MONTGOMERY & ANDREWS
Northwest New Mexico

Aquifer Groundwater Reclamation System

Alberto A. Gutiérrez served as principal in charge of this project while serving as President of GCL, predecessor to Geolex, Inc.

During an environmental audit at a closed petroleum refinery and aboveground storage tank battery in New Mexico, GCL discovered hydrocarbon contamination in several monitor wells. A thorough study of the site, based on observations and chemical analyses from 33 boreholes, revealed three localized plumes of hydrocarbon product floating on the groundwater. Hydrogeologic studies of the site identified the boundaries and characteristics of the plumes and were used by GCL to design a groundwater reclamation system specifically matched to the site. The reclamation system used five, strategically placed recovery wells from which both floating product and contaminated water were removed for recovery and treatment.

GCL designed and built a pump to match the hydraulic characteristics of the wells. The pump is a cylindrical device that is submerged just below the oil/water interface. It is filled from the top by gravity and skims floating product from the surface of the water. The pump was installed with its inlet below the static water level so both floating product and some contaminated water were removed to create a drawdown in the well and enhance the inflow of product. This arrangement was suitable for four of the recovery wells because of their low capacities. One of the recovery wells, however, was installed in a high transmissivity zone, and an additional deep well pump was used to draw down the water level, while the recovery pump skimmed the floating product and contaminated water from the surface.

The recovery pump used for this system operated on compressed air at about 50 pounds per square inch (psi) and 12 to 24 volts AC or DC current. It pumped 1 gallon per minute (gpm) at a head of 50 feet, was relatively low in cost, and was constructed of readily available materials and components. The pump was thoroughly field-tested and its design was refined to provide consistent and reliable operation.

Major Project Elements:

- Remedial design/ Remedial action
- Groundwater modeling
- Above-ground storage tank management
- Hazardous waste management
- Program/Project management/QAQC
- Environmental data management
- Environmental risk assessments
- Regulatory compliance/ Permitting
- Property audits
- Hydrology/Hydrogeology

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