



# Guayanilla Bay

Chronic oil release



## Overview of the Guayanilla Bay area

CORCO, Shell and PREPA are the primary property holders





## Manhole #2

Located between Highway 127 and the PREPA property. Primary point of oil recovery.



Oil recovery from Manhole #2



## Core samples were collected along the storm drain

Samples collected to a depth of twelve feet to get to the water table on the outside of the drain



## Core samples were logged and screened for oil

An area west of PREPAS driveway revealed oil in the core at the groundwater interface



## Sample locations

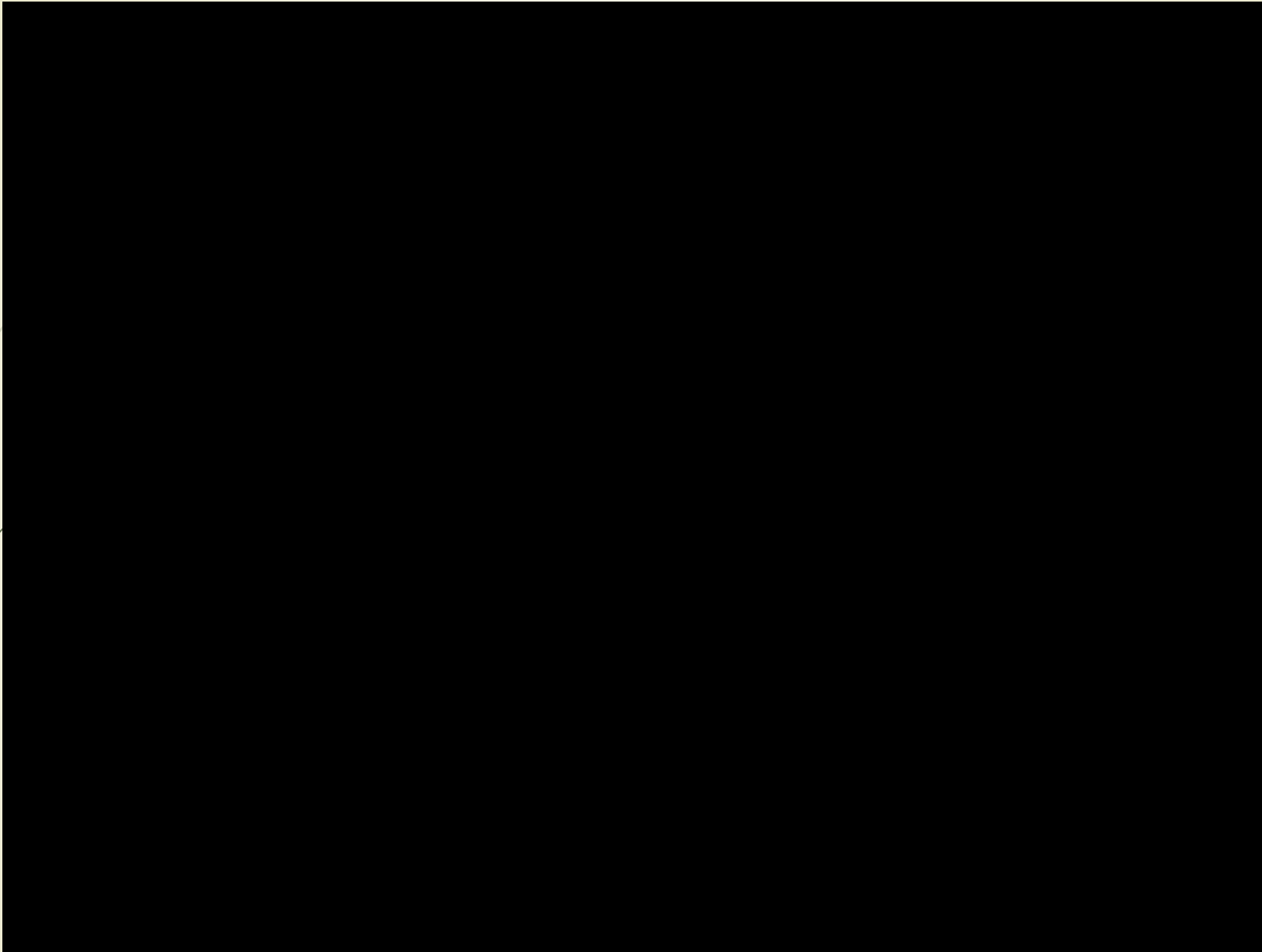
Core samples collected along storm drain and on CORCO and Shell properties. Oil samples collected from Shell and CORCO monitoring/recovery wells.






# Preparations to video log the storm drain interior

- Induchem was subcontracted to utilize a hydro-jet unit and vacuum truck to recover debris, rocks, and sediment from piping extending 630 feet downgradient from Manhole #1 to the outfall area.
- PREPA provided non-potable water from their facility to use in the hydro-jet.
- Total quantity shipped from project site to date: 465,500 gallons of oil and water and 23,100 pounds of oil contaminated sediment. This material was taken to the Allied Landfill and ConWaste Landfill facilities on the island.
- The remote video inspection subcontractor mobilized and performed/recorded the inspection of stormwater piping to confirm the condition of the piping between Manhole #1, Manhole #2, and the outfall. Two hidden Manholes were discovered in PREPA's driveway. They had been paved over on the surface.



