DELTA REMEDIATION

CASE STUDIES HD#11

HYPREP Lot 3 Ex Situ Bioremediation

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BACKGROUND & SITE INFORMATION

Nigeria Hydrocarbon Pollution Remediation project (HYPREP) awarded contracts in 2018 for a pilot stage ogoniland remediation clean up. One of the successful bidders (Pac Rim Engineering, an American based engineering firm) got awarded lot 3 in the Hyprep pilot phase. Pac Rim reached out to Delta to come onboard as a technical partner for the project. Additionally, Delta was able to provide bioremediation product for the successful execution of the project.

Nigeria Hydrocarbon Pollution Remediation Project (HYPREP) awarded contracts in 2018 for a pilot stage Ogoniland remediation clean up. One of the successful bidders (Pac Rim Engineering, an American based engineering firm) was awarded NKELEOKEN ALODE. SECTION A (lot 3) in the HYPREP pilot phase. Pac Rim reached out to Delta to join them as a technical partner for the project. Starting concentrations of the hydrocarbon contaminated soils were up to 11123 mg/kg max TPH concentration. Upon completion, all soil samples were below the HYPREP RBCA soil criteria of 1000mg/kg.

Delta Remediation provided Pac Rim Engineering with a three-part solution to complete this bioremediation project including a custom consortium of BioLogix, micronutrients supplement for enhanced culture growth and bio-catalyst. BioLogix technology looks like a very fine grain powder and comes in clear bags that are boxed for shipping.

The local site soils were assessed for permeability, excavated, and placed in an engineered biocell for treatment. Delta assisted in the design and build of the onsite field bioreactor using tanks, pumps, piping and plumbing designed to promote aeration of reactor tanks.

The soil application process involved using mixing tanks and pumps to feed bag-pack sprayers, where 25 laborers were utilized in the application of the BioLogix solution to the soils as an excavator spread out the soils in lifts within the biocell. Confirmatory sampling was used to determine the results below.

RESULTS

Soil Depth	Initial TPH (mg/kg)	Final TPH after Bioremediation (mg/kg)	HYPREP RBCA* Criteria (mg/kg)
0.9mbgs – 2.0mbgs	230	<detection	1000
3.0mbgs – 6.0mgbs	11123	987	1000
6.0mbgs – 8.2mgbs	2242	396	1000

HYPREP Risk-Based Corrective Action (RBCA) criteria limit for TPH of 1,000mg/kg.

"Dedicated to sustainable remedial solutions, Delta's innovative Biologix bioremediation process transforms contaminated soil and water using innovative biology and chemistry returning contaminated sites to their original state. Delta's ScreenLogix tool is a cost-effective solution to improve efficiency in environmental operations.

"Our approach is collaborative and flexible, working dynamically with clients, consultants and contractors in order to develop the optimal solution for each specific challenge."

Robert Lacey, President

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