Suisun Marsh Monitoring Program
Channel Water Salinity Report

Reporting Period: March 2019

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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), 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 March through March 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's 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

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 March affect channel water salinity in the Marsh.

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

2. MONITORING RESULTS

2.1 Channel Water Salinity Compliance

During the month of March 2019, 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 March is 8.0 mS/cm for all stations.

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

$$\text{PDM} = \frac{\sum \text{daily average of high tide specific conductances}}{\text{number of days in the month}}$$

2.2 Delta Outflow

Delta outflow is represented by the Net Delta Outflow Index (NDOI). The NDOI for March 2019 ranged between 74,615 cfs and 181,907 cfs. The mean NDOI for the month was 124,648 cfs.

2.3 Precipitation

There were 14 days of precipitation in March in Fairfield. The total rainfall was 5.57 inches. The historical average precipitation for March in Fairfield is 3.43 inches. The total rainfall was 162 percent of average. Measurements were recorded at the Waterman Water Treatment Plant.

2.4 Suisun Marsh Salinity Control Gates Operations

Operations and flashboard/boat lock installations at the Suisun Marsh Salinity Control Gates (SMSCG) during March 2019 are summarized below:

Date	Gate Status	Flashboards Status	Boat Lock Status
March 1-31	0 Operational	Installed	Operational

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 March 2019, PDM salinity levels at the five compliance stations are shown in Figure 1. Salinity levels for March started in the range of 0.21 mS/cm to 0.83 mS/cm, and ended the month in the range of 0.19 mS/cm to 1.23 mS/cm.

PDM salinity levels at monitoring stations S-35 and S-97 are shown in Figure 2. Salinity at S-35 began the month at 2.93 mS/cm and ended the month at 2.72 mS/cm. Salinity at S-97 began the month at 1.12 mS/cm and ended the month at 1.63 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 March 2019 were compared with means for those months during the previous nine years (Figure 4). The average salinity for March 2019 at all compliance and monitoring stations ranked first lowest in salinity levels for the past 10 years. The salinity trend is similar to March 2011, which was part of a Wet water year.

Table 1: Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations
March 2019

Station Identification	Specific Conductance (mS/cm)*	Normal Standard	Normal Standard Met?	Deficiency Standard	Deficiency Standard Met?
C-2**	0.2	8.0	Yes	N/A	N/A
S-21	0.7	8.0	N/A	N/A	N/A
S-42	1.3	8.0	Yes	N/A	N/A
S-49	0.7	8.0	Yes	N/A	N/A
S-64	0.4	8.0	Yes	N/A	N/A

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

Figure 1: Suisun Marsh Progressive Daily Mean High Tide Specific Conductance for Compliance Stations March 2019

