

DIFFICULT TARGETS, DIFFICULT TERRAIN: A GPR SURVEY GONE AWRY

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Preparations were laid for a GPR survey to image angled wooden piles supporting electrical towers in Long Beach, California. Despite the expected difficulty of identifying wood in a potentially-brackish environment, our previous successes in similar conditions and preliminary calculations based on as-built drawings suggested it was possible to achieve the project goals.

Once on site, it was obvious that surface conditions were not ideal. Major differences between actual construction and as-built plans were also uncovered during excavation that took place while we were in transit, invalidating original calculations and casting into doubt the likelihood of survey success. Despite the potential for failure, we worked with the client for ground improvement and collected a full day of data before record-breaking rainfall began.

After the former dirt lot turned into a small retention pond, quicksand areas expanded despite best efforts to improve the site. Following long discussions with the client, we decided to continue the survey regardless. Time and budget constraints precluded a second mobilization, and good preliminary results from the first day's work gave us hope.

Following the survey, every available processing technique was attempted to model GPR data collected after the rain, but to no avail. We were left with only our original good day of data. Although the client was satisfied with the results, the project was undeniably a failure.

Mismatches between the geophysicist's and client's understanding of acceptable site conditions can be significant and must be overcome. The art of saying that a method will not work under certain conditions without compromising the client's belief in geophysics as a practice is left up to the contractor. We take this case study as an opportunity to share experiences about what did and did not work, and to highlight what we think we should do in the future.