Inspection

State of California—Health and Human Services Agency
California Department of Public Health

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

December 19, 2012

Steve Samaras
Interim Operations Manager
San Bernardino County Special Districts
Department - Water / Sanitation Division
P.O. Box 5004
Victorville, CA 92395-5004

Dear Mr. Samaras:

2012 SANITARY SURVEY OF CSA 70, ZONE W-1 LANDERS (SYSTEM NO. 3610060)

On October 23, 2012, Mr. Andrés Aguirre, an engineer with this office, completed a sanitary survey of the domestic water supply facilities and operations of San Bernardino County Service Area 70, Zone W-1 Landers (CSA 70 W-1). A completed Sanitary Survey Report and deficiency list are enclosed documenting the findings of the inspection. Overall, the water system facilities were found adequately maintained but several deficiencies were found in monitoring and operations. This letter will briefly discuss some of the deficiencies found as well as other findings of the inspection.

Water Quality Monitoring

CSA 70 W-1 has several monitoring deficiencies that need to be addressed. Nitrate is past due for Wells 1 and 2, EDB/DBCP is past due for Well 2, and distribution lead and copper is past due. A Notice of Violation was issued for failure to collect lead and copper samples. A minimum of ten lead and copper samples will need to be collected between June and September 2013.

For source monitoring, all wells have completed initial gross alpha and radium 228 monitoring. Wells 1, 2, and 3 are now assigned a gross alpha monitoring frequency of once every nine years and radium 228 monitoring is waived for all sources.

There is no current approved bacteriological or chemical monitoring plan on file. CSA 70 W-1 sent a plan dated October 14, 2011 and titled *Department of Public Health Bacteriological Sample Siting Plan and Groundwater Rule for County Service Area 70 W1 CA3610060*; however, this plan has not been approved.

Comments on bacteriological monitoring plan were provided in the February 29, 2012 e-mail to Steve Samaras. It is recommended that chlorine residual sample locations and frequency be noted. Updated frequencies noted in the sanitary survey report should be noted as well as the Department letter dated January 28, 2011.

Operations/Management

The Special Districts Department has adequately certified distribution operators and treatment operators. Review of the CSA 70 W-1 2011-2012 Adopted Budget shows that total revenue requirements are not met with financing sources. However, wells, storage tanks, boosters, and treatment facilities were found in sanitary conditions indicating that funding for facility maintenance is adequate.

Distribution maintenance activities, such as flushing and valve exercise have not been completed and there are several monitoring deficiencies. The Special District staff is shared with other divisions in addition to water. There may not be adequate staffing in operations and management as these activities and monitoring have not been addressed. Need to review organization chart and duties.

Sources

All well sites were visited and all were found to be in sanitary conditions with minor corrections needed as noted in the deficiency list. CSA 70 W-1 is in compliance with the source capacity requirements of the Waterworks Standards found in Title 22, California Code of Regulations (CCR), Section 64554.

Distribution

Since 2005 CSA 70 W-1 has not exercised valves every two years per its plan. CSA 70 W-1 needs to ensure that all valves are exercised within two years. It is recommended that system crucial valves be exercised annually. Dead ends should be flushed annually at a minimum.

Please review the enclosed survey report, data sheets, and attachments and provide changes or comments as needed. A written response to this letter is requested by **January 30, 2013** along with a plan to correct the deficiencies indicated in the deficiency list. Please note the dates of correction, or planned dates of correction, of the deficiencies outlined in the deficiency list and return a copy to the Department along with your reply.

The Department greatly appreciates your assistance and that of Mr. Gerald Palmer during and after the inspection. If you have any questions regarding this letter or report, please contact Andrés Aguirre at (909) 383-4308 or by e-mail at andres.aguirre@cdph.ca.gov.

