



WATER QUALITY MANAGEMENT PROGRAM 2008 PROGRAM REPORT

This annual report summarizes 2008 water quality monitoring data and provides an update on Zone 7 Water Agency's Water Quality Management Program (WQMP), which the agency established with its retailers in 2003. The WQMP provides the basis for identifying ways to meet anticipated future regulations, reduce public health risks, and improve the delivered water quality - especially its taste, odor and hardness, by effectively managing water quality issues, guiding operations, upgrading or improving facilities, and providing new facilities when necessary.

WQMP WATER QUALITY TARGETS are internal goals that Zone 7 applies to specific constituents that affect potable and non-potable water quality. These targets set goals that are significantly more stringent than existing regulations. Some of these constituents have been identified as "key parameters of concern" based upon the concerns expressed by our customers and the levels found in our local drinking water supplies, and anticipated changes in regulations. In 2008, Zone 7 met all of its non-potable water quality targets, and primary and health-related drinking water targets. However, some of our aesthetic water quality and operational targets were not met consistently, including those for drinking water hardness, total dissolved solids, chlorinous odor, appearance, chloride, chloramine residuals, and free ammonia residuals.

HOW ARE WE MEETING WQMP WATER QUALITY TARGETS? Zone 7 continued to work on and support operational and planning activities that help meet our water quality targets and ensure that the service area has enough water. In addition to ongoing internal agency planning, we also work closely with various organizations to protect source water at the State level. Water quality improvement projects were identified in Zone 7's Capital Improvement Program (CIP). A critical capital project, the Mocho Groundwater Demineralization Plant, will be completed this year. Other key improvement projects are anticipated for later completion (permanent Taste and Odor Treatment at Del Valle and Patterson Pass Water Treatment Plants which will be scheduled based on estimated costs and funding availability; and the next phase of demineralization planned for 2018). In the interim, Zone 7 will continue seasonal powdered activated carbon (PAC) feed at Del Valle and Patterson Pass treatment plants to assist in reducing levels of odor-causing compounds. It is exciting to note that the agency is under consideration for the AWWA Partnership for Safe Water Ten-Year Director's Award. This award is bestowed by the AWWA to recognize water treatment plants that meet all their performance goals for a ten year consecutive period.

HOW TO READ WATER QUALITY TARGET GRAPHS Each bar on the chart represents the range of measurements for various constituents taken during 2008. The diamonds represent the average values over the year. Water quality targets or ranges are highlighted in green. Any maximum contaminant level (MCL) set by state and federal water quality regulations are highlighted by the yellow bar at the top of each chart, where available. The length of the bars represents the total range of validated data.

DEFINITIONS

MCL: *Maximum Contaminant Level, the highest level of a contaminant that is allowed in drinking water established by the U.S. Environmental Protection Agency and the California Department of Public Health. Primary MCLs are enforceable standards based on health effects. Secondary MCLs are based on aesthetic qualities such as taste, odor, and appearance;*

AWWA: *American Water Works Association;*

mg/L: *milligrams per liter, a unit expressing the concentration of chemical constituents in solution as weight (milligram) of solute per unit volume (liter) of water; equivalent to one part per million;*

