Current Report

Introduction

Water year 2021 was classified as Critical in the Sacramento Valley and San Joaquin Valley due to ongoing drought. The previous year was classified as Dry. (source). The 2020-2021 data from all stations within the same region were plotted on one graph and then combined with the graphs from other regions to make a facet graph for each parameter. The minimum and maximum values in 2021 were determined for each field parameter or laboratory analyte to show the range within a single year. The instances when a result fell below the reporting limit were excluded from these minimum and maximum calculations. When this occurred, a vertical dashed line capped at the reporting limit was added to the graph to represent the presence of a non-detect. It should be noted that sampling was not conducted in January and February of 2021 due to the stay-at-home order and safety concerns caused by the COVID-19 pandemic.

Specific Conductance

Surface specific conductance varied greatly in 2021 across the sampling regions with the highest levels occurring in the western regions (San Pablo Bay, Suisun & Grizzly Bays, Confluence) due to the strong marine influence from the Pacific Ocean. Surface specific conductance ranged from an average of 84 µS/cm (C10A in Southern Interior Delta, August) to 46,189 µS/cm (D41 in San Pablo Bay, October) during 2021. Higher specific conductance values were seen in 2021 (µ = 13,364 µS/cm) than in 2020 (µ = 11,310 µS/cm), which was likely due to the on-going drought keeping the San Francisco Estuary drier throughout the year.