Sincerely,

Sean F. McCarthy, P.E.
Senior Sanitary Engineer
San Bernardino District

Enclosure

California Department of Public Health
Division of Drinking Water
Sanitary Survey Report

Purveyor: San Bernardino County Service Area 70, Zone W-1 – Landers System No. 3610060
Person(s) Contacted/Position: Gerald Palmer, Steve Samaras/Interim Operations Manager
Date of Inspection(s): October 23, 2012 Reviewing Engineer: Andrés Aguirre
Last A. I. Date: August 28, 2002 (Vlad Rakhamimov) District Engineer: Sean McCarthy

A. INTRODUCTION

1. Permit Status (Date Issued/Amendment Purpose)

Full: Permit No. 83-018 issued March 15, 1983.
Amendment(s): One amendment, No. 1, issued March 23, 2000 to add Well 3 to system.
Are the permit provisions complied with? No. Permit condition 2 to permit amendment 1 requested to raise the Well 3 pedestal at least 12 inches at the next refurbishment.
Is the permit up to date? Yes
List Data Sheets on file (permit, files, etc.) Wells, reservoirs, booster, chlorination, and distribution.

2. Changes in System

a) Since last annual inspection:

2002-2008 – No changes reported.
2009 – Installed new security system.
2010 – No changes reported.
2011 – New 500 kW diesel generator at R-1 site.
b) Planned future changes: Rehabilitate Pressure Reduction Stations and R-2 Tank A.

3. Consumer and Production Data

No. of service connections: 647 total (193 inactive) as noted in 2011 Annual Report.
No. with meters: All connections are metered.
Approx. population served: 1,495 (2011 Annual Report)

Description of service area: The County of San Bernardino Special Districts Department (County) operates the County Service Area 70, Zone W-1 (CSA 70 W-1) water system. The system serves the unincorporated desert community of Landers, approximately [redacted] Yucca Valley. CSA 70 W-1 consists of 9 ± square miles and consists of primarily residential five-acre parcels.

Table 1: Production Data for Past Ten Years (2002-2011)

Year	Maximum Day, MG	Maximum Month, MG	Month	Annual Produced, MG
2011	0.31	4.99	July	46.54
2010	0.44	6.83	August	53.30
2009	0.41	6.74	August	54.26
2008	NA	NA	NA	NA
2007	0.45	8.21	--	72.45
2006	0.39	7.93	August	66.79
2005	0.34	7.98	July	62.14
2004	0.4	8.17	July	65.12
2003	0.381	7.79	July	53.6
2002	0.49	8.2	June	63.9

Notes: Source is Annual Reports submitted to the Department. NA = not available.

B. SOURCE DATA

Table 2: CSA 70 W-1 Landers Sources

Sources	Status	Capacity (gpm)	Comments
Groundwater			
Well 1	Active	238	
Well 2	Active	189	
Well 3	Active	346	
	TOTAL	773	1.1 MGD
Surface Water – NONE			
Connections with other systems – NONE			

Note: Capacities provided by Gerald Palmer during survey. Need recent pump tests.

Discussion and Appraisal: (i.e. Does source capacity comply with Waterworks Standards?)

The Waterworks Standards require in Title 22, California Code of Regulations (CCR), Section 64554 (a) that at all times a public water system shall meet the Maximum Day Demand (MDD) with source capacity alone. The MDD is defined as the highest day demand in the previous ten years and if unavailable, an estimate may be made using the maximum month, as described in Title 22, CCR, Section 64554 (b) (2), or maximum annual usage, as described in Title 22, CCR, Section 64554 (b) (3).

For compliance determination, source production is considered equal to system demand. System demand is the water needed to supply customers and it includes customer demand, system losses, and maintenance activities (i.e. flushing). Available production information from the previous ten years is summarized in **Table 1**. The maximum demand was in 2002 at 0.49 MGD.

The current source capacity is 1.1 MGD (**Table 2**) which adequately meets the MDD. For reliability, it is recommended that a water system be able to meet the MDD with the highest capacity source offline. With Well 3 offline, the capacity is 0.61 MGD (427 gpm) which would still meet the MDD. It should be noted that these estimates do not take in to account fire flow.

Drinking Water Source Assessment and Protection (DWSAP)

The Department completed a Drinking Water Source Assessment and Protection (DWSAP) survey with County assistance in June 21, 2002 for existing wells. The Department issued a vulnerability summary in the letter dated September 18, 2002. A summary of vulnerabilities is shown in the table below with concentrations of contaminants that may be associated with possible contaminating activities (PCA) at the time of the assessment and recent results.

