

# Scientific Mud Pies: Sedimentary Analysis of the Sag Pond at Fairfield Osborn Preserve

Geography 317 Lab Methods in Physical Geography: Kyle Towers, Pasha Aboamery, Emma Anthony, Gracie Lock, Mark Castro, Lauren James, Devin Connor, Chris Cunningham, Quinten Rodriguez, David Price, Justin Reacer, and Dr. Michelle Goman  
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## Abstract

In 2014, the students of Geography 317 visited the Fairfield Osborn Preserve to analyze the stratigraphy of the sag pond, located on the Rodgers Creek fault, and infer past environmental changes. Students took soil samples along a 25 meter transect using soil augers. Three locations were sampled within the sag pond and a comparative sample was taken outside of the pond. The samples were taken in 10 cm increments to approximately 50 cm in depth. The class performed loss on ignition, macrofossil, pH, grain size analysis, magnetic susceptibility, and Munsell color evaluation on the soil samples in the lab. Preliminary investigation showed distinct changes in soil color and texture with depth and macrofossil charcoal, suggesting changes in environment over time and the presence of fire in the region. We hope to correlate these changes in stratigraphy with long-term sedimentary processes resulting from mass wasting and tectonic activity.

## Research Questions

- Determine change in stratigraphy as soil depth increases
- Determine local flora, fauna and fire history based on soil analysis