µg/L: *micrograms per liter; equivalent to one part per billion;*

pCi/L: *picoCuries per liter; a measure of radioactivity;*

Table 1. Status of Potable Water Quality Targets

Key Parameters of Concern	Water Quality Targets ¹	Target Currently Met	Requires Optimization	Requires Capital Investment	Supplemental Table/Figure
Appearance	Minimize air bubbles/cloudiness events ⁴	✓			Table 2b
Arsenic (µg/L)	<5	✓			Figure 1
Chloramines					
Total Residual (mg/L as Cl ₂)	2.0 - 2.5 from water treatment plants (WTPs), wells will be operated to be as close to this target range as feasible	✓ ²	✓	✓	Figure 6
Cl ₂ :NH ₃ -N	4:1 to 5:1	✓ ³			
Minimize odor	Chloramine above pH 8.0 for WTPs	✓			
Prevent Nitrification:					
Free Ammonia Residual (mg/L as N)	<0.15 at retailer turnouts	✓ ²	✓	✓	Figure 7
Nitrite (mg/L as N) ⁷	<0.02	NA			
Consistency	Provide consistent chloramine residual at all wells and WTPs	✓ ²	✓	✓	Figure 6
Chloride (mg/L)	<100	✓ ²		✓	Figure 3
Chromium VI ^{Cr6+} (µg/L)	<20 (pending potential regulations)	✓			Figure 2
Cryptosporidium	4-log removal, including multi-barrier control	✓			
Disinfection By-Products (DBPs)					
Maximum leaving WTP	Total Trihalomethanes (TTHMs) <64 µg/L	✓			Figure 9a
	Five Haloacetic acids (HAA5) <48 µg/L	✓			Figure 9b
Running Annual Average (RAA) DBPs at Retailer Turnouts	TTHM <40 µg/L	✓			Figure 8a
	HAA5 <30 µg/L	✓			Figure 8b
N-Nitrosodimethylamine (NDMA) (ng/L)	<10 (pending potential regulations)	✓ ⁶			
Hardness (mg/L as CaCO₃)	<150		✓	✓ ⁵	Figure 5
pH (Units)	non-corrosive	✓			
	pH leaving WTP at +/- 0.2 units of target	✓			
Radon (pCi/L)	<1000 (pending potential regulations)	NA			
Taste and Odor (earthy/musty)					
Odor Threshold Concentrations					
2-Methyisoborneol (MIB)	9 ng/L	✓	✓	✓	
Geosmin	4 ng/L	✓	✓	✓	
Events ⁴	No events	✓	✓	✓	Table 2a
Total Dissolved Solids (TDS) (mg/L)	<500	✓ ²	✓	✓	Figure 4

¹ Targets are either at the secondary MCLs or 80% of the primary MCLs except for the key parameters of concern in the table above.

² Averages met target.

³ Ratio is adjusted to meet target free ammonia residual.

⁴ An event is defined as when three or more similar complaints are received in a 7-day period. There were no events in 2008

⁵ Averages met target for CWS and Livermore only.

⁶ All NDMA detections were <10 ng/L

⁷ Monitoring discontinued after retailer meeting in 2006. Future monitoring to be conducted as requested by retailers.

Table 2a. Retail Customer Water Quality Complaints reported to Zone 7*

Parameter	Dublin San Ramon Services District (DSRSD)	City of Pleasanton	Cal Water Service	City of Livermore	Totals
Odor					
chlorinous		8			8
earthy/musty		1		1	2
unspecified/other		7		1	8
Colored/Murky					0
Turbidity/Suspended Solids				1	1
Salty Taste					0
Hardness		13			13
Others					0

Table 2b. Cloudy Water Complaints

Retailer	Cloudy/Air
DSRSD	1
Pleasanton	1
CWS	
Livermore	

Table 3. Status of Non-Potable Water Quality Targets

Key Parameters of Concern	Units	Maximum Applied Level/Targets	Average Targets	SBA		
		Vineyards		Avg	Min	Max
Boron**	mg/L	<1	<0.5	0.22	<0.1	0.31
Chloride	mg/L	<200	<125	73	22	121
Emitter Clogging Potential Ca+Mg+	mEq/L	3 to 4	3 to 4	2.4	1.6	3.2
Available Nitrogen from Nitrate	mg/L as N	-	<10 during summer	0.7	0.1	1.0
pH	---	-	<8.0	7.7	7.2	8.5
Sodium	mg/L	<200	<100	58	24	86
Total Dissolved Solids	mg/L	-	<650	289	182	389

*The complaints are reported to Zone 7 by the end of each month and are presumed to be directly related to the Zone 7 water supply.

The 2008 reporting format differs from the 2007 report in which all complaints, regardless of their relation to Zone 7, were reported in the Report Card.

