CHOLLAS CREEK

WATERSHED

SAN DIEGO
COASTKEEPER

Water Quality Report

IMPACT SNAPSHOT

471
Samples Taken in the Field

529
Water Samples Collected

18
Students Trained

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Introduction

Program

In partnership with *Groundwork San Diego–Chollas Creek* and *Outdoor Outreach*, San Diego Coastkeeper launched a new science program in Fall of 2021. Our one-of-a-kind program engages Black, Indigenous, and People of Color (BIPOC) high school students in year-long environmental science education and workforce training.

This program empowers students to care for their communities through field-based learning and outdoor excursions. We aim to inspire the next generation of environmental scientists, conservationists, and stewards. Furthermore, the data collected by students inform decision-makers, key stakeholders, and the public about the health of Chollas Creek.

Through this program, we are committed to the following:
- Increasing environmental science literacy
- Overcoming equity barriers to ecological stewardship and outdoor recreation
- Providing real-world STEM experiences

Participants

Program participants are 14–18 years old and attend Lincoln High School. Lincoln High School is located in the Lincoln Park neighborhood of Southeast San Diego and is part of the San Diego Unified School District. Lincoln Park is a historically working-class neighborhood and is home to diverse populations.

- Amiyah Anthony
- Andrea Nava
- Aurora Morales
- Christina Baraka
- Daniel Asoa
- Diamond Daniel
- Gerard Mitchell
- Gustavo Fraga
- Harriet Chance
- Jorge Estrada
- Leo Penaloza
- Litzy Santos
- Marce Valadez
- Melissa Aguilar Macias
- Pedro Fragoso
- Tito Solomon
- Vivienne Mitchell
- Yoseline Bautista

Goals

1 Environmental Stewardship

- Connect BIPOC youth in the Chollas Creek region to the outdoors and their local watershed, the Chollas Creek Watershed.
- Increase environmental science literacy among BIPOC youth in the Chollas Creek region.
- Improve the ecological health of Chollas Creek and the Chollas Creek Watershed.

2 Workforce Development

- Build skills through water quality sampling training and data collection.
- Network with local environmental organizations and institutions.

3 Local Advocacy

- Offer the tools, resources, and skills to advocate for positive environmental change in their communities.
- Encourage informed and engaged community members.

4 Equitable Access

- Provide monthly stipends and free transportation to participants.
- Increase diversity and representation in the conservation and environmental workforce.

About

Chollas Creek Watershed

The Chollas Creek Watershed contains waterways that crisscross through populated neighborhoods – mostly communities facing environmental racism and justice challenges – including Chollas Creek, City Heights, Lemon Grove, La Mesa, Encanto, and Barrio Logan. Chollas Creek is an urban 30-mile-long creek within the Chollas Creek Watershed. This watershed empties into the eastern shoreline of San Diego Bay at the naval base.

Water quality standards used in the graphs in this report are from:
- San Diego Basin Plan Water Quality Objectives
- California Toxics Rule, 40 CFR § 131.38, Establishment of numeric criteria for priority toxic pollutants for the State of California
- Environmental Protection Agency Benchmarks

Chollas Creek is one of our region's most neglected water bodies.

Chollas Creek is on the federal Clean Water Act 303(d) list, which means the waterway is pollution-impaired or damaged by pollution and fails to meet federal or state water quality standards. The pollutants found in Chollas Creek include toxic metals, pathogens, and harmful levels of nutrients. These pollutants negatively impact the waterway's health, surrounding communities, habitats, and ecosystems.

About

Water Quality Monitoring

Students collected environmental data and water quality samples from six sites in 2021–2023. All data collected can be found on our website. The ecological data collected in the field include:

- **Salinity** is how much salt is present.
- **Turbidity** measures how clear, cloudy, or opaque water looks.
- **Conductivity** is the ability of water to pass an electrical current.
- **Dissolved oxygen** is the amount of oxygen available to aquatic life.
- **pH** measures how acidic or basic the water is.
- **Total dissolved solids** are dissolved minerals and salts in water.

Students also collected water quality samples for pollution analysis, including:

- **Total suspended solids** are debris that a filter can trap.
- **Nitrate or Nitrite** includes fertilizers, human and animal waste, powerplant emissions, and vehicle exhaust.

- **Phosphorus** includes plant and leaf litter, soil, human and animal waste, and fertilizer.
- **Copper** sources include fertilizer, waste dumps, wastewater, and vehicle exhaust.
- **Lead** is a heavy metal and a powerful neurotoxin, which can damage the brain and injure other soft tissues.
- **Zinc** comes from galvanized metal surfaces (roofs, gutters, fencing, guard rails, drainage systems) and debris from vehicle tires.
- **E.coli** is a strong indicator of sewage or animal contamination.
- **Enterococcus** indicates fecal bacteria and the possible presence of disease-causing bacteria, viruses, and protozoa.
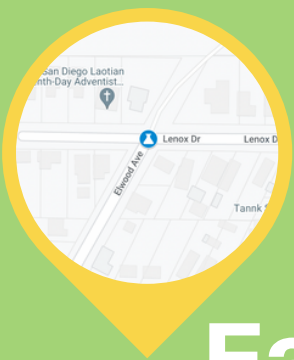- **Total Coliform** is an indicator of water's suitability for drinking.

Asterisks * on the graph indicate recent rain.

