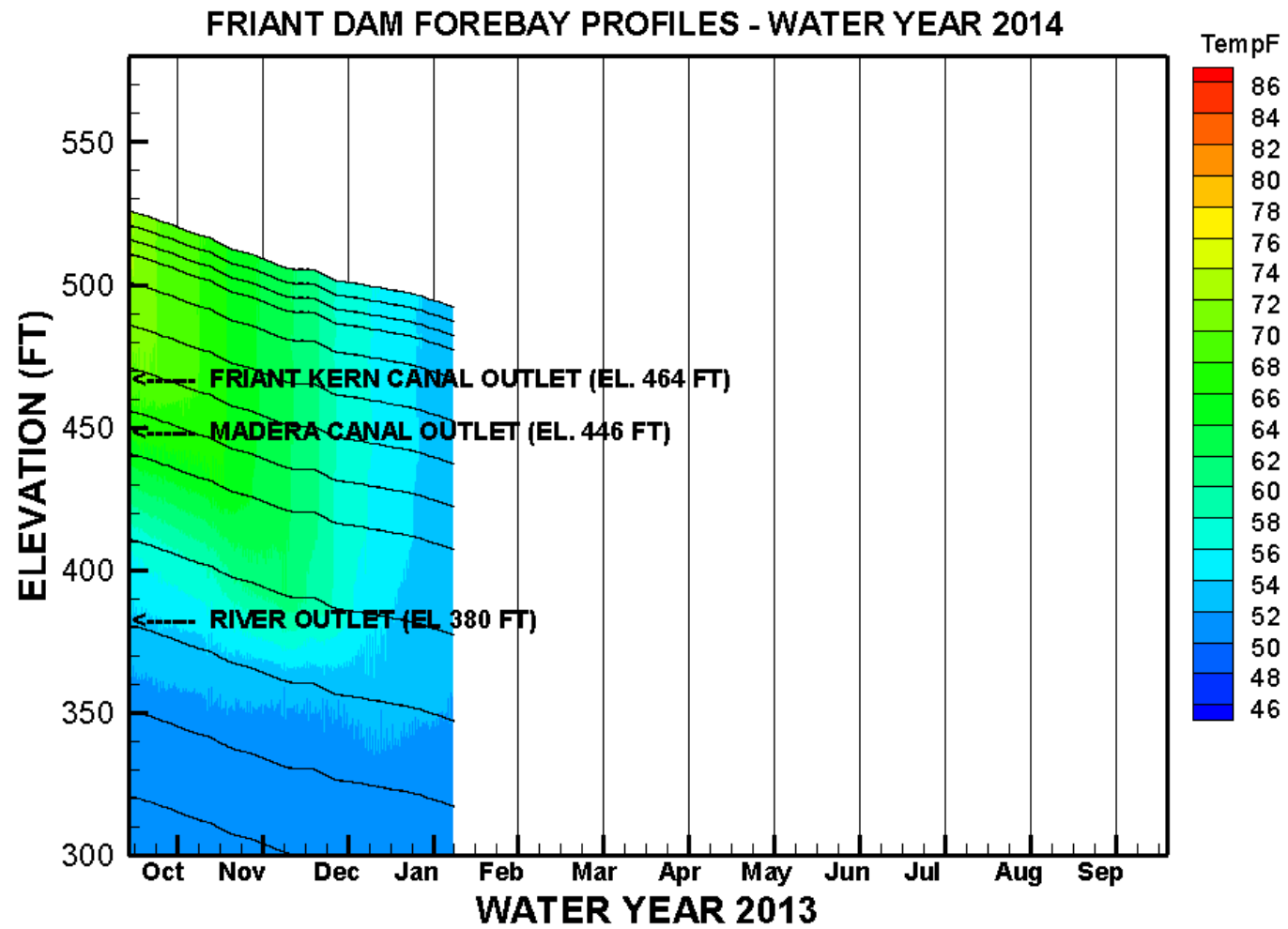


Figure 2. Friant Dam forebay water temperature profile data for water year 2014 (through January 21, 2014). Black lines are temperature logger data points.

