



Sunnyvale

Caribbean Drive Green Street Project

*SCVURPPP Annual C.3 Stormwater Workshop
June 10, 2021*

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Caribbean Drive Green Street Project

- First Green Street in Sunnyvale
- EPA-funded Healthy Watersheds, Resilient Baylands Project
 - ◆ 16 partner organizations in Bay Area – includes SFEP, SFEI
 - ◆ Multi-benefit Urban Greening
 - ecological restoration & biodiversity
 - stormwater treatment
 - traffic calming
 - recreation
 - ◆ Funding: \$568K
 - \$265K grant funding
 - \$303K City contribution (includes transportation and trail improvements)



Project Management

- Partners:

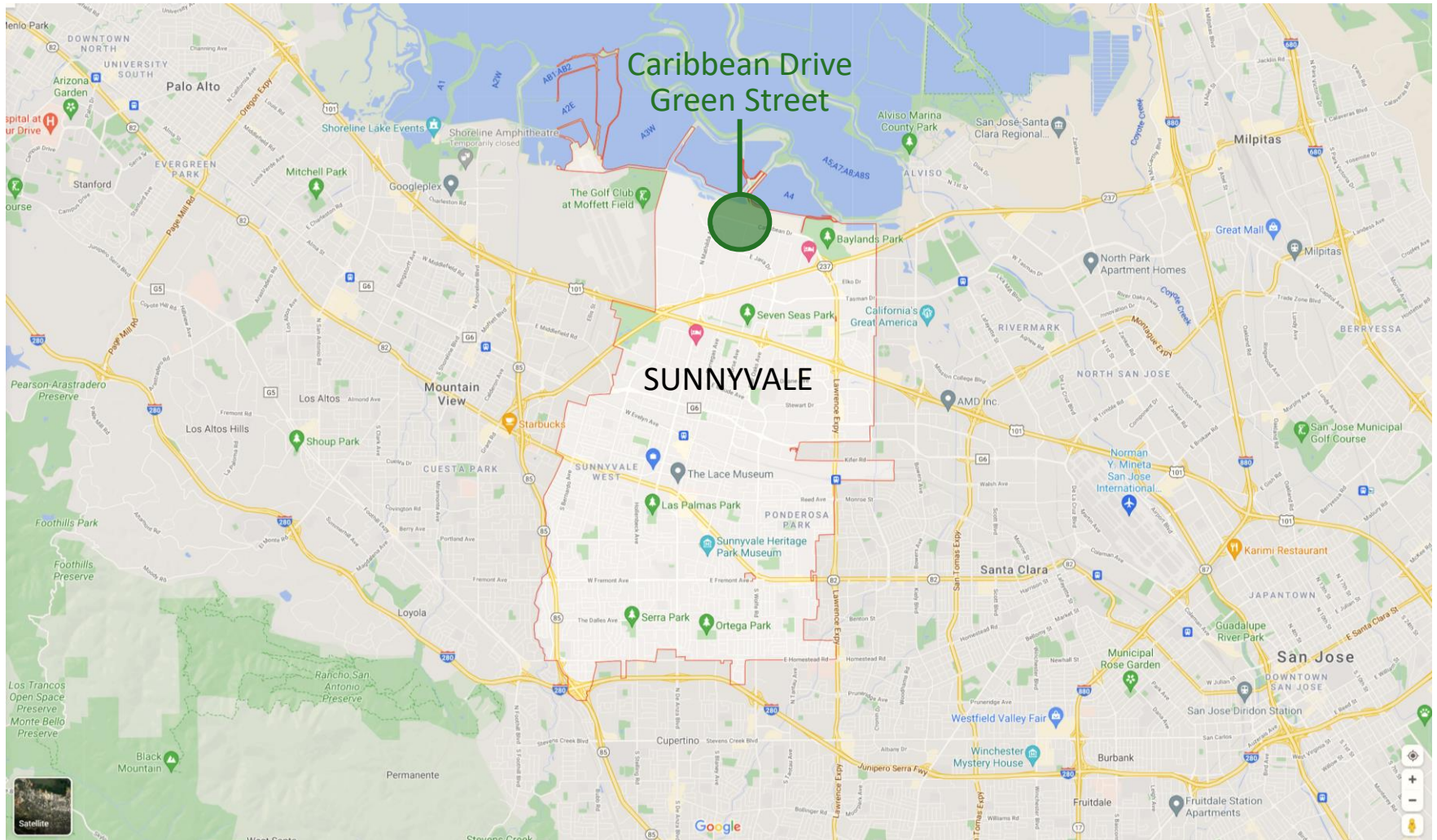
- ◆ Environmental Services Dept.
- ◆ Dept. of Public Works
- ◆ SFEI and SFEP (design advisory team)
- ◆ Mark Thomas (design consultant)
- ◆ CDM Smith (WPCP consultant)