Table 3: Summary of Vulnerability to Possible Contaminating Activities (PCA)

Source	Most Vulnerable Activities (PCA)	Chemical Detected as of 2002	Chemical Detected as of Oct. 2012
Well 1	Septic systems – low density Above ground storage tanks Wells – water supply	Nitrate 7.3 mg/L Arsenic 4.5 µg/L	Nitrate 5.7 mg/L Arsenic 4.4 µg/L
Well 2	Septic systems – low density Above ground storage tanks Wells – water supply	Nitrate 8.8 mg/L Arsenic 4.7 µg/L	Nitrate 5.9 mg/L Arsenic 4.1 µg/L
Well 3	Septic systems – low density Above ground storage tanks Wells – water supply	Nitrate 8.8 mg/L Arsenic 5.2 µg/L	Nitrate 5.6 mg/L Arsenic 4.4 µg/L

Notes: Nitrate reported as mg/L NO3.

Nitrate was detected at concentrations well below the nitrate (as NO3) MCL of 45 mg/L. Primary sources of organic nitrates include human sewage and livestock manure, especially from feedlots. The primary inorganic nitrates which may contaminate drinking water are potassium nitrate and ammonium nitrate both of which are widely used as

fertilizers.[1] PCA which may be associated with the detection of nitrate are septic systems. Concentrations have not changed significantly to indicate a vulnerability.

Arsenic was detected at concentrations below the primary arsenic MCL of 10 µg/L. Arsenic can be naturally occurring from erosion of deposits but has also been used as wood preservative, as an alloying element in ammunition and solders, as an anti-friction additive to metals used for bearings, in electronics production, and to strengthen lead-acid storage battery grids[2]. Historically, it has been used in herbicides and pesticides. No PCA has been associated with arsenic and is very likely naturally occurring. Concentrations have not changed significantly to indicate a vulnerability.

All well sites were visited and all were found to be in sanitary conditions with minor corrections needed as noted in the deficiency list. Hose bib vacuum breakers are needed on hose bibs in Wells 1 and 2. Well 3 has a gap in the well cap that should be adequately sealed with an NSF approved epoxy. From the chemicals monitored and the source assessment, the source wells are not considered immediately vulnerable to contamination. In regards to contamination by organic contaminants, there has been no detection or associated PCA and the sources are considered non-vulnerable.

C. TREATMENT

1. Surface Water Sources – NONE

2. Groundwater Sources

Is continuous disinfection provided? CSA 70 W-1 provides continuous chlorination for all its wells using 12.5 percent sodium hypochlorite at each wellhead. Diaphragm electronic metering pumps are used and are set to dose at 0.9 to 1.9 mg/L as found during the survey. CSA 70 W-1 did not provide information on target distribution residual. Specific installation data is noted in the attached chlorination data sheets.

If disinfection is not provided, are provisions and connections for emergency chlorination provided per Office of Drinking Water guidelines? The Department does not have an emergency chlorination plan on file. CSA 70 W-1 has continuous chlorination. It is recommended that a plan de developed for emergencies and main disinfection.

Discussion & Appraisal: The chlorination facilities were found to be adequately housed and in sanitary conditions. Chlorination facilities are checked daily by the Special Districts Staff. It is recommended that an emergency chlorination plan be developed, if

[1] USEPA, *National Primary Drinking Water Regulations: Contaminant Specific Fact Sheets, Inorganic Chemicals, Consumer Version.* EPA 811-F-95-002-C, October 1995

[2] Information on chemical/constituent use may be found in the Toxicological Profiles of the U.S. Department of Health and Human Services – Agency for Toxic Substances & Disease Registry, accessed October 2012 at <http://www.atsdr.cdc.gov/toxprofiles/index.asp>

not already completed, to assist when there is positive distribution bacti, main break, or other emergency. It was noted that the raw water sample tap and chlorination injection are downstream of the check valves. Recent raw bacteriological samples show there is a chlorine residual. The District should move raw sample taps upstream of chlorination to ensure raw results. Please forward information on target residual/where measured.