## Methods & Site Background

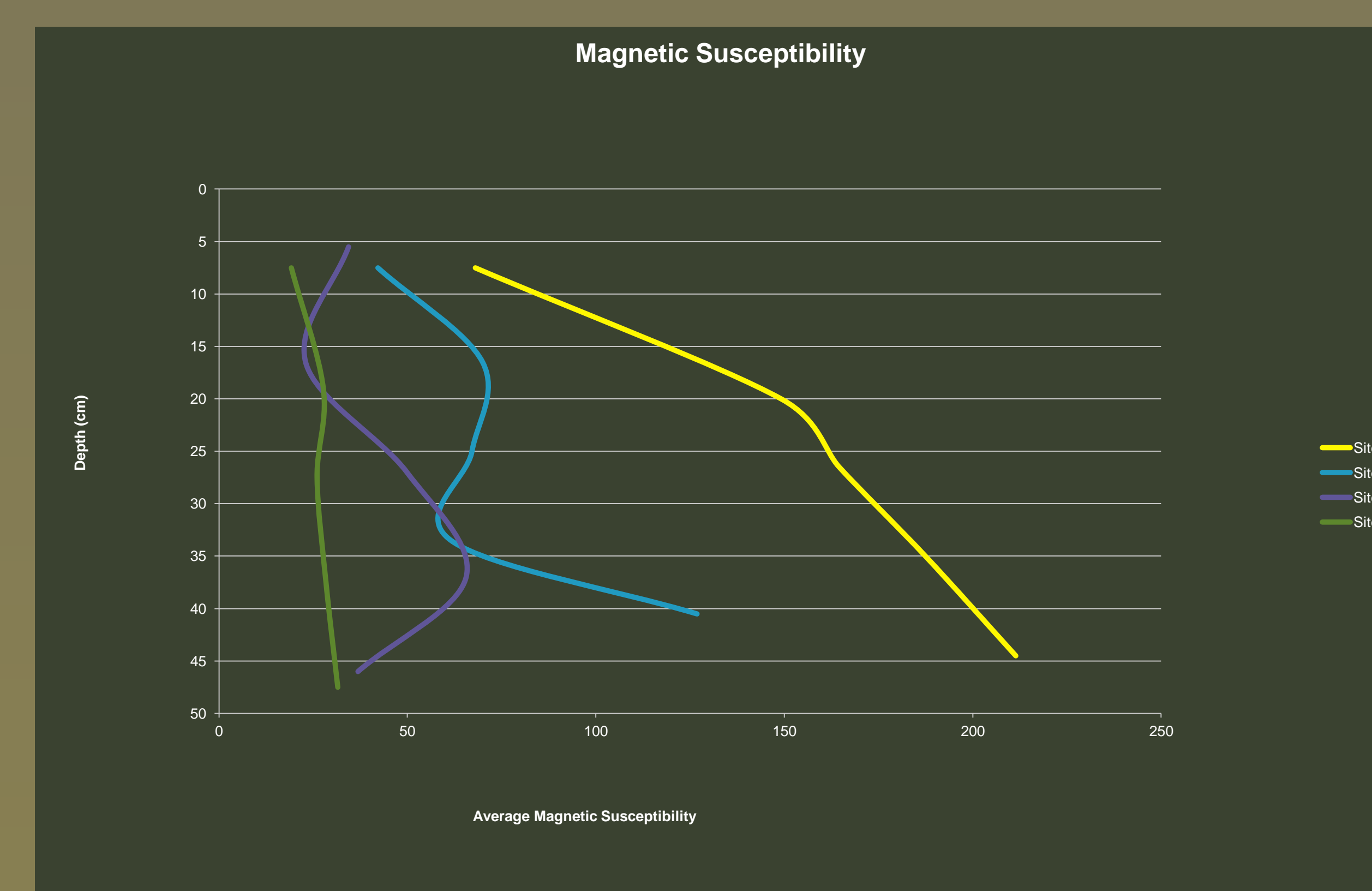
