



Rods, Pebbles, and Pins: Tracking Changes in Fluvial Processes Fairfield Osborn Preserve

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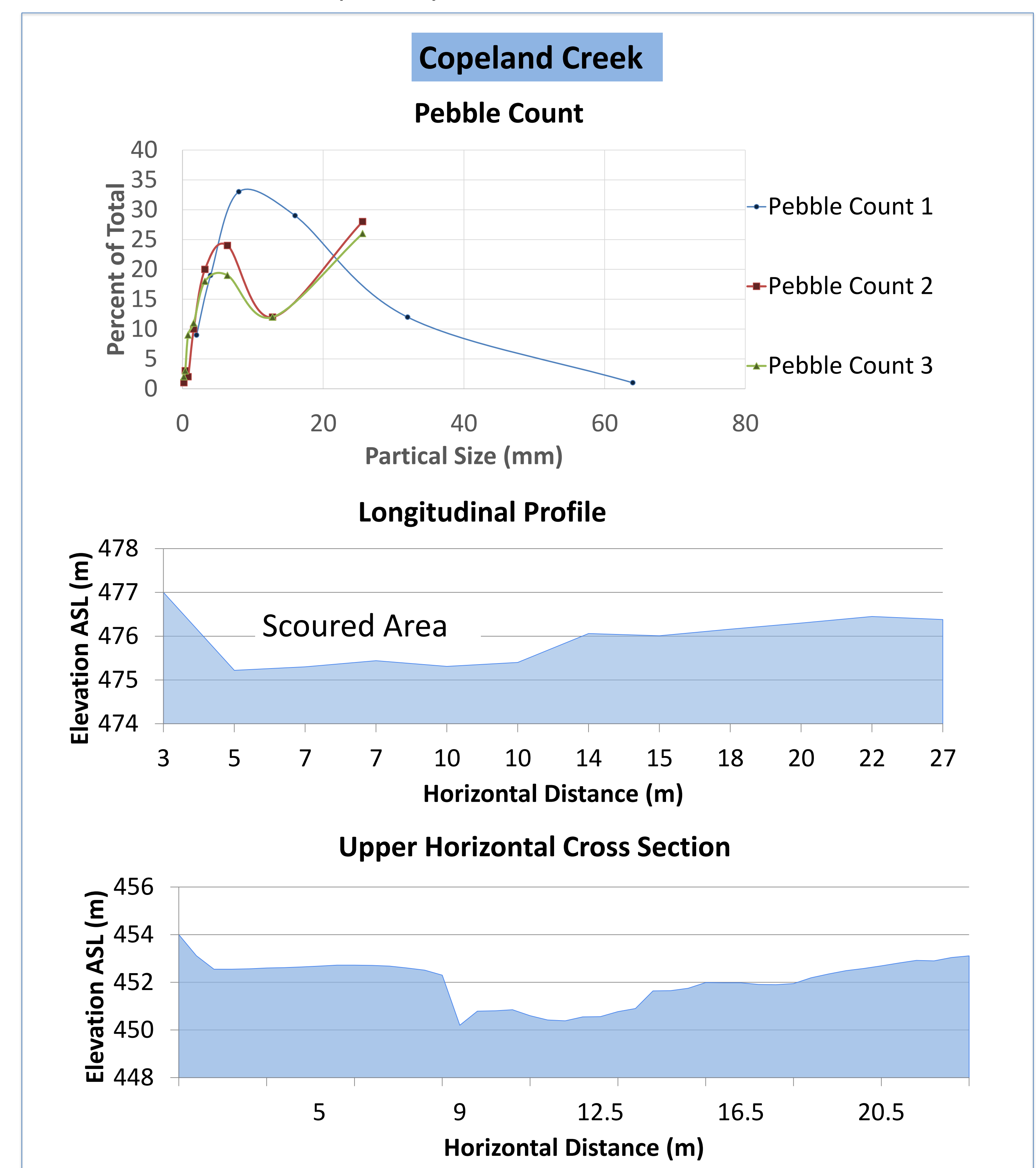
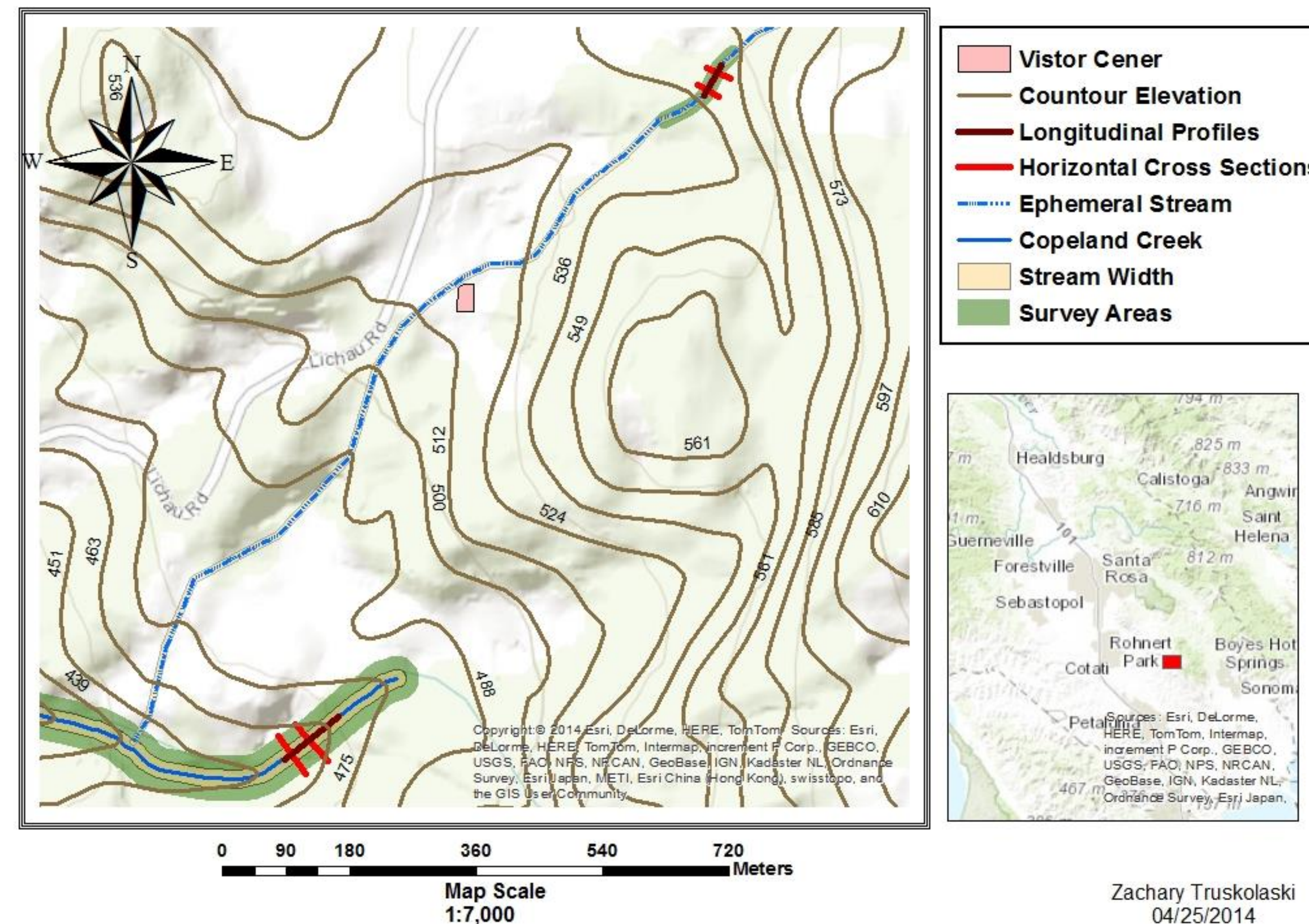
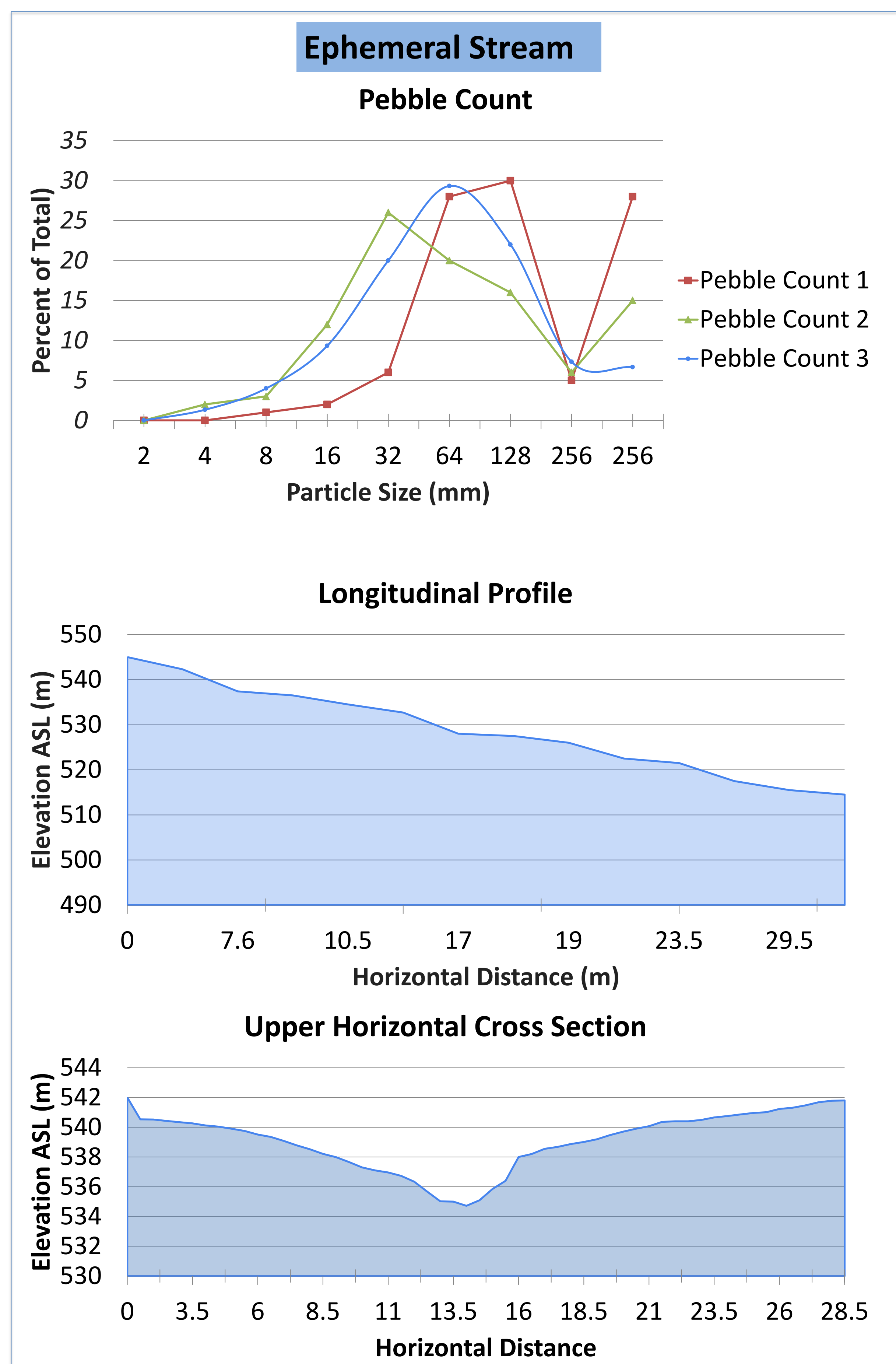