**Boron minimum reporting limit (MRL) is at 0.10 mg/L

Figure 1. Arsenic

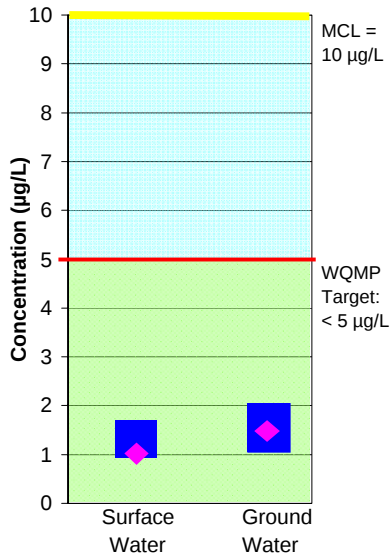


Figure 2. Total Chromium

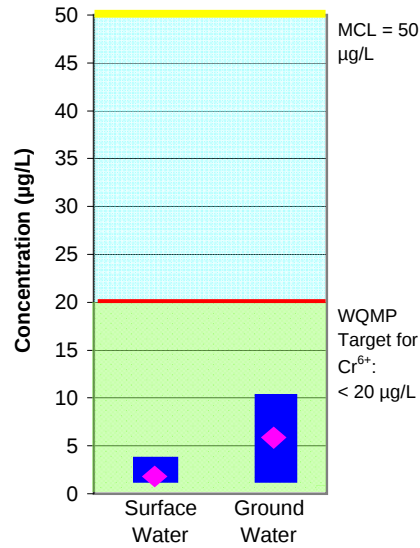
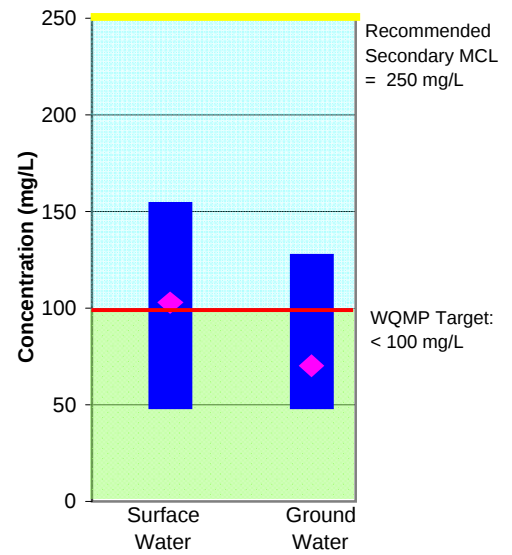
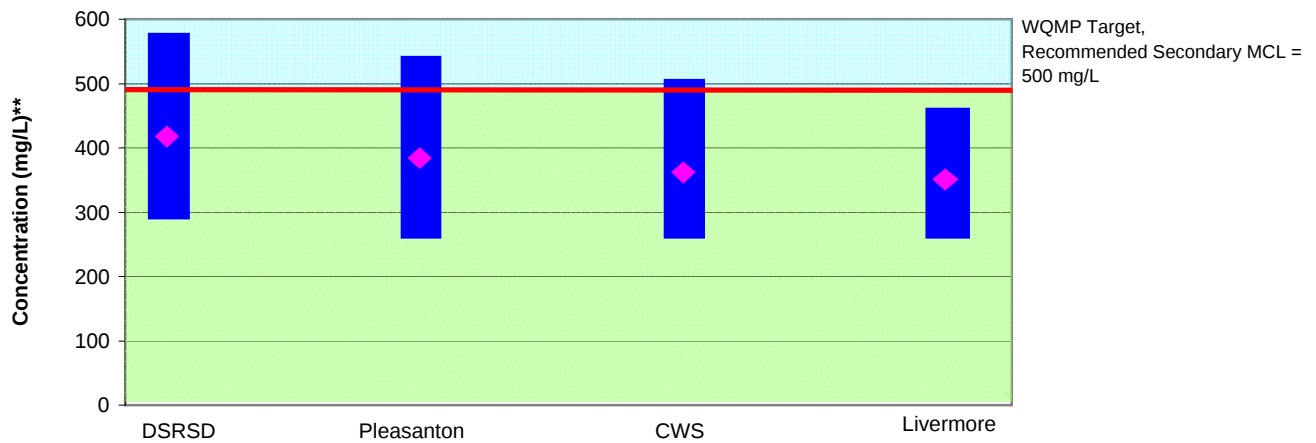


