



PROJECT:

El Paso Energy Former El Dorado Refinery Groundwater Remediation

NEED

El Paso Energy's former El Dorado refinery had a series of unlined treatment ponds that required closure in 2012. A post-closure treatment system was needed with a low life-cycle cost and the ability to maintain full treatment of the groundwater and stormwater systems during construction. The system had to remove a variety of constituents including metals, chlorinated organic compounds and petroleum hydrocarbons prior to discharge to the Walnut River, an important water resource.

SOLUTION

A multi-stage wetland system was built on the site in the former pond location, including:

- Primary treatment stage for reductive dehalogenation of trichloroethane (TCA) and vinyl chloride (VC), utilizing saturated vertical downflow through a reactive media bed.
- Oxidizing treatment stage for aerobic degradation of gasoline-range (GRO) and diesel-range (DRO) petroleum hydrocarbons, utilizing surface-flow wetlands with aerobic deep zones.
- Final polishing stage consisting of a surface flow wetland for control of algae and total suspended solids.

BENEFIT

The wetland system was designed to match the existing ponds, minimizing the need for new construction outside the treatment area. Concrete from the existing refinery structures was crushed on-site and reused as aggregate for the wetlands, and a former oil/water separator was repurposed for removal of iron.

The resulting system utilizes only 5 HP (3.7 kW) for water movement and aeration through the treatment process, dramatically reducing long-term life cycle costs for site closure compared to conventional mechanical alternatives.

LOCATION

El Dorado, Kansas

PROJECT TYPE

Groundwater Remediation

COMPLETION DATE

2012

DESIGN FLOW

432,000 gallons per day
(1,635 m³/d)

TREATMENT

Cascade Aeration
Sedimentation
Reductive Dehalogenation
(Vertical Downflow Wetlands)
Aerobic Bioremediation
(Surface Flow Wetlands)