3. Other Treatment or Blending Facilities – NONE

4. Treatment System Classification: N/A

D. STORAGE DATA

Table 4: CSA W-1 Landers Storage Reservoirs

Reservoir Name	Type	Capacity (MG)	Zones Served	Notes/Comments
R-1	Bolted steel	0.21	Zones A and B	Gravity and booster forebay.
R-2A	Bolted steel	0.21	Zone B	Gravity storage.
R-2B	Bolted steel	0.21	Zone B	Gravity storage.
	Total Storage	**0.63 MG**		

Does storage capacity comply with Waterworks Standards?

The Waterworks Standards for source capacity require in Title 22, CCR, Section 64544 (a) (2) that systems with less than 1,000 service connections shall have storage capacity equal to or greater than the MDD, unless it can demonstrate it has an additional source of supply or emergency source connection to meet MDD.

The MDD is 0.49 MG, which compared with the total storage capacity of 0.63 MG is adequate. Tanks are not normally maintained full at all times. However, there is adequate source capacity and the storage capacity is in compliance with the storage capacity requirements of the Waterworks Standards. It should be noted that these estimates do not take into account fire flow or operational storage requirements and assume tank is full.

Are all data sheets completed and on file? Yes

Are Office of Drinking Water coating procedures adhered to? No coating required, tanks use galvanized steel for interior.

Discussion and Appraisal: (i.e. condition, coated, cleaned and/or inspected, plans for recoatings?) All tanks were inspected and all were visually checked in the interior. All tanks were found in sanitary conditions with the exterior in good condition. An interior inspection of the tanks found no floating debris, odor, or water clarity problems. Dust

buildup was noted in the upper inner wall of Tank R-1. Tank R-1 should be scheduled for a wash down when excessive build up is noted.

The tank sites are adequately fenced to prevent unauthorized access. CSA 70 W-1 does not have a formal written reservoir inspection program but does check on tanks on a regular basis. It is recommended that an interior inspection program be developed.

E. TRANSMISSION FACILITIES

Describe transmission facilities: Steel line from Tank R-1 booster station to R-2 tanks under adequate pressure. Line appears to go through the distribution system. Please confirm location of main.
Discussion and Appraisal: No problems have been reported. It is recommended if the line is a dedicated line that CSA 70 W-1 review provisions for isolating the main in the event of a major break.

F. DISTRIBUTION SYSTEM

1. Pressure Zones

Describe or tabulate:

Table 5: Pressure Zones in CSA 70 W-1 Landers

Pressure Zone	Pressure Range (psi)	Source Production (wells, pressure sta. etc.)	Storage Capacity (MG)	Number of Connections
Zone A	40-125	Wells 1, 2 and 3	0.42	
Zone B	40-120	Wells 1, 2 and PRVs from Zone A	0	
Zone C	40-100	PRVs from Zone B	0	

Notes: Pressure range from 2002 Annual Inspection. Please provide number of service connections.

2. Booster and Reducing Stations

(Describe or tabulate): CSA 70 W-1 has one booster station and five pressure reducing stations, one at the Tank R-1 site and four in distribution as summarized below. Facilities were found in sanitary conditions.

Table 6: Booster Stations in CSA W-1 Landers

Station	No.	Capacity / power	Status	From Zone	To Zone
R-1 Booster	1	200 gpm / 20 hp	Active	R-1	Zone A
	2	200 gpm / 20 hp	Active	R-1	Zone A

Note: Booster capacities from 5/6/1997 pump tests.

Table 7: Pressure Reducing Stations in CSA W-1 Landers

Station Name	Capacity (gpm)	Pressure Zone		Valve Size (in)	Valve Type	Setting (psi)
		Upstream	Downstream			
R-1 Site		Zone A	Zone A	12		
Kuna/Reche		Zone A	Zone B	6		
Napa/Bowman		Zone A	Zone B	12		50
Rocky Acres / Kuna		Zone B	Zone C	8		60
Scotch/Mitch		Zone B	Zone C	6		

Note: Please update as needed.

3. **Mains**
Describe or Tabulate:

Table 8: Main Composition

Material	Amount (ft or %)	Size	Class/Gage	Condition
Asbestos cement	244,750 ft	6"	Class 150	Installed 1983
Asbestos cement	14,000 ft	8"	Class 150	Installed 1983
Asbestos cement	~5,136 ft	12"		Installed 1983?
TOTAL	**~263,886 ft**	**50 mi**		

Source: Amounts of 6" and 8" from 2005 Annual Report to the Department. Class of 6" and 8" from 1983 permit. Amount of 12" estimated from undated *C.S.A. 70 Improvement Zone W-1 Water Distribution System* map received October 18, 2011. Please update as needed.

