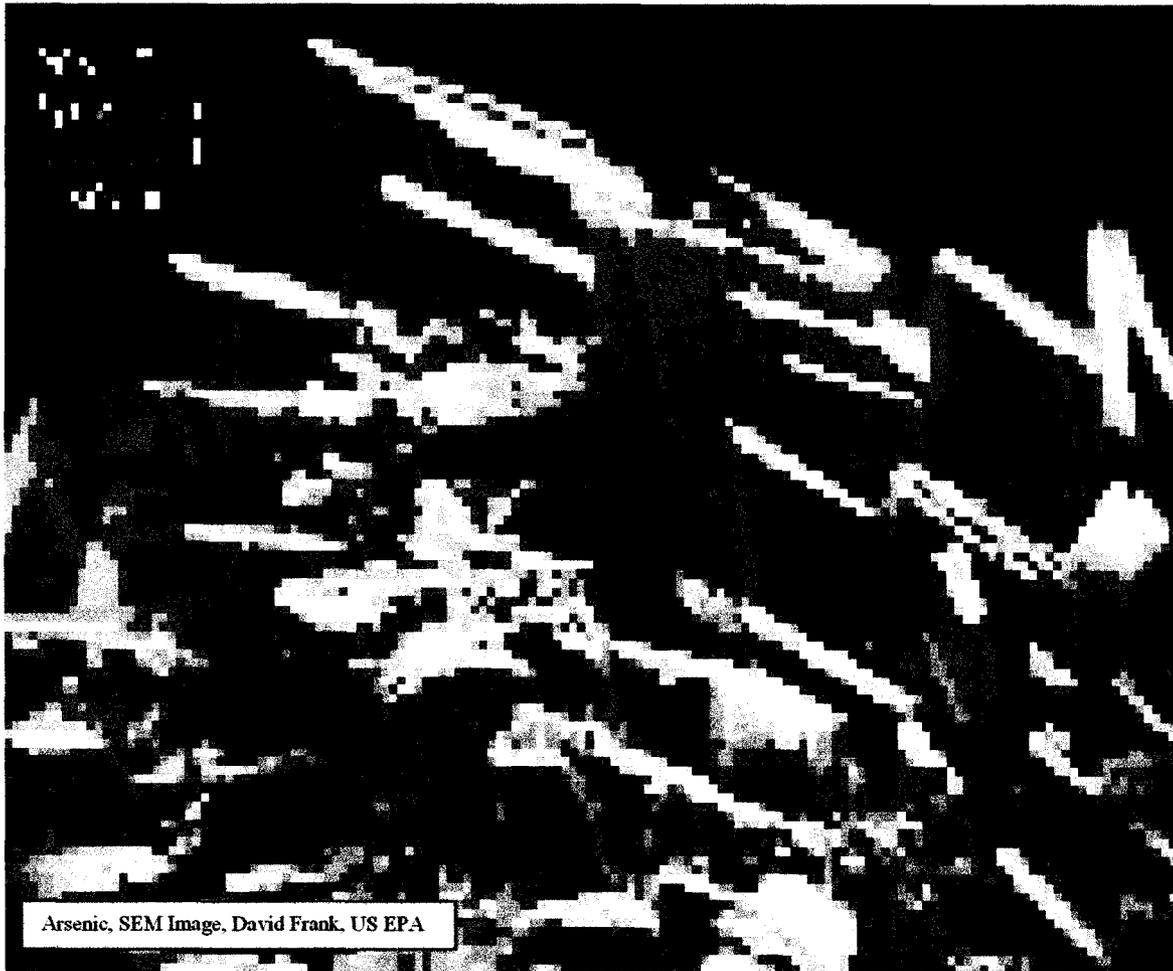


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Arsenic Treatment Plan
For
Montezuma Rimrock Water Company LLC
Decision Nos. 64665 and ~~67583~~
Docket Nos. W-02064A-01-0787



Arsenic, SEM Image, David Frank, US EPA

Montezuma Rimrock Water Co LLC

Arizona Corporation Commission

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P.O. Box 10
Rimrock, AZ 86335

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Introduction

This report is submitted on behalf of Montezuma Estates Property Owners Association ("MEPOA") dba Montezuma Estates Water Company, by the Montezuma Rimrock Water Company, L.L.C. ("MRWC"). The Arizona Corporation Commission ("Commission") in decision 64665 required MEPOA to submit to the Commission, a report describing what steps MEPOA is planning to take in order to reduce the arsenic level in its water to below 10 parts per billion ("ppb"). The Arizona Corporation also required MRWC to submit to the Commission, "within 60 days of the effective date of this Decision, its arsenic treatment plan, if not previously filed by Applicant" in Decision No. 67583.

