

RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites

Frontier Fertilizer – Davis, CA Success Story

Photovoltaic Panels Power a Ground Water Treatment System



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EPA is encouraging the development of renewable energy facilities on potentially contaminated land and mine sites. This series of stories highlights successful projects and the benefits of siting renewable energy facilities on potentially contaminated land and mine sites.

Site Description

Located near the eastern border of Davis, California, the Frontier Fertilizer Superfund site encompasses nearly 18 acres of land. Since 1995, the U.S. Environmental Protection Agency (EPA) has been operating a ground water extraction and treatment system on the property. The Agency's remediation efforts also include the use of electrical energy to heat the most contaminated areas to reduce the toxicity of the ground water. The site has a triangular shape with its southern border parallel to Interstate 80. There are two development projects just north of the site; one adjacent field is being redeveloped as a light industrial/business park, while residential units were recently constructed approximately 600 feet north of the Frontier site's boundary. The California Department of Toxic Substances Control and the Frontier Fertilizer Superfund Oversight Group provide oversight.

Property History

Until 1948 the site was farmland, at which point it was sold to the C. Bruce Mace Ranch Company to be developed as a farming operation's headquarters. In 1970, Anderson Farms, Inc. bought the property. Two firms used the site for fertilizer and pesticide storage, sales and application from 1972 to 1987: the Barber and Rowland Company from 1972 to 1982 and the Frontier Fertilizer Company from 1982 to 1987. These companies disposed of unused pesticides and fertilizer in a 4,000-cubic-foot basin in the site's northwest corner. Soil and ground water became contaminated when rinse water from tanks and containers was dumped into the basin and on the surrounding ground. Major contaminants confirmed on the site include the pesticides.

To address these issues, Frontier Fertilizer excavated about 1,100 cubic yards of contaminated soil in 1985. The underground and above-ground tanks, as well as most of the site's structures, were removed in 2000. The only remaining building is a warehouse that contains the ground water treatment system.

Renewable Energy Development

To offset the energy consumed by ongoing ground water treatment, a solar photovoltaic (PV) system was installed on the roof of the site's remaining building. This 5.7 kilowatt (kW) PV system was designed and installed by CH2MHill and Roseville Solar Electric (RSE) and consists of 30 Evergreen ES-190-RL and 190 Watt solar modules arranged into 10 three-module panels. Over the course of a year, the PV system is expected to produce approximately 8,500 to 9,000 kilowatt-hours (kWh) of electricity—offsetting up to 5% of the site's annual electricity use for pump and treat system operations, and saving energy costs of approximately \$1,500 per year. The State of California has a 10% cost share for the installation of the solar panels.



QUICK FACTS:

Location:	EPA Region 9, Yolo County, CA
Property Size:	18 acres
Site Ownership:	8 acres owned by a developer; 10 acres privately owned but under U.S. EPA Superfund Program oversight
Former Use:	Farmland, fertilizer and pesticide storage and sales
Cleanup Type:	Superfund
Contaminants:	Pesticides, VOCs
Type of RE:	Solar PV (non-grid)
RE Capacity:	5.7 kW
Project Cost:	\$35,000
Key Partners:	California Department of Toxic Substances Control, Frontier Fertilizer Superfund Oversight Group

PROJECT HIGHLIGHTS:

- The 5.7 kW PV system powers treatment of contaminated ground water.
- PV system produces up to 9,000 kWh of electricity annually, saving \$1,500 per year in energy costs.
- Surrounding properties are being developed for residential and commercial use.

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For more information, visit: www.epa.gov/renewableenergyland or contact cleanenergy@epa.gov