

Project Profile

*Newmont Mining
Low Sheep Well-Carlin, Nevada
TS Power Plant-Battle Mtn., Nevada*



Background

In 2005, AdEdge Technologies Inc. (AdEdge) was contacted to assist with design and implementation for two separate treatment systems related to the Newmont Mining site located in Carlin, Nevada, and an additional site in Battle Mountain. Site personnel and RTW Inc. evaluated arsenic treatment options, and eventually selected adsorption for these sites. At the Carlin, Nevada location, implementation began in September, 2005 including engineering submittals and permitting by the Nevada Division of Environmental Protection (NDEP). Upon completing site preparations and construction in December 2005, AdEdge installed the new 25 gpm Adsorption Package Unit (APU) arsenic treatment system at the Low Sheep well site in January 2006. Historically, arsenic concentrations reported in the source well serving the mining site was 32 parts per billion (ppb), which is three times higher than the new USEPA arsenic maximum contaminant level (MCL). A complete water profile was obtained on the source water to assess the water chemistry and predict performance. The table below lists some of the more important water-quality parameters.



APU-25LL System – Carlin, Nevada
Arsenic Treatment System

System Description

AdEdge installed an APU-25 lead/lag arsenic removal system designed for up to 25 gpm maximum flow. The system utilizes Bayoxide E33 adsorption media. The small footprint system features a twin vessel configuration with automatic controls, series flow configuration, and a chorine injection system. Due to the fact that all of the detected arsenic is in the form of arsenic III (As III), sodium hypochlorite is injected as an oxidant. The sodium hypochlorite pretreatment step converts As III to As V prior to entering the adsorption treatment system. The AdEdge adsorption system requires no other chemicals, regeneration, and does not generate liquid or hazardous waste. Media, when spent, will be discarded as a non-hazardous solid waste. Minimal operation, maintenance, or operator attention is required for this simple automated system. Instrumentation is provided on a control panel to measure critical operating parameters. Total gallon throughput and flow rate for each vessel is measured continuously with a dedicated flow totalizing meter.

Total As **	0.032	mg/L As
As(III)	0.032	mg/L
Alkalinity	164	mg/L @ CaCO3
Hardness **	196	mg/L @ CaCO3
Silica **	36.0	mg/L SiO2
Phosphate **	negligible	mg/L P04
Sulfate **	45.0	mg/L SO4
Iron **	ND	mg/L Fe
Manganese **	ND	mg/L Mn

Performance

The systems were placed into operation in July and October of 2006. Sustainable yield from the source wells is approximately 25 gpm. The Low Sheep system processes 3,000 gal/day while the Battle Mountain site treats an average of approximately 36,000 gallons per day. Initial sampling results indicate excellent arsenic removal performance (i.e., non-detect in lag vessel). Uptime for both systems has been excellent and the APU's have operated at very high treatment efficiencies.

For More Information Contact

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