Subsequent to decision 64665, in Commission decision 67853, sale of assets and transfer of MEPOA's Certificate of Convenience and Necessity ("Certificate") to MRWC was approved. This report is intended to address the arsenic treatment plan requirements of both Commission decisions 64665 and 67853.

System Description

The Service area of the Utility consists of approximately 722 lots within the Montezuma Estates subdivision in Rimrock, AZ, approximately 8 miles north of Camp Verde. Of these 722 lots, several hundred may not be developable due to flood risks or other constraints. There are currently approximately 147 connections to the water system. A small number of homes in the service area have their own private well and are not connected.

The system consists of two well sites located approximately 3/10 of a mile from each other. Each well site is equipped with a 10,000 gal storage tank, a 2000 gallon pressure tank, and chlorination equipment. The Point of Entry ("POE") # 1 site has emergency generators. The well at POE # 2 is currently off-line. The distribution system is primarily constructed with Schedule 40 PVC mains. Built in the 1970's, the mains and gate valves have been subject to failures. MEPOA has replaced most valves in recent years, but the marginal Schedule 40 PVC mains will need to be replaced over time. The gate valve replacement initiative has reduced water losses and the frequency of line breaks.

In 2004, the system average daily demand was 25,342 gallons per day ("GPD"), or a continuous 17.6 gallons per minute ("GPM"). POE # 1 yields approximately 55 GPM with current pumping equipment, and has been able to sustain the entire demand since POE # 2 was taken off line in late 2003.

Arsenic concentrations observed from POE # 1 has ranged from 55 ppb to 28 ppb, while arsenic concentrations from POE # 2 has ranged from 55 ppb to 35 ppb.

Steps Taken by MEPOA To Date

MEPOA attempted to find water with lower arsenic levels by drilling the well for POE #2 deeper. The effort failed when a highly mineralized zone of water was encountered at depth. This well was partially backfilled and was removed from service. A replacement well was drilled adjacent to well 2 to restore access to a functioning well at that location, and is currently in the process of source approval with ADEQ.

MEPOA has collected water samples from POE#1, and submitted them for comprehensive laboratory analyses. The results of these analyses are required by manufacturers of treatment plants to determine if their systems are capable of treating the feed water, and estimate construction and O&M costs.

MEPOA has been proactively researching regulatory requirements, financing and technical options so that it can comply with the new standard for arsenic when it goes into effect next year. MEPOA has attended one of the ACC/ADEQ/WIFA Arsenic Workshops, and has been in contact with several vendors of treatment equipment.

Future Steps Required of MEPOA

Because the transfer of water utility to MRWC is expected to be completed in the next 60 days, MEPOA proposes to suspend further efforts toward addressing the arsenic levels at this point. MRWC personnel are already actively engaged in the planning for system upgrades to reduce arsenic concentrations to below 10 ppb by January 26, 2006, as evidenced by the preparation of this report.

Summary of ADEQ Arsenic Master Plan Recommendations

The ADEQ Master Plan recommends a central treatment plant(s) using iron-modified activated alumina (Fe-AA) (single vessel or two vessels in series) system. To implement the ADEQ Adsorption to Fe-AA, estimated capital costs are \$256,000 with annual O&M costs of \$47,000.

Point Of Use ("POU") Option

On the basis of information provided by ADEQ through the Black Canyon City Study, and Watts/Premier, a manufacturer of POU units, MRWC believes that the POU option is a viable and cost effective alternative to implementing the recommendations of the ADEQ master plan.

MRWC believes there are significant factors supporting the POU treatment option including;

- The relative small number of customers currently served,
- The potential for significant growth over the next 10 years,
- The lack of a single POE location for all wells, storage tanks, and boosters,
- Significantly lower capitol costs, compared to ADEQ Master Plan estimates,
- Relatively low operations/maintenance & monitoring costs,
- The potential for technologic advances and cost reductions,
- Effective treatment of other water quality parameters, and
- Availability of off-the-shelf units to install prior to the January 26, 2006 deadline.

The existing and potential number of customers is a factor that may support the POU treatment option. The system currently has approximately 147 service connections. The system is expected to grow at a rate of 20 new connections per year for the next 10 years, at which time most of the readily buildable lots in the subdivision would be occupied. This would result in "built-out" size of approximately 350 service connections ten years from now.

The non-centralized configuration of the wells, storage and booster tanks at this time, precludes using a single "whole supply" treatment unit. Given the projected growth in connections, and low well yields at POE #2, MRWC anticipates a future need to reconfigure the locations and capacities of wells, storage and booster tanks. However, this is not economically feasible nor is it reasonably physically achievable prior to the January 26, 2006 deadline.

