
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: October 2015

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per the State Water Resources Control Board (SWRCB) Water Rights Decision 1641 (D-1641), dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity, which is referred as "specific conductance" (SC). The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below to ensure salinity standards are met to protect habitat for waterfowl in managed wetlands:

COMPLIANCE STATIONS:		
Station Identification	Station Name	General Location
C-2*	Collinsville	Western Delta
S-64	National Steel	Eastern Suisun Marsh
S-49	Beldon Landing	North-Central Suisun Marsh
S-42	Volanti	North-Western Suisun Marsh
S-21	Sunrise	North-Western Suisun Marsh

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh:

MONITORING STATIONS:		
Station Identification	Station Name	General Location
S-97	Ibis	Western Suisun Marsh
S-35	Morrow Island	South-Western Suisun Marsh

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

2. MONITORING RESULTS

2.1 Channel Water Salinity Compliance

October 2015 was the 22nd month in the deficiency period that started January 2014. A deficiency period is defined by D-1641 Table 3 footnote 6. During the month of October, all five compliance stations were in compliance with channel water salinity standards (Table 1). Compliance with standards for the month was determined for each compliance station by comparing the progressive daily mean (PDM) of high tide SC with respective standards. The standard for October was 19.0 mS/cm for stations Collinsville (C-2), National Steel (S-64), Beldon Landing (S-49), and the deficiency standard was also 19.0 mS/cm for stations Sunrise Club (S-21) and Volanti (S-42).

The progressive daily mean is the monthly average of both daily high tide SC values. The mathematical equation is shown below:

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\# \text{ days in the month}}$$

2.2 Delta Outflow

Outflow for October 2015 stayed fairly stable, fluctuating between 3,600 cfs and 6,500 cfs (Figure 3). The month began at 4,800 cfs and ended the month at 5,100 cfs. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for October 2015 is listed below:

Month	Mean NDOI (cubic feet per second)
October	5,000

2.3 Precipitation

There was only one small precipitation event in October. On October 4th, 0.12 inch of rain fell. October's historical average precipitation in Fairfield is 1.30 inches. The monthly total precipitation recorded at the Fairfield Water Treatment Plant is below:

Month	Total Precipitation (inches)
October	0.12

2.4 Suisun Marsh Salinity Control Gates Operations

The flashboards were installed on August 28th. Tidal operations and boat lock monitoring began on this date. Operations and flashboard/boat lock installations at the Suisun Marsh Salinity Control Gates (SMSCG) during October 2015 are summarized below:

Date	Gate Status	Flashboards Status	Boat Lock Status
October 1-31	3 Operational	In	Partially Closed

3. DISCUSSION

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- Delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operations of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions During the Reporting Period

For October 2015, PDM salinity levels at the five compliance stations are shown in Figure 1. Salinity levels for October started in the range of 12.89 mS/cm to 15.22 mS/cm and ended the month in the range of 12.27 mS/cm to 15.31 mS/cm. Salinity at National Steel was not collected for the month. The station went offline on September 17th for station rehabilitation. Given that National Steel is located on Montezuma Slough between Collinsville and Beldon Landing, both of which were in compliance for October, it can be assumed that National Steel was in compliance for the month and had a PDM between 12.0-13.0 mS/cm. Salinity at Sunrise Club was not obtained between October 7-14. The station was offline due to dredging of the site. Salinity at the compliance stations was fairly stable for the month.

Salinity levels at monitoring stations S-35 and S-97 are shown in Figure 2. Salinity at S-35 began the month at 17.71 mS/cm and decreased slightly during the month to end at 17.46 mS/cm. At station S-97, salinity followed the same pattern as S-35. Salinity began the month at 19.31 mS/cm and ended the month at 19.03 mS/cm.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high tide SC at the compliance and monitoring stations for October 2015 were compared with means for those months during the previous nine years (Figure 4).

The average salinity for October 2015 at all compliance and monitoring stations ranked the second highest in salinity levels for the past 10 years. The highest salinity was in 2014 which was a critical water year. Following 2015 was 2008 which was a critical water year.