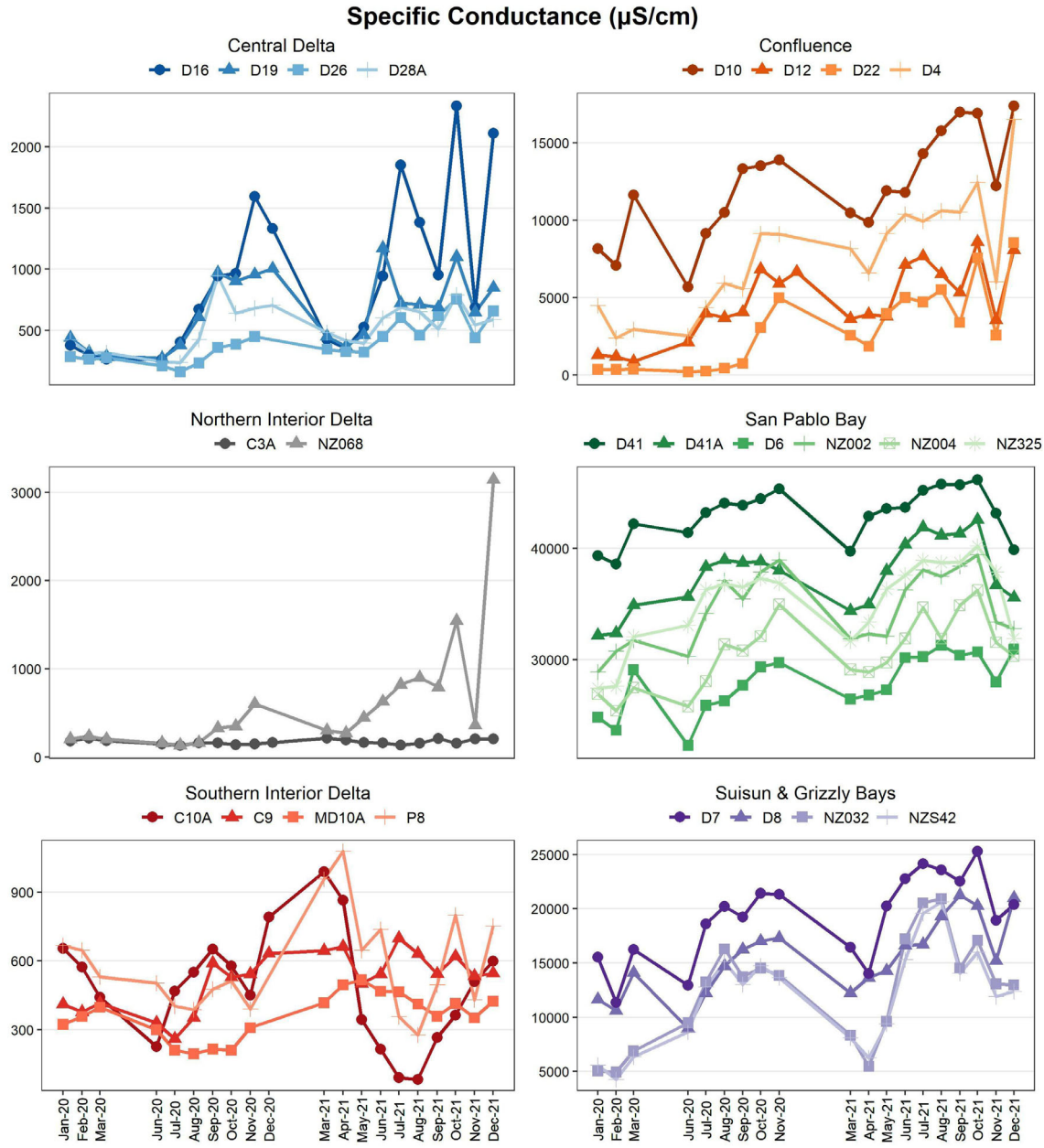

Figure 34: Surface specific conductance in µS/cm at six regions in the San Francisco Bay-Delta estuary during 2020-2021.

Turbidity

Surface turbidity values ranged from 0.2 FNU (C3A in Northern Interior Delta, August) to 111.3 FNU (D41A in San Pablo Bay, July) during 2021. The year 2021 had slightly higher average turbidity than 2020 (11.7 FNU vs. 9.8 FNU).

