
Suisun Marsh Monitoring Program
Channel Water Salinity Report
Reporting Period: October 2007

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 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:

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

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

Station Identification	Station Name	General Location	Classification
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

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.

* 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 October, 2007, salinity conditions at all five compliance stations are in compliance with channel water salinity standards of SWRCB (Table 1). Compliance with standards for the month of October was determined for each compliance station by comparing the progressive daily mean of high-tide SC with respective standards. The standard for compliance stations C-2, S-64, S-49, S-42 and S-21 are 19.0 mS/cm during October 2007. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below.

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

2.2 Delta Outflow

Outflow for October 2007 was typical this time of year. The range was between 3,000 and 5,000 cfs for most of the month with a short period of increased outflow during mid month with a peak of about 6,500 cfs due to runoffs from the precipitation events as shown in Figure 3. 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 2007 is listed below:

Month	Mean NDOI (cubic feet per second)
October	4,061

2.3 Rainfall

Unlike past years, October 2007 was an active month with several rainfall events. The largest rainfall amount occurred on October 10, 2997 with a total of 0.9 inches. The monthly total is shown below:

Month	Total Rainfall (inches)
October	2.22

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during October 2007 is summarized below.

Date	Gate status	Flashboards status	Boat Lock status
October 1 – 31	Open	Out	Closed

The gates were not operated for the month of October because salinity levels throughout the marsh were not of concern. However, DWR will continue to monitor salinity levels in the marsh and will operate the gates and install the flashboards if conditions warrant.

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,
- operation of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions during the Reporting Period

During October 2007 PDM salinity levels at Collinsville(C-2), National Steel(S-64), Beldons (S-49), and Volanti(S-42) ranged between 7.0 mS/cm and 16.5 mS/cm as shown in Figure 1. Salinity levels started off high at all stations, but remained stable and below the standard throughout the month.

Overall, salinity levels in October 2007 were at least 3 mS/cm or more below the monthly standard at all compliance and monitoring stations.

S-21 (Sunrise Club) continues to be out of service since late December 2005 due to flooded event, thus S-21 station will not be reported in future reports until further notice. To date, on going repair work is being done at S21 site. S42 will continue to be the surrogate reporting station for the 2007-2008 control season.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for October 2007 were compared with means for those months during the previous nine years (Figure 4).

Mean salinity pattern of all compliance and monitoring stations resembles that of 2000. Compared to previous nine years, October 2007 salinity levels were ranked third in high Specific Conductance, thus making it the month with the seventh lowest salinity levels. Unlike past years, the higher salinity for October 2007 is probably a result of delay gate operations in support of fish passage. Thus, allowing more salinity intrusion but salinity standards will not be compromised in the overall operational decisions.

Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****October 2007**

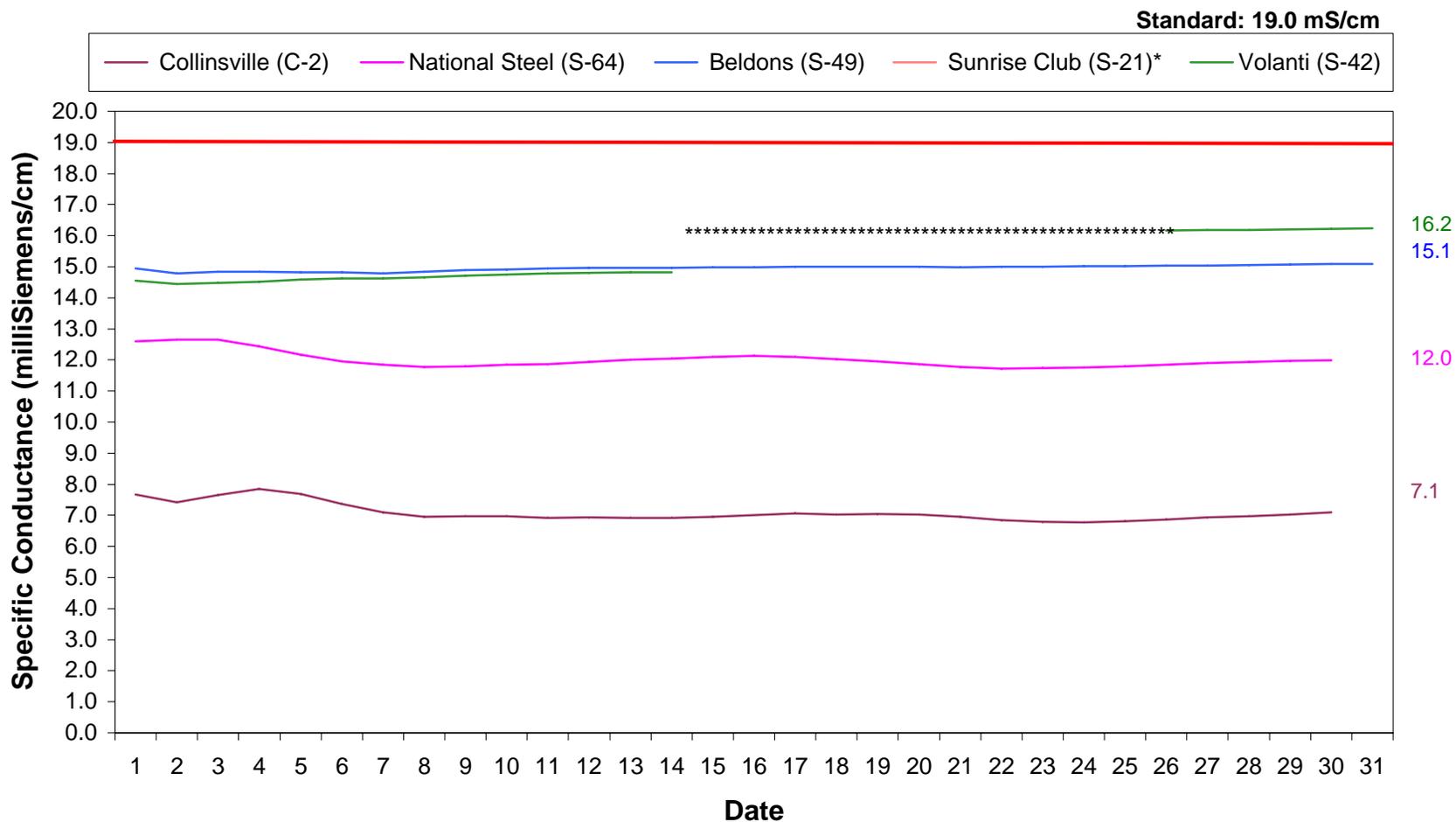
Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	7.1	19.0	Yes
S-64	12.0	19.0	Yes
S-49	15.1	19.0	Yes
S-42	16 .3	19.0	Yes
S-21***	n/a	19.0	Yes

