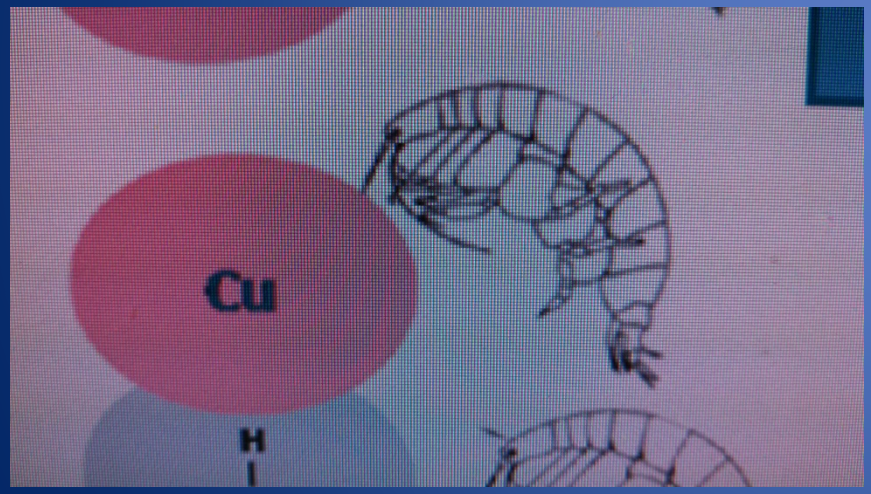
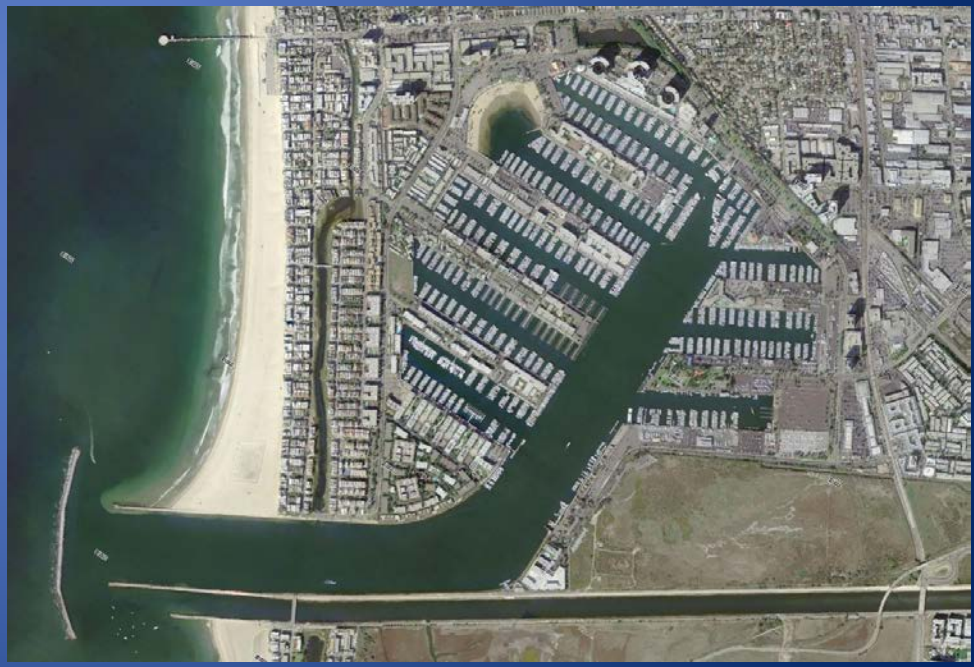
Marina del Rey Sediment and Water Column Studies – A Brief Review and Analysis Relative to Findings on Copper





Amphipod *E. estuarius* and Marina del Rey

Sediment Ecosystem Assessment Protocol
SERDP Project ER-1550
Chadwick, Rosen et.al. 2011

