
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: May 2003

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TABLE OF CONTENT

1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT1

2. MONITORING RESULTS.....2

 2.1 CHANNEL WATER SALINITY COMPLIANCE2

 2.2 DELTA OUTFLOW2

 2.3 RAINFALL3

 2.4 SUISUN MARSH SALINITY CONTROL GATE (SMSCG) OPERATIONS3

3. DISCUSSION.....3

 3.1 FACTORS AFFECTING CHANNEL WATER SALINITY IN THE SUISUN MARSH3

 3.2 OBSERVATIONS AND TRENDS.....4

 3.2.1 *Conditions during the Reporting Period*4

 3.2.2 *Comparison of Reporting Period Conditions with Previous Years*.....4

1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

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:

Station Identification	Station Name	General Location	Status
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

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

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	Status
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 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

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during May 2003 (Table 1). Compliance with channel water salinity standards for the month of May was determined for each compliance station by comparing the mean high-tide specific conductance (SC) with respective standards. The standard for all the compliance stations (i.e. C-2, S-64, S-49, S-42, S-21) was 11.0 mS/cm during May 2003. Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive daily mean SC for each station is used to track salinity conditions during each month (Figures 1). The progressive mean is calculated for each compliance station. 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

The May Delta outflow started off on the high end (i.e. above 50,000 cfs) and continues to increase reaching a peak of about 67,000 cfs on May 8, 2003. The early outflow event was contributed from precipitation occurring the first week of May (see Sec 2.3). Thereafter, precipitation ceased and outflow began to decline and continues on a downward trend with an end of month outflow around 18,000 cfs. The monthly mean Net Delta Outflow Index (NDOI) for May is listed below:

Month	Mean NDOI (cubic feet per second)
May	42,230

The NDOI is the estimated average daily rate of outflow from the Delta.

2.3 Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during May 2003 is listed below:

Month	Total Rainfall (inches)
May	1.02

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during May 2003 is summarized below.

Date	Gate status	Flashboards status	Boat Lock status
May 1 - 14	3 gates open	Installed	Closed
May 15 – 31	3 gates open	Removed	Closed

All three gates continued to be open due to low water quality levels in the marsh during May. The flashboards were removed on May 15, 2003, since there were no concerns with meeting water quality standard (i.e. May = 11.0 mS/cm) for the remaining control season.

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

Salinity levels at all compliance and monitoring stations did not exceed 4.0 mS/cm on the eastern (Figure 1) and western portions (Figure 2) of the marsh throughout May. Despite only two precipitation events in May 2003, salinity levels continue to remain low throughout the entire marsh and were well below the standard of 11.0 mS/cm.

Channel water salinity conditions in the Marsh were appeared to be influenced by outflow in May 2003. Outflow and perhaps low exports for the most part of May are factors resulting in low salinity levels in the marsh.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for May 2003 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations are similar to that of 1999, however, with slightly higher magnitude. S21 salinity level was lower than S42 and mimics that of 2000 level, however, the pattern is similar to that of 1996, 1998, 1999, and 2000. Compared to previous nine years, May 2003 salinity levels were ranked sixth in Specific Conductance, except for Collinsville station. For May 2003, Collinsville station was ranked fifth or less in Specific Conductance.

Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****May 2003**

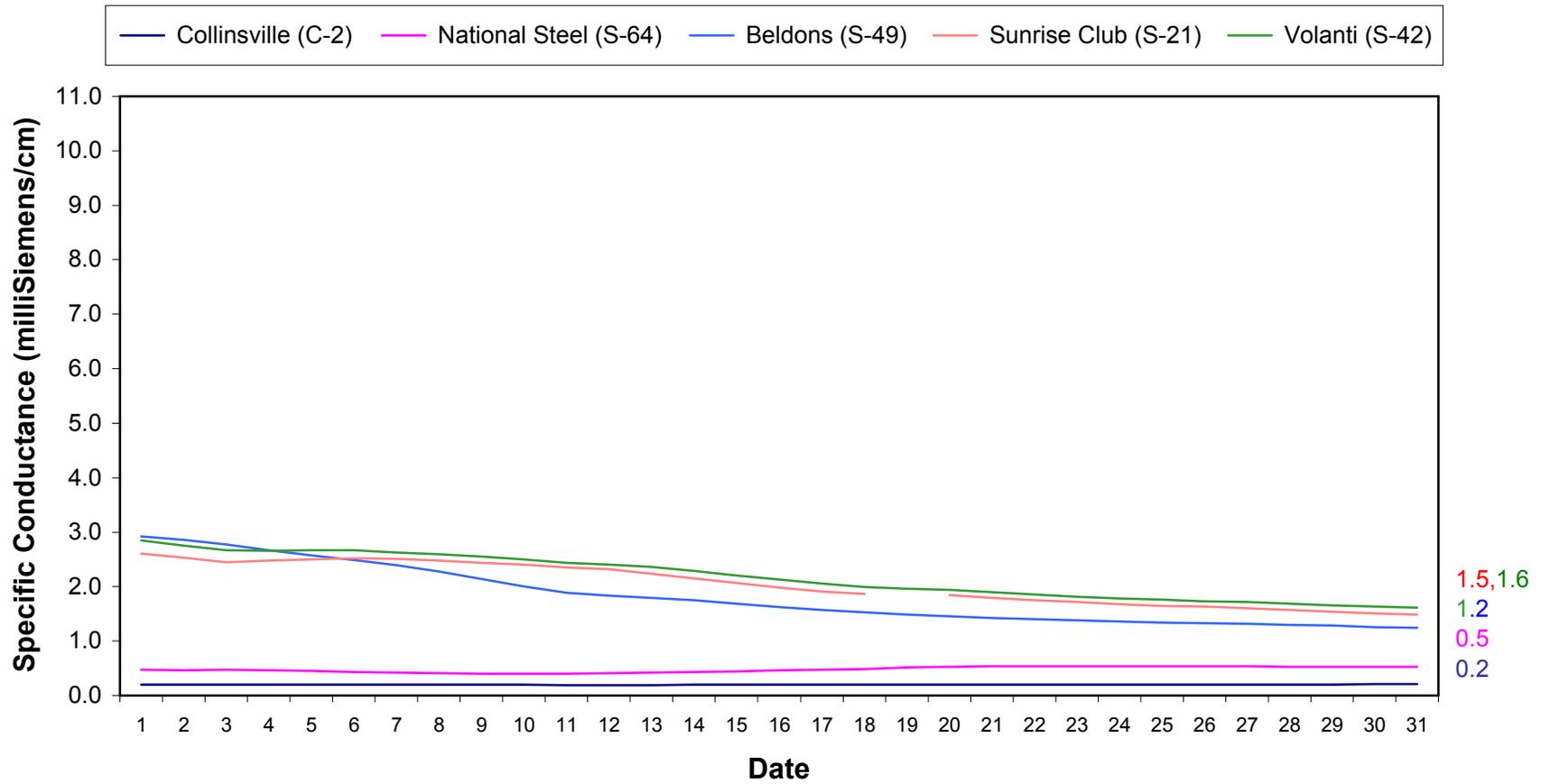
Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	0.2	11.0	Yes
S-64	0.5	11.0	Yes
S-49	1.2	11.0	Yes
S-42	1.6	11.0	Yes
S-21	1.5	11.0	Yes