*milliSiemens per centimeter

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

***station is temporarily out of service. S42 is a surrogate station for S21 during the 2007-2008 control season.

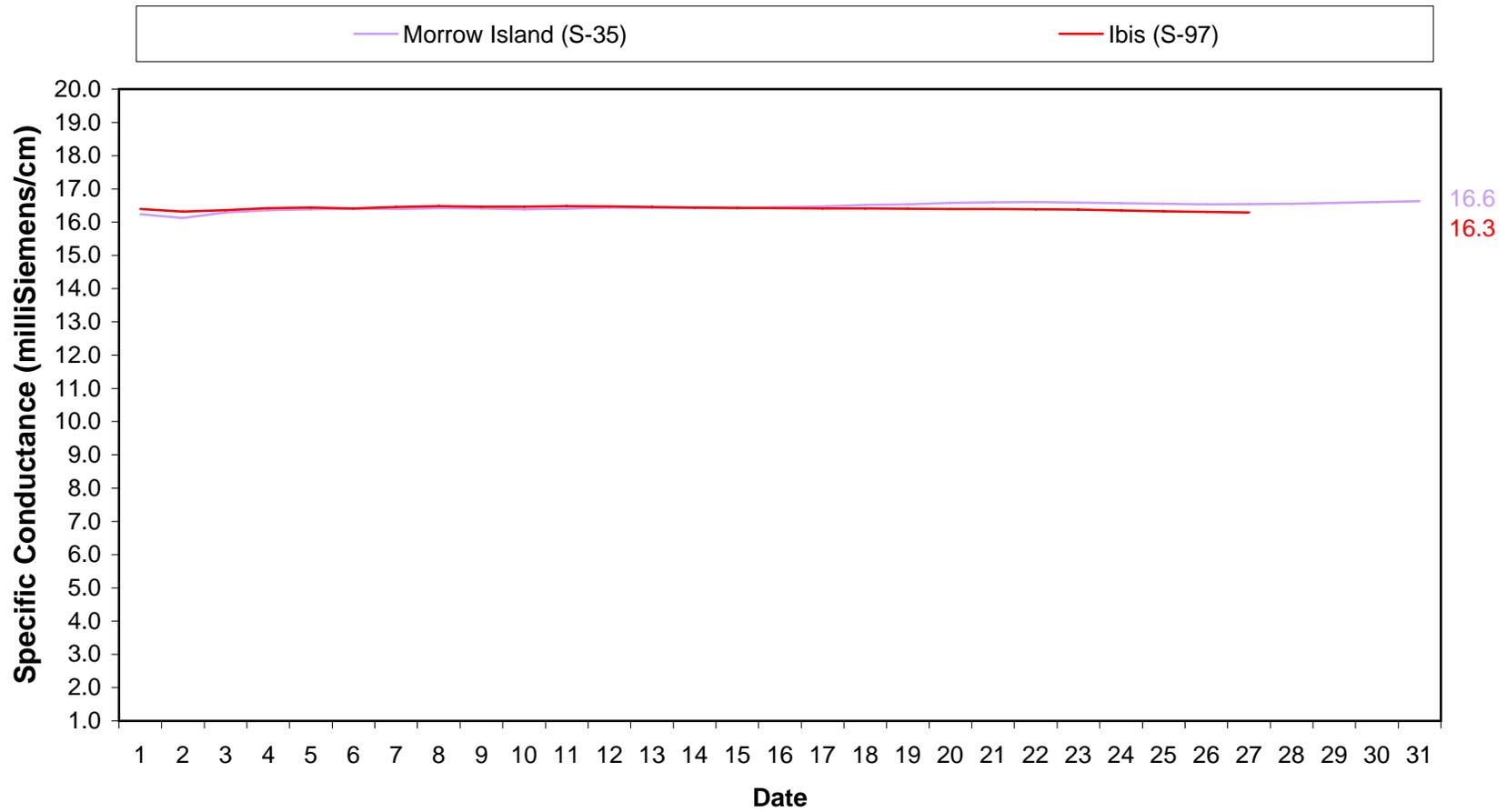
Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance for October 2007