6 Sampling Sites

in the Chollas Creek Watershed

Sampling site
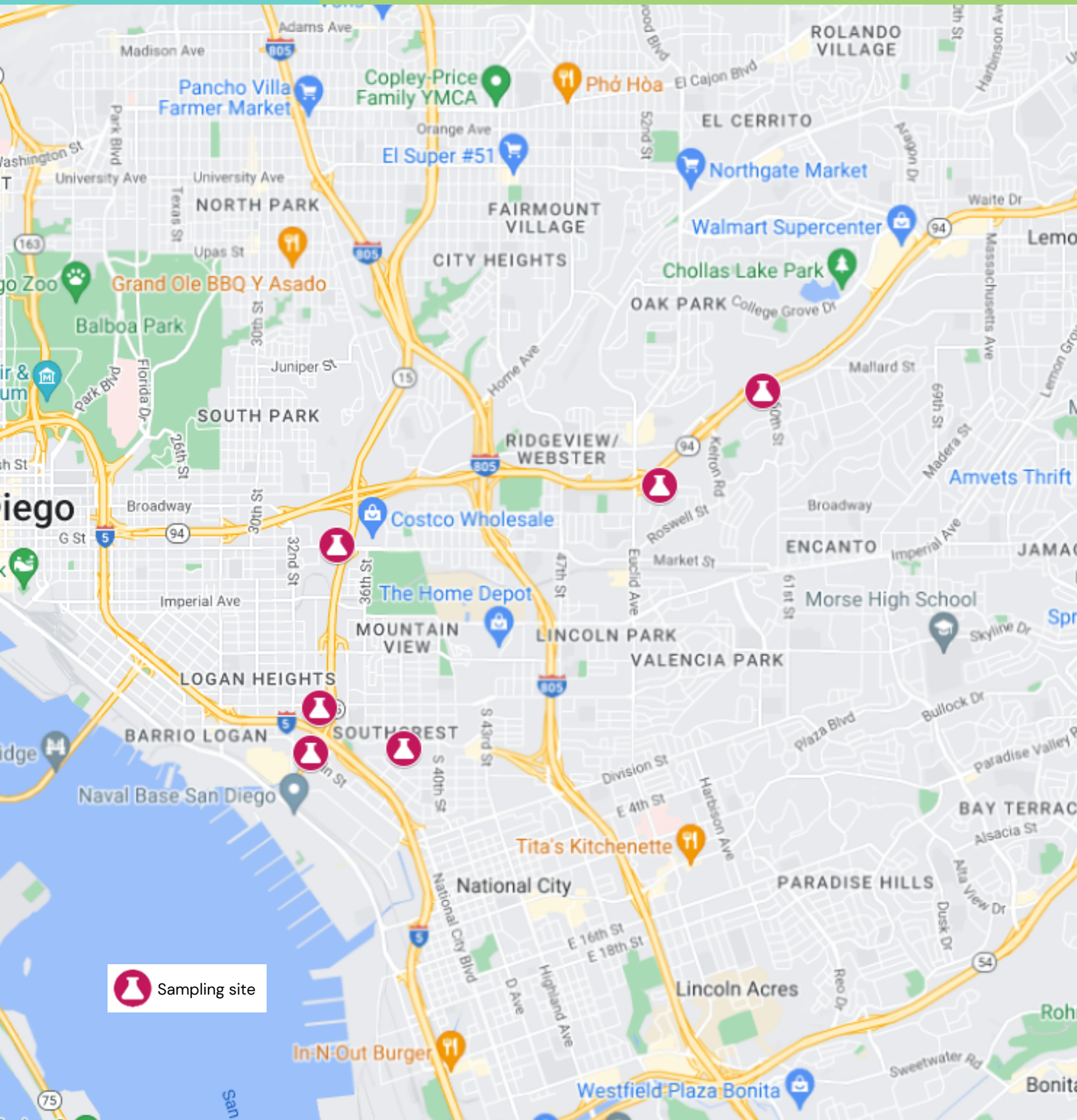
EarthLab

Observations

This sample site is located at the Earthlab at Millennial Tech Middle School.

The nearby storm drain outfalls often brought trash to the area.

Seven out of twelve times, there was no water during the sampling.
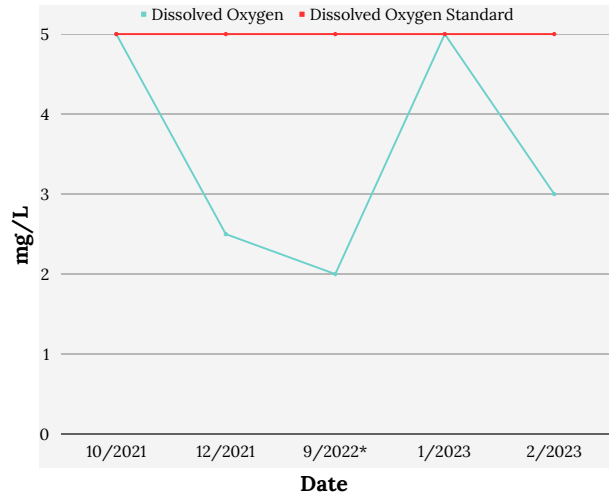
EarthLab

Insights

The average pH was 7.9, making it slightly basic. Conductivity, the ability of water to conduct electricity, fluctuated over time. The lowest conductivity reading was in January 2023, when the most water was present during sampling.

