

I. Manganese and Water Quality

Location	Concentration (mg/l)			
	SMCL ^A	Total	Dissolved	Particulate
Bulter Raw	0.05	0.10	0.10	0.00
Butler Finished		0.09	0.03	0.06
Harmony Outside Raw		0.25	0.25	0.00
Harmony Outside Finished		0.25	0.23	0.02
Average Distribution System (pre-flush) ^B		0.27	0.14	0.13
Average Distribution System (during-flush)		0.79	0.15	0.64
Note: ^A EPA's secondary maximum contaminant level for manganese. ^B This average is skewed by a total manganese concentration at one location of 0.71 mg/l at a particularly low part of the distribution system. Without that result, the average total, dissolved, and particulate manganese concentrations are 0.17 mg/l, 0.14 mg/l, and 0.03 mg/l respectively.				

Table 8 - Manganese Concentration Summary.

Ranked Solutions After Testing And Analysis

- 1) No or reduced manganese in source water -> new source of supply
- 2) Remove manganese from source water -> treatment alternatives
- 3) Sequester and flush -> Refine current sequestering and flushing programs.
 - a. Aquamag dosing and location
 - b. Unidirectional flushing program

II. Water System Capacity

- 1) Currently Serve - 330 Equivalent Dwelling Units (EDUs)
- 2) Remaining Capacity – 650 EDUs
- 3) Total Capacity – 980 EDUs

Number of EDUs Added ^D	Total Number of EDUs	Redundant Source Capacity (gpm) ^A	Maximum Day Demand (gpm) ^B	Peak Hour Demand (gpm) ^C	Notes and Facility Planning Recommendation
0	330	296	80	175	Add redundant fire flow capacity ^E .
100	430		104	228	Complete Butler Booster Station medium demand pump redundancy project ^E .
228	558		135	296	Peak Hour Demand equals existing redundant source pumping capacity. Surplus storage becomes equalization storage to satisfy Peak Hour Demand. Add additional source of supply ^E .
300	630		153	334	
360	690		167	366	End of planning period.
400	730		177	387	
500	830		201	440	
600	930		225	493	
650	980		238	520	Without an additional source of supply, surplus storage would be exhausted at this point. Add additional source of supply, if not already installed, or add additional storage.
<p>Note:</p> <p>^ABased on well supply and largest well out of service.</p> <p>^BMaximum day demand equals the total number of EDUs multiplied by 0.24.</p> <p>^CPeak hour demand equals the total number of EDUs multiplied by 0.53.</p> <p>^DNote that as of the writing of this report the City estimates it has ~192 entitled but not built out EDUs. The majority of these EDUs are in the entitled Royal Ridge and Greenleaf Air Ranch developments according to the City's tracking of potential future water system connections. Accessory Dwelling Units are allowed in the City and are not included in this count.</p> <p>^EThese projects are not strictly required to meet the Drinking Water Rules but offer significant benefits for overall system operation, maintenance, and reliability.</p>					

Table 15 - Facility Planning Recommendations.

III. Sewer System Capacity