Table 1: Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations October 2015

Station Identification	Specific Conductance (mS/cm)*	Normal Standard	Normal Standard Met?	Deficiency Standard	Deficiency Standard Met?
C-2**	12.27	19.0	Yes	N/A	N/A
S-64	***	19.0	***	N/A	N/A
S-49	12.72	19.0	Yes	N/A	N/A
S-42	14.04	N/A	N/A	19.0	Yes
S-21	15.31	N/A	N/A	19.0	Yes

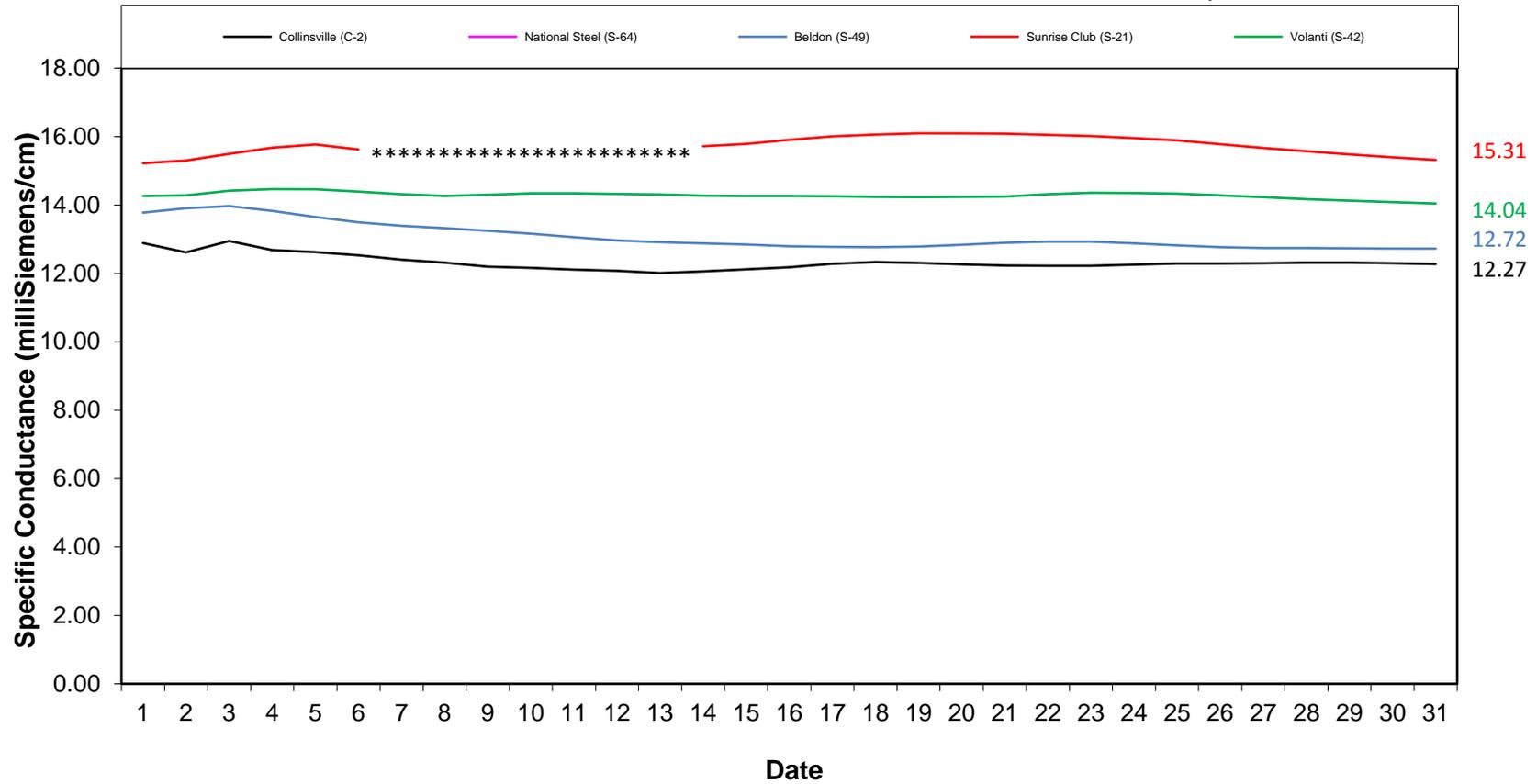
*milliSiemens per centimeter

**The representative data from nearby USBR station is used in lieu of data from station C-2.

*** S-64 was offline due to station rehabilitation.

Figure 1: Suisun Marsh Progressive Daily Mean High Tide Specific Conductance for Compliance Stations October 2015

C-2, S-64, S-49 Standard = 19.0 mS/cm
 S-21, S-42 Deficiency Standard = 19.0 mS/cm



**** S-21 was offline between October 7-14 due to dredging of the site.
 S-64 went offline on September 17th for station rehabilitation.

