

**Ongoing Project Report:  
Remediation of Clark and Subic Bay**



**Project Details:**

Location	Clark and Subic Bay, Philippines
Contaminant	Multiple Industrial and Chemical Pollutants
Project Duration	December 2007-- Present
Project Cost	Budget \$230,000
Implementing Partners	Green Cross Switzerland, Great Forest Inc., Coca Cola Foundation, Clark Development Corporation, Subic Bay Redevelopment Authority, University of Philippines Biotech,

**Performance Metrics:**

Toxin	Multiple Heavy Metals, Lead, Polycarbonate Biphenyls
Affected Population	77,000

- **Background and Scope:**

The Subic Naval Base is located some 120 km north of Manila, directly in the path of international shipping lanes. Since 1990, NGOs both inside and outside of the Philippines have reported that military activity in both locations had been contributing to extensive pollution of the Subic Bay. Both the Subic Naval Base and Clark Air Force Base were abandoned in 1992, leaving all the preexisting pollution untreated and uncovered in the environment. The Naval facility had no comprehensive sewage system or sewage treatment, instead dumping all waste directly into Subic Bay. Lead and heavy metals from the ship repair facility were also similarly dumped into the Bay.

The Clark Air Base was evacuated following a volcanic eruption in September of 1991. The eruption put a massive amount of ash into the air, as well as decimated a large portion of land and residential areas. The fallout from the volcanic eruption left several groundwater drinking wells contaminated. At the initial stages of this project, the Subic Bay housed 14 identified contaminated sites, as well as 12 potentially contaminated sites.

The local community is acutely aware of the deteriorating environment and drinking water contamination in the area. Polychlorinated phenyl (PCBs) have infected the water as well as the soil, making the situation more urgent, as the contamination now has a much higher potential to freely spread throughout the environment through soil siccation.

- **Solution Implemented:**

Blacksmith is spearheading the formation of a local stakeholder group, including the local population, redevelopment authorities, and governmental bodies. The goals of this project are to assist the remediation of former US military operations in Subic Bay, as well as to improve the health of the inhabitants of the area that could have been negatively impacted by the environmental pollution. Specifically, Blacksmith has outlined four specific objectives. First, Blacksmith plans to assess the extent of contamination at the former US Naval Base Subic Bay and the former US Air Force Base Clark. Second, Blacksmith, along with partner institutions, plans to assist in the remediation of previously identified PCB contaminated soils at the former US Air Force Base. Third, this project sets out to raise awareness of people directly and indirectly affected by the contamination. Lastly, Blacksmith and the stakeholder group plan to assist in the effective and efficient project management and sustainable operations.

- **Project Performance:**

Through the period of January—December 2008, the following activities have been undertaken in the project:

- 1.) **Coordination Work and Field Visit to the Site**

Blacksmith Institute has identified two technical experts to assess the needs and requirements of the remediation process. They also conferred with local officials, allowing proper communication between Blacksmith and the local population of the requirements and processes of the proposed plan of action.

Among the items already discussed were the need to purchase field equipment to test for the presence of heavy metals, a definitive determination of the boundaries of the contaminated areas, collection of soil samples, as well as a determination of further needs in the area.

2.) Coordination Work and Discussion with Local Officials

Agency protocols were discussed in order to facilitate smooth implementation of the project. Local institutions have been conducting further evaluation and revision of the proposals, specifying certain objectives that they would like to have met by Blacksmith and foreign partners.

3.) Field Visits to the Identified Priority Sites for Assessment

Visits to the previously identified priority areas were conducted, with the purpose of assessing soil and water quality. Test results from the area helped to further target the remediation efforts.

4.) Identification of Local Technical Experts, Supplies Needed, and Total Budgetary Needs

This phase of the project staffed local partners, forming a group of people based in the area to oversee the day-to-day operation and implementation of the joint efforts of Blacksmith and its partner organizations.

○ **Outcomes and Follow Up:**

In the Clark and Subic Bay areas, 660 samples have been taken. PCB's was identified in the Clark area, and six cubic meters of soil and water have been remediated. In the Subic Bay, three different pollutants have been identified—Arsenic, Mercury, and Cadmium, and 12 cubic meters have been remediated. 13 contaminated sites have been further identified and scheduled for extensive remediation, and several more field visits have been conducted to indicate the extent and type of pollution in each of the given areas.