- Timeline:

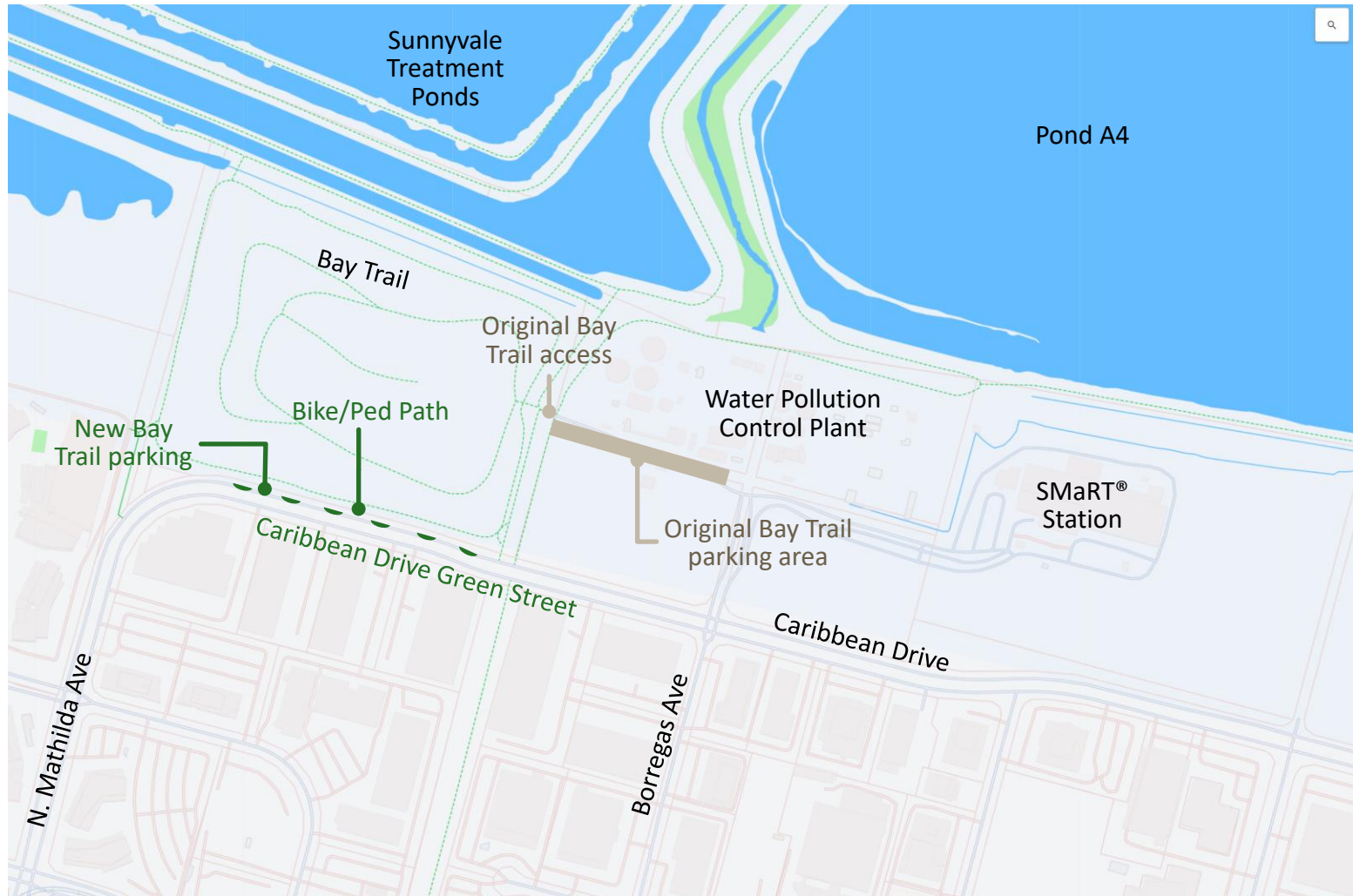
- ◆ 2016: Grant award
- ◆ 2017-2019: Design
- ◆ 2020: Construction complete
- ◆ 2021: Interpretive signage installed