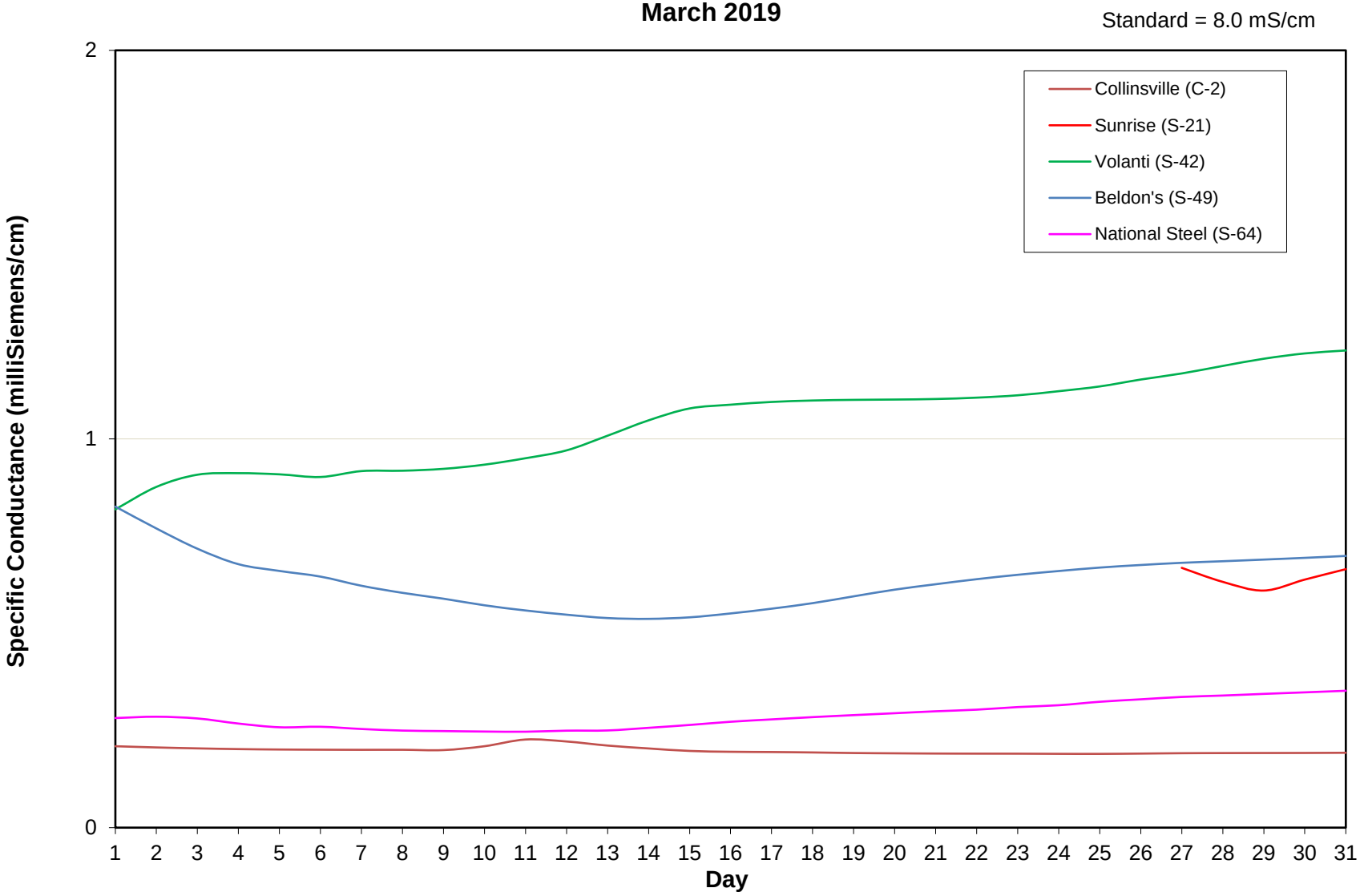


Figure 2: Suisun Marsh Progressive Daily Mean High Tide Specific Conductance for Monitoring Stations March 2019