Phosphorus
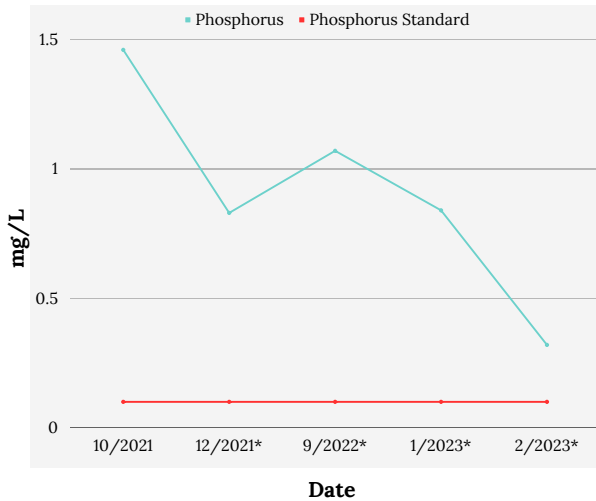
Dissolved Oxygen

Consistent high phosphorus levels could have contributed to the low dissolved oxygen levels. Total dissolved solid levels were highly variable, which means there were high and low concentrations of dissolved substances in the water. Low levels of dissolved oxygen made aquatic life challenging to sustain. **Dissolved oxygen levels never met water quality standards.**
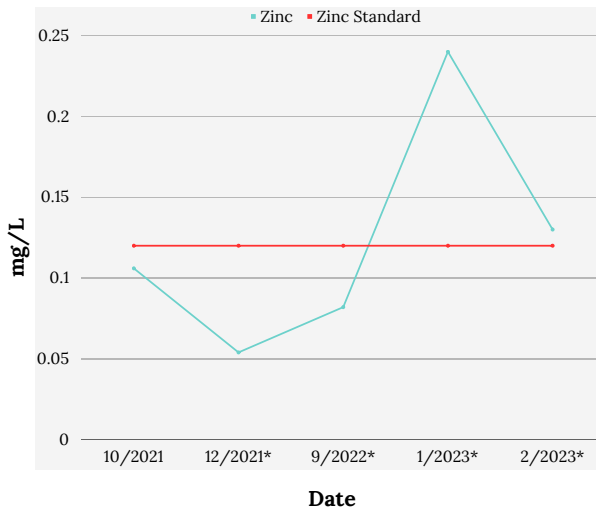
Zinc

Copper
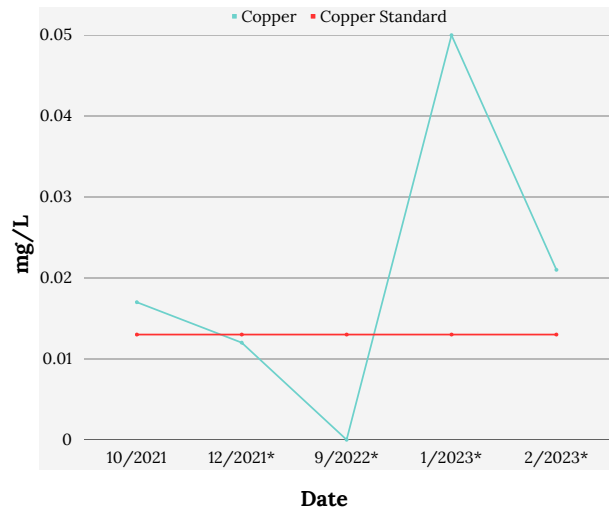
Turbidity was usually high, making the water cloudy or opaque due to more inorganic and organic matter. There was an increased presence of all metals. **Zinc and copper levels failed water quality standards in 2023.**
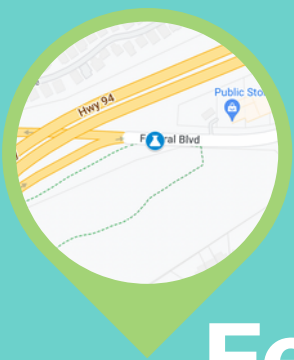
Federal Boulevard

Observations

Over time, there was an increase in sediment on the slope alongside this sample site.

We often saw crawfish at this sample site.

This site has consistent water throughout the year and is the most upstream sampling site.

Federal Boulevard
Insights

The average pH was a reasonably mild 7.8. **Conductivity was very high in December 2021, meaning more elevated amounts of dissolved substances, chemicals, and minerals were in the water.** Salinity was consistently low, which is characteristic of this upstream site. Dissolved oxygen levels were variable and very low in September 2022.