Figure 2: Suisun Marsh Progressive Daily Mean High Tide Specific Conductance for Monitoring Stations October 2015

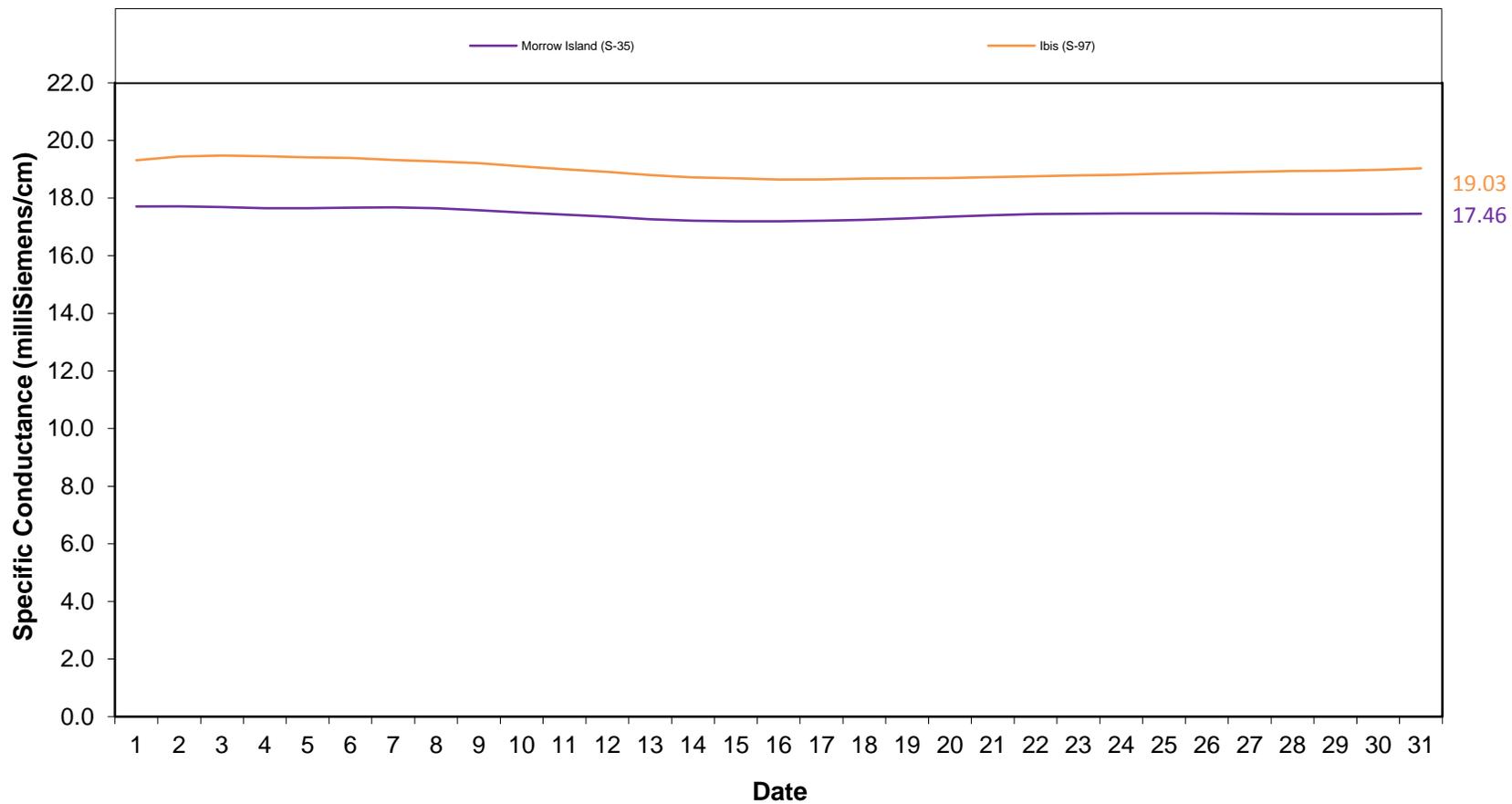
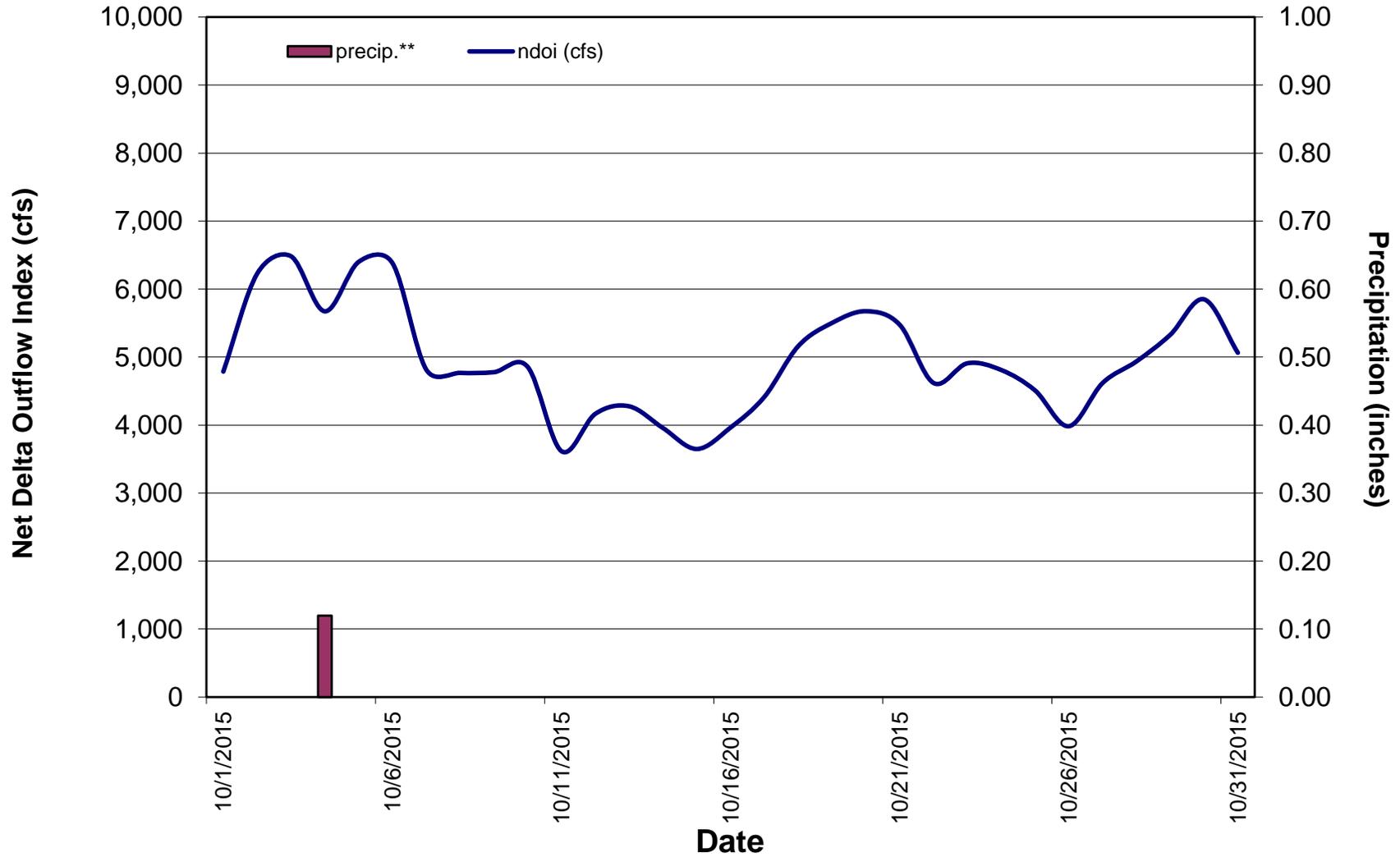