The ADEQ Master Plan recommends an iron-modified activated alumina system. The estimated capital costs are \$256,000 with annual O&M costs of \$47,000. The cost per customer for arsenic treatment under the Master Plan option was projected to be \$33.38 per month. In contrast, the estimated costs for the POU treatment option are \$41,325 in initial capitol costs, and approximately \$13,135 in annual O&M costs. The projected cost per customer is approximately \$15 per month. Thus the POU option could save each customer \$220.56 annually over the ADEQ Master Plan option.

Since the announcement lowering the arsenic MCL to 10 ppb, many emerging companies have introduced new treatment systems and are vying for market share/dominance. MRWC believes that there will be an inevitable shakedown of manufactures and vendors. Those products which are most reliable and cost-effective will prevail. Unfortunately,

some utilities will have made selections from companies who will disappear, or who's equipment, or treatment effectiveness will fall short. Additionally, it is likely that further technologic advances and cost reductions will occur over the next ten years. This timeframe corresponds to the remaining time estimated to for the MRWC service area to be "built-out".

MRWC believes that it is a reasonable approach to use the POU units for an interim period of 10 years, and then switch to a centralized arsenic treatment system. MRWC anticipates that within 10 years the growth of the community, and its corresponding water demand, will have stabilized and that MRWC will have centralized the location of storage and booster facilities. Financially, MRWC's draft budget estimates indicate that even at the relatively reasonable cost of \$15 per month per connection, \$130,000 could be accumulated over a ten year period. This fund would then be used to purchase a ten years hence, state-of-the-art centralized treatment plant, sized for the community with a reduced growth rate.

POU Implementation

MRWC proposes to use the KP-5 model Reverse Osmosis ("RO") unit from Watts/Premier, of Phoenix AZ. A unit would be installed at the kitchen sink of each home. The unit is a 5-stage filtration system, and has a capacity of 25 GPD. These systems are equipped with three pre filters, one 5 micron sediment and two 5 micron carbon blocks. Following the prefilters is the 25 GPD RO membrane, three gallon holding tank and a final 10 inch in-line polishing filter. These systems carry NSF International Certification for the reduction of arsenic, barium, cadmium, copper, cyst, hexavalent chromium, fluoride, lead, perchlorate, radium 226/228, selenium, TDS, trivalent chromium and turbidity. Arsenic reduction is approximately 99%

The KP-5 RO system is equipped with a total dissolved solids (TDS) monitoring faucet that reads the levels of TDS in the treated water and determines if the unit is working properly. TDS is an indicator of the performance of the RO membrane. Initially, the RO system should reduce on average 96% of the incoming TDS. Over time, the membrane will reduce less of this incoming TDS, and eventually will need to be replaced. Watts Premier estimates the life of an RO to be between two and five years, depending upon the quality of the incoming water.

If the metering faucet senses that the TDS level through the RO membrane has been reduced below the set level, the light on the faucet will turn from green to red. The red light does not mean that the system is not removing any of the incoming water contaminants. Rather, the RO system is still removing minimally 80% of the incoming water

contaminants; however, it is signaling to the user that it is time to service the unit .

The RO requires a minimum inlet pressure of 40 psi. Homes with less than 40 psi service pressure can be equipped with a small RO booster pump

Installation Plan

MRWC would begin the program with a Public Information/Outreach program to inform customers of the implementation plan. Information would be presented at least one public meeting and in several newsletters.

Homeowners would be contacted for scheduling of their installation, and an individual pre-installation home visit would be requested to determine if there are any special conditions, and answer any questions.

In order to meet the January, 26, 2006 deadline, MRWC proposes to contract with one or more licensed plumbers to perform the initial installation effort in existing homes. New homes being built after the initial effort will be provided with a unit for the owner/builder to install, otherwise MRWC personnel will install the unit prior to occupancy.

O&M Schedule

All POU units will receive an annual service call. MRWC Staff will take an arsenic compliance sample if required, check unit indicators and system operation, and change the pre and post RO filters. The RO membrane itself will be replaced if needed, and this is anticipated every 3 years.

Monitoring and Compliance Reporting

As MRWC understands ADEQ's preliminary monitoring requirements, 1/3 of all POU units will have to be tested for arsenic concentration every 3 years. Thus, all POU units would have to be tested at least every 9-year cycle.

In addition to the above required monitoring, MRWC believes it is important to monitor the system influent concentrations as well as the POU performance annually, thus MRWC proposes to test each POE and 10 randomly selected POU units annually.

Recordkeeping and reporting will conform to ADEQ requirements. ADEQ is currently producing documentation that will provide ruling on how systems will implement the POU program. MRWC will follow these guidelines set by ADEQ.