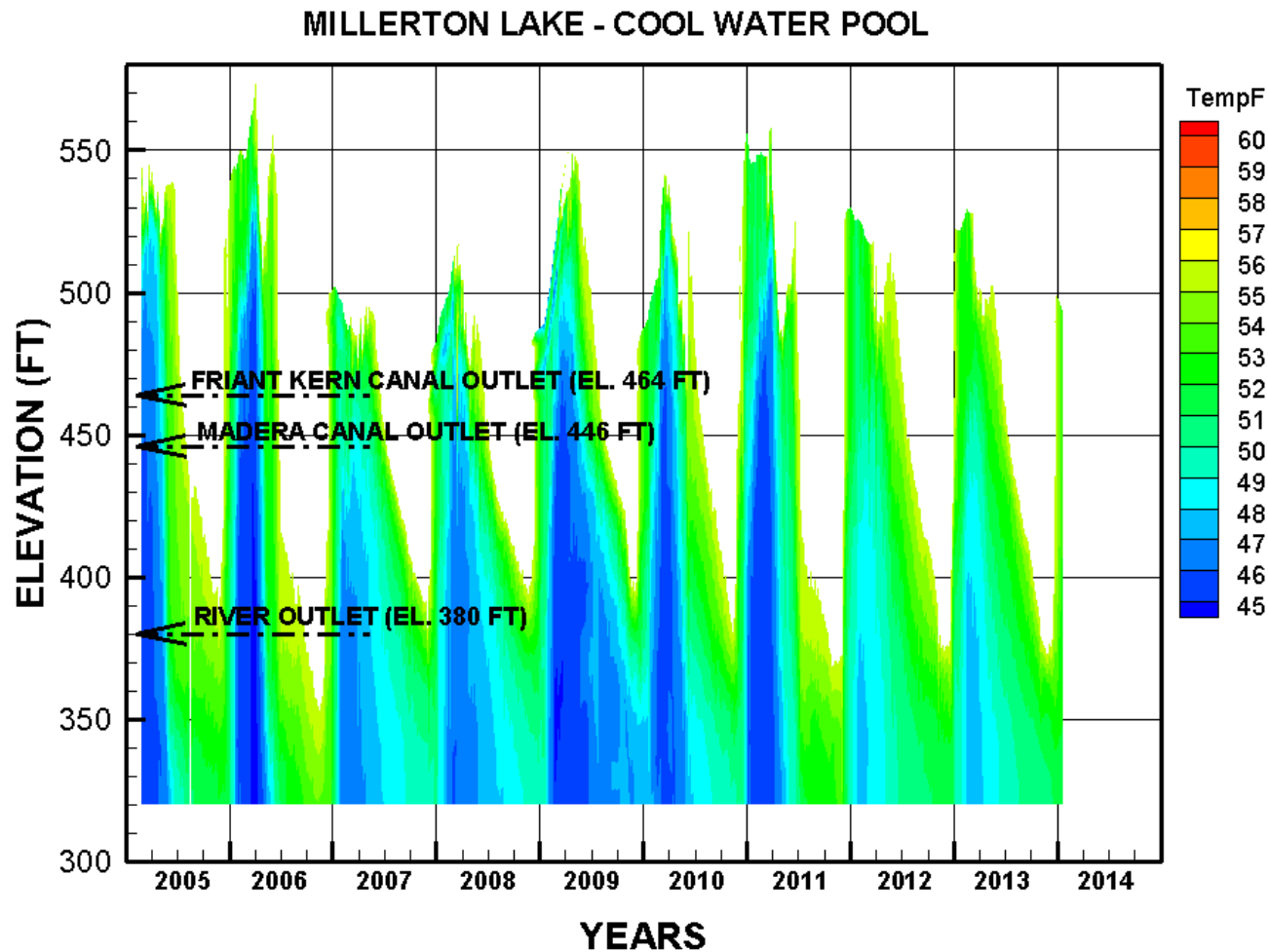


Figure 3. Millerton Lake historical cool water pool conditions for 2005 through January 2014. For this plot, cool water is defined to be water temperatures below 56 °F. These data show a clear trend that the cool water pool volume and temperature is greatly reduced in 2012 and 2013. With current drought conditions, 2014 cool water pool temperatures are about 2.4 °F warmer than in January 2013. If current drought conditions persist, it is likely the cool water pool will be significantly reduced in 2014.