West Caribbean Drive, Sunnyvale



West Caribbean Drive, Sunnyvale



Project Benefits

INTERPRETIVE SIGNAGE FOR COMMUNITY EDUCATION

PROTECTED BIKING AND WALKING PATH

6 BIORETENTION RAIN GARDENS – TREAT RUNOFF FROM 41,500 SQ. FT.



TRAFFIC CALMING – REMOVAL OF ONE TRAVEL LANE

WIDE BUFFER ZONE – “DOOR ZONE” AND EASE OF PARALLEL PARKING

15 NEW PARKING SPACES

NATIVE PLANT SPECIES

Caribbean Drive: 6 Bioretention Areas



Caribbean Drive: Before vs. After



Before (February 2020)



After (July 2020)

Caribbean Drive: Before vs. After



Before (February 2020)



After (June 2021)

Caribbean Drive: Before vs. After



Before (February 2020)



After (June 2021)

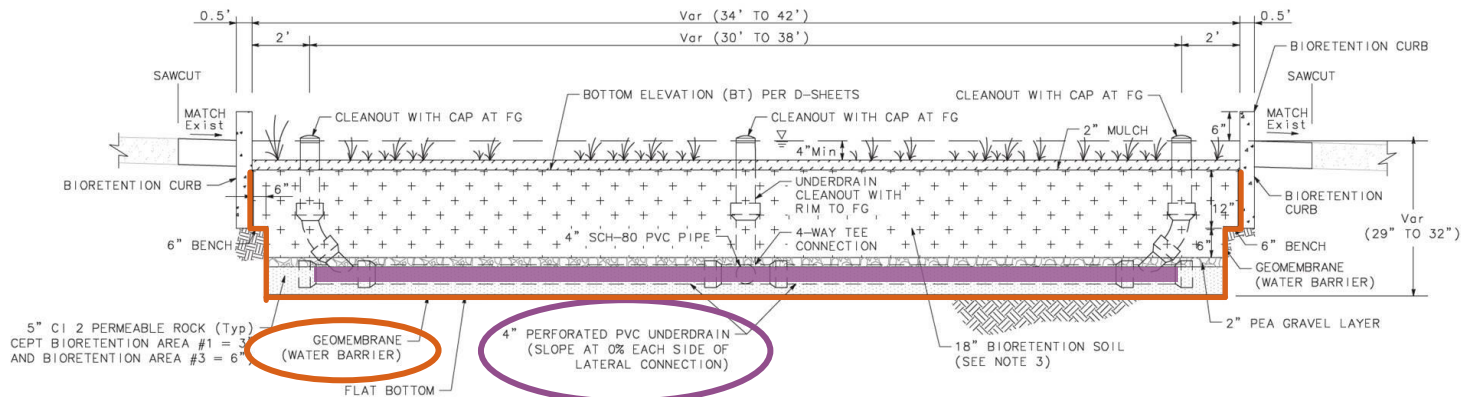
Caribbean Drive: Construction



April 7, 2020 – Curb placement



April 20, 2020 – Geomembrane and perforated pipe



Caribbean Drive: Construction



April 26, 2020 – Bioretention soil added



May 20, 2020 – Irrigation installed

Caribbean Drive: Construction



June 2020 – Completed bioretention areas

Interpretive Signage for Community Education

Sunnyvale Caribbean Drive Green Street Project
We live, work and play in a watershed.

What is a watershed?
A watershed is an area of land where all the water drains to a specific point. Water in a watershed comes from rivers, streams, rainfall and snowmelt. Watersheds may vary from large river systems to small creeks, and may cross city, county, state or national boundaries.

Why are watersheds important?
We rely on water within our watershed for drinking, cleaning, cooking, gardening, manufacturing and other uses. Our watershed also provides critical habitat for native plants and wildlife. Sunnyvale is located within the Santa Clara Valley watershed, which covers 780 square miles and provides drinking water to 1.9 million Californians.