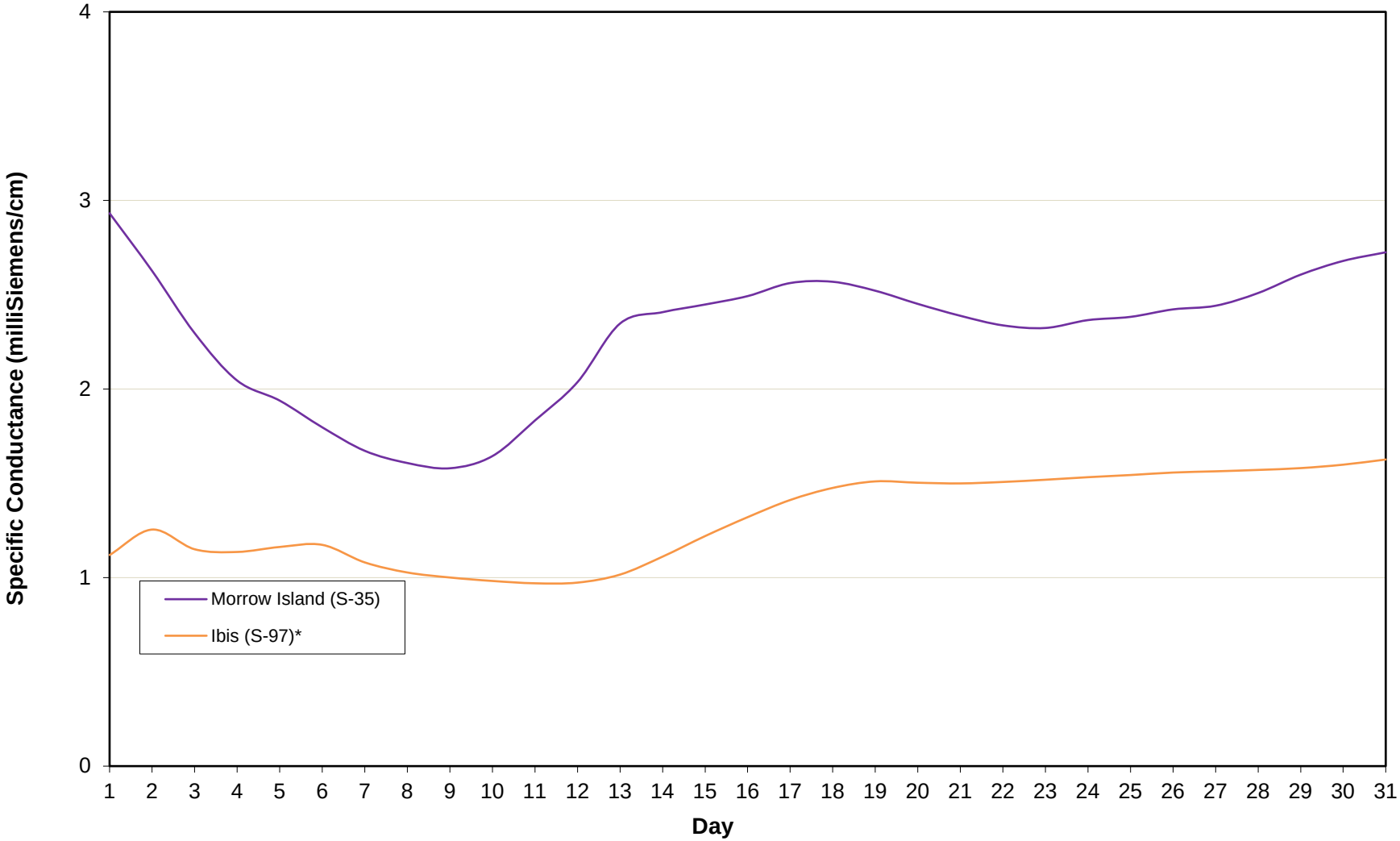
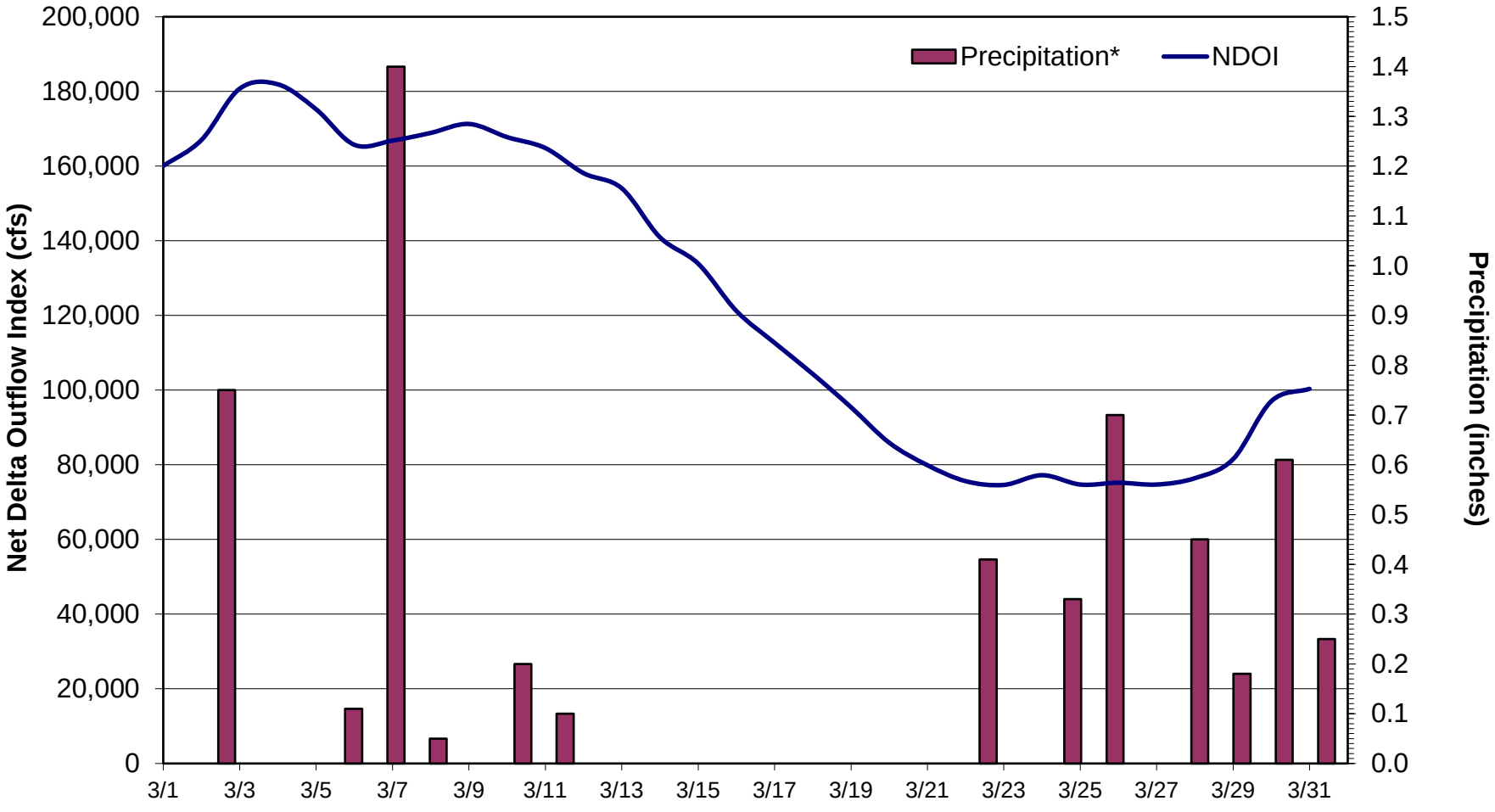