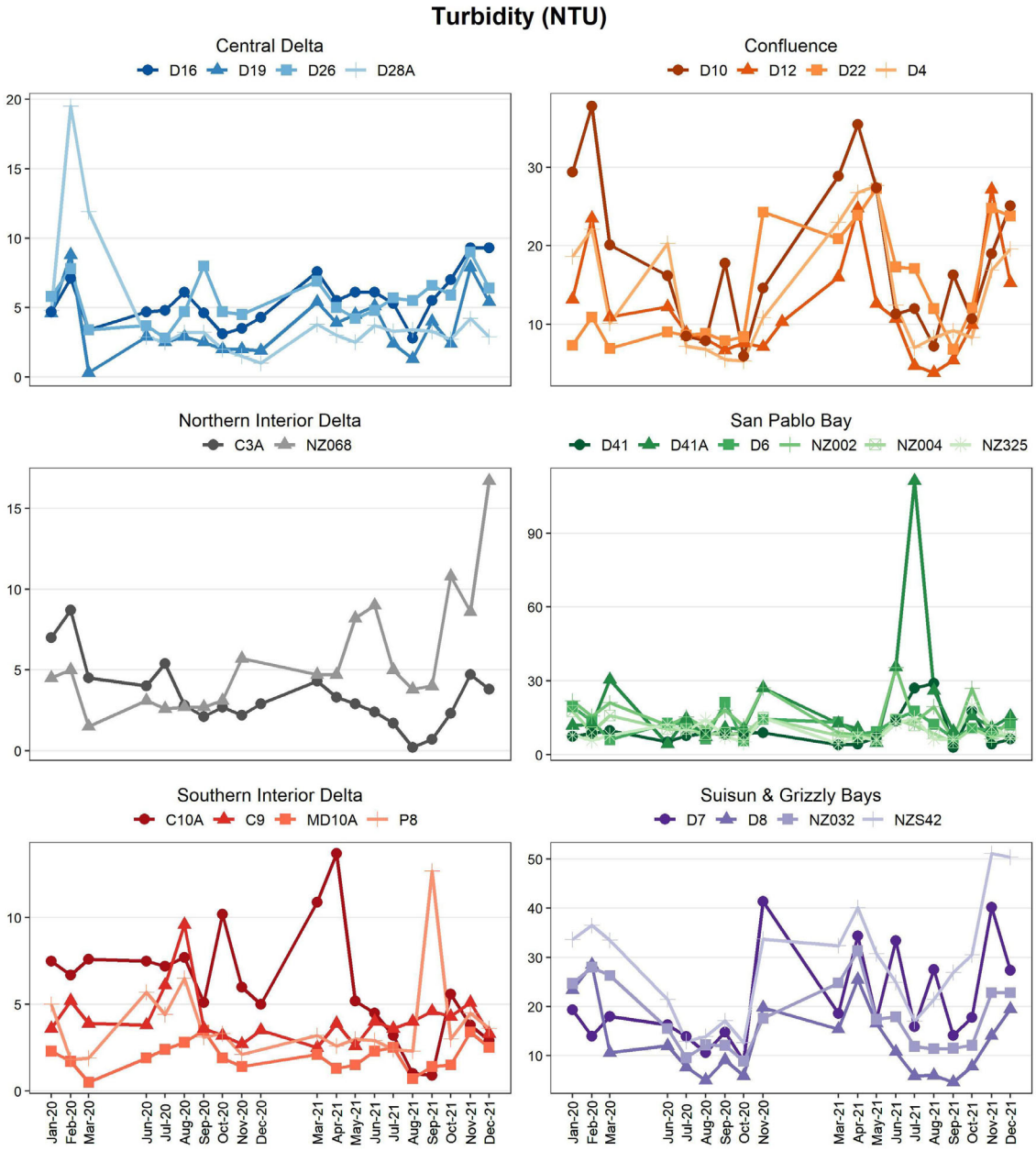

Figure 35: Surface turbidity in NTU at six regions in the San Francisco Bay-Delta estuary during 2020-2021.

Dissolved Ammonia

Dissolved ammonia levels in 2021 ranged from ≤ 0.05 mg/L (the reporting limit) in several regions to 0.27 mg/L (C3A in Northern Interior Delta, March). Dissolved ammonia levels are typically higher at C3A in the Northern Interior Delta due to its location downstream of the effluent discharge from Sacramento Regional Sanitation District. Ammonia levels are typically lower throughout the Delta and Bays, likely due to dilution and nitrification.

