crestline village
WATER DISTRICT

Memo

To: Board of Directors
From: Alan E. Clanin
Date: September 11, 2020
Subject: Electra Well Treatment Process

The Electra Well which was drilled at the end of 2017 was found through water quality analysis to have high amounts of Gross Alpha Radiation caused by groundwater flowing across plates of Subsurface Uranium. This well is thought to be capable of producing and sustaining at least 30 gallons per minute.

The District has been working with Water Treatment Technologies (WRT), Misco Water Systems (DeNora) and AdEdge Water Technologies (AdEdge) to engineer and manufacture a water treatment system that would be capable of reducing the contaminants to an acceptable level.

AdAdge quoted a price of **$45,000.00**.

This is a contained system that has no backwashing or media cleansing requirements which is environmentally friendly. The media vessels are exchanged when depleted and disposed properly by the manufacturer.

WRT quoted a price of **$132,100.00**. It is similar in function to the AdEdge system.

Misco Water Systems quoted a price of **$174.900.00.** This system requires backwashing the treatment vessels to the sewer or a receiving truck to properly dispose of the treated waste. The Ion Exchange Resin used in the treatment vessels will last many years longer than the media in a contained system, but is not feasible for our purposes as sewer connections are not available.

Recommendation: This is an information only item. AdEdge is still in the process of calculating the lifespan of the resin in the vessels at the given flow rate before exchanging vessels is required. This will allow staff to calculate the buy-back and ongoing expenses versus the cost of imported water.

Dear Alan:

Pursuant to our previous discussion in which a price was given to treat and remove Gross Alpha and Uranium that was based on a similar project. This R.O.M. (Rough Order of Magnitude) was $64,500.00 which was deemed high so you recently lowered the flow rate to 30gpm Maximum based on a well utilization of 18 hours a day.

You also provided newer Water Quality Data for Electra Well. Given the lower flow rate and new water data, we reviewed the design and pricing and modified to suit new parameters. We are pleased to offer the following for your use and consideration.

CRESTLINE WATER DISTRICT - Gross Alpha and Uranium reduction - Proposal REV.2 Sept. 9, 2020

- Design Basis - Flow Rate = 25gpm on average and 30gpm maximum
- AdEdge Model Number = MOD92-IX-1447EX-6-MVH-LL
    - Modular system containing 6 - 14" diameter x 47" high vessels, Lead-Lag configuration, with piping rack, pressure gauges, rotameters, diaphragm valves and bag filters.
        - See attached GA reference drawing for what Unit will look like, what we are including and footprint dimensions
    - AdEdge AD92 Media
    - AdEdge submittals
    - AdEdge start-up services

AdEdge is pleased to offer this Gross Alpha and Uranium reduction system as described above for R.O.M. Pricing of **$40,000.00** USD, excluding Freight and Taxes. If you want a number with freight for budgeting purposes then use R.O.M. of **$45,000.00** job-site, but no taxes.

ITEMS NOT INCLUDED:

- Piping to and from battery limits of modular vessels and Engineering thereof
- Foundation for Vessels and Civil / Structural Engineering thereof
- Feed Pump Equipment and Engineering thereof
- Spare Parts

The existing flow path of water is from Well Head through existing Cl02 skid, then future treatment equipment and finally to distribution. The new flow path will be as follows:

Well >> AdEdge AD92 System >> Cl02 Injection >> Distribution

When the resin is spent, the Vessel is removed and replaced with a completely new pressure vessel including new I/X resin. We will calculate and provide estimated resin life based on modeling of influent water characteristics and desired effluent quality based on water data sent to AdEdge.

If you have any further questions, please let me know. Thank you, Sir, for your interest in AdEdge.
Regards,

Chuck