

# Project Profile

## EPA Arsenic Treatment Demonstration - Rimrock, Arizona



### Background

In mid 2003, AdEdge Technologies Inc. (AdEdge) was selected to implement three full scale arsenic treatment Demonstration Projects with USEPA using its granular ferric oxide (GFO) technology. At the Rimrock location, implementation began in September, 2003 including engineering submittals and permitting by the Arizona Department of Environmental Quality (ADEQ). Upon completing site preparations and construction in early March, AdEdge installed the new 100 gpm Adsorption Package Unit (APU) arsenic treatment system at the Montezuma Haven well site. This system was AdEdge's second installation for a public drinking water system in Arizona utilizing GFO technology. Historically, arsenic levels reported in the source wells serving the community ranged from 50 to 55 parts per billion (ppb), over five times the new USEPA standard of 10 ppb. 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-100 System – Rimrock, Arizona  
Arsenic Treatment Demonstration

### System Description

AdEdge and its local subcontractor installed an APU-100 designed for up to 100 gpm maximum flow in an outdoor location near the well head. The system was converted to a SERIES flow configuration due to the lower than expected well pumping capacity. The system utilizes Bayoxide E33 adsorption media. The small footprint system features a twin vessel configuration with automatic controls, PLC, series flow configuration and a 100 percent backwash recycle system with zero discharge or loss of water. No pretreatment is necessary. For disinfection purposes, sodium hypochlorite is injected prior to entering the distribution system. The AdEdge adsorption system requires no 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 **	0.052	mg/L As
As(III)	< 0.05	mg/L
Alkalinity	374	mg/L @ CaCO <sub>3</sub>
Hardness **	330	mg/L @ CaCO <sub>3</sub>
Silica **	26.0	mg/L SiO <sub>2</sub>
Phosphate **	< 0.10	mg/L P <sub>04</sub>
Sulfate **	11.6	mg/L SO <sub>4</sub>
Iron **	0.17	mg/L Fe
Manganese **	< 0.05	mg/L Mn

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### Performance

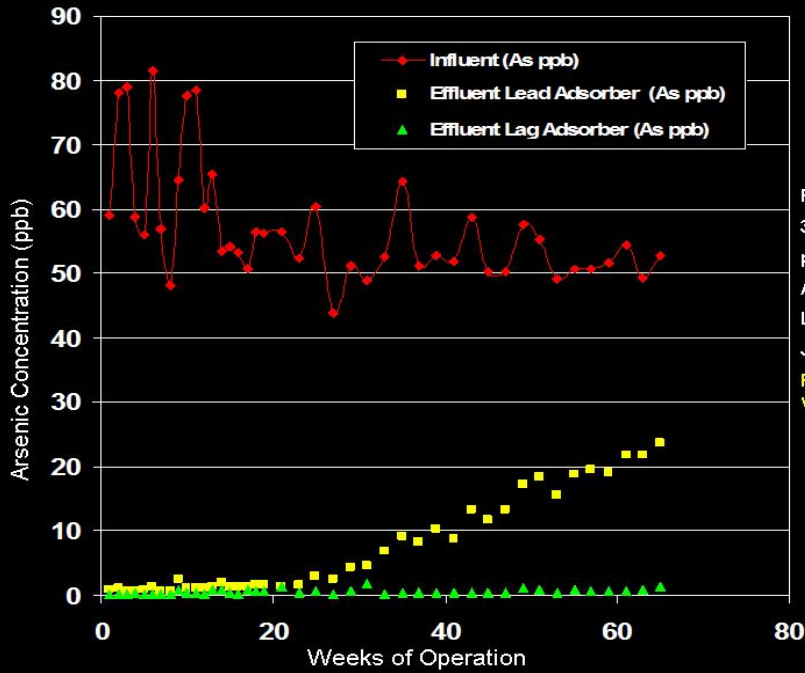
The system was placed into operation in June, 2004. Sustainable yield from the source wells is approximately 35 to 38 gpm. The well runs twelve hours per day with the system treating approximately 25,000 gallons per day. Weekly sampling results through 65 weeks of run time indicate excellent arsenic removal performance (i.e., below 2 ppb in the lag vessel through 65,000 bed volumes). The system uptime has been greater than 99.9 percent and the APU has run at very high treatment efficiencies despite arsenic in the raw water ranging from 45 to 80 ppb. A one-year demonstration period is being extended to 18 months by USEPA's third party contractor Battelle. The attached chart provides treatment performance of the system through 65 weeks of operation.

### For More Information Contact

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# Rimrock, AZ - Performance



Rimrock, AZ EPA Project  
 35 gpm flow rate, 12 hr/day  
 pH 7.2  
 Arsenic influent: 50-60 ppb ave  
 Lead / Lag configuration  
 June, 2004 began treatment  
**Results through 65,000 bed volumes treated to date**



Site Before Treatment July, 2003



After Installation May, 2004



With Shade Structure June, 2004

## Rimrock - Arizona Montezuma Haven Wells Series Operation

### Process Flow Diagram AdEdge Arsenic Reduction System APU System