Phosphorus
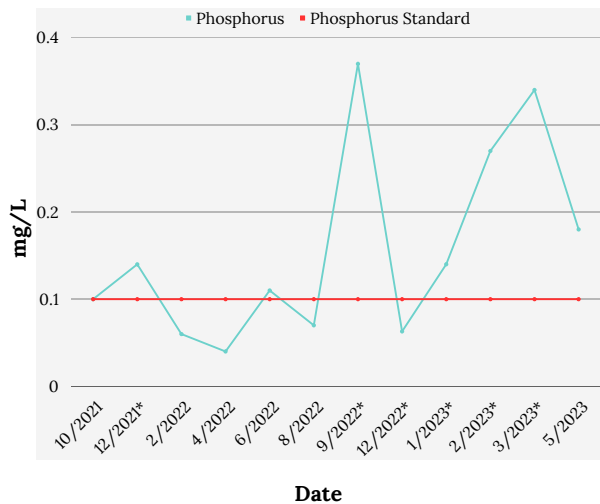
Copper
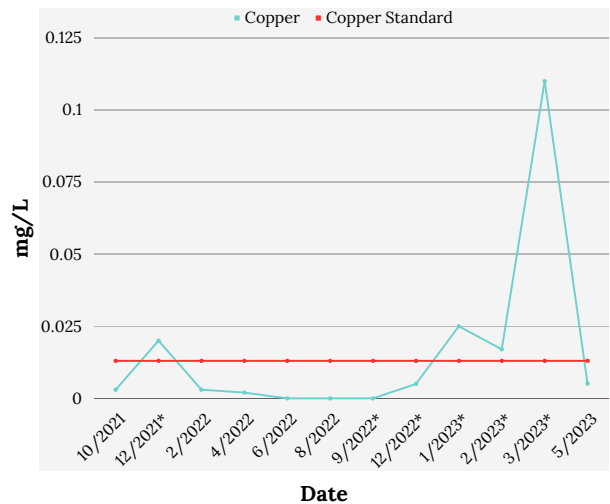
Lead generally had lower levels than zinc, but all metals were very high in January 2023. Copper levels had large spikes in winter and were low in warmer months. The highest nitrate/nitrite levels were in December 2022 and January 2023. **Phosphorus was often higher than water quality standards, which can cause increased growth of algae and large aquatic plants, likely resulting in decreased dissolved oxygen levels.**
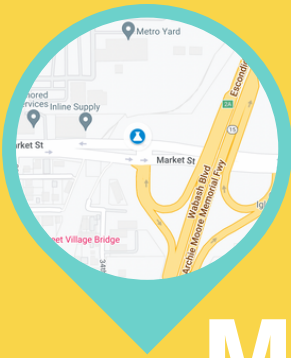
E.coli
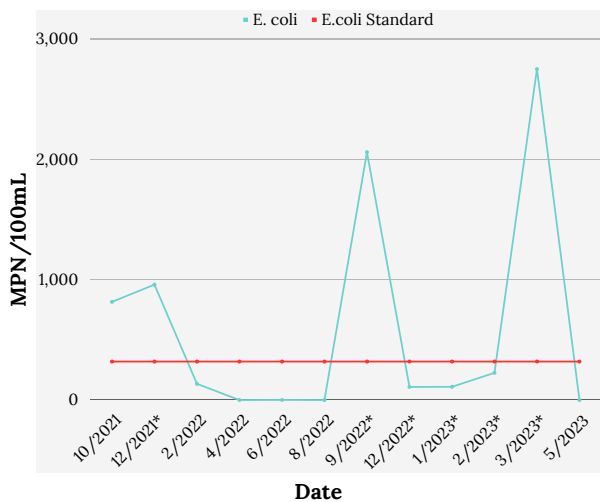
Total Coliforms
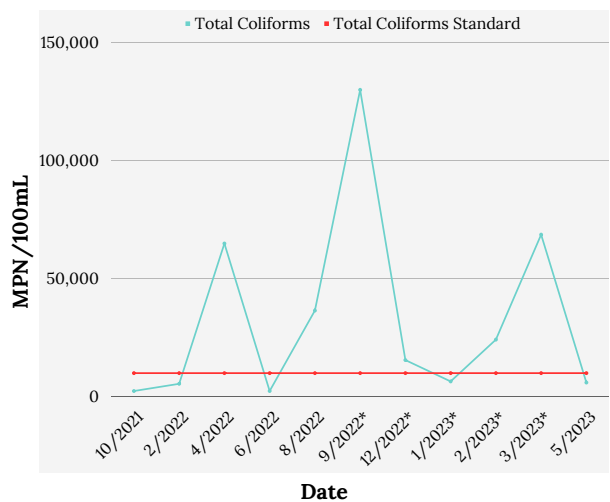
Usually, one or more types of bacteria had high levels. **In September 2022, all types of bacteria had high levels above water quality standards.** Total coliform levels had high spikes in April 2022, September 2022 and March 2023.

Market Street

Observations

This site consistently has high volumes of trash.

During winter, there was the most change in water quality, likely due to rain.

Six out of twelve times, there was no water during sampling events.
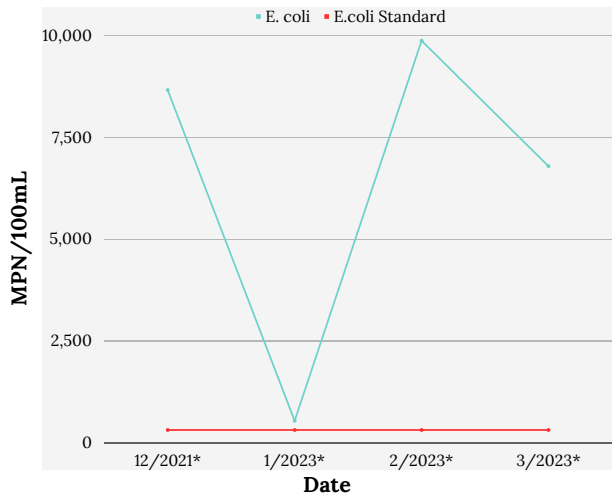
Market Street
Insights