4. **Distribution System Classification:** The distribution system is classified as a D2 system as noted in the Department letter dated February 7, 2001. The classification is still current.

5. **Discuss leak history** during past 12 months (mains and connections):
The undated CSA 70 W-1 "System and Facility" report[3] notes that most the existing service lines are Orangeburg brand polyethylene (PE) pipe with some Yardley PE pipe installed in 1982. The report notes service lines are deteriorating and failing. CSA 70 W-1 replaces service lines with new PE as problems leaks/breaks appear. Review of the number of leaks since the previous inspection show the number of main breaks has not changed significantly. The number of service connection breaks has greatly fluctuated indicating a continued need for replacement.

[3] "System and Facility Report" included in Appendix B of *San Bernardino County Service Area CSA-70-W-1 Landers Water System Emergency Response Plan*, dated December 23, 2004 and prepared by Special Districts Department

The distribution system is comprised of asbestos cement. Review of the most recent aggressive indices for the sources from 2010 and 2012 shows the indices range from 12.1 to 12.3. Water is considered non-aggressive to asbestos pipe with an index with an index greater than 12.

Table 9: CSA W-1 Landers – Leaks/Breaks since Previous Inspection

Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Main Breaks or Leaks	0	0	10	0	1	0	1	1	NA	NA
Service Line Breaks or Leaks	15	87	81	93	121	15	76	47	NA	NA
Water Outages	0	0	0	0	4	0	0	0	NA	NA
Boil Water Orders	0	0	0	0	0	0	0	0	NA	NA

Source: Annual Reports submitted to the Department.

6. **Are Distribution facilities** constructed in accordance with Waterworks standards?
CSA 70 W-1 follows the Special Districts Department's standard drawings and specifications with the most recent revision being 2008. C900 PVC class 150 and 8 inch and larger is used for all new mains although specifications are available for other material. New service lines are 1 inch polyethylene. The District does minor main replacement and repairs with major work contracted out, generally greater than $2,500. System materials and size comply with Title 22 Waterworks Standards. Available information shows that the majority of the service area is asbestos cement; however, recent information is needed. The number of isolation valves appears to be compliance with the Waterworks Standards.

7. Describe water main and sewer line/sewage disposal **separation practices**
No sewers. Good separation from individual sewage disposal systems as the system has lines in dedicated easements.

It is recommended that the Special Districts specifications include the minimum separation of 25 ft between septic and potable lines as required by Title 22, CCR, Section 64572 (f).

8. Does the system have **low head lines** and what is their program to eliminate them?
There are no reported low head lines (less than 5 psi).

9. Extent of **lead** pipes, joints, and/or lead solder used in distribution system and present policy: None known. CSA 70 W-1 is complying with the no lead requirements.

10. **Discussion and Appraisal:** Adequate pressure is maintained throughout the distribution system. Distribution mains are 29 years old, below the typical life expectancy estimate for well-maintained mains of 35 to 40 years.[4] The number of main

[4] USEPA, *Asset Management: A handbook for Small Water Systems* EPA Publication 816-R-03-016 September 2003

leaks does not indicate the distribution system is failing. CSA 70 W-1 adequately maintains a capital improvement plan to fund for future main replacement. Continued service line replacement is needed but no complaints or problems have been encountered.

It is noted that the CSA 70 W-1 uses polyethylene service lines. Studies have shown that polyethylene and poly butylene service lines are prone to permeation by diesel and petroleum products[5]. CSA 70 W-1 has not encountered problems with the service lines; however, it should be aware of the potential permeation near fuel stations or soils that may be contaminated.

G. WATER QUALITY AND MONITORING

1. **Bacteriological** (Distribution and Sources)

Description of program: In 2011 CSA 70 W-1 collected 2 to 9 samples per month. It is not clear which are the sample sites or monitoring frequency. For the **Groundwater Rule**, CSA 70 W-1 submitted an Acknowledgement of Type of Triggered Source Monitoring Under the GWR, dated October 14, 2011 where it indicated that all sources will be sampled in the event of a positive coliform sample in the distribution. CSA 70 W-1 samples all sources monthly.