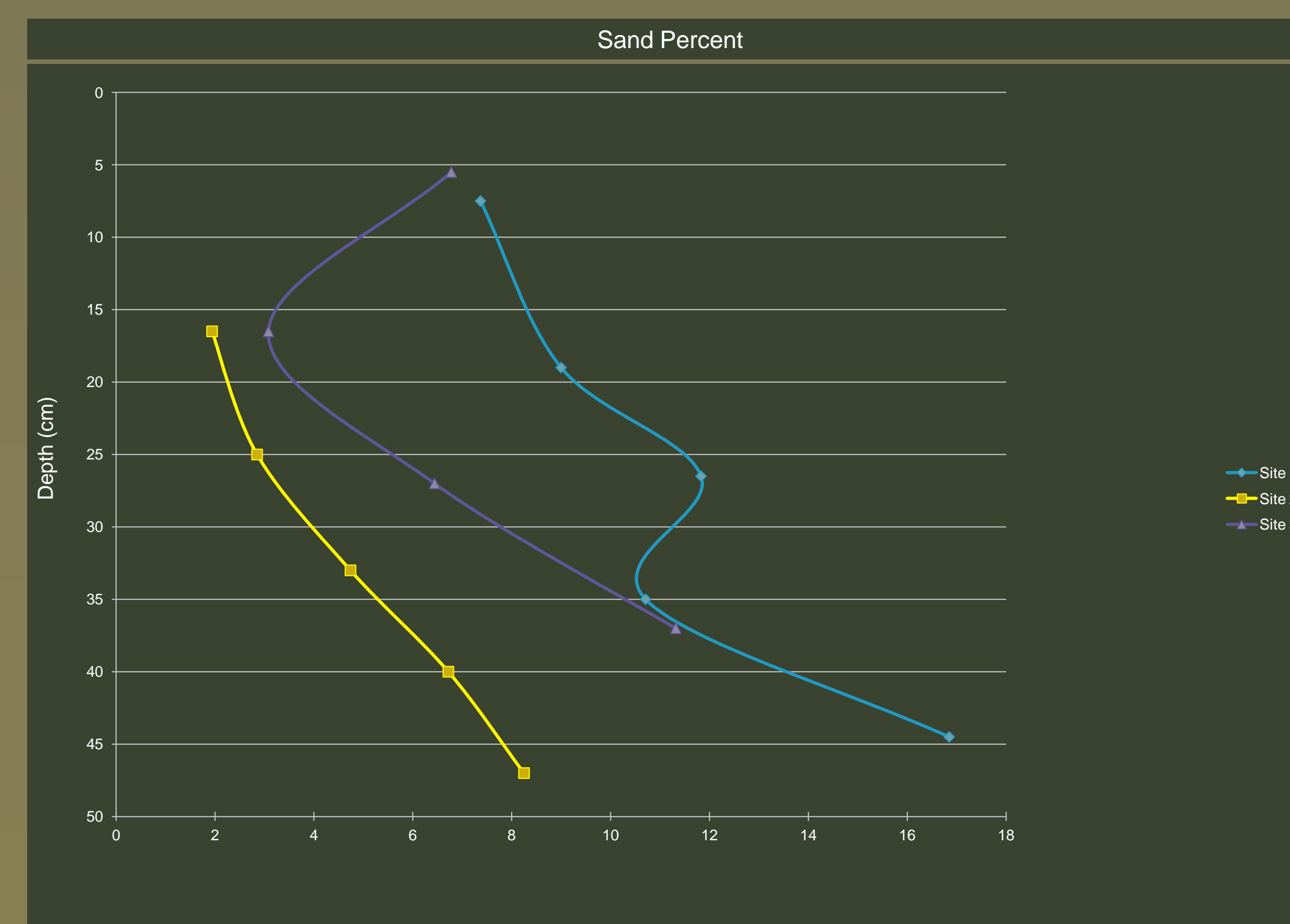
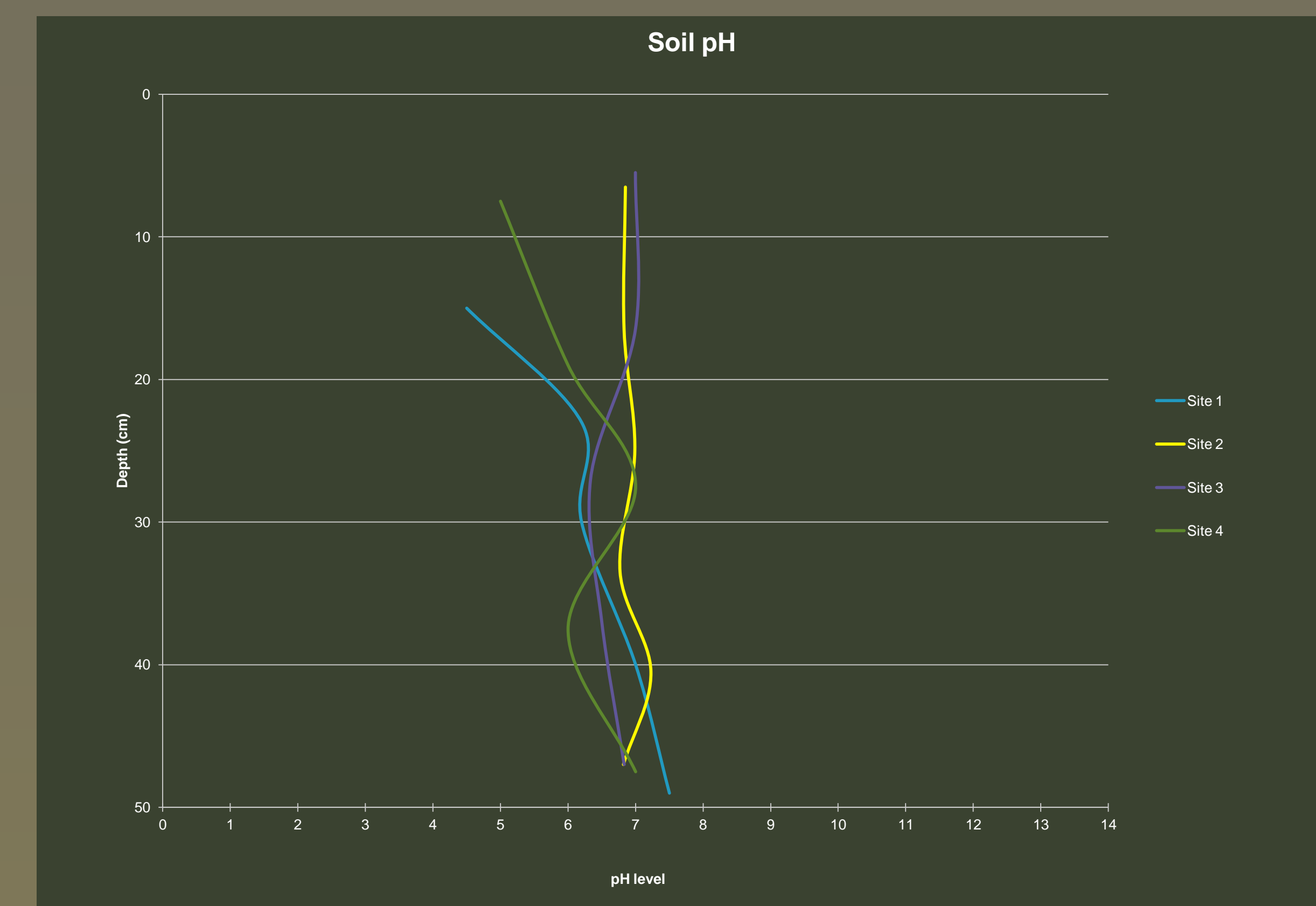