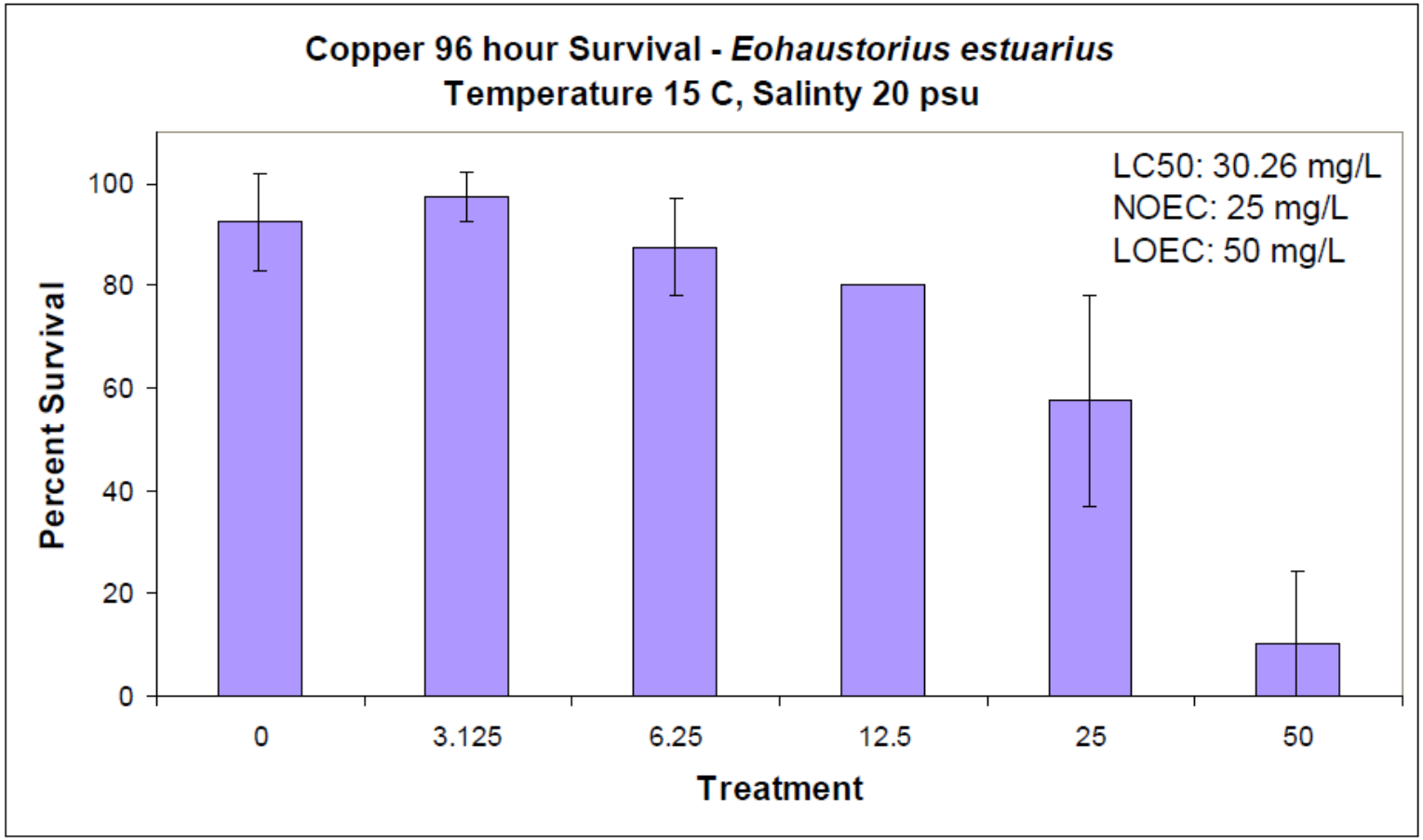
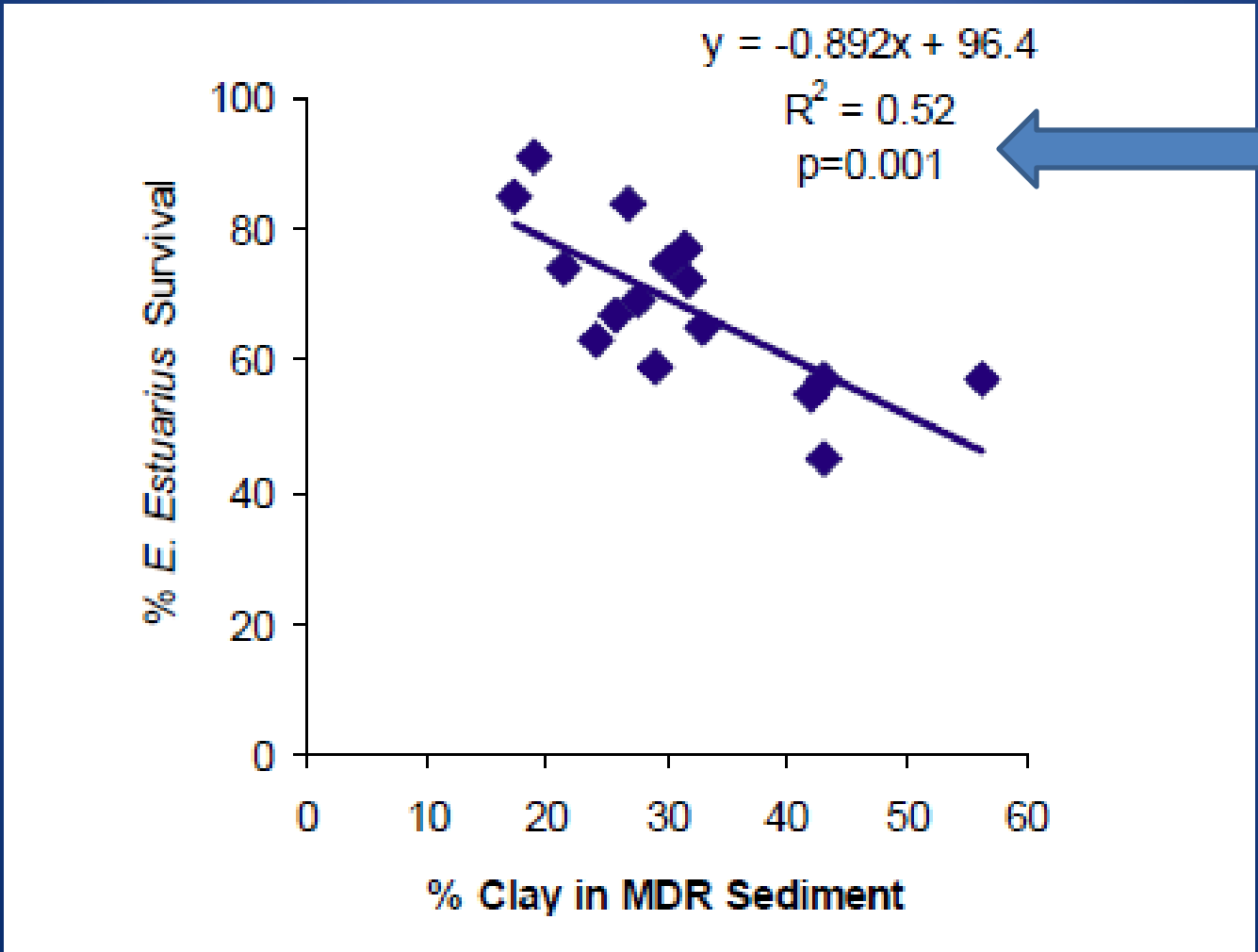