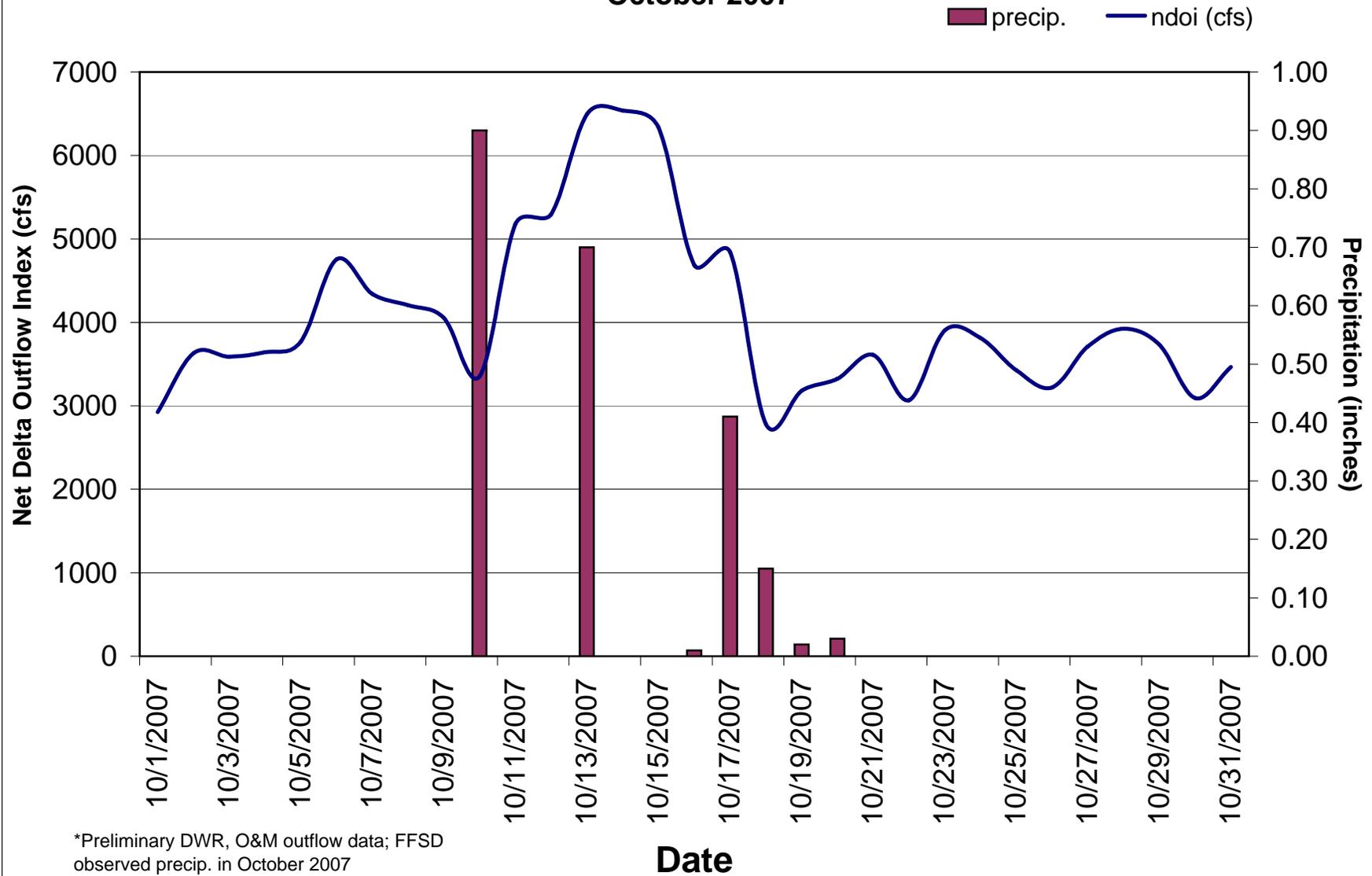
*S21 station is temporarily out of service for repair work.