There was an average pH of 7.75, making the water slightly basic. **Dissolved oxygen fluctuated quite a bit but was highest in December 2021, which could have affected sustaining aquatic life.** Turbidity, or the clarity of the water, was highly variable.
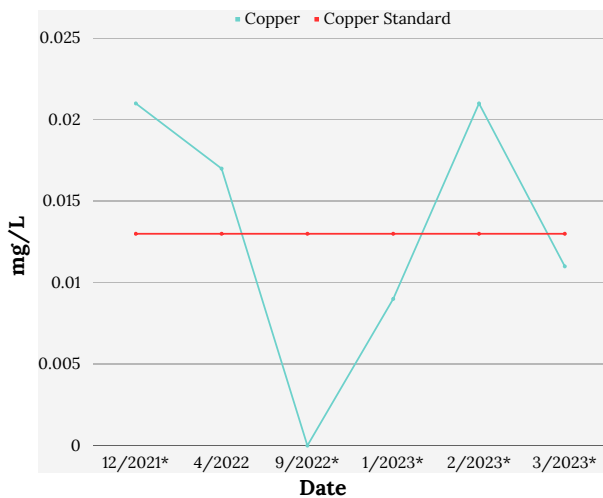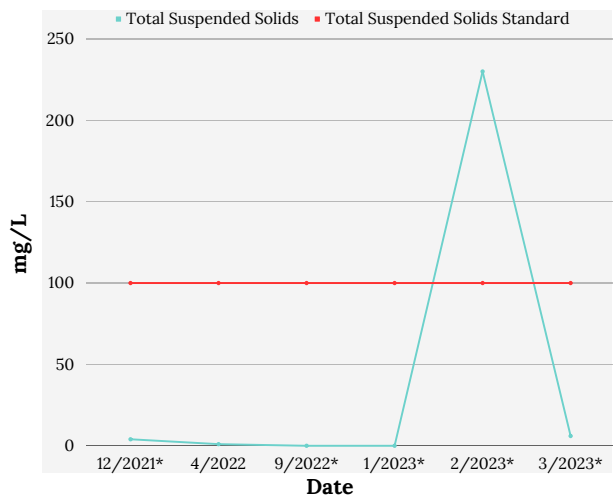
Phosphorus
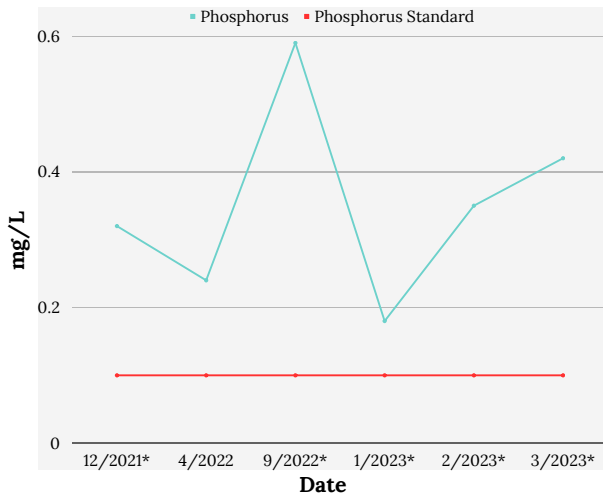
E.coli

Phosphorus levels were consistently above water quality standards, with the highest in September 2022. **E.coli and total coliform levels exceeded water quality standards during every sampling event.**
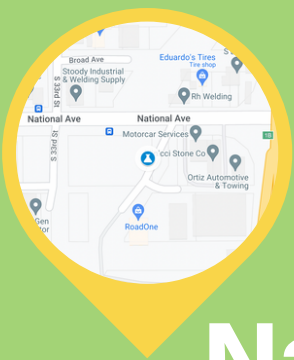
Copper

Total Suspended Solids

Lead levels decreased, and zinc levels fluctuated. After raining in September 2022, phosphorus levels increased. However, nitrate/nitrite levels decreased over time. **January 2023 had very low total dissolved solids levels, but a significant increase in February 2023 exceeded water quality standards.**

National Avenue

Observations

This site is under an overpass and near a car towing business.

We regularly saw large amounts of trash in the creek. In December 2022, we found many dead fish at this site following recent rain.

Water was consistently present during each sampling session.