* = milliSiemens per centimeter

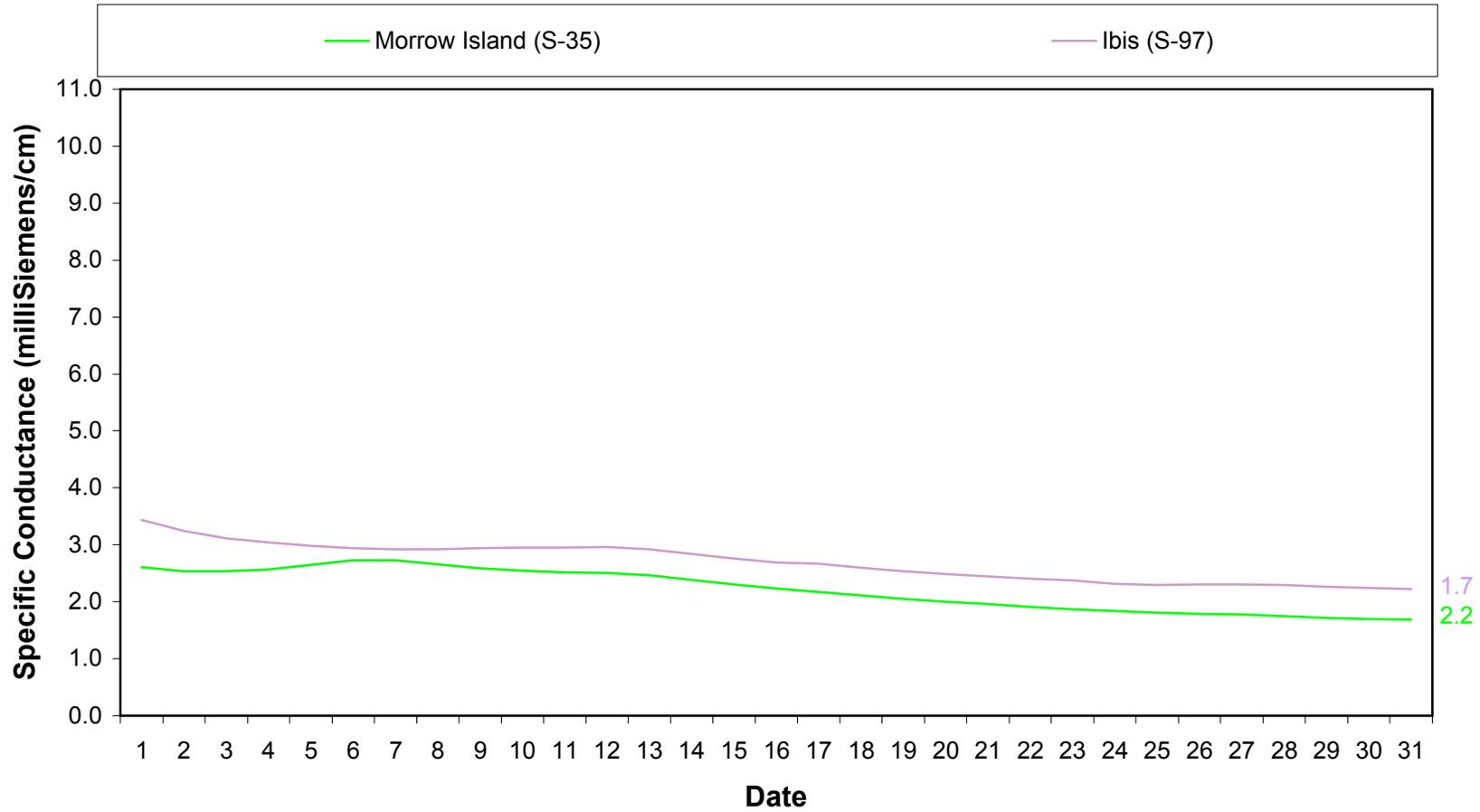
** The representative data from nearby USBR station is used in lieu of data from station C-2.

**Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance
May 2003**

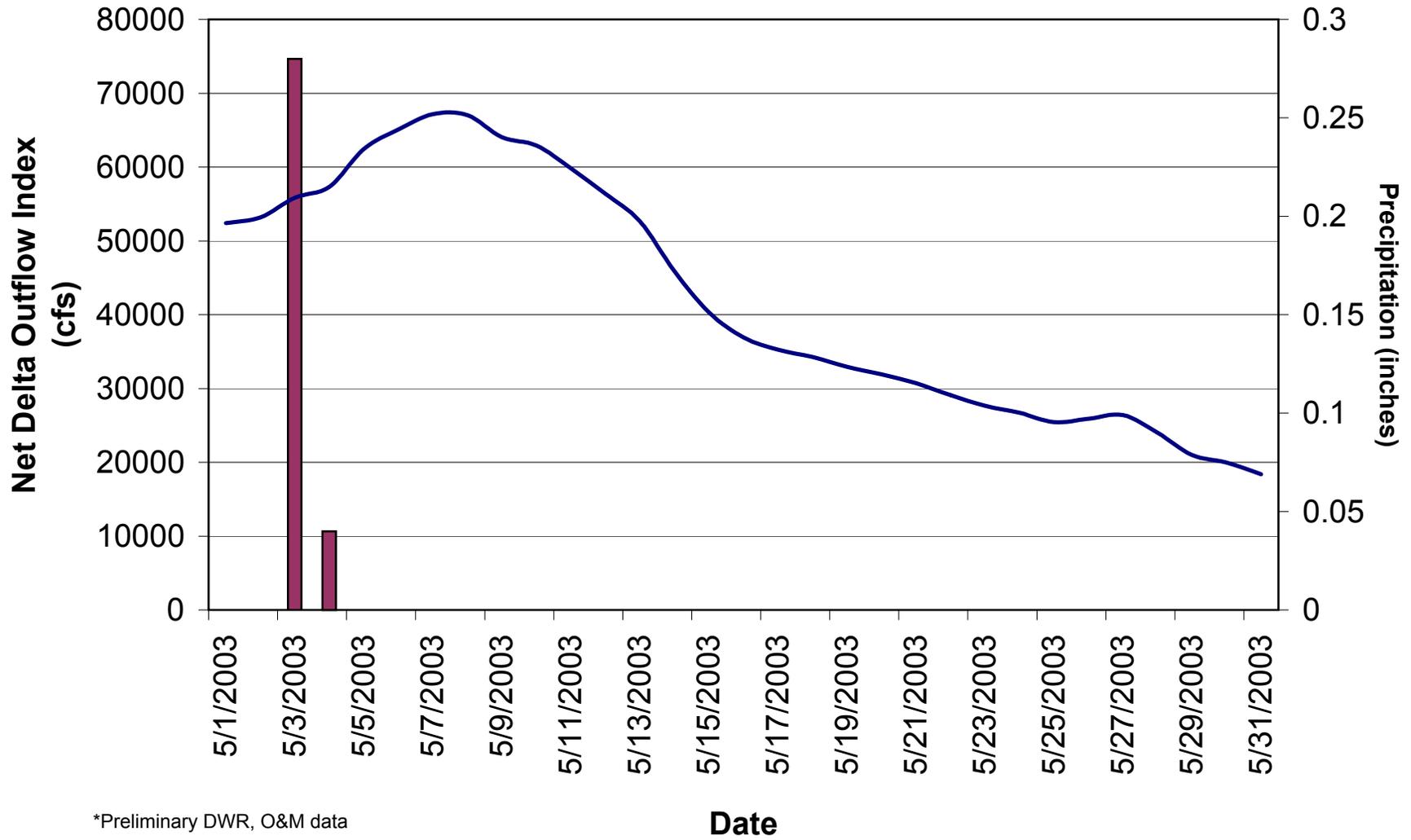
Standard = 11.0 mS/cm



**Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance
May 2003**