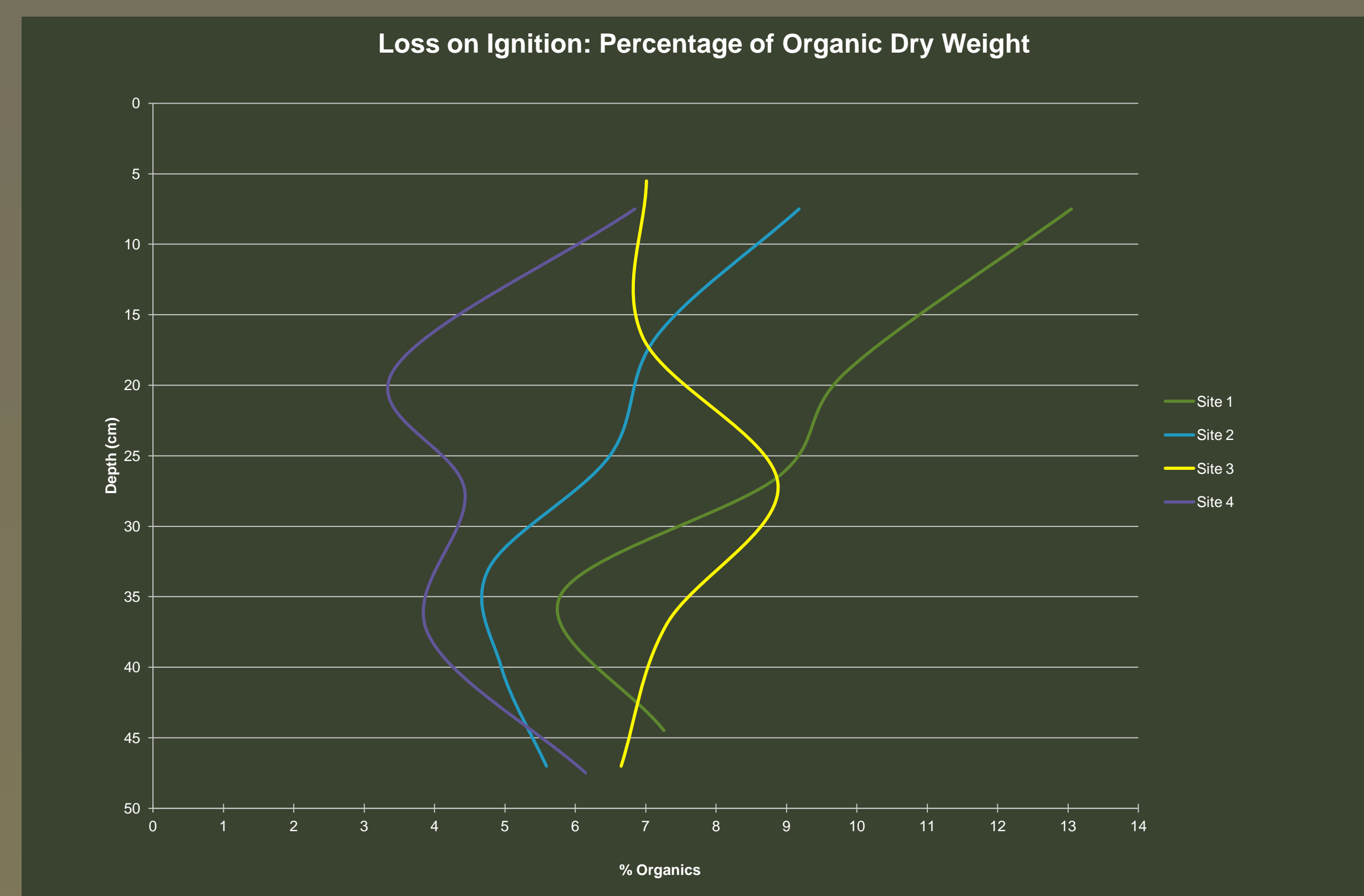
### Methods