National Avenue
Insights

The average pH was 7.8. **Conductivity was consistent, except for a spike observed in April 2022, indicating more dissolved substances, chemicals, and minerals in the water.** Turbidity, or the clarity of the water, varied over time. Dissolved oxygen levels were highly variable. Salinity is very high compared to other sample sites.
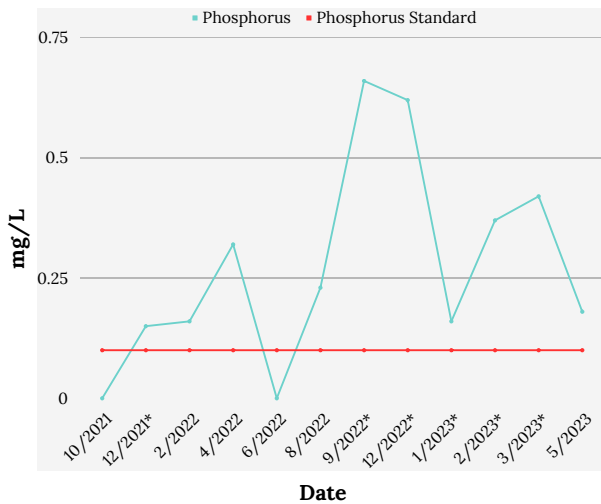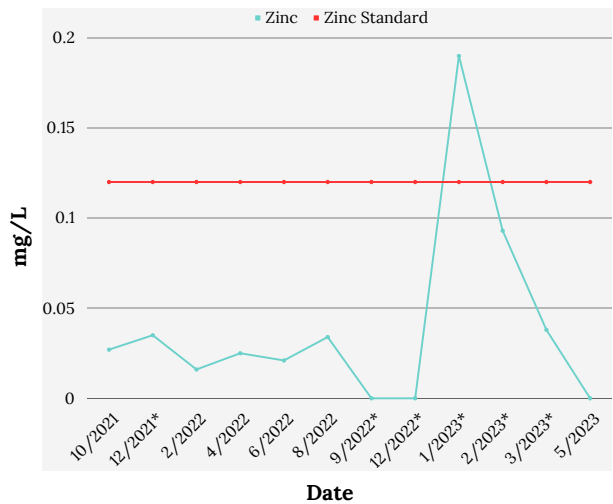
Enterococcus
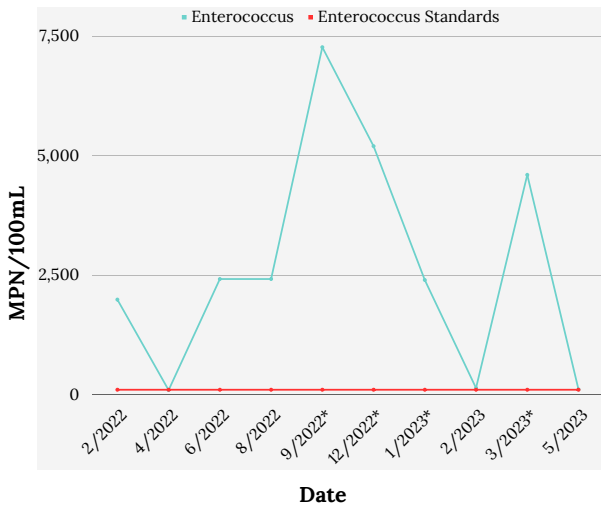
E.coli
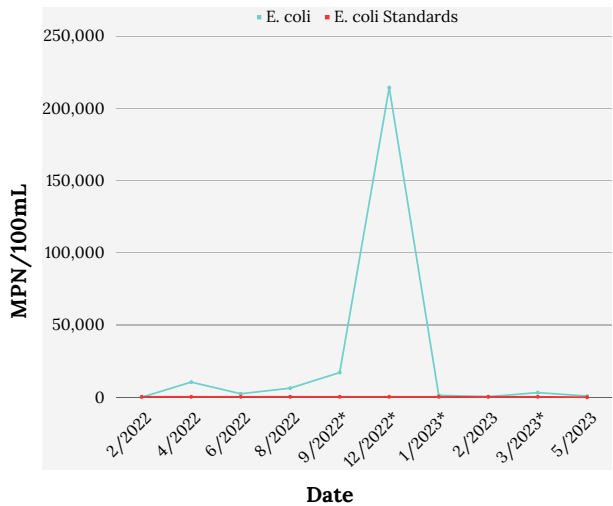
All bacteria types had high levels and spikes in December 2022. E.coli and enterococcus regularly exceeded water quality standards. Zinc levels were generally within water quality standards but drastically increased in January 2023. There was a high spike in copper in December 2022 and January 2023.
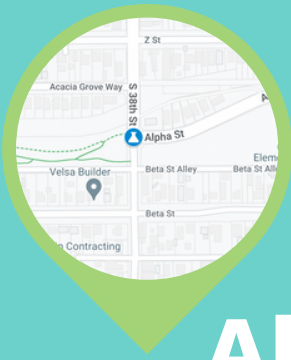
Phosphorus

Zinc

Nutrient levels were generally variable. In June 2022, nutrient levels were very low, but they increased more during fall and winter. **Phosphorus levels were varying, but 10 out of 12 times, they were higher than water quality standards.**

32.69173, –117.11242

Alpha Street

Observations

This site is near Cesar Chavez Elementary School.

A walking trail near the site leads to the Southcrest Trails Neighborhood Park.

