

Foremost Environmental Solutions



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## Coal Machinery Facility – Glenwood Springs, CO



### System Type:

Chemical Reactive System Bio/Chem Recirculation with BioWall™

### Location:

Former EIMOC Coal Machinery Facility, Glenwood Springs, CO

### Client:

Glenwood Industrial, Glenwood Springs, CO

### Project Description:

This facility was a source of low levels of hexavalent chromium contamination in groundwater that resulted from the chromium plating of mining tools. The plating had been conducted in tanks that were located in a concrete-block pit along the south side of a warehouse building that was 50 feet up-gradient of the Colorado River.

Monitoring of groundwater at the site showed that hexavalent chromium contamination from the pit was trapped in the soil under the building and continued to contaminate the groundwater whenever the water table would rise. FES designed a combined chemical and biochemical recirculation system to fixate the soluble chromium in-situ. The remediation system relied on bioremediation of natural organic matter in a BioWall™ (a trench filled with a mixture of Isolite®CG, sand, hay, fertilizer, et.al.) to provide the reducing conditions for chromium fixation and the addition of a chemical reducing agent to enhance the reducing conditions in the surrounding soil. The system was installed and operated for six months. The groundwater was monitored for one year.

Groundwater monitoring from wells down-gradient of the former plating operation showed that measurable amounts of dissolved chromium were flushed from under the building by the remediation system. Discharged contaminated groundwater was pumped from a down-gradient collection well through a shallow underground pipe system around the building into the treatment/infiltration trench near the location of the former plating pit. The bioremediation matrix in the BioWall™ provided reducing conditions that would precipitate the soluble chromium in the re-circulated groundwater. This system was augmented with the addition of aqueous calcium polysulfide solutions to speed the establishment of reducing conditions and to minimize soluble chromium from bypassing the treatment system and impacting the Colorado River.

This X-PerT System proved to be a very cost-effective solution for the successful removal of soluble chromium from soils under the warehouse building and in down gradient monitoring wells. Chromium concentrations had dropped to below the Colorado Standards and were no longer impacting groundwater quality. Groundwater monitoring results indicated that soluble chromium concentrations continued to stay below the state's Drinking Water Standards three months after the treatment system was discontinued. The Colorado Department of Public Health and Environment issued a letter of "No Further Action" less than one year after the treatment system had been installed. Because the in situ system was mostly passive and unobtrusive, the investor-client was able to lease the warehouse during remediation and immediately sold the remediated property for twice the purchase price.