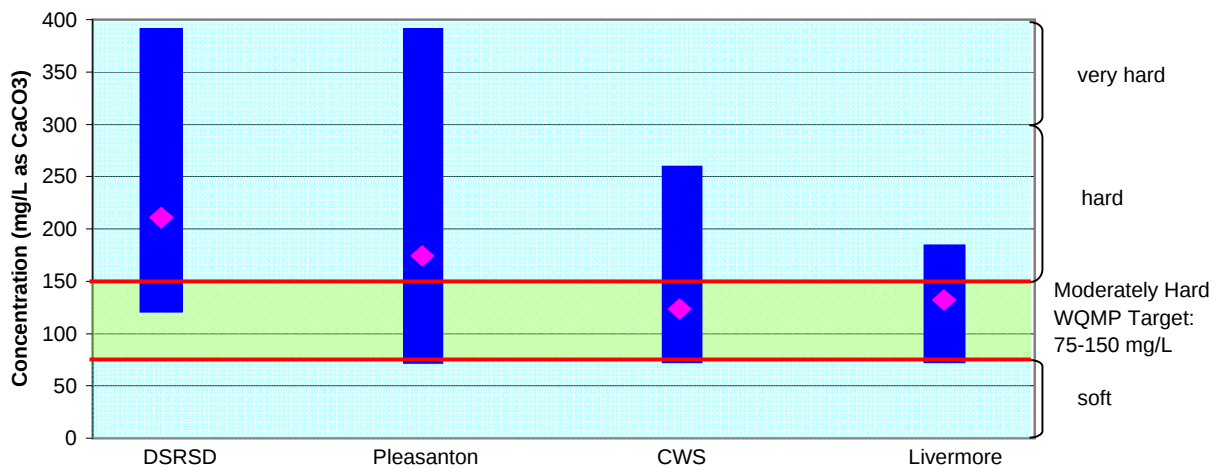
Figure 3. Chloride



**Figure 4. Total Dissolved Solids (TDS)*, **
Retailer Turnout Samples**



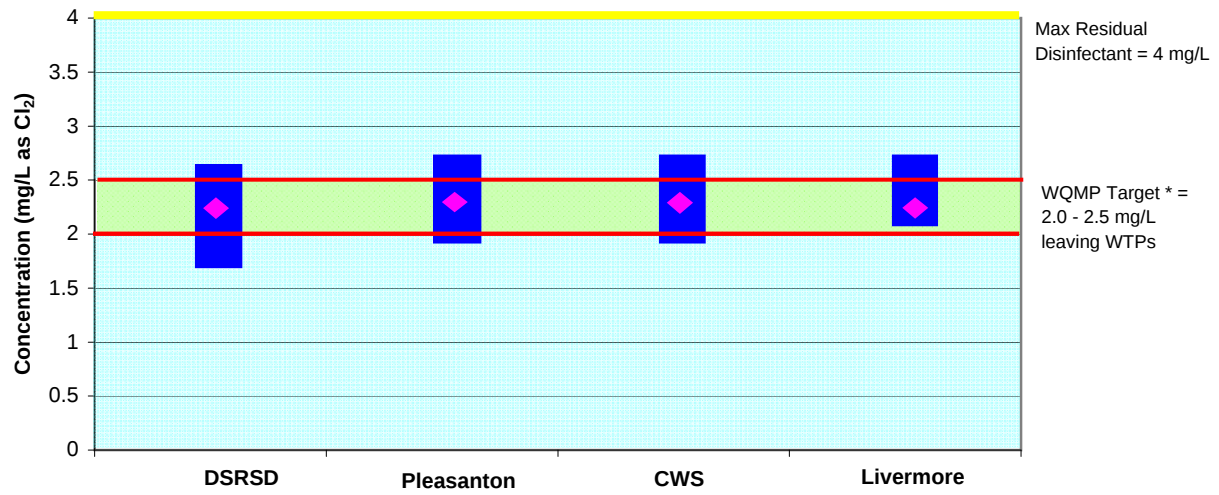
**Figure 5. Total Hardness*
Retailer Turnout Samples**