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- No oil was seen entering through the pipe joints between Manhole #2 and the outfall.
  - Pipe plugs are currently deployed in both ends of piping extending between Manholes #1 and #2. A riser pipe has been installed in the 'pass-through' section of the plug in Manhole #2 to allow any infused groundwater/oil mix to be pumped/vacuumed from this section without removing the plug.



## Outfall into mangrove beach

From here oil moves overland into the waters of the bay



## Stressed vegetation downhill from outfall

A natural drainage swale flushes this area during rain events helping disperse the oil



Soil sampling was performed on the mangrove beach

Roots, shell and rock limited samples to the top twelve inches of the soil.



## Remediation challenges

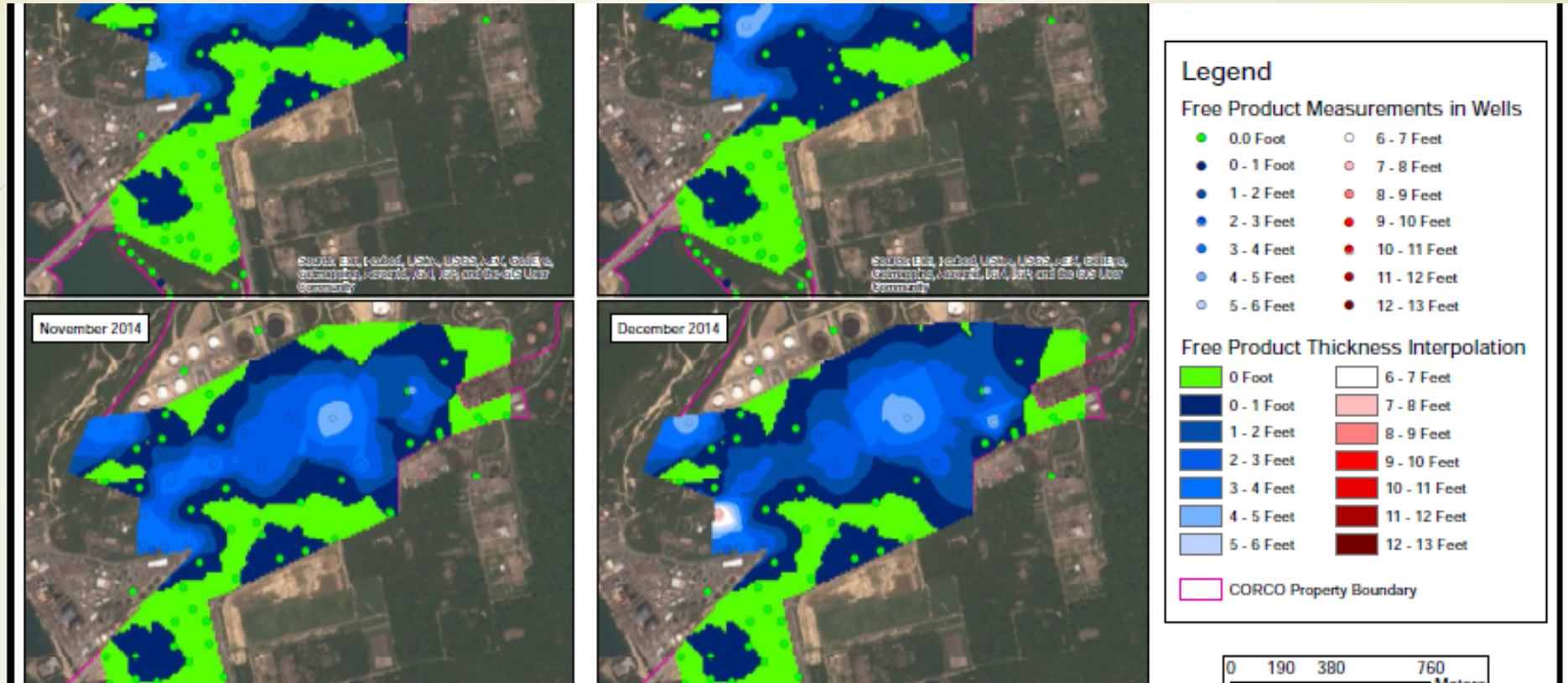
Highway 127 is a narrow two lane road heavily travelled by trucks, plant workers, and the public. Road shoulders provide minimal room. Four sets of overhead electrical lines cross the area along with two underground 230K volt powerlines. Numerous marked pipelines cross the area along with abandoned (unmarked) pipelines.



## CORCO Free Product 1994-1999

Historical Free Product Thickness Interpretation






## CORCO Free Product Recovery 2014

Free Product Thickness Interpretation September thru December 2014



# Shell interpretation of oil plume

GUAYANILLA SITE INVESTIGATION SUMMARY February 2014



Fingerprint analysis of product samples from the Shell and CORCO wells indicate that oil present along the eastern and southern boundaries of the Shell site are derived from sources on the CORCO property. Fingerprinting of samples on the Shell property also indicates that this product has mixed with a second source of primarily kerosene in this area.

The fingerprinting of product samples taken from the discharge point to Guayanilla Bay, the nearby storm drain manhole, and Geoprobe locations along Highway 127 indicate significant variability in product composition and suggest the mixing of product from several sources in this area.

The fingerprint analysis has identified a relatively fresh release of kerosene in the area of Manhole #2 and the southwest corner of the Shell facility. Since the Shell terminal has been inoperative since 1982, an additional, as yet unidentified, release appears to be present in this general area.