**Two out of twelve times, there was no water during sampling.**

Alpha Street
Insights

Apart from February 2022, Total dissolved solids had consistently very high levels, which means there's a high concentration of dissolved substances in the water. **The dissolved oxygen levels were very low, which signifies a water quality impairment that makes it difficult for aquatic life to survive.**
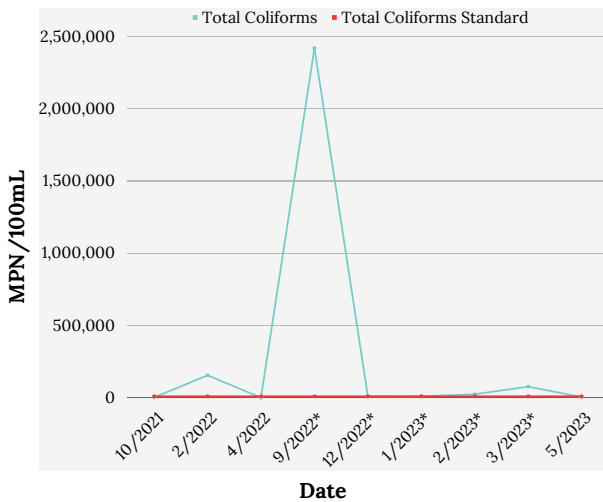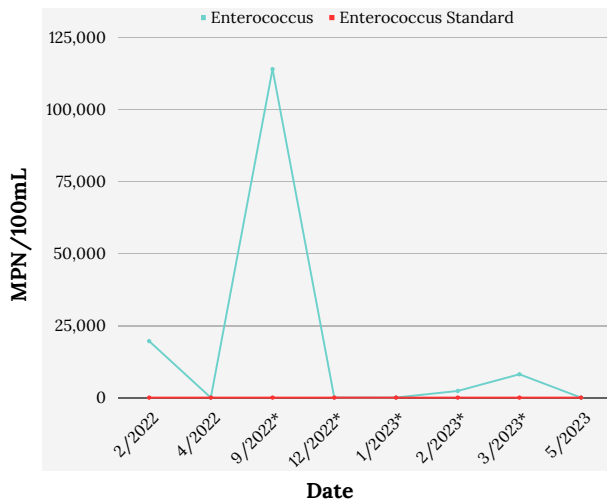
Phosphorus
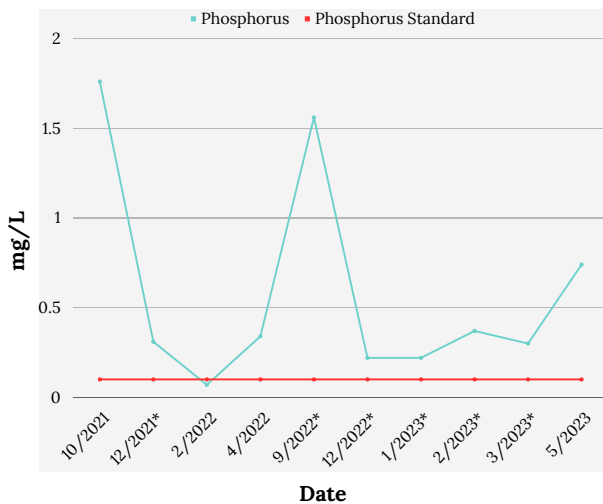
Copper
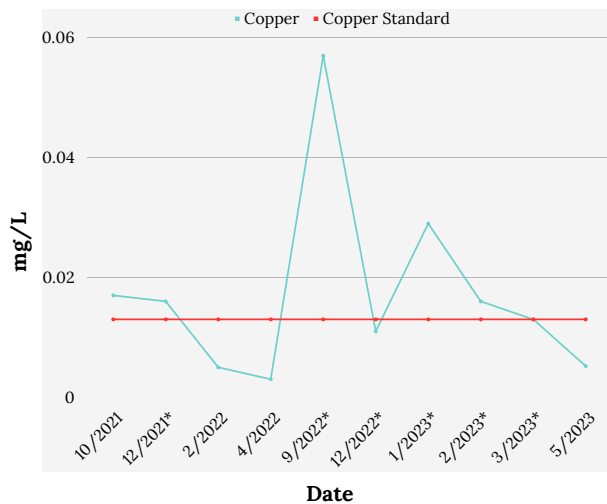
In October 2021 and September 2022, phosphorus levels were very high. High amounts of phosphorus can cause increased algae growth and large aquatic plants, which results in decreased levels of dissolved oxygen. **Copper levels were higher than water quality standards half of the time.**
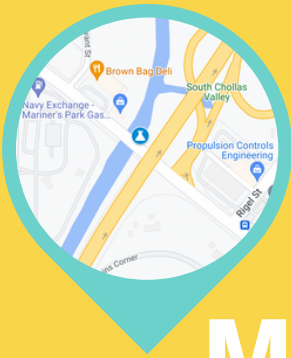
Total Coliforms

Enterococcus

Bacteria levels were highest in September 2022 after recent rain. **This site has a wide range of bacteria levels but is consistently higher than water quality standards.**

32.691257, −117.123425

Main Street
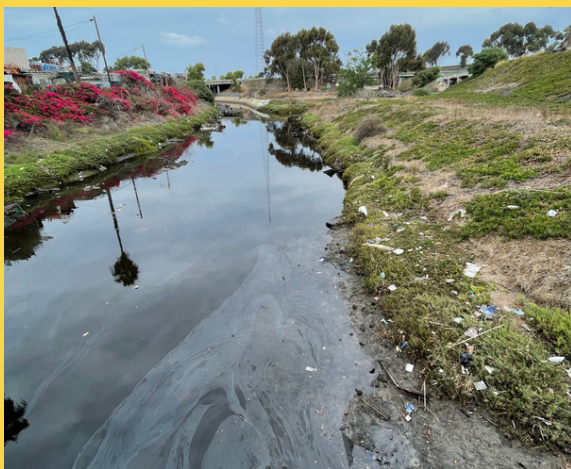
This site is upstream of the Naval Base in Barrio Logan.

There is a seating and scaffolding business next to this sample location.

This site has a tidal flow from San Diego Bay, so water is consistently present throughout the year.

Main Street
Insights

The average pH was 7.86. **There were consistently high levels of total dissolved solids, meaning there were high levels of dissolved organic matter and inorganic salts in the water.** Turbidity levels, or the clarity of the water, were highly variable. The dissolved oxygen levels were highly varying. The lowest levels were in September 2022 and the highest in February 2022.