Customer Issues

At this point, MRWC does not know if 100% of customers will allow installation of the POU units. It is expected that with an enthusiastic outreach/education program the participation rate will be high. For those recalcitrant customers, MRWC favors termination of water service, unless there is some liability protection provided by State or Federal law. MRWC looks forward to ADEQ and ACC for guidance on this issue.

Financial aspects of plan

For initial funding of the arsenic treatment plan, MRWC intends to apply for a WIFA loan. The current estimated loan request is \$50,000. Terms and timing of the loan are largely unknown to MRWC. However, for budget estimating it was assumed to have a 4% interest rate, and a term of 10 years.

A request for an arsenic treatment surcharge will also be made to ACC, as was presented last year at the Arsenic Masterplan Workshop held in Prescott, AZ. On the basis of cost estimates from the POU unit manufacturer, the ADEQ POU pilot studies and MRWC estimates, an arsenic treatment surcharge in the amount of \$15 per service connection per month is proposed.

An annual budget for the Arsenic Treatment Plan by year is presented in Table 1. Major assumptions in the budget include:

- Initial funding of \$50,000
- Loan payments of \$6074 per year
- A system growth rate of 20 new connections per year
- A surcharge of \$15 per service connection per month

As can be noted in the budget (Table 1), the program maintains a positive balance throughout the 10-year plan, and ends with approximately \$130,000. MRWC proposes that these funds be used to procure and operate a new centralized treatment plant, and any remaining funds used in the O&M, and/or adjustment to rates charged to customers.

MRWC is currently investigating the possibility of a centralized arsenic removal treatment system and anticipate potential changes to the above presented Arsenic Treatment Plan. Research and water analysis is presently underway.

Appendix – Table 1

TABLE 1
Montezuma Rimrock Water Co LLC
Arsenic Treatment Plan
Annual Budget 2006 - 2016

Operative Year	2005	2006	1	2	3	4	5	6	7	8	9	10	Program
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTALS
Service Connections	145	165	185	205	225	245	265	285	305	325	345		
LOANS AND ACC SURCHARGE REVENUE													
WIFA Funding	50000	0	0	0	0	0	0	0	0	0	0	0	50000
Annual Revenue from Arsenic Fee (\$15/Mo/Connection)	0	28700	33300	36900	40500	44100	47700	51300	54900	58500	62100	65700	459000
TOTAL FUNDS	\$50,000	\$28,700	\$33,300	\$36,900	\$40,500	\$44,100	\$47,700	\$51,300	\$54,900	\$58,500	\$62,100	\$65,700	\$508,000
TREATMENT PLAN EXPENDITURES													
INFRASTRUCTURE COSTS													
Cost for POU units (\$210/unit)	30450	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	\$72,450
Labor to install POU Units (\$75/unit)	10875	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	\$25,875
OPERATION & MAINTENANCE COSTS													
Parts for Annual POU Service Call (\$35/unit)	0	0	5775	6475	7175	7875	8575	9275	9975	10675	11375	12075	\$77,175
Labor for Annual POU Service Call (\$40/unit)	0	0	6600	7400	8200	9000	9800	10600	11400	12200	13000	13800	\$88,200
Parts for Triennial RO Membrane Replacement(\$48/unit)	0	0	0	7920	960	960	960	960	960	960	960	960	\$8,880
MONITORING & REPORTING COSTS													
Analytical Costs (1/3 of POU Units every 3 years @\$15)	0	0	0	3075	0	0	3975	0	0	4875	0	0	\$11,925
MRWC Electric Analytical Costs (2 POE's + 10 Units)	0	180	180	0	180	180	0	180	180	0	180	180	\$1,260
Field Technician (\$15/Hr * 1Hr/Sample)	0	180	180	1025	180	180	1325	180	180	1825	180	180	\$5,235
Environmental Scientist (\$30/Hr)	0	300	300	1200	300	300	1200	300	300	1200	300	300	\$5,700
Total Treatment Plan Costs	41325	6360	18735	32795	22895	24195	39455	27195	28695	45155	31895	31895	\$318,300
WIFA Loan Payments P+1 (4% over 10 Years)	0	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	6074.76	\$60,747.6
TOTAL EXPENDITURES	\$41,325	\$12,435	\$24,810	\$38,870	\$28,770	\$30,270	\$45,530	\$33,270	\$34,770	\$51,230	\$37,770	\$37,770	\$379,048
BALANCE	\$8,675	\$25,940	\$34,430	\$32,461	\$44,191	\$55,021	\$60,191	\$76,222	\$98,352	\$105,622	\$129,952	\$129,952	