

2012 Update – Renewable Energy on Mine Sites

This fact sheet highlights ongoing and future activities on renewable energy assessment and development activities at mining sites.

Molycorp, Inc. (Questa, NM): The Molycorp site encompasses two distinct molybdenum mines and associated mill tailing ponds. Mining operations have been ongoing at the site since 1920. Years of open-pit mining resulted in over a million tons of waste rock being placed around the open pit area. Tailing seepage and runoff from the tailing ponds and weathering of the tailings piles has resulted in ground water and soil contamination. In conjunction with EPA’s cleanup planning at the site, Chevron, the potentially responsible party, coordinated with EPA and state agencies to construct a 1 MW concentrated photovoltaic (CPV) solar facility on 20 acres of the mine tailings in 2010. The CPV facility has been operational since February 2011 and is the largest of its kind in the United States. A local energy cooperative purchases the energy through a 20-year purchase agreement.

ASARCO Mission Mine (Sahaurita, AZ): Located on Tohono O’odham Nation (TON) land, the ASARCO Mission Mine is an open-pit copper mine that covers 29 square miles. At the request of the TON, in 2011, EPA prepared a renewable energy assessment to evaluate renewable energy development opportunities for a 280-acre portion of the mine tailings area. The tailings area located on lands within the San Xavier District of the TON and was leased to ASARCO by the Nation for mining-related activities. The study concluded that the ASARCO Mission Mine tailings area could accommodate a utility-scale solar energy project. TON passed a resolution accepting the 2011 EPA Feasibility Study. The local utility, Tucson Electric Power, is working with the TON on a solar project on top of the tailings area. An environmental impact statement (EIS) was completed for the 280-acre area on top of the mine tailings and submitted to the Bureau of Land Management (BLM) as part of the Arizona Restoration Design Energy Project. BLM will release a draft EIS in 2012. The Nation’s overall funding priorities and the EIS process will determine how quickly this project unfolds.

Summitville Mine (Rio Grande County, CO): Gold mining activities on the 1,400 acre Summitville Mine released cyanide and acidic, metals-laden mine water into the Alamosa River. In 1994, EPA began remediation at the site and cleanup activities include capturing and treating contaminated water before releasing it into the Alamosa River. In 2010, EPA and the Colorado Department of Health and the Environment began construction of a micro-hydroelectric power plant to supply electricity to help power remedial activities. The plant, composed of a pipe penstock and turbine, began operation in September 2011 and provides up to 32 kilowatts (kW) of energy to the treatment system. The hydro-electric system was de-mobilized for the winter and will reopen in the spring of 2012.

McKinley Mine (Tse Bonito, NM): The McKinley Mine covers approximately 31,000 acres. Beginning in the 1960s, Chevron, under lease from the Navajo Nation, mined coal from two areas: the North Mine and the South Mine. The South Mine is a patchwork of private, public, Tribal fee, allottee and state lands and closed in 2007. The North Mine is on Navajo Nation reservation land and closed in 2009. EPA completed a renewable energy pre-feasibility assessment for McKinley Mine at the request of the Navajo Nation. Based on a preliminary screening of the mining area, EPA and the Navajo Tribal Utility Authority (NTUA), in coordination with Chevron, identified four areas at the mine (approximately 550 Chevron-controlled acres) suitable for solar energy generation in the near term with minimal

Abandoned Mine Lands Team Renewable Energy Technical Support

As part of USEPA’s interest in encouraging renewable energy development on current and formerly contaminated land and mining sites, EPA’s Abandoned Mine Lands Team (AMLT) works with Regional offices to provide technical and analytic support to communities and other mining site stakeholders to explore alternative energy opportunities through carrying out pre-feasibility energy analyses and other forms of technical support.

Mine sites where the AMLT has provided technical and community support include:

- Molycorp, Questa, NM
- Summitville Mine, CO
- Chino Mine, Hurley, NM
- Iron King Mine – Humboldt Smelter, Dewey-Humboldt, AZ
- McKinley Mine, Tse Bonita, NM
- ASARCO Mission Mine, Sahaurita, AZ

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<http://epa.gov/aml/>

site preparation work and appropriate geotechnical testing. The Navajo Nation and NTUA are moving forward with plans for renewable energy projects on the site. NTUA completed a market analysis, to develop a request for proposals (RFP) issued for potential solar developers. NTUA plans to set up a limited liability corporation (LLC) and issue an RFP by December 2012.