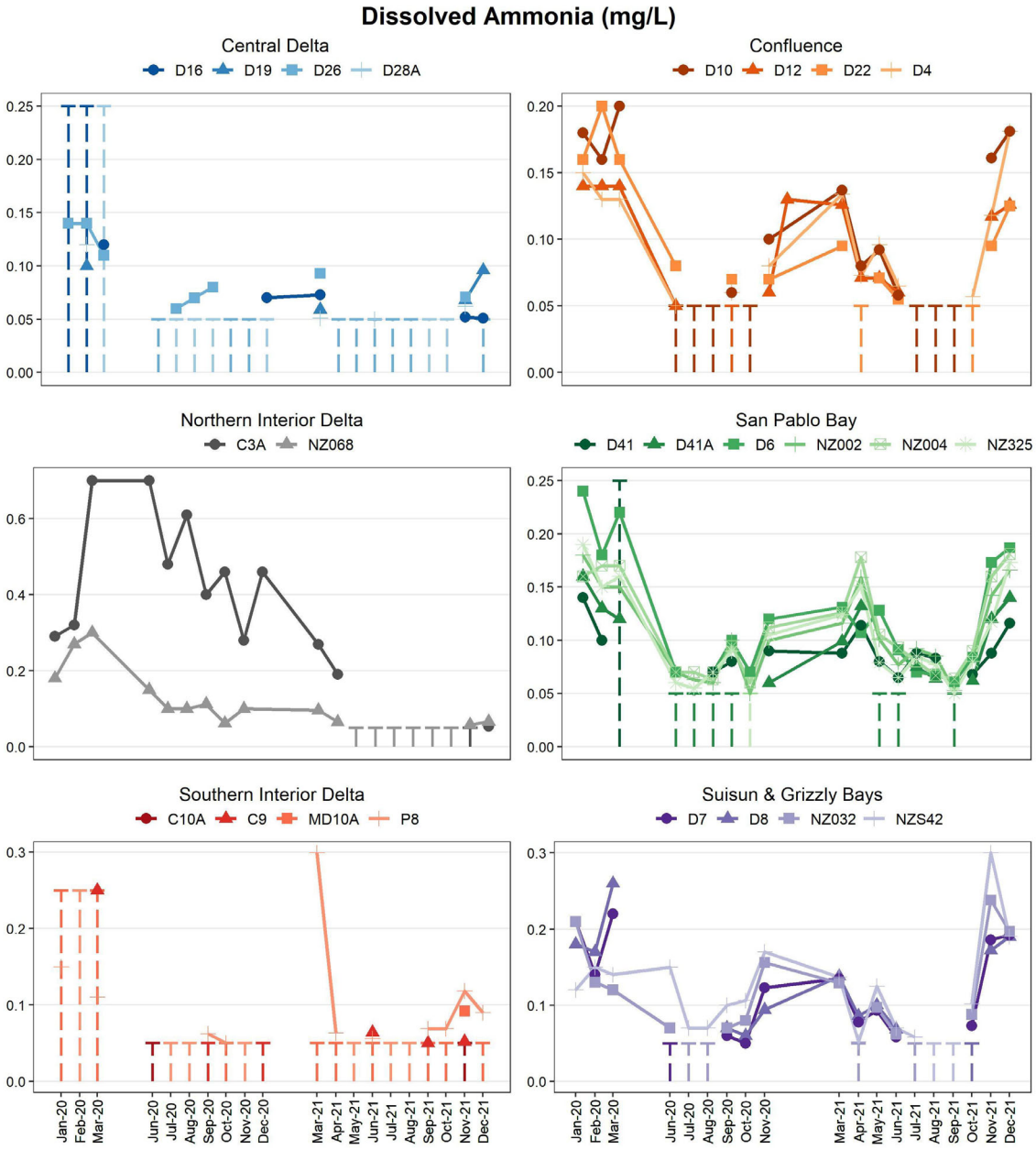

Figure 36: Dissolved ammonia concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2020-2021. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Chlorophyll a

Chlorophyll a values in 2021 ranged from ≤ 0.5 µg/L (the lowest reporting limit) to 25.51 µg/L (C10A in the Southern Interior Delta, March). The highest levels of chlorophyll a were seen in the Southern Interior Delta region during the early spring months in 2021. This was mostly due to elevated levels at station C10A, which is known for being shallow during dry periods of the year, with increased temperatures and lower flows allowing for increased phytoplankton production.

These elevated chlorophyll a levels in the early spring at C10A also align with the continuous fluorescence data collected at this station. More information about the phytoplankton genera is described in the phytoplankton section.