When it rains within our watershed, rainwater (or stormwater) flows over roads and sidewalks mixing with pollutants, such as car oil, pesticides, litter, and pet waste. Polluted stormwater enters storm drains and flows through an underground storm drain system, eventually emptying directly into our creeks and the San Francisco Bay. Stormwater in our watershed is not treated before it enters natural waterways. Green stormwater infrastructure, such as this rain garden, helps to clean stormwater before it enters the Bay.

In this area, you will find:
The plants you see in this area are California native species that are water-wise and thrive in the alkali meadows that used to be found at the edge of the Bay. They can effectively filter stormwater and help create a vibrant natural area. The selected plants also have shallow roots that do not interfere with the recycled water pipeline running below.




Salt grass (*Distichlis spicata*)

Yarrow (*Achillea millefolium*)

California sea lavender (*Limonium californicum*)

Juamea (*Juamea calamosa*)

Alkali heath (*Frankenia salina*)

SFEI San Francisco Estuary Institute

This project was funded by the U.S. EPA San Francisco Bay Water Quality Improvement Fund and was developed in partnership with the San Francisco Estuary Institute and San Francisco Estuary Partnership.

Sunnyvale Caribbean Drive Green Street Project
Bioretention Rain Gardens

What is green stormwater infrastructure?
Green stormwater infrastructure is an approach to water management that protects, restores or mimics the natural water cycle by capturing and filtering rainwater (or stormwater) runoff from streets and sidewalks. Green stormwater infrastructure includes bioretention rain gardens, permeable pavements, infiltration planters, trees and tree boxes, and rainwater harvesting systems.

What is a bioretention rain garden?
Bioretention rain gardens, such as this one, use soil and plants to treat stormwater runoff before it enters a waterbody. Stormwater runoff flows from roads and sidewalks into this area instead of into a storm drain. Here, plants absorb the stormwater or it seeps into the soil. Rain gardens filter out many pollutants so that cleaner water can flow into the storm system and, eventually, into the San Francisco Bay. Bioretention rain gardens improve watersheds because they:

- Conserve water by using native plants as ground cover
- Filter pollutants out of stormwater runoff through plants and soil
- Reduce flooding during storms by increasing permeable surface area

In this area, you will find:
The plants you see in this area include a balance of two main types. Alkali meadow species, like Alkali heath and Yerba mansa, live in salty soils at the edge of the Bay. Other species, like California poppy and Scarlet monkeyflower, have native wildflowers that attract pollinating insects and birds, like bees, butterflies, and hummingbirds.




Alkali heath (*Frankenia salina*)

California poppy (*Eschscholzia californica*)

Yarrow (*Achillea millefolium*)

Scarlet monkeyflower (*Mimulus cardinalis*)

Yerba mansa (*Anemopsis californica*)

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Sunnyvale Caribbean Drive Green Street Project
Better Trails, Safer Roads and Cleaner Water

What is the Caribbean Drive Green Street Project?
The Caribbean Drive Green Street Project is a major green stormwater infrastructure project that helps achieve important ecological and water quality goals. It converted a portion of the former road surface into more than 4,000 cubic feet of bioretention rain gardens. These rain gardens treat stormwater from an upstream urban area of nearly 41,500 square feet. The California native plants planted here use less water and ensure the stability and longevity of these gardens. In addition to the benefits of bioretention rain gardens, this project also:

- Creates safer walking and biking opportunities with a protected multi-use path
- Provides convenient access to the Bay Trail with additional parking
- Installs native plant species that fit in with the surrounding ecology

In this area, you will find:
The plants you see in this area all provide habitat for native pollinators. They attract a variety of creatures, including honey bees, hummingbirds, and butterfly species, like the Acmon blue, northern checkerspot and sandhill skipper. These plants grow close to the ground, which helps to maintain clear visibility for bicycles, pedestrians, and vehicles using the street.




Beardless wild rye (*Leymus triticoides*)

Blue-eyed grass (*Silybium bellum*)

California fuchsia (*Epilobium canum*)

California goldenrod (*Solidago velutina*)

Coyote mint (*Monardella villosa*)

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Successes & Challenges

- Successes:
 - ◆ Multiple benefits
 - ◆ Collaboration between agencies and departments
 - ◆ Project design part of Cleanwater Program
 - ◆ Accelerated construction timeline during pandemic
 - ◆ Built-in O&M in construction contract for 6 months

- Challenges:
 - ◆ Pandemic impact on materials supply
 - ◆ Ongoing O&M plan and resources





Sunnyvale

Thank you!

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