INTRODUCTION

In the fall of 2013 Geography 360 (Geomorphology) established a longitudinal study of an ephemeral and permanent stream (Copeland Creek), at Fairfield Osborn Preserve (FOP), Sonoma County, CA. FOP is located on Sonoma Mountain. The longitudinal study was set up to study streamflow in regards to fluvial erosion and transport, and to help us study the processes that erode, carry, and deposit sediment. This survey established the baseline conditions of the streams, enabling future researchers and students to document fluvial landscape change.

METHODS

A 50 meter reach was surveyed for both the ephemeral creek study site and the Copeland Creek study site. Students were tasked with measuring longitudinal profiles and horizontal cross sections at both streams. The profiles and cross sections were measured by using stadia rods and auto-levels at one meter intervals. Wolman pebble counts were conducted at each site in order to characterize bed load of each stream. Additionally, multiple bank erosion pins were placed at four locations at each study site and the exposed portion of each stake was measured. These measurements will be compared to future measurements to quantify stream erosion.



SUMMARY

The Geography 360 class was able to characterize the ephemeral stream as having a higher gradient associated with higher velocity flows and Copeland Creek with a shallow gradient and lower velocity flows, both indicative of the Wolman Pebble counts. The survey of Copeland Creek and the ephemeral stream established the baseline conditions of the streams, enabling future researchers and students to document fluvial landscape change.

Acknowledgments

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