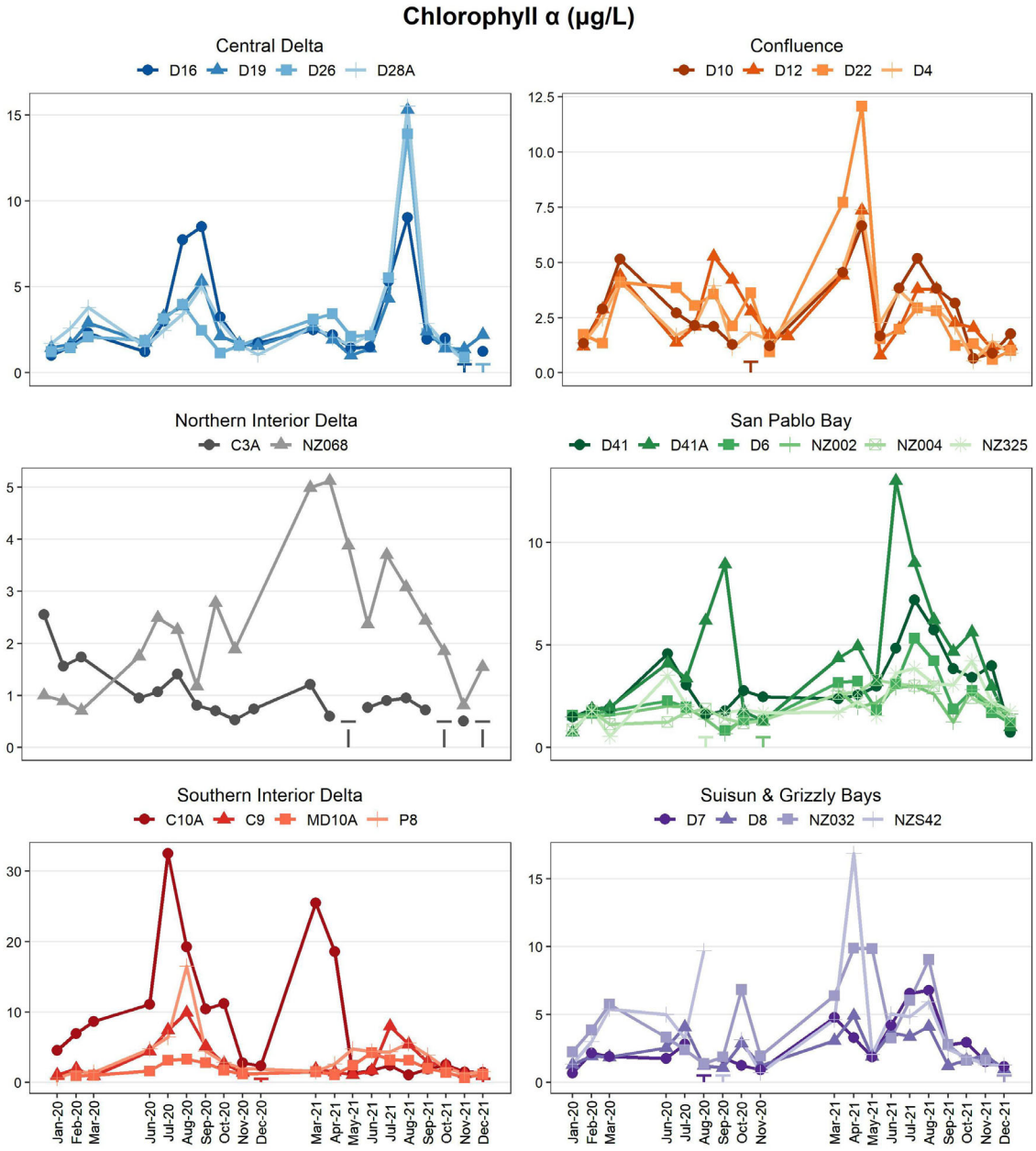

Figure 37: Chlorophyll a concentrations in µg/L at six regions in the San Francisco Bay-Delta estuary during 2020-2021. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Dissolved Nitrate + Nitrite

Dissolved nitrate + nitrite values in 2021 ranged from ≤ 0.05 mg/L (the lowest reporting limit) to 3.58 mg/L (P8 in the Southern Interior Delta, December). The Southern Interior Delta region had the highest fluctuation of dissolved nitrate + nitrite concentrations and had the highest levels compared to the rest of the estuary, likely due to influence from nearby agricultural land use and wastewater treatment effluent.