Sampling plan approved and current (do we have a copy) There is no current plan on file. CSA 70 W-1 submitted a plan dated October 14, 2011 which has not been approved. Comments were provided in the February 29, 2012 e-mail to Steve Samaras. The sample plan should indicate the exact number of samples to be taken and frequency.

Population: 1,495 (2011) Connections: 647 total (2011)
Samples/week/month? A minimum of two samples per month is required based on population and service connections as noted in Title 22, CCR, Section 64423 (a)(1).
MCL violations since previous inspection? None.

Compliance and Appraisal: Coliform monitoring and reporting is currently in compliance. A revised monitoring plan is needed for review as there is no current approved plan on file. It is recommended that raw water sampling procedures be reviewed. Recent samples show a chlorine residual. Chlorination is currently downstream of the raw water sample tap.

[5] USEPA, "Permeation and Leaching Issue Paper," August 15, 2002

2. Chemical (Sources)

Description of Program: The Department letter dated January 28, 2011 provides the minimum Title 22 monitoring frequencies for the CSA 70 W-1 sources unless otherwise advised by the Department or through permit. CSA 70 W-1 is currently on a non-vulnerable monitoring frequency. As discussed in the DWSAP section of this report, it is recommended that CSA 70 W-1 sources continue on this frequency.

Table 10: CSA 70 W-1 Landers Last Sample Dates for Sources

Source Name	General Min./Phy.	Inorganic Chemicals	Nitrate	Radioactivity	VOC	SOC	EDB & DBCP
Well 1	2/16/11	2/16/11	11/3/11	GA 10/27/10	11/6/08	2/28/11	2/28/11
Well 2	2/16/11	2/16/11	11/3/11	GA 10/27/10	10/27/10	9/18/08	**9/18/08**
Well 3	3/3/11	3/3/11	8/2/12	GA 10/27/10	11/6/08	2/28/11	2/28/11

Note: Dates in bold indicate deficient monitoring or results not received in our database. See individual chemical monitoring sections for specific information. GA = gross alpha.

General mineral/physical (secondary MCL):

Monitoring required every three years. Monitoring frequency and results in compliance.

Inorganic (including nitrite):

Monitoring required every three years. Monitoring frequency and results in compliance.

Nitrate:

Monitoring required annually. Nitrate must be sampled by the end of 2012 at Wells 1 and 2 to avoid a monitoring violation. Current results are in compliance.

Volatile Organic Chemicals (VOC):

Monitoring required every six years. Monitoring frequency and results in compliance.

Synthetic Organic Chemicals (SOC) and EDB/DBCP:

Monitoring required every three years or a monitoring waiver may be granted for the current compliance period (2011-2013) if all results were non-detect and sampled after 2001. **Waivers will not be given for DBCP and EDB monitoring** and will be required every three years. A waiver renewal may be requested with an updated DWSAP.

The Department approved an SOC monitoring waiver for all wells in the letter dated January 28, 2011. Well 2 is past due for EBD and DBCP and will need to be sampled. Other than this CSA 70 W-1 is in compliance with all SOC monitoring and results.

Radiological:
The Radionuclide Rule, found in Title 22, CCR, Section 64442, requires initial monitoring to assign a monitoring frequency. Monitoring from 2001 onwards is considered for compliance with the radionuclide rule which consists of four consecutive quarters of gross alpha and radium 228.

All CSA 70 W-1 wells have completed initial monitoring. Wells 1, 2, and 3 are assigned a gross alpha monitoring frequency of one sample every nine years. Radium 228 is waived for all wells. CSA 70 W-1 is in compliance with monitoring frequency and results.

3. **Disinfectant/Disinfection Byproduct (D/DBP) Distribution Monitoring**
Description of programs:

Maximum residual disinfectant level (MRDL):
Systems that chlorinate are required to sample for MRDL at the same point and time total coliform samples are collected. CSA 70 W-1chlorine residuals are well below the 4 mg/L maximum level. In 2011 the monthly averages ranged from 0.32 to 0.81 mg/L with a running annual average of 0.51 mg/L.

