Remediation System Upgrade for Improved Mass Recovery

Former Aerospace Manufacturing Facility,
Los Angeles County, California

- EXPERIENCE
- INTEGRITY
- SERVICE

HARGIS + ASSOCIATES, INC
ENGINEERING • HYDROGEOLOGY

Hargis + Associates, Inc. was retained by the owners of a former aerospace manufacturing facility to provide operations and maintenance (O&M) oversight for an existing remediation system in Los Angeles County, CA. The soil and groundwater at the site were impacted with volatile organic compounds (VOCs), including trichloroethylene, tetrachloroethylene, and methylene chloride, and the semi-volatile organic compound (SVOC) 1,4-dioxane.

The existing remediation system integrated multiple remediation subsystems including soil vapor extraction, groundwater extraction and treatment, and dual-phase extraction (DPE), using treatment technologies including both liquid-phase and vapor-phase granular activated carbon, thermal oxidation, air stripping, and an ozone/peroxide advanced oxidation process (AOP). As part of O&M oversight, Hargis sought improvements to remediation system efficiency and performance.

Hargis performed a comprehensive evaluation of the existing remediation system's performance, focusing on finding areas where operational efficiency could be improved. The DPE remediation subsystem was tied exclusively to the AOP system and had many operational issues. The AOP system relied on multiple utility subsystems (air compressor, oxygen generator, and ozone generator), and failure of any of these would cause the AOP system to shut down, in turn shutting the DPE down. Previous attempts at increasing runtime of the DPE subsystem focused on increasing reliability of the AOP and its utility subsystems, however after many months of effort the average monthly runtime for the DPE subsystem was only ~30% of total available runtime.

After evaluating operations of the existing remediation system and analyzing the quality of the raw process water, Hargis recommended a new approach: replace the existing ozone/peroxide AOP system with a new Ultraviolet Light (UV)/Peroxide AOP System. Hargis was able to incorporate elements of the existing AOP system into the new AOP system design, saving on design and equipment costs; and provided turnkey service for the UV/Peroxide AOP system install including engineering design, regulatory permitting, and oversight of construction and startup of the new AOP system.

In addition to making upgrades to the AOP system, Hargis evaluated operation of the DPE subsystem extraction wells and made recommendations for well optimization.

In the year following startup of the upgraded UV/Peroxide AOP system, year over year DPE subsystem runtime increased 94%; and year over year DPE subsystem mass removal increased by more than 1,500%, resulting in removal of more than 26,000 pounds of VOC and SVOC mass in the first year of operation.

KEY ACCOMPLISHMENTS

- Comprehensive performance evaluation of multi-modal remediation system.
- Determined weak points in existing remediation system operation and evaluated alternative technologies to address existing remediation system shortcomings.
- Completed feasibility evaluation and managed bench testing of new treatment technology.
- Designed, permitted, and provided construction oversight of new advanced oxidation treatment train.
- Provided startup and ongoing operations & maintenance oversight for the upgraded remediation system.