



Water Quality TF Agenda Number 2.e.

Water Quality and Estimated Costs for Recovery and Treatment at TDRP


Water Quality Standards Task Force
Laura Grignano, CAP
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Tonopah Desert Recharge Project



- Built in 2006
- 220 acres; 19 basins
- 150,000 AF/yr. capacity



Factors Affecting Water Quality-TDRP

- Influenced by relative portions of native groundwater and CAP water
- Will change as recovery operations progress
- Groundwater sampling indicates that arsenic and fluoride exceed drinking water standards
- Assumed that recovered water will need to be treated to comply with standards set

Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



Study's Assumed Recovery Volumes

Phases and Assumed Recovery Volumes for TDRP Recovery Plan Update

Recovery Phase	Dates	Annual Recovery Volume, in AF	Cumulative Total Recovery Volume, in AF
Phase I	2020-2029 (10 years)	10,000	100,000
Phase II	2030-2039 (10 years)	20,000	300,000
Phase III	2040-2045 (6 years)	30,000	480,000

Information provided by CAP

Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



Water Quality at TDRP

Projected Concentrations of Arsenic and Fluoride in Recovered Water (mg/L)

Constituent	Projected Concentration in 2020	Projected Concentration in 2045	Average Concentration in CAP Water	EPA MCL
Arsenic	0.016	0.041	0.0026	0.010
Fluoride	2.3	5.6	0.32	4.0

Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



Treatment Options Explored

- Two treatment options were evaluated as the most applicable for the TDRP site
 - Option 1 - **Coagulation-assisted microfiltration**
 - Option 2 - **Iron-based sorbent media filter** for arsenic removal followed by **activated alumina media filter** for fluoride removal
- Pilot testing will need to be done to determine which option is technically feasible, if Option 1 is feasible then this method is preferred due to lower costs

Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



Estimated Costs

- Cost to build and operate recovery wellfield for 26 years without treatment **\$67,500,000**
\$141/AF
- Cost to build and operate recovery wellfield for 26 years with treatment
 - Option 1 **\$143,500,000**
\$299/AF
 - Option 2 **\$213,000,000**
\$444/AF

Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



Capital and O&M - Treatment

Treatment Option	Capital	O&M	Total
Treatment 1	\$117/AF	\$41/AF	\$158/AF
Treatment 2	\$105/AF	\$198/AF ¹	\$303/AF

¹ Activated alumina produces a waste stream that results in significant costs

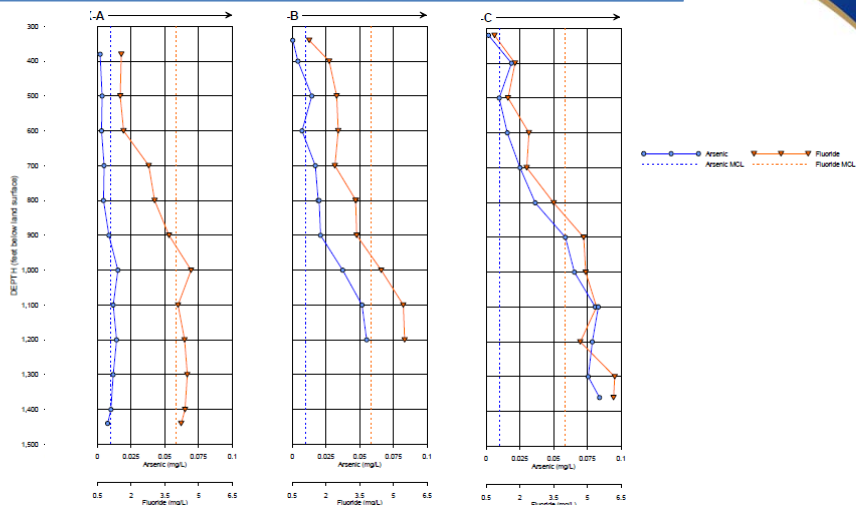
Source: Report - Recovery Plan Update for TDRP, Montgomery & Associates
August 5, 2015



TDRP – Borehole Drilling 2016



2016 – Arsenic and Fluoride Data



Source: Report – TDRP 2016 Exploration Drilling, Montgomery & Associates
January 5, 2017



Questions?