**Figure 3. Daily Net Delta Outflow Index and Precipitation*
May 2003**



*Preliminary DWR, O&M data

**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
May of 1994-2003**

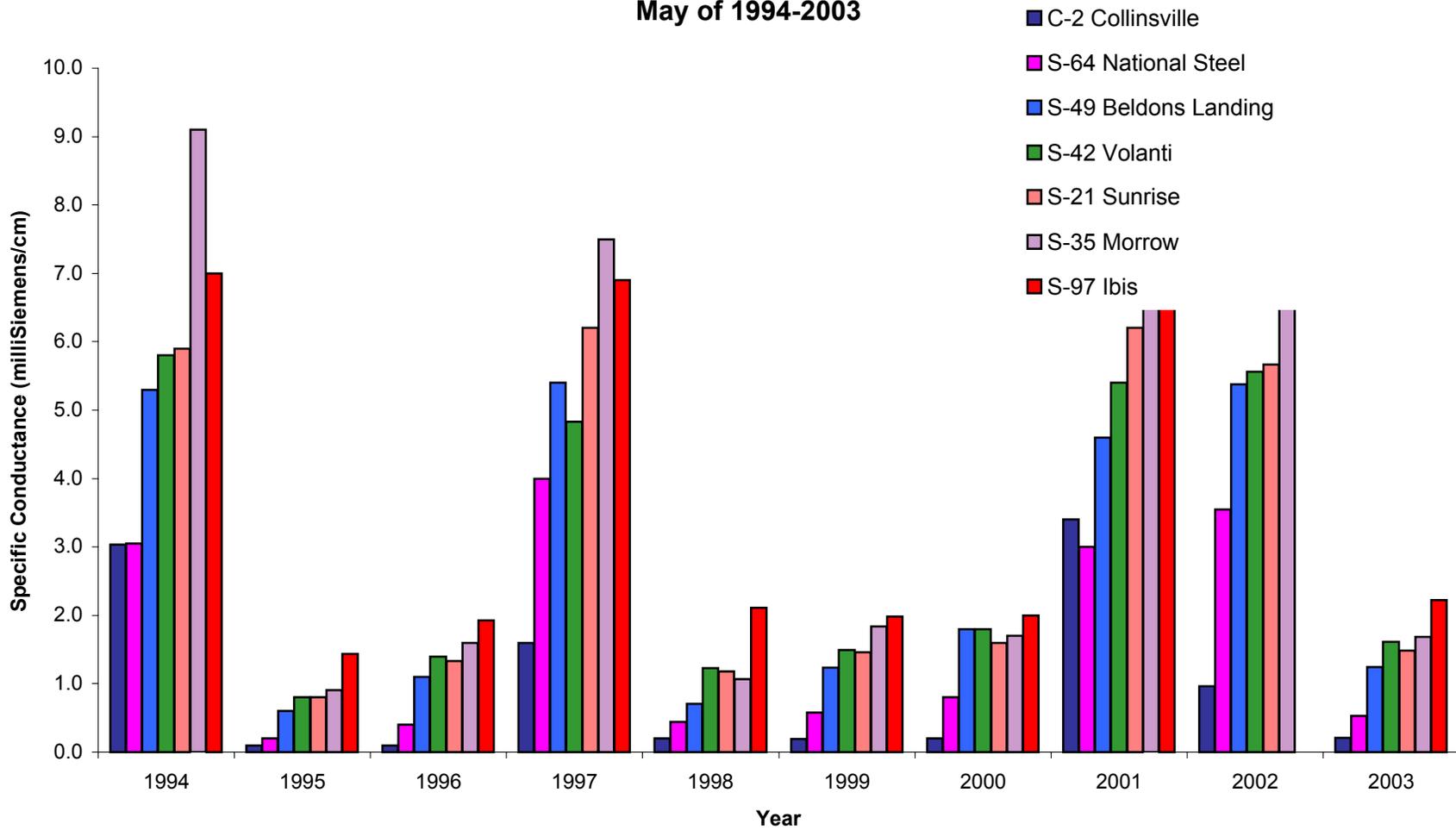


Figure 5

