Sediment and PCB Transport in San Leandro Bay

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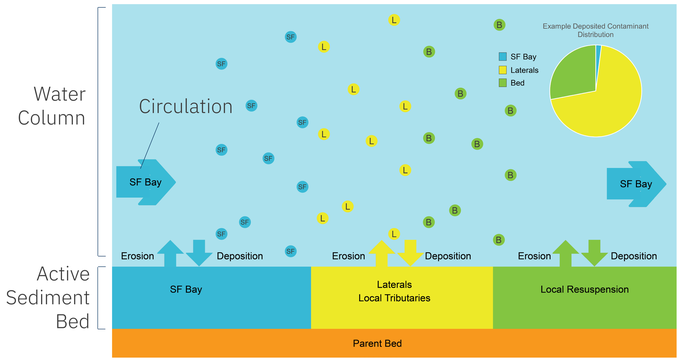


Conceptual diagram of SLB sediment sources

What are the rates of recovery of San Francisco Bay, its segments, and in-Bay contaminated sites?

Sediment entering San Leandro Bay (SLB) has contained chemicals of potential concern due to industrial activities in the surrounding watersheds. Understanding the sediment associated with contaminants is crucial, as the management of priority margin units depends on a comprehensive understanding of how sediment loads and processes work across various sources.

An integrated approach

Hydrodynamic and Sediment Transport Model + Watershed Model

Using refined watershed and sediment fate models

Watershed Dynamic Model (WDM) Refinement

The WDM has been refined to evaluate sediment loads into nine distinct subregions of the SLB watershed.

Improved Resolution

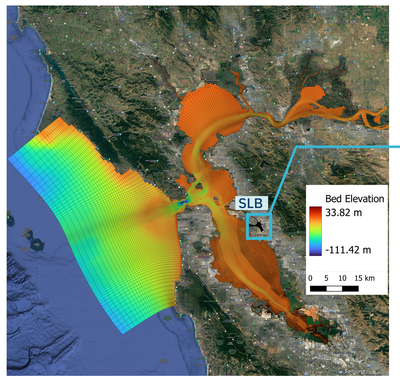
The model has better resolution in key areas such as intertidal regions, marshes, and channels of SLB.

Tracking Sediment Loads

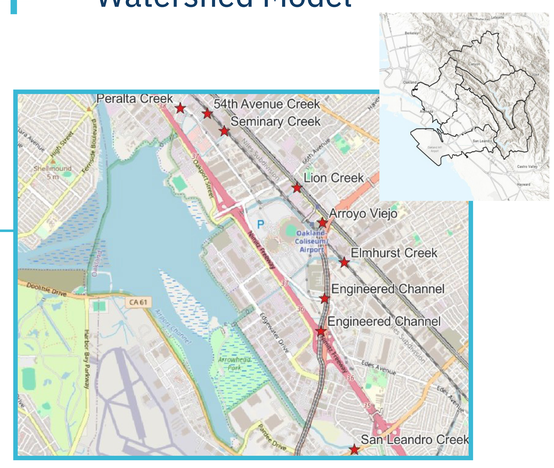
The refined model allows for the tracking of sediment loads over the course of a year (Water Year 2017), using a sophisticated hydrodynamic and sediment transport model.

Ongoing Work

There is an ongoing effort to develop a model that will evaluate sediment and contaminant fate and transport throughout the San Francisco Bay.

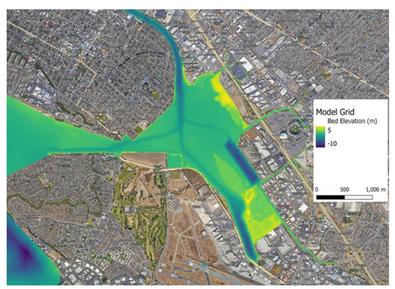


Hydrodynamic model of San Francisco Bay

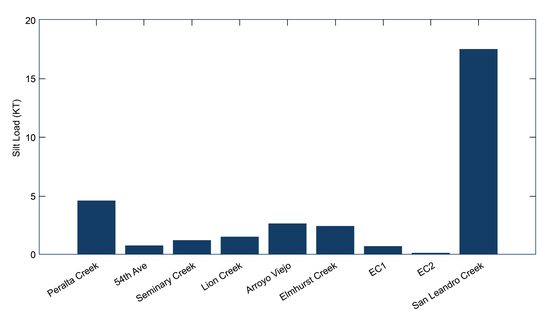


Watershed input locations in SLB

Refined region of SLB



Loadings to SLB from each watershed for water year 2017



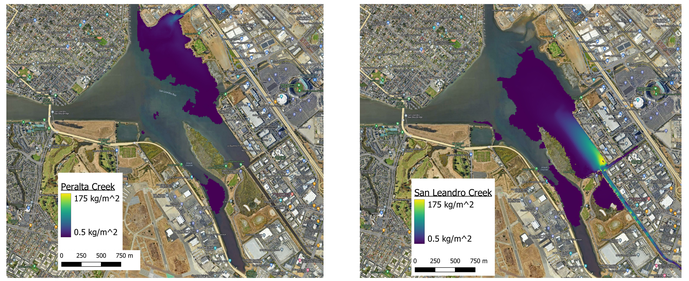
Outcomes

Independent Tracking of Sediment

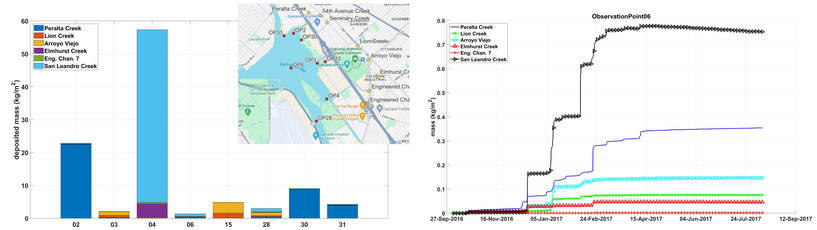
Sediment from different watershed inputs can be independently tracked, allowing for an evaluation of deposition patterns both spatially and temporally.

Support for Management Decisions

Distinguishing between different sources of sediment contributes to a better understanding of recovery rates, which can inform and support management decisions.



Left: Sediment deposited on bed after 1 year from Peralta Creek | Right: Sediment deposited on bed after 1 year from San Leandro Creek



Left: Sediment mass at eight locations in San Leandro Bay from six different watershed inputs after 1 year | Right: Sediment deposited over time in center of SLB

Looking forward

Results of the sediment transport evaluation will tie into estimates of PCB concentrations and expected recovery rates in SLB. Then, methods developed for SLB can be applied to other priority margin units and Bay-wide studies.

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