Iron King – Humboldt Smelter (Dewey-Humboldt, AZ): The Iron King Mine - Humboldt Smelter Superfund Site encompasses areas of contamination from two separate facilities: the Iron King Mine and the Humboldt Smelter. The Iron King Mine facility covers 153 acres, the majority of which is covered by waste rock piles and tailings. The Humboldt Smelter facility occupies approximately 183 acres. On-site ponds, pits and lagoons were reportedly used for the leaching of minerals from mined ore. In 2009, EPA completed a renewable energy assessment for the site to assess the opportunity to meet potential on-site light industrial/commercial electricity demand or to generate grid-tied electricity on the site. The reuse assessment determined that solar energy and bioenergy are the most promising renewable options for the site. Since 2009, no renewable energy activities have taken place on the site, although the reuse assessment is available to inform cleanup activities at the site.

Leviathan Mine (Alpine County, CA): The Leviathan Mine Superfund Site lies in a remote portion of Alpine County, California. Waste from open-pit sulfur mining covers 253 acres at an elevation of 7,000 feet. Acid mine drainage has devastated the stream system as far as 9 miles downstream. Atlantic Richfield, the PRP, is conducting a feasibility study that will include an estimate of power needs for long-term cleanup. The mountain location is far from the power grid and winter snows prevent transport of fuel to the site for half the year. Using renewable energy could potentially allow treatment of the acid drainage for longer periods of the year. EPA's RE-Power America's Land Initiative awarded the site a grant in 2009 for the National Renewable Energy Lab (NREL) to analyze the potential for a hybrid power generation system using renewable energy, including wind and solar, to power cleanup activities. NREL has installed wind and solar data collection units at the site, and the study was expanded into 2012. Currently, small solar units power monitoring instruments and data transmission via satellite, and warm a year-round bioreactor control room at the site.

Gilt Edge Mine (Lead, SD): Located in the northern Black Hills, the Gilt Edge Mine site covers 360 acres. Mining operations for gold, copper and tungsten resulted in millions of gallons of acidic heavy-metal-laden water being sent to three open pits and produced millions of cubic yards of acid-generating waste rock that requires cleanup and long-term treatment. EPA's RE-Powering America's Land Initiative, in partnership with NREL, is conducting a wind study at the site. A 55-meter meteorological tower that collects wind speed data was installed in May 2010, but the tower was destroyed by lightning in August 2010. A new tower was installed in May 2011. A final report indicating whether the Gilt Edge Mine could host a commercial wind farm is expected in spring 2012.

Jeddo Mine Tunnel (Hazleton, PA): Through a grant awarded by EPA's RE-Powering America's Land Initiative, NREL conducted a feasibility study of renewable energy potential at the Jeddo Mine Tunnel site. The man-made tunnel provides drainage for four major coal basins. Acid mine drainage containing aluminum, iron and manganese has negatively impacted the water quality in the nearby Nescopeck River. The purpose of the renewable energy study was to assess the technical and economic viability of hydroelectric and geothermal energy production at the site. In addition, the report outlined financing options that could assist in the implementation of a hydroelectric system. In 2011, the site was found to be compatible with a hydroelectric system and no large issues were raised from the turbine manufacturer or dam designer as to possible construction or maintenance issues. The NREL report clarified whether or not the facility can qualify for specific federal tax incentives and other grants and low interest loans that could increase the financial viability of the project, as well as technical characteristics of the dam that could be affected by cleanup activities.

[EPA's RE-Power America's Land Initiative](#) awarded grants to five mining sites in the November 2011 - Vermont Asbestos Mine Group (Lamoille County, VT), Chino Mine (Silver City, NM), ASARCO (East Helena, MT), Peru Mill Industrial Park (Deming, NM), Uranium Mills Tailing (Lakeview, OR). Renewable energy assessment work is not yet underway at these sites, however, the sites will be revisited in six to nine months to monitor how preliminary analysis work is unfolding.