Figure 3: Daily Net Delta Outflow Index and Precipitation October 2015

*Preliminary DWR, O&M data

**Precipitation data from Fairfield Water Treatment Plant



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
October 2006-2015**

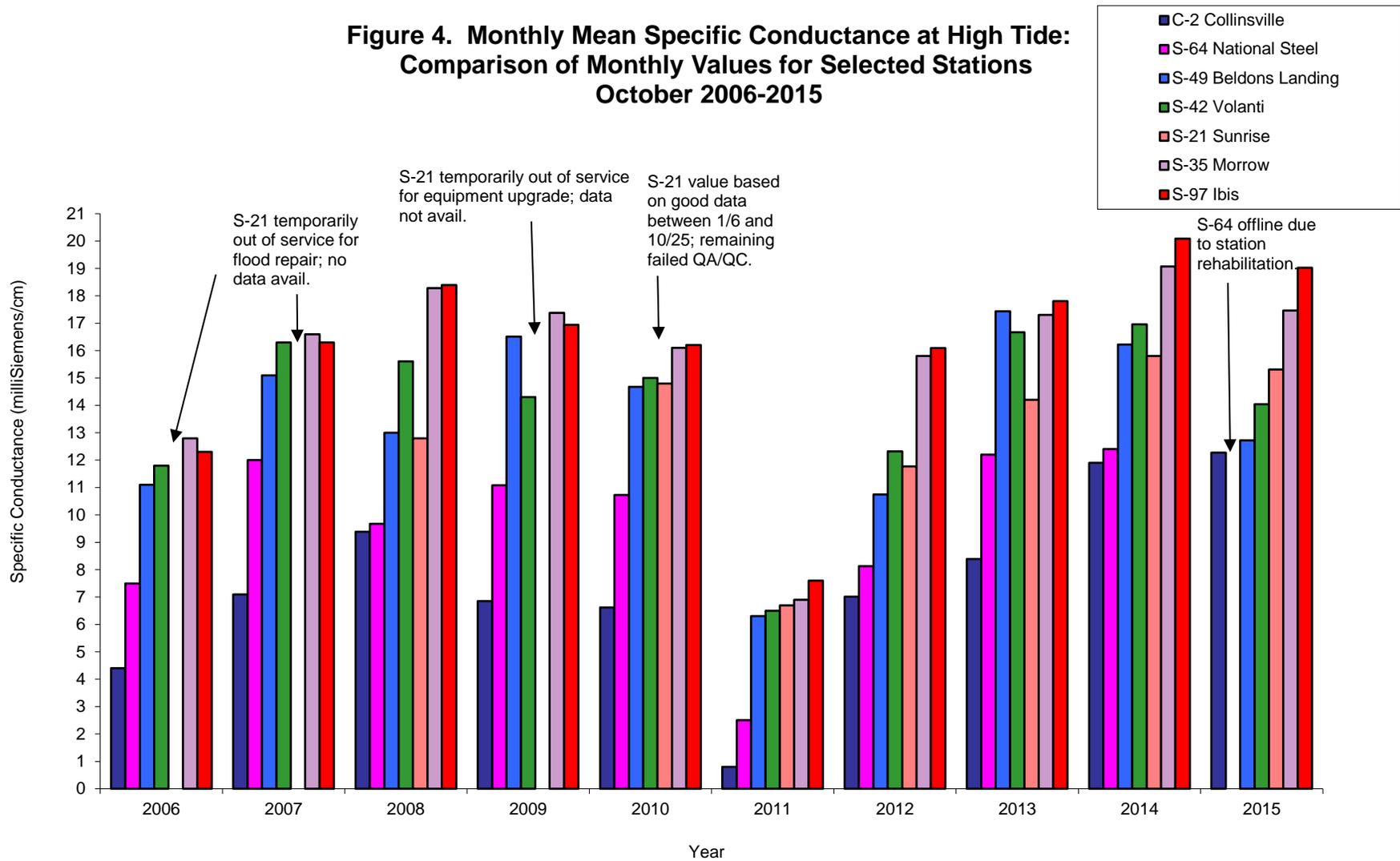


Figure 5: Suisun Marsh Stations

- ★ Compliance
- ▲ Monitoring
- ◆ Blacklock
- Initial Facilities