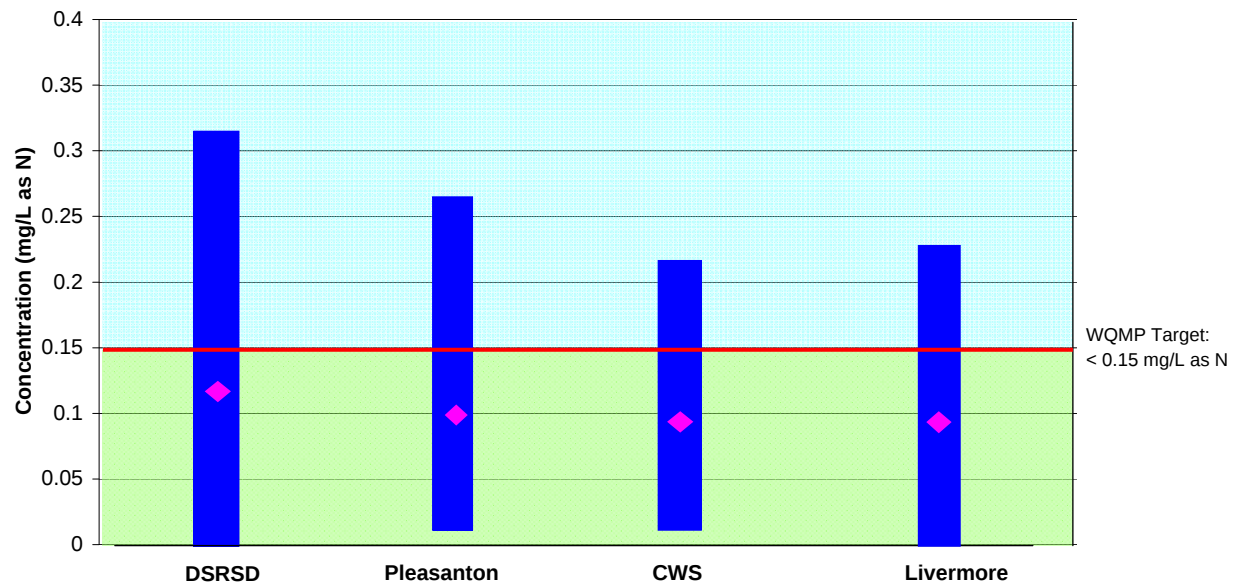
*Average values are flow weighted

**TDS is estimated from electrical conductivity readings

**Figure 6. Chloramines*, **
Retailer Turnout Samples**



**Figure 7. Free Ammonia*
Retailer Turnout Samples**



* Samples were taken once a week for each retailer

** Lower residuals are mostly from groundwater sources. Residuals leaving WTPs are mostly within the target range except for a few brief incidents during a plant startup.

