Stormwater Education

The OCSD has partnered with the SLO County non-profit organization, One Cool Earth to develop and deliver stormwater curriculum to local elementary schools. One Cool Earth has been a proud partner of Oceano Elementary School and has successfully delivered many hands-on science lessons in their school garden over the past eight years. By adapting their current lessons around water management, One Cool Earth is able to provide stormwater education that is directly tied to the students' lived experiences with this local water infiltration project.

One Cool Earth is proud to deliver Next Generation Science Standards aligned curriculum that ties in with local projects such as this one.

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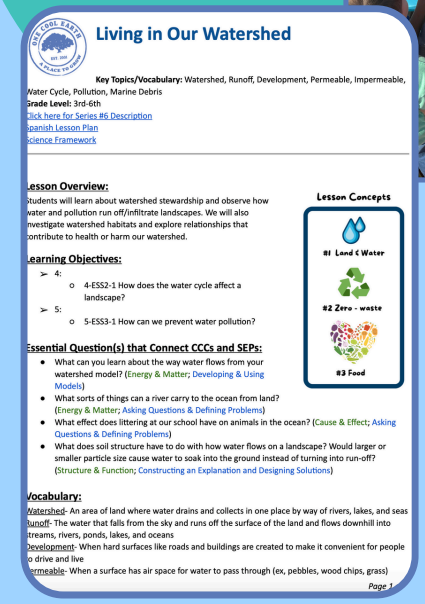


Living in Our Watershed

Key Topics/Vocabulary: Watershed, Runoff, Development, Permeable, Impermeable, Water Cycle, Pollution, Marine Debris
Grade Level: 3rd-6th
Click here for Series #6 Description
Spanish Lesson Plan
Science Framework

Lesson Overview:
Students will learn about watershed stewardship and observe how water and pollution run off/infiltrate landscapes. We will also investigate watershed habitats and explore relationships that contribute to health or harm our watershed.

Learning Objectives:
- 4:
  - 4-ESS2-1 How does the water cycle affect a landscape?
- 5:
  - 5-ESS3-1 How can we prevent water pollution?

Lesson Concepts
#1 Land ⟨ Water
#2 Zero - waste
#3 Food

Essential Question(s) that Connect CCCs and SEPs:
- What can you learn about the way water flows from your watershed model? (Energy & Matter; Developing & Using Models)
- What sorts of things can a river carry to the ocean from land? (Energy & Matter; Asking Questions & Defining Problems)
- What effect does littering at our school have on animals in the ocean? (Cause & Effect; Asking Questions & Defining Problems)
- What does soil structure have to do with how water flows on a landscape? Would larger or smaller particle size cause water to soak into the ground instead of turning into run-off? (Structure & Function; Constructing an Explanation and Designing Solutions)

Vocabulary:
Watershed- An area of land where water drains and collects in one place by way of rivers, lakes, and seas
Runoff- The water that falls from the sky and runs off the surface of the land and flows downhill into streams, rivers, ponds, lakes, and oceans
Development- When hard surfaces like roads and buildings are created to make it convenient for people to drive and live
Permeable- When a surface has air space for water to pass through (ex, pebbles, wood chips, grass)

Page 1

Funding for this project has been provided in part under the Proposition 1 – the Water Quality, Supply, and Infrastructure Improvement Act of 2014 through an agreement with the State Water Resources Control Board.

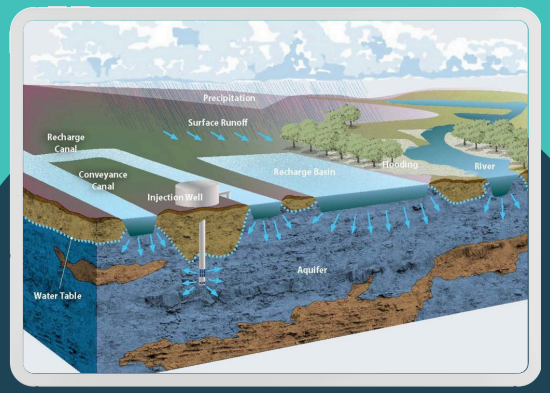
Brochure created by One Cool Earth
onecoolearth.org