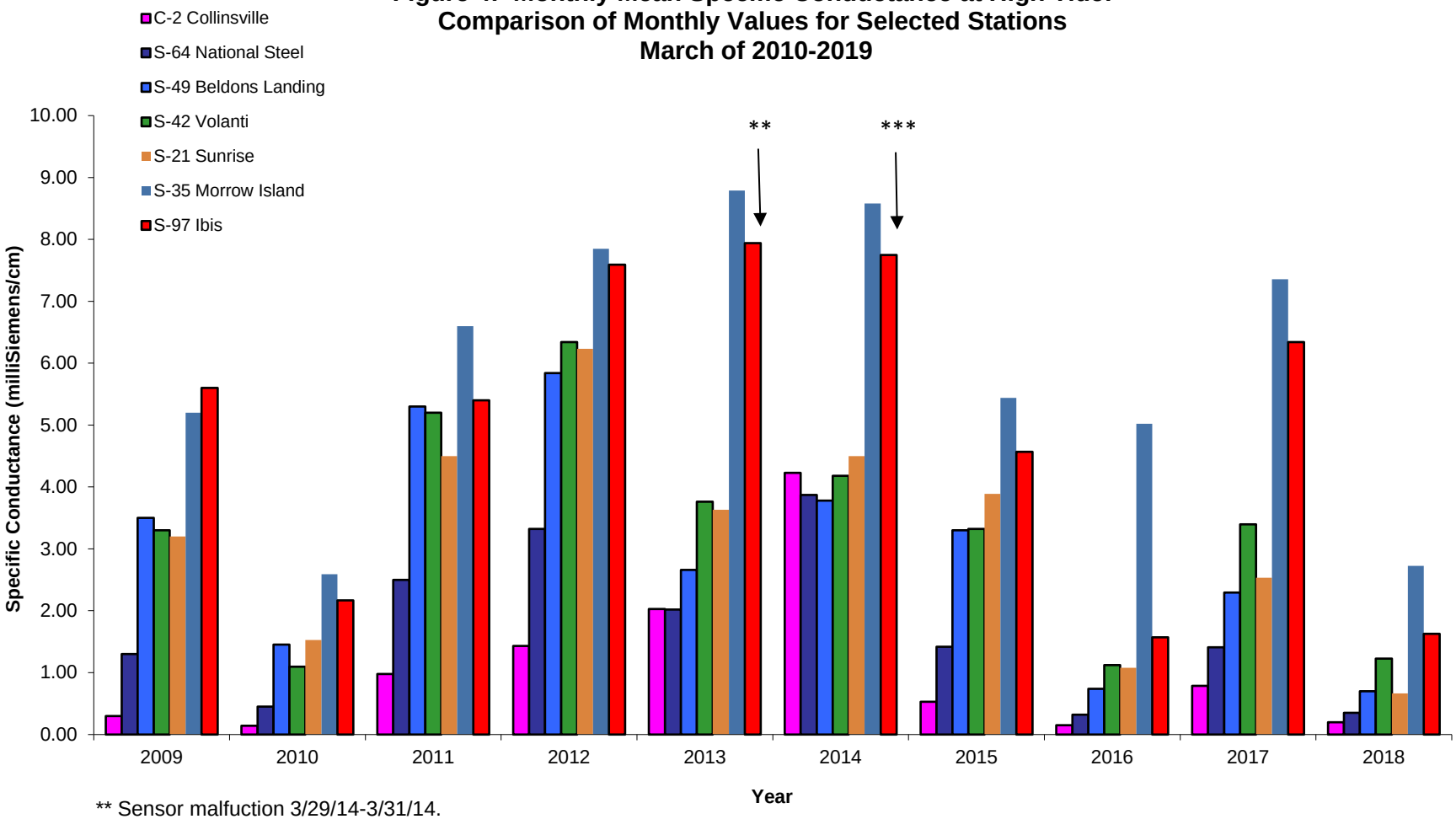
Figure 3: Daily Net Delta Outflow Index and Precipitation
March 2019



*Precipitation data from the Fairfield Waterman Water Treatment Plant

Date

Figure 4: Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations March of 2010-2019



** Sensor malfuction 3/29/14-3/31/14.
*** Bad stage data 3/19/15-3/31/15.