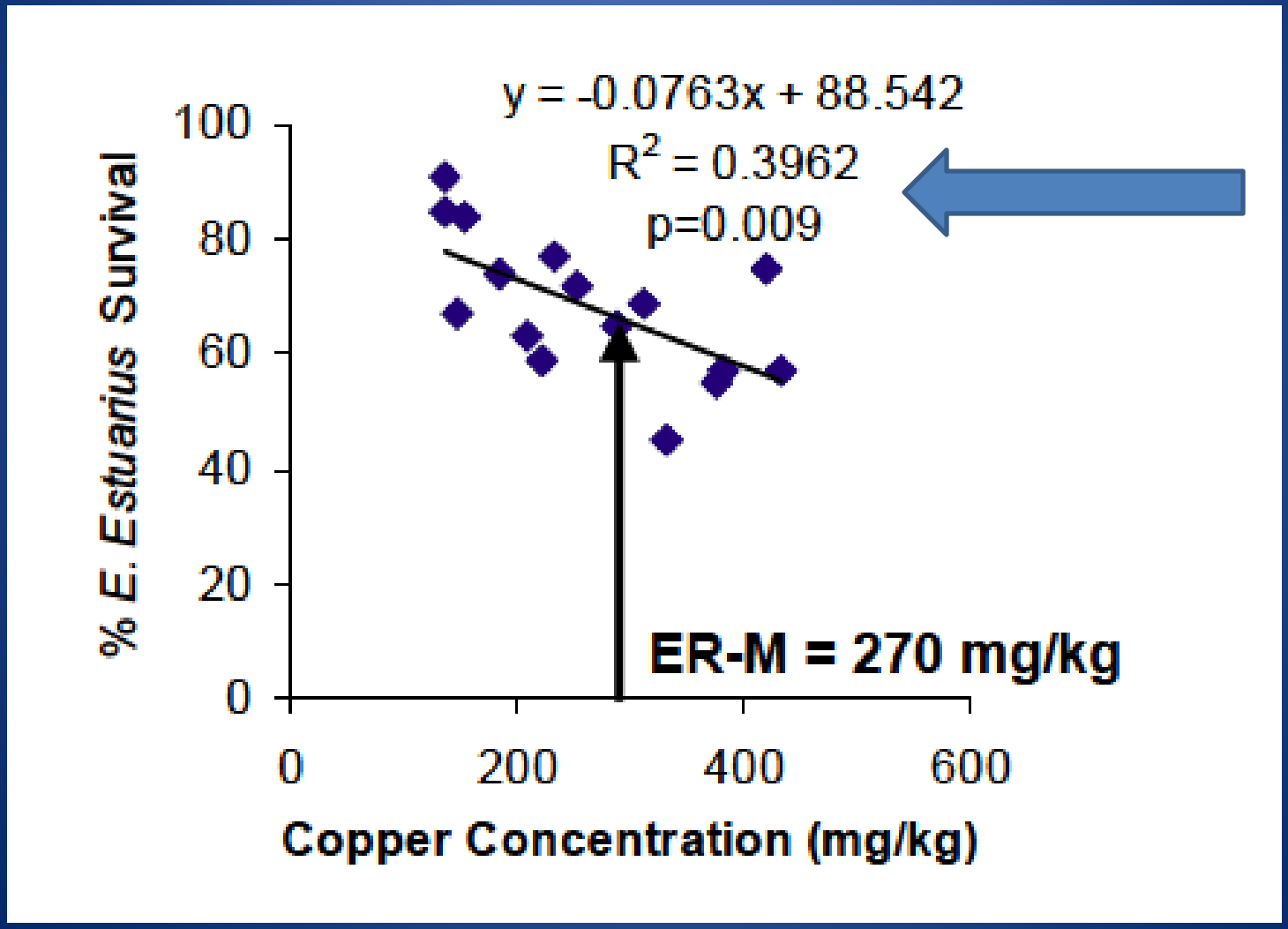


