USACE, MOBILE DISTRICT

CORRECTIVE MEASURES IMPLEMENTATION FOR GROUNDWATER AT SPACE LAUNCH COMPLEX 17

Cape Canaveral Air Force Station, Florida

PROJECT HIGHLIGHTS

CLIENT PROFILE

The U.S. Army Corps of Engineers (USACE) Mobile District manages of variety of programs in Alabama, Georgia, Florida, Mississippi, and Tennessee as well as Central and South America. The District's mission includes supporting all branches of the military and other federal agencies such as U.S. EPA, and providing design and construction for civil works projects. Cape Canaveral Air Force Station (CCAFS) is an installation of the U.S. Air Force Space Command 45th Space Wing. CCAFS is the primary launch facility for the Command's Eastern Range and has been supporting America's space program since the 1950s.

PROJECT OVERVIEW

The firm provided preliminary and final remedial design, permitting, and construction at a complex site that contained a 0.8-acre solvent source area beneath the previously inaccessible Space Launch Complex 17 (SLC 17) launch pad structure. Bioremediation using emulsified vegetable oil (EVO) and potassium lactate was selected as the final remedy. The goal of the project was to prepare final design plans and specifications, provide turnkey construction services, complete performance monitoring, and achieve significant contaminant mass reduction as a result of the remedial efforts.

CHALLENGES

- Completion of design and construction within a 12-month time frame.
- Manufacture of 68,000 gallons of a consistent EVO blend.
- EVO transportation logistics from staging to injection areas due to restricted access.

THE MSE GROUP APPROACH

Preliminary Design: Included detailed review of previous EVO injection designs, review of federal and state underground injection control (UIC) permit requirements, finite-level source area investigations to determine injection pressure and depths, and bacterial microcosm studies to evaluate indigenous Dehalococcoides (Dhc) gene counts and interactions with potential biostimulants.

Pilot Testing: Completed radius-of-influence injection pressure testing to provide design parameters for EVO volume and injection pressure relative to the permeability of the aquifer at specific locations at the site.

Final Design: Completed final design plans and permitting for EVO manufacture plant and injection array. Also completed SPCC plan and UFP QAPP.

Construction/Operation: Completed manufacture and injection of over 110,000 gallons of EVO in 134 injection points in a 15-foot source layer at two contaminant source areas. Construction included turnkey EVO plant construction, installation of all distribution piping, EVO manufacture, and plant decommissioning.

"All work completed by the contractor has been of high quality and has consistently met and/or exceeded stakeholder expectations."

– USACE, Mobile District

"The contractor was selected for the SLC-17 project based on past performance and proven technical and management capabilities."

– USACE, Mobile District

ACCOMPLISHMENTS

- Self-mixing EVO saved over $200,000 by eliminating external vendors.
- Achieved 91% contaminant mass reduction in 1 year.
- Field execution exceeded the initial performance objectives.
- As a result of cost savings, completed additional out-of-scope tasks.

AREAS OF EXPERTISE

- Environmental compliance, remediation, and restoration
- Design/build
- Remedial design