OCEANO STORMWATER PROJECT

Oceano Community Services District

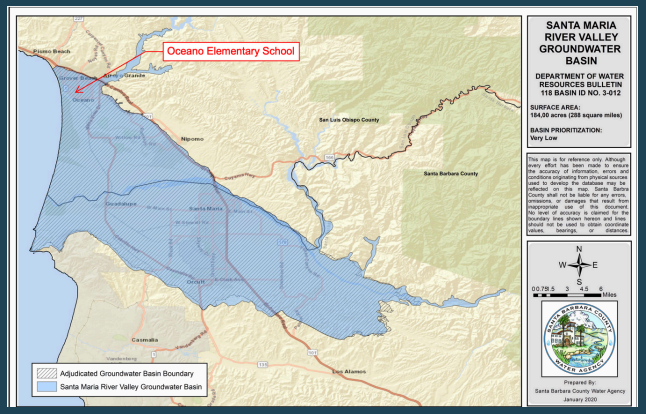
Project Background

Oceano experiences flooding in certain areas of the community. Impervious surfaces, such as pavement and concrete have, over time, increased run-off. Because of community buildout, chances were reduced for the underlying soil to absorb stormwater runoff, leading to more flooding. The soils beneath Oceano are extensively sand, making it a great location for projects that capture rainwater and allow it to infiltrate into the soil, and down into groundwater aquifers used for drinking water. The capturing and infiltrating rainwater leads to less frequent flooding during storm events.



https://groundwaterexchange.org/news-keyword/managed-aquifer-recharge/

The Oceano Community Services District (OCSD) obtains their municipal water supply in part from the Santa Maria River Groundwater Basin. In addition to flood abatement, the process of infiltrating rainwater helps to recharge this ground water supply, rather than allowing it to wash into Arroyo Grande Creek and the Pacific Ocean.

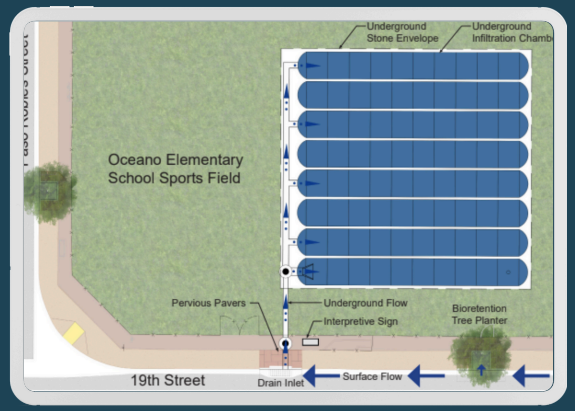


1 Street Improvements

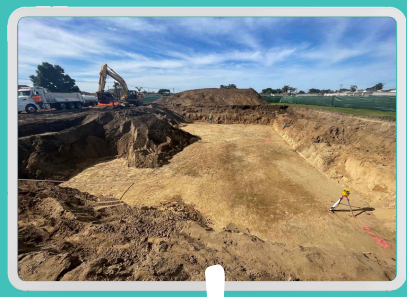
Bioretention tree planters along Paso Robles and 19th Street collect and treat stormwater runoff, allowing it to naturally infiltrate back into the ground. Instead of replacing the removed concrete sidewalk, permeable pavers were used to let rainwater soak into the soil.

2 Infiltration Gallery

An infiltration gallery are underground chambers that collect rainwater, allowing it to seep into the soil and recharge aquifers. Oceano Elementary School was chosen for its ability to capture stormwater runoff from an 11-acre watershed. The gallery holds about 180,000 gallons and is expected to infiltrate around 2.3 million gallons of water annually. Decreased runoff also reduces infiltration into the sewer system. All this happens underneath the school's soccer field!



Excavation



Installation of chambers

Filling in of chambers

Final Product