- Using a soil auger, discrete samples at multiple depths were collected at four points along a transect.
- Field analysis included determination of pebble size and Munsell soil color values
- Lab analysis included texture by feel, loss on ignition, magnetic susceptibility, pH, macro charcoal and percent of clay and sand composition

### Collection Site Background:

A sag pond is defined as a body of water that occurs in the lowest part of a depression formed either near the head scarp of rotational landslides or between two strands of an active strike-slip fault. Our site is located at 38° 20.591 N and 122° 35.460 W within the boundaries of Fairfield Osborn Preserve. The sag pond measured 25 meters in length and 5 meters in width. The sag pond was dry at the time, allowing field data collection.

## Results



Photos left to right: Overview of sag pond, collection of soil, Munsell of soil samples



Photos left to right: Shell and grass seeds



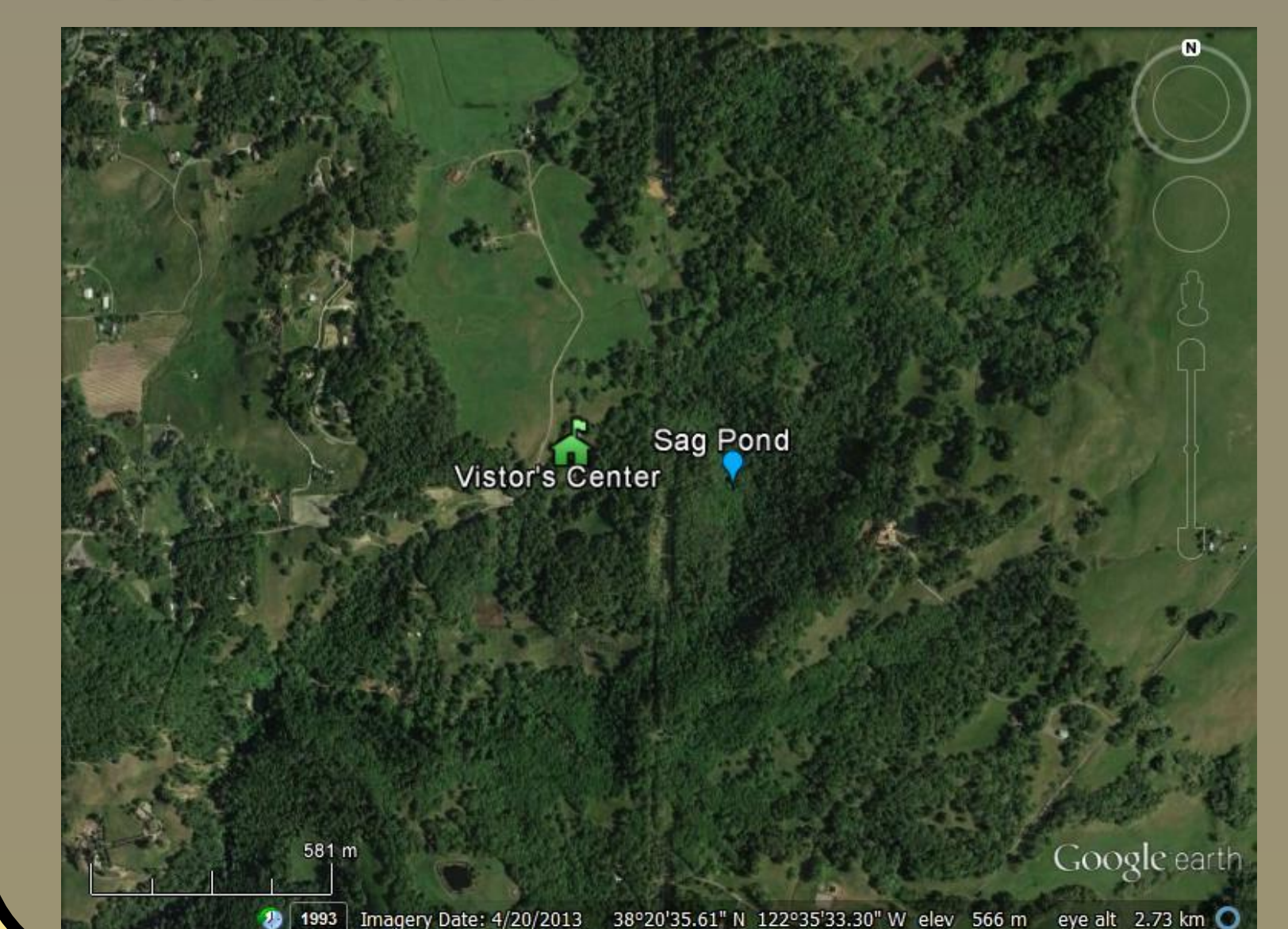
Group photo

## Conclusions

- Iron rich sediment increased with depth and along the transect from north to south
- Composition of sand increased with depth
- Relative pH seems to fluctuate from slightly acidic to neutral depending on depth
- A small amount of charcoal was found in the 0-25 cm range.
- A combination of shells, insects, small amounts of charcoal and a variety of seeds were found in the top 25 cm.



## Site Location



## Acknowledgements

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