Figure 3-1. Results from copper range-finding experiment for estuarine amphipod *Eohaustorius estuarius*.

Correlation between survival of *E. estaurius* and % clay in Marina del Rey Sediment



Correlation between survival of *E. estuarius* and Copper Concentrations in Marina del Rey Harbor Sediment



CALIFORNIA WATER QUALITY CONTROL PLAN FOR ENCLOSED BAYS AND ESTUARIES – PART 1 SEDIMENT QUALITY

- The lines of evidence does not establish causality associated with specific chemicals.
- Reference stations shall… be representative.. of grain size. (*Note the reference site chosen in MDR sediment study was the second lowest in clay%.*)
- Methods to determine cause may be based on Toxicity Identification Evaluation and Bioavailability such as Acid Volatile Sulfides and Simultaneous Extracted Metals.
- Guideline development should only be initiated after the stressor has been identified.

Mussels, the most sensitive species to copper, growing in Marina del Rey back basin. An individual mussel can release 8 million eggs.

Undaria pinnatifida
Asian Kelp

Asian Kelp invasions have been linked to hull fouling and boating traffic. It competes for light and space with native populations of marine algae, plants and animals, drastically affecting native ecosystems. Source – California Division of Boating and Waterways

Asian Kelp in San Francisco Bay
Source – NY Times, Aug. 2009