Phosphorus
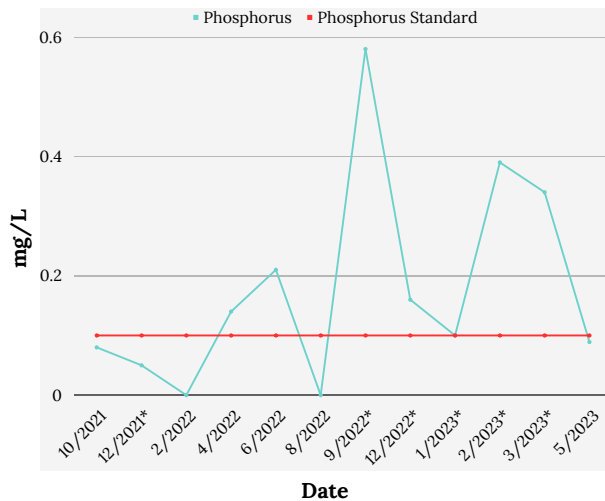
Copper
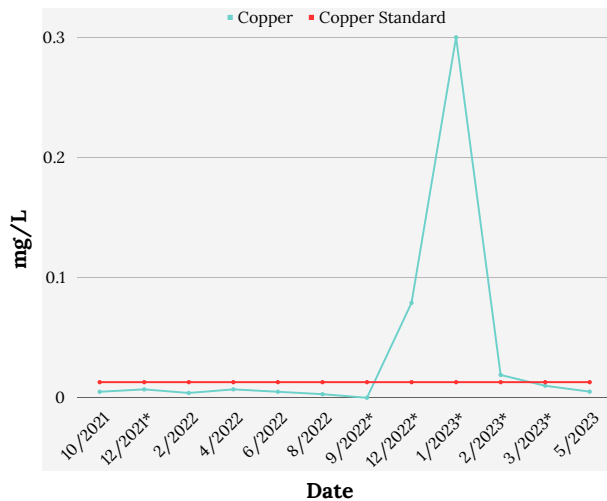
In 2022, there was an increase in lead and zinc in the water. **Copper and zinc levels increased from 2022 to 2023. Copper had a significant increase in levels in January 2023.** Nitrate/Nitrite was highest in February 2023, and phosphorus was highest in September 2022.
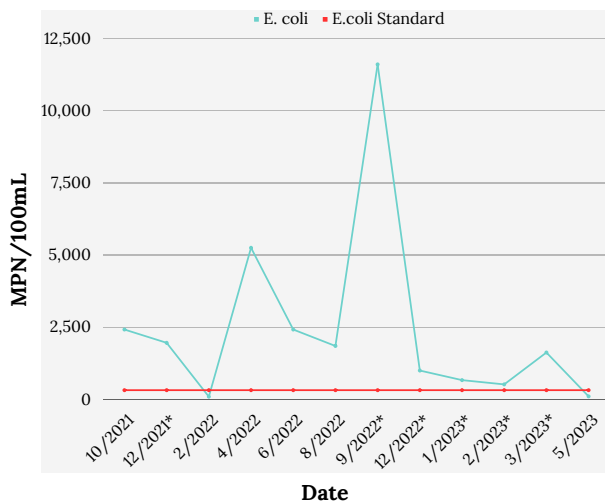
E.coli

Enterococcus
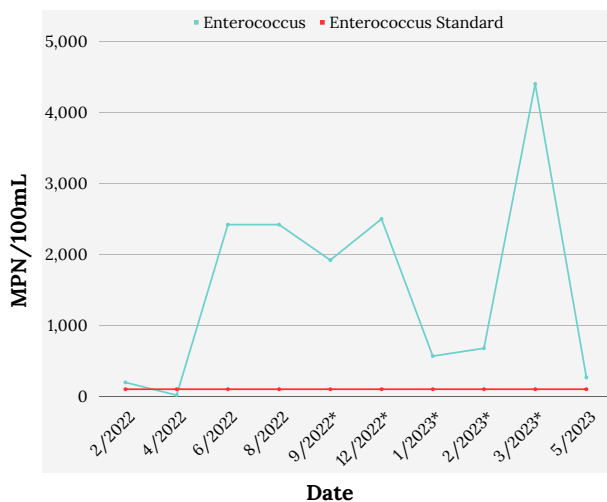
Due to the recent rains, E.coli and total coliforms were high in September 2022. **Enterococcus and E.coli levels were typically high and were higher than water quality standards during every sampling event except for one.**

Recommendations

Capture and treat stormwater runoff

When it rains, pollution increases and degrades water quality in Chollas Creek. This happens because rainwater washes over the city, carrying harmful things like metals, bacteria, pesticides, fertilizer, and pet waste into the creek. This pollution is a big problem for the creek's health and affects water quality downstream in San Diego Bay and the ocean. This is why we recommend not going into the water at our beaches for at least three days after it rains to avoid getting sick from polluted urban runoff.

The best solution is to capture and treat stormwater. We can collect the rainwater and use it as a water supply instead of letting it become polluted runoff. This would help improve the water quality and keep our beaches clean.

Maintain and clean trash from waterways

We have noticed a lot of trash in the water at all the places we tested. This trash includes plastic, paper, tires, shopping carts, and clothes. We need to clean up these areas more often to make the water cleaner. By removing the trash, we can improve the water quality and protect the natural environment. It will also stop the trash from entering the ocean and harming marine life.

Restore native vegetation and natural habitats

Many places we tested have invasive plants and concrete slabs in the creek. We need to remove these things and restore the natural habitat. Doing this will help improve the water quality, reduce sedimentation and salinity, make the area more resistant to floods, and increase our water supply by recharging the groundwater.

Engage with community members

Everyone in the Chollas Creek and San Diego area can help protect and restore our natural environment. If more people learn about the health of our waterways and the water quality, we can make a difference through community action. We should all work together to care for our water and make it cleaner and healthier for everyone.

Let's work together to improve our communities' water quality and health in the Chollas Creek Watershed!

We couldn't have done it without your generous support .

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