*****missing data due to equipment failure.

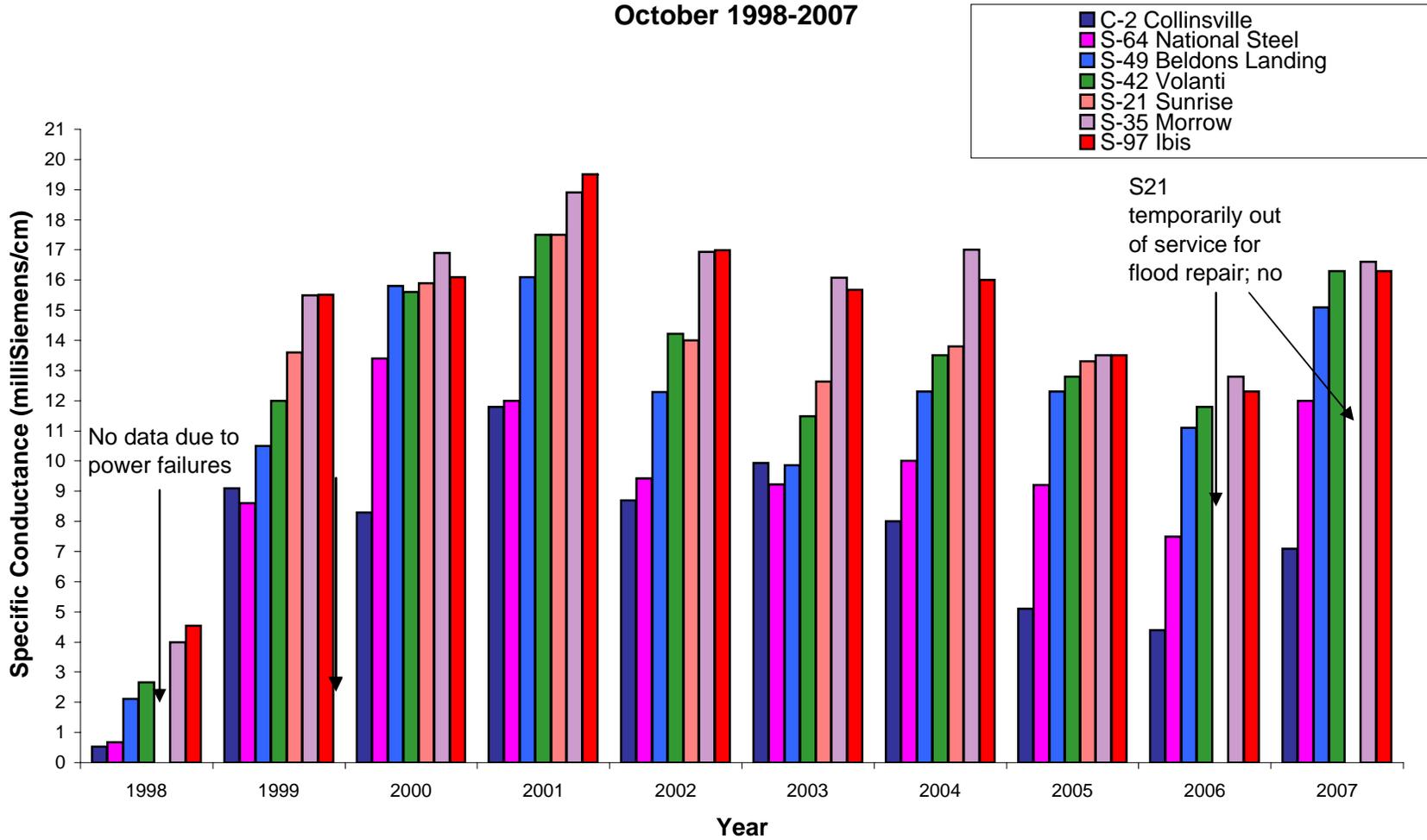
Figure 2. Suisun Marsh Progressive Mean High-Tide Specific Conductance For October 2007