Figure 8a. Total Trihalomethanes (TTHMs)^{} ******
Retailer Turnout Samples**

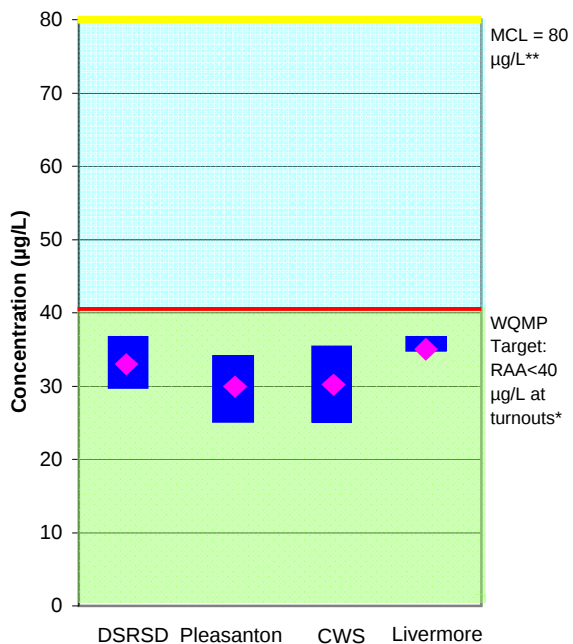


Figure 8b. Five Haloacetic Acids (HAA5)^{} ******
Retailer Turnout Samples**

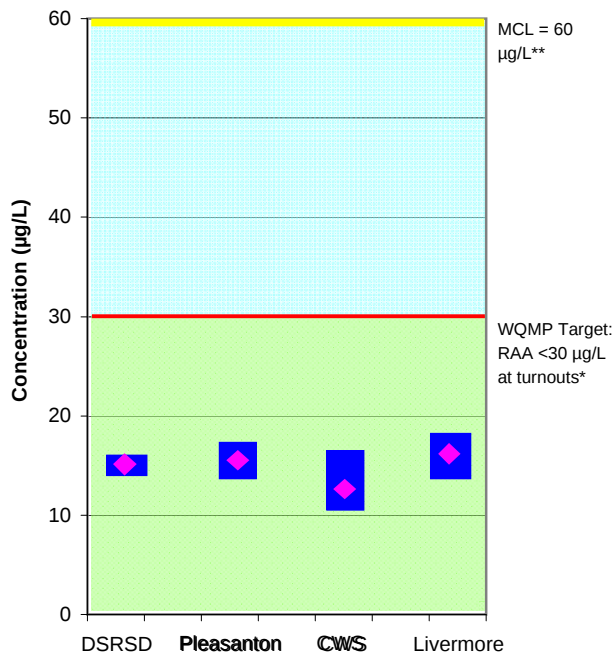


Figure 9a. Total Trihalomethanes (TTHMs)^{*}
WTP Effluent Samples**

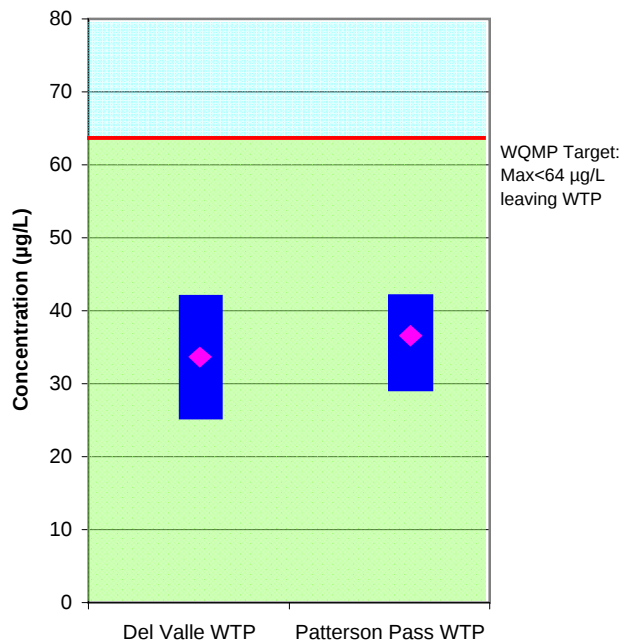
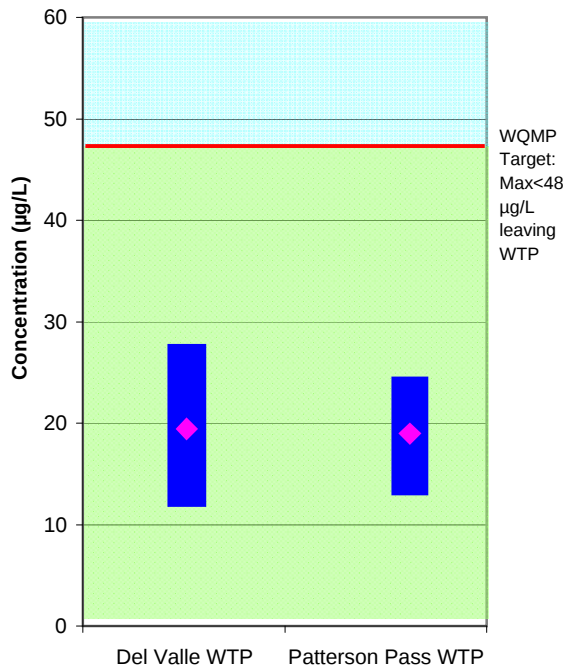


Figure 9b. Five Haloacetic Acids (HAA5s)^{*}
WTP Effluent Samples**



* Quarterly running annual average (RAA) DBPs at Retailer's turnouts.

** Retailer MCL compliance for TTHMs/HAA5s is determined by system-wide RAA of quarterly samples.

*** There is no MCL for TTHMs/HAA5s leaving WTP