

Project Profile

Gore Hill #1 & #2 – MT Arsenic and Iron Removal



Background

In November 2009, AdEdge Water Technologies, LLC was contacted by Great West Engineering to provide an arsenic and iron removal system for the Gore Hill County Water Treatment Plant Wells #1 and #2 in Great Falls, Montana. The existing water system consisted of multiple wells feeding into a centralized distribution system with a maximum capacity of 150 gpm. The raw water for Plant #1 has an average arsenic level of 18 ppb and an iron level of 1.39 mg/L, well above the EPA MCLs of 10 ppb and 0.3 mg/L respectively. Plant #2 has an average arsenic level of 21 ppb and an average iron level of 4.51 mg/L, also well above the EPA MCLs of 10 ppb and 0.3 mg/L.



Treatment System

Each AdEdge treatment system features a skid-mounted AD26 oxidation and filtration package unit sized for a maximum design flow of 150 gpm. Gore Hill Plant #1 features the model APU26-4260CS-2-AVH and utilizes AdEdge AD26 media in a two vessel configuration. Gore Hill Plant #2 features the model APU26-4260CS-3-AVH and utilizes AdEdge AD26 media in a three vessel configuration. Each system is equipped with automated control valves and harness, central control panel with programmable logic controller (PLC) and a color user interface screen. System features also include differential pressure switches, control panel and local gauges, flow sensors and totalizers, and a central hydraulic panel with sample ports for a complete functioning packaged unit. A continuous feed of sodium hypochlorite is fed prior to the treatment system to optimize the removal of arsenic and iron. Each 42-inch diameter treatment vessel contains 28 cubic feet of AdEdge AD26 oxidation/filtration media.

In addition to the arsenic and iron treatment systems, AdEdge is providing a recycle backwash system for each site. The backwash recycle system reclaims 100% of the backwash waste water and removes the captured arsenic and iron as a semi-solid sludge that can be disposed of in a non-hazardous landfill. Backwashing of the treatment systems occurs two or three times a week depending on the incoming levels of iron and water usage.

Performance

The system was started up and commenced in April 2011. Since the system began operation, iron levels are at non-detectable levels and arsenic levels have lowered from 18 ppb and 21 ppb to non-detectable levels.

For More Information Contact

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Priority Parameters		
pH **	7.40	
Total As **	.006 - .021	mg/L As
As(III)	no data	mg/L (if known)
Sulfides **	no data	mg/L
Hardness **	679	mg/L @ CaCO ₃
Alkalinity **	271.0	mg/L @ CaCO ₃
Silica **	16.0	mg/L SiO ₂
Phosphate **	-	mg/L PO ₄
Sulfate **	589.0	mg/L SO ₄
Iron **	4.0 - 4.51	mg/L Fe
Manganese **	0.02	mg/L Mn

Priority Parameters		
pH **	7.20	
Total As **	0.014-0.018	mg/L As
As(III)	no data	mg/L (if known)
Sulfides **	no data	mg/L
Hardness **	685	mg/L @ CaCO ₃
Alkalinity **	295.0	mg/L @ CaCO ₃
Silica **	16.0	mg/L SiO ₂
Phosphate **	-	mg/L PO ₄
Sulfate **	575.0	mg/L SO ₄
Iron **	1.39	mg/L Fe
Manganese **	0.02	mg/L Mn