

Project Profile

Melody Woods Water Company
Los Gatos, California
Iron and Manganese Treatment System



Background

In February 2009, the Melody Woods Water Company selected and began working with AdEdge Technologies to assist with the design and implementation of a Manganese, Iron and Turbidity treatment system to serve the water supply for Melody Woods in Los Gatos, California. The site has two existing groundwater supply wells that provide drinking water for approximately 53 connections with very high levels of Manganese (Mn), Iron (Fe) and Turbidity that exceed the secondary drinking water standard Maximum Contaminant Levels (MCL) and resulted in poor water quality being served to the community. The two wells were designed to operate at the same time with existing controls in place, and the wells produce approximately 15,000 gallons per day (gpd) in 12 – 13 hours of well pumps operation. The treatment system was designed for 20 gallons per minute (gpm) with an approximate iron concentration of 0.50 milligrams per liter (mg/L), high manganese levels of up to 1.65 milligrams per liter (mg/L), and high turbidity of 10.1 NTU. The AD26 oxidation/filtration treatment system was implemented to reduce these parameters to below MCLs. The proposed integrated AdEdge AD26 iron and manganese treatment system treatment system for Melody Woods included a pH adjustment module, pre-chlorination module, and, a backwash supply pump skid, raw water booster pump skid, and backwash recycle module with integrated controls. AdEdge assisted Melody Woods Water Company with the necessary drawings, submittals, and technical documents for obtaining the necessary County permits to install and operate the new treatment system. The project was implemented in a turnkey fashion with Quality Service, Inc to perform on-site construction and installation services.



Parameters		
pH	7.00	units
Total As	ND	mg/L As
As(III)	no data	mg/L (if known)
Sulfides	no data	mg/L
Hardness	266.0	mg/L @ CaCO3
Alkalinity	206.0	mg/L @ CaCO3
Silica	no data	mg/L SiO2
Phosphate	no data	mg/L P04
Bicarbonate	206.0	mg/L HCO3
Iron	0.50	mg/L Fe
Manganese	0.47 - 1.065	mg/L Mn
Radium	<0.5	pCi/L Ra

Treatment System

The treatment AdEdge AD26 oxidation/filtration system, consisted of a skid mounted model AD26-2162-S-2-PLC in parallel configuration, with a Programmable Logic Controller module (PLC) which regulates the automated control valves. System features also include differential pressure switches, central control panel and local gauges, flow sensors and totalizers, including sample ports for a complete functioning package. Each vessel contains the catalytically active AD26 Manganese Dioxide media. In addition to the treatment system, the integrated water treatment system includes a sodium hypochlorite feed module which introduces an oxidant ahead of the filtration system to aid in iron and manganese removal. Also, a sodium hydroxide (NaOH) chemical feed is injected prior to the filtration system to raise up the pH which was less than 6.5. The chemical feed modules are integrated into the system package, as well as the ancillary equipment such as the auxiliary backwash supply pump skid and raw water booster pump skid with local control panel. One nice sustainable and environmental friendly feature of the system is a zero discharge backwash recycle module. With this system, consisting of a backwash recycle pump skid and control panel, bag filter, and a vertical polyethylene storage tank, nearly 95% of the backwash water can be recycled for use.

Performance

The system was successfully started up and commenced in May, 2009. The system throughput is based on a utilization of approximately 12-13 hours per day, with approximately 20 gpm being consistently treated with very high manganese and iron levels exceeding the MCLs. An average of 1.65 mg/L of manganese (with peak concentrations exceeding 2.0 mg/L) have been observed in the raw water quality. To date the system is performing excellent and consistently achieving MCLs (over 97% removal) for these contaminants with no down time.

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