Stage 1 D/DBP:
A groundwater system with a population ≤10,000 is required to collect one Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5) sample per treatment plant per year during the warmest month from within the distribution system [Title 22 CCR Section 64534.2 (a)]. Each groundwater basin is considered one treatment plant [Title 22, CCR, Section 64534 (d)].

Samples are taken from locations representing the maximum residence times. This frequency may be reduced to one sample every three years if after one year of monitoring TTHM is ≤0.020 mg/L (20 µg/L) and HAA5 is ≤0.015 mg/L (15 µg/L). Well 1, 2, and 3 are located in [redacted] Groundwater Basin[6] and there are no treatment plants. Sources appear to use same aquifer; as such, CSA 70 W-1 would be required to sample at least one location.

The Department does not have a Stage 1 monitoring plan on file. Review of monitoring completed shows the CSA 70 W-1 began sampling for Stage 1 in 2004 at Reservoir 2B (R-2B). R-2B has since been monitored quarterly, except for 2008, with all results well below the 80 µg/L TTHM MCL and 60 µg/L HAA5 MCL. Stage 1 monitoring will need to continue until Stage 2 requirements take into effect October 2013.

[6] Kennedy/Jenks/Todd LLC, *Basin Conceptual Model and Assessment of Water Supply and Demand for the Ames Valley, Johnson Valley, and Means Valley Groundwater Basins*, April 2007

Table 11: CSA 70 W-1 Landers Stage 1 D/DBP Annual Averages

Year	TTHM, µg/L	HAA5, µg/L	Comments
2004	2.8	ND	2 quarters sampled at R-2B
2005	1.5	ND	4 quarters sampled at R-2B
2006	0.8	ND	4 quarters sampled at R-2B
2007	0.3	ND	4 quarters sampled at R-2B
2008	3.7	1	2 quarters sampled at R-2B
2009	2.2	1	4 quarters sampled at R-2B
2010	3.5	1	4 quarters sampled at R-2B
2011	3.3	1	4 quarters sampled at R-2B

ND-non detect/below detection limit for reporting. R-2B = Reservoir 2B

Stage 2 D/DBP:

CSA 70 W-1 submitted a 40/30 Certification Form dated August 1, 2008 that was approved and allowed the system to waive standard monitoring. However, compliance monitoring will still need to be completed. CSA 70 W-1 is a Schedule 4 system (population < 10,000) and is required to submit a compliance monitoring plan by October 1, 2013.

Groundwater systems with population 500-9,999 are required to sample a minimum of two distribution sites per year in their compliance monitoring plans. Sites must be selected from one high TTHM site, one high HAA5 site. As CSA 70 W-1 has only sampled at R-2B, it is recommended that additional sites be sampled throughout the distribution to assist in selecting one additional sites. Beginning October 2013 these will be the only sites sampled for TTHM and HAA5.

4. Additional Monitoring

Description of Programs:

Distribution General Physical:

CSA 70 W-1 does not sample color, odor, and turbidity from distribution.

Distribution Lead and Copper Monitoring:

CSA 70 W-1 is currently on reduced triennial monitoring. CSA 70 W-1 is currently in violation of the lead and copper monitoring rule for failure to monitor. At least ten (10) lead and copper samples will be due in summer 2013. Per Title 22, CCR, Section 64675(b) (2), each system conducting reduced tap sampling shall collect the required samples during the months of either June, July, August, or September.

Table 12: CSA W-1 Landers Lead and Copper Monitoring

Date of Monitoring	No. of Samples	90th Percentile Lead (mg/L)	90th Percentile Copper (mg/L)	Comments
9/1/2003	20	ND	0.13	Second triennial
10/2/2006	11	ND	0.13	Third triennial
12/30/2009	3	ND	0.062	Missed sample period
NEXT DUE JUNE – SEPTEMBER 2012 PAST DUE				

Notes: ND = Not detected/below detection limit of 0.005 mg/L for lead and 0.050 mg/L for copper. Shaded values indicate exceedance of 0.015 mg/L lead action level and 1.3 mg/L copper action level.

5. Is an approved water quality **monitoring plan** on file (i.e. Briefly summarize plan, date, and needed additions): There is no current approved plan on file. CSA 70