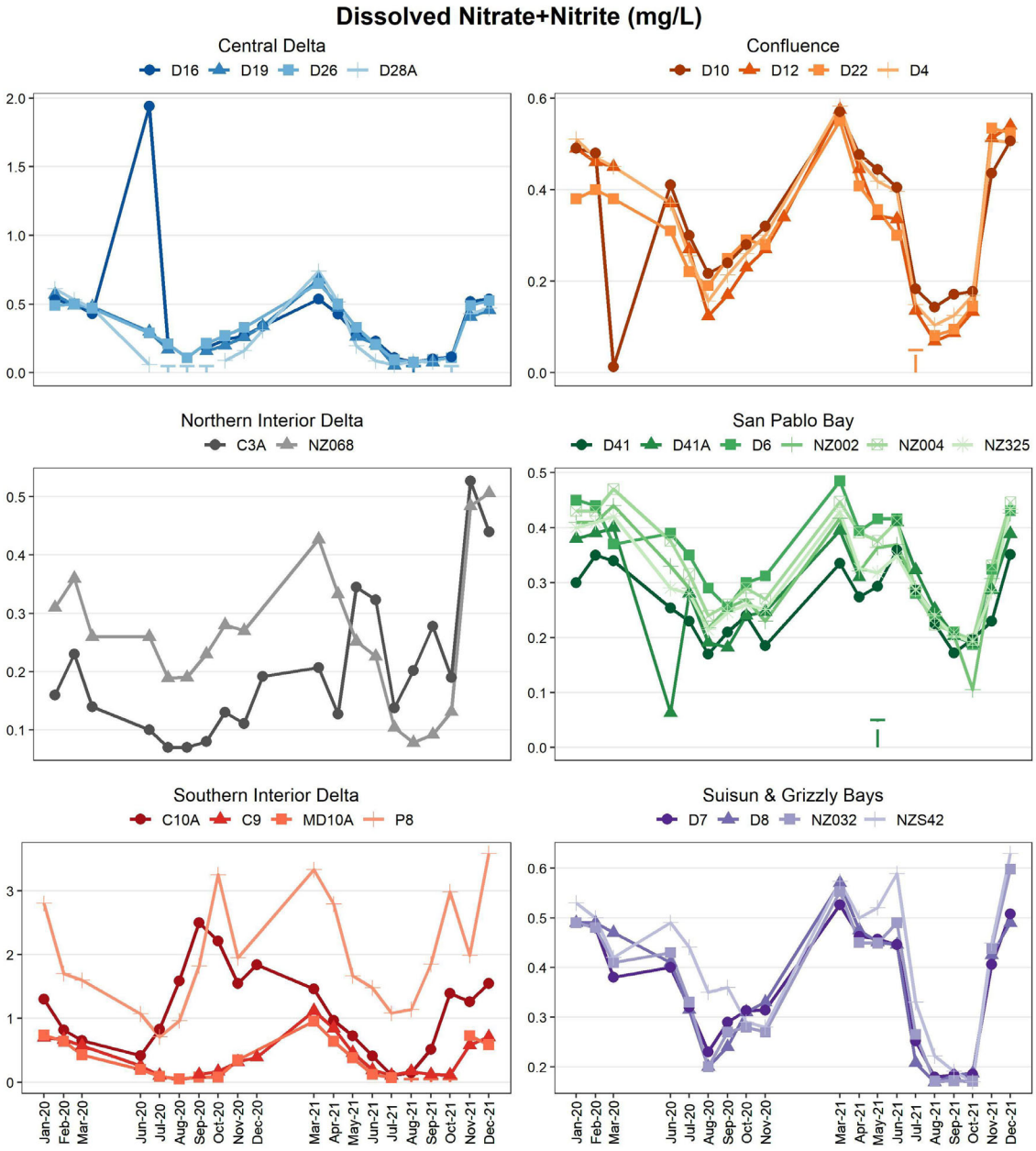

Figure 38: Dissolved nitrate and nitrite concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2020-2021. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Total Phosphorus

Total phosphorus values in 2021 ranged from 0.02 mg/L (C3A in the Northern Interior Delta, October) to 0.47 mg/L (P8 in the Southern Interior Delta, October). The Southern Interior Delta region had the highest fluctuation of total phosphorus concentrations and had the highest levels compared to the rest of the estuary, likely due to influence from nearby agricultural land use and wastewater treatment effluent.

