

## Water Level Recorders (2013 MAP Study #24) 2013 ATR Summary

### Introduction

The data reported in this section are related to the study “Additional Water Level Recorders”, 2013 Monitoring and Assessment Plan (MAP) Study #24, and indirectly addresses certain aspects of other problem statements by providing a continuous record of water surface elevations to validate hydraulic models being used for many other aspects of Restoration Planning and Design.

### Methods

Stage data are collected by the recorders (Figure 1) at 15 minute intervals. These data are periodically downloaded and converted to water surface elevations. The necessary calculation methods were described in the 2010 ATR in detail.

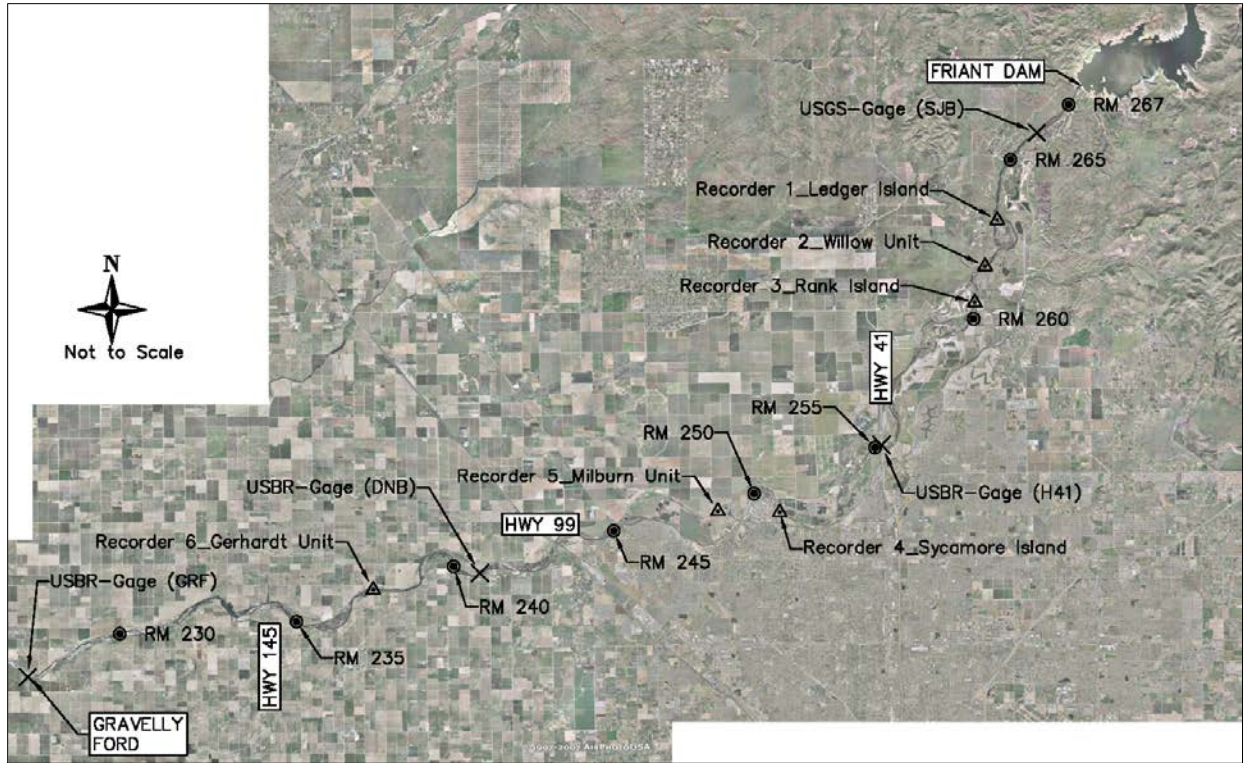


Figure 1. Water Level Recorder

### Results

Locations of the recorders and other permanent gages operated by other agencies are shown in Figure 2. Water surface elevation data obtained from all six recorders during January 2013 through the middle of November 2013 are presented in an Excel data file as well as in Figures 1, 2, and 5 in Appendix A along with the data from US Geological Survey (USGS) and US Bureau of Reclamation (USBR) gages for comparison purposes (Appendix A Figures 3, 4, 6 and 7).

Recorder 5 data indicates water level fluctuations beginning the second week of April 2013 (Figure 2 in Appendix A). These reading fluctuations were observed from the data downloaded on June 19, 2013. The recorder batteries were also replaced with new ones on the same day. Continued monitoring indicated that the fluctuations stopped a few days after replacing the batteries. A field investigation performed in September 2013 failed to identify any reasons for the fluctuations. As a result, the data collected by Recorder 5 during this period is unreliable. Other than this issue, the data collected from all recorders match well with the permanent gages in that region that are maintained by USGS and USBR.



**Figure 2. Water Level Recorder and Permanent Gage Locations**