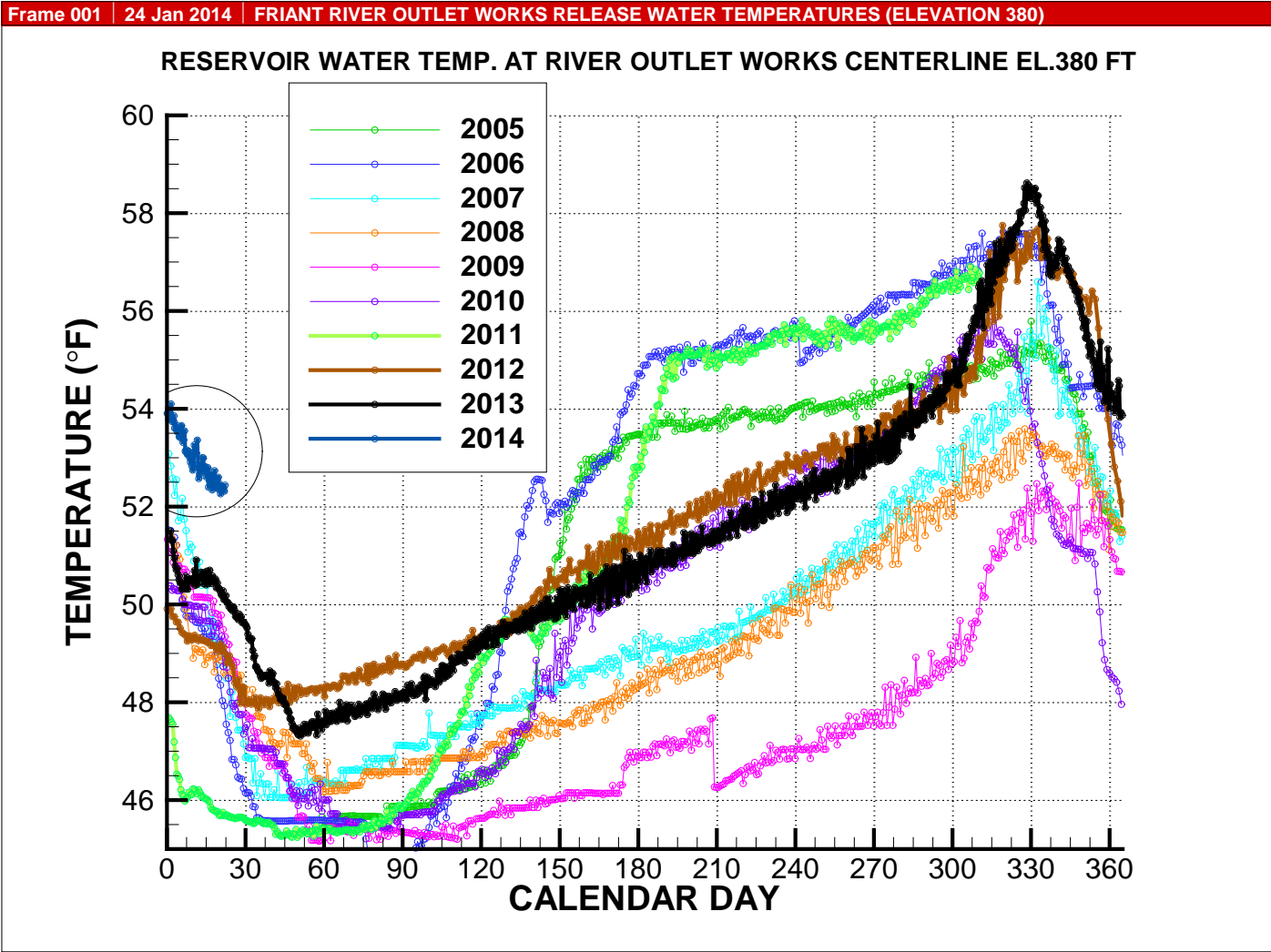


Figure 4. These data represent the temperature of water available for the river outlet releases to the San Joaquin River below Friant Dam for years 2005 through January 21, 2014. These temperatures were measured at El. 380 in Millerton Lake. Note: the 2014 water year release temperatures (blue line, circled) are about 2.4 °F higher than 2013.