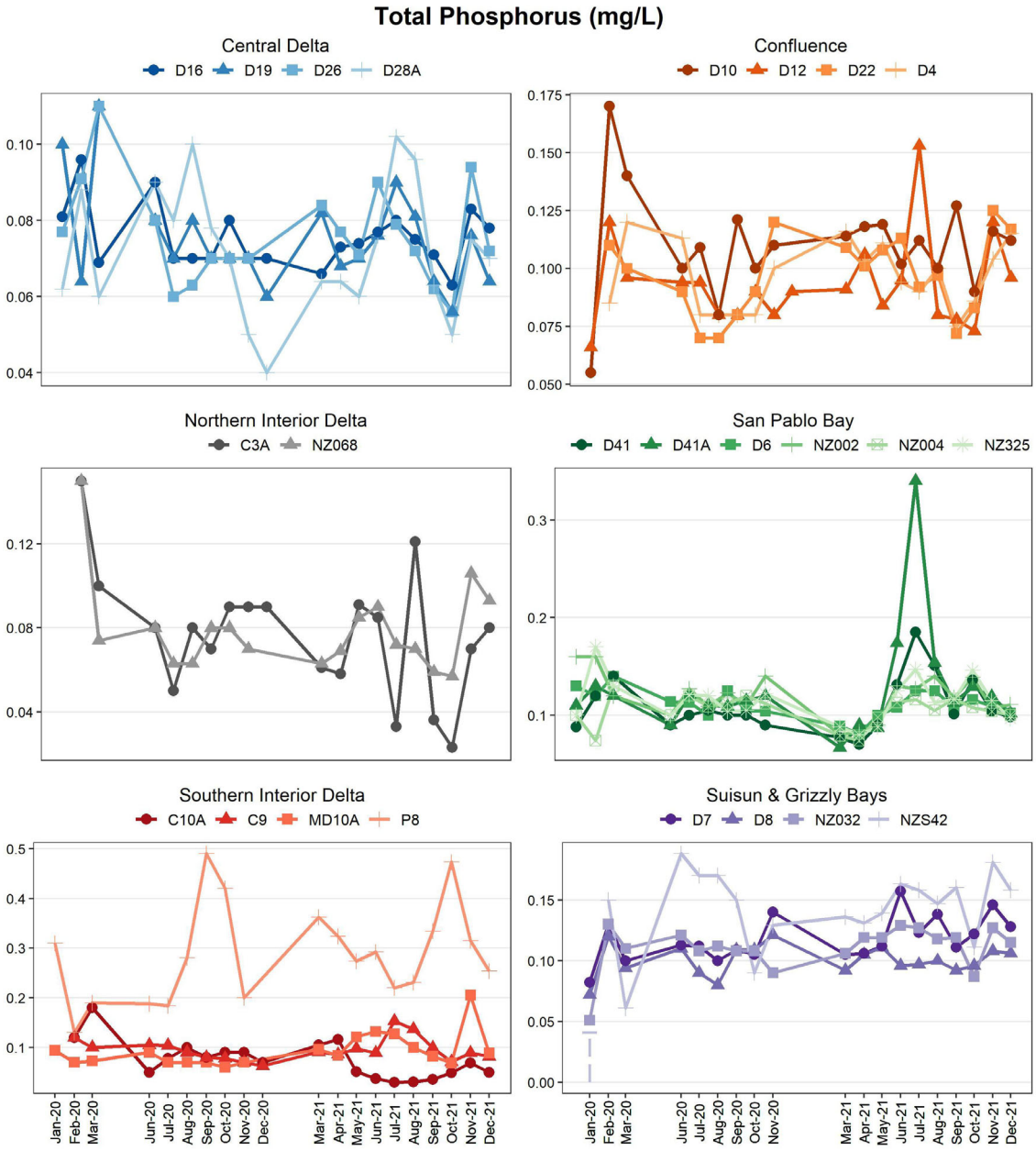

Figure 39: Total phosphorous concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2020-2021. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Data and Contact Info

EMP's discrete water quality data sets are available publicly via the Environmental Data Initiative (EDI) here.

For questions related to EMP's discrete water quality data sets, please contact Morgan Battey at Morgan.Battey@water.ca.gov.