

# Characterizing Microbial Pollution from Southern California Beaches

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**Introduction: Understanding why and how beach water & sediment are polluted.**

**How does sediment influence bacteria survival?**

- *Bacteria lives in the sediment.*
- *Bacteria multiplies in the sediment.*
- *Sediment can help E.coli grow and can release E.coli back into beach water.*



**Problem Description: People get sick swimming in water that is polluted.**

*People that swim in polluted have a higher risk of getting illnesses such as stomach flu, ear infection, upper respiration infection and skin rashes than swimmers at clean beaches.*

*Cleaning storm drains before getting to the beaches and polluting them.*

*Characterizing survival of microbes in the environment will help public officials protect recreational water quality*

**Public Health**



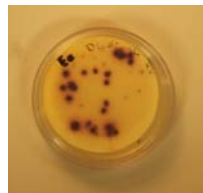
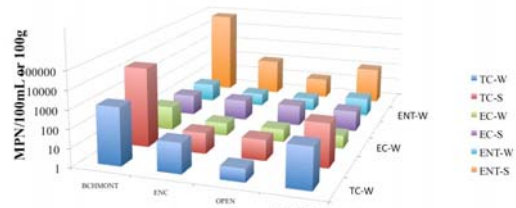
**Proposed Solution: Using knowledge of beach environment to understand pollution**

Measured several parameters:

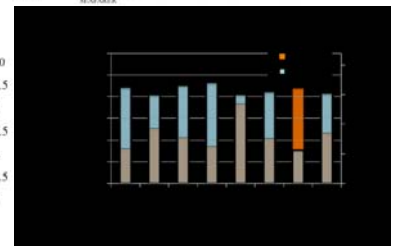
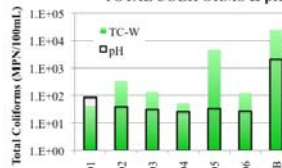
- **Bacteria concentration**
  - Membrane Filtration, IDEXX
- **Moisture content**
  - $(\text{Dry weight} - \text{Boat}) / (\text{Wet weight} - \text{Boat})$
- **Organic content procedure**
  - $(\text{Weight} + \text{OC} - \text{Boat}) / (\text{Weight} - \text{OC} - \text{Boat})$
- **DNA extraction**
- **Salinity test**
- **Sediment grain size analysis**

**Data**

**FIB in Water & Sediment - Ventura**

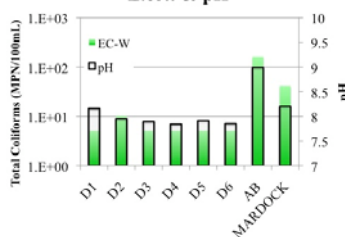


**TOTAL COLIFORMS & pH**

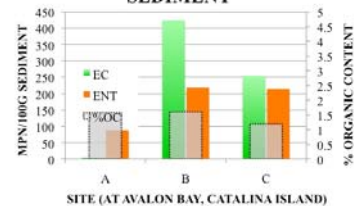


**Total Coliforms as a function of pH and Salinity at Ventura Harbor and Keys**

**E.coli & pH**



**FIB CONCENTRATIONS IN SEDIMENT**



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