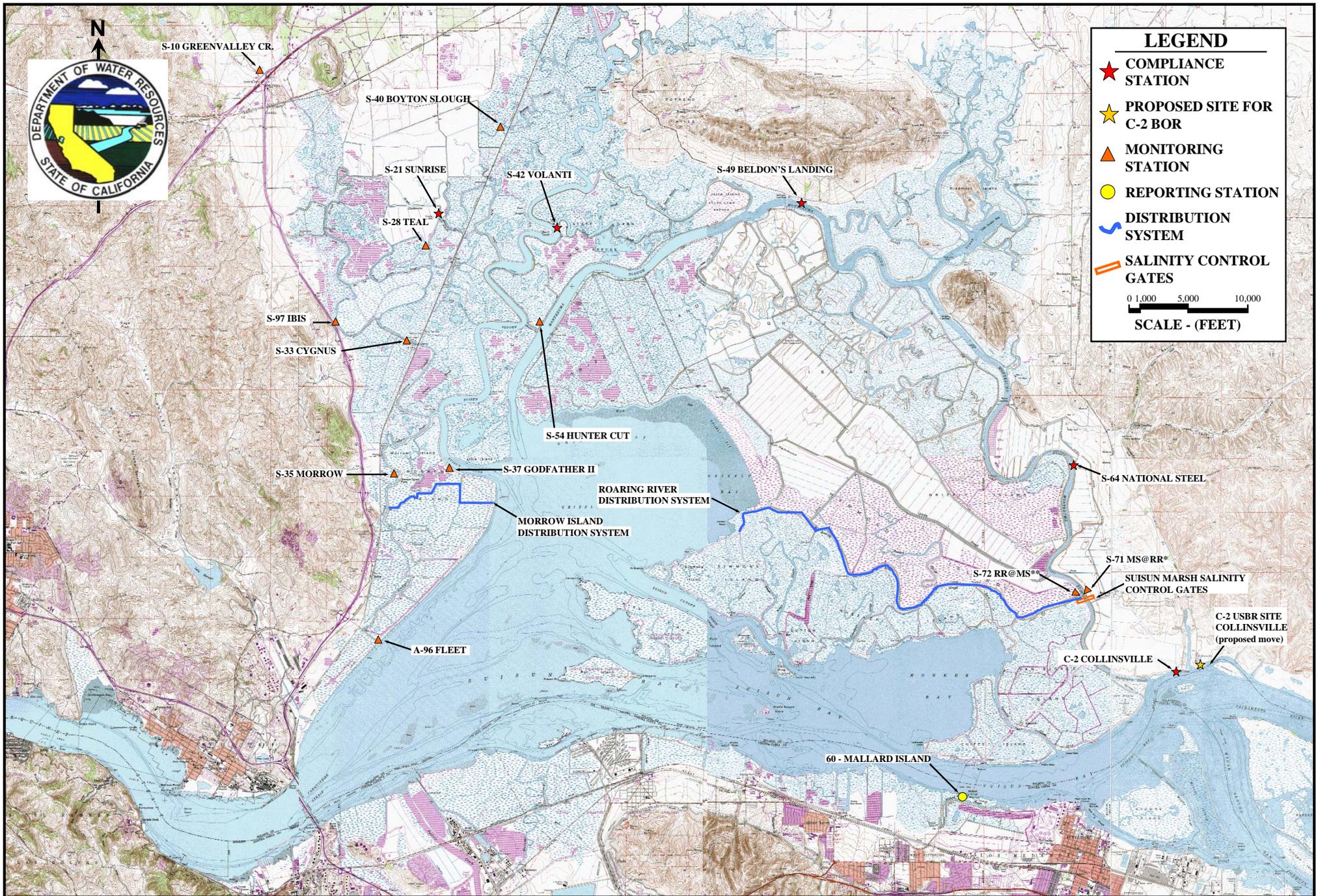


**Figure 3. Daily Net Delta Outflow Index and Precipitation*
October 2007**



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
October 1998-2007**





LEGEND

- ★ COMPLIANCE STATION
- ★ PROPOSED SITE FOR C-2 BOR
- ▲ MONITORING STATION
- REPORTING STATION
- DISTRIBUTION SYSTEM
- ▭ SALINITY CONTROL GATES

0 1,000 5,000 10,000
SCALE - (FEET)

SUISUN MARSH PROGRAM WATER QUALITY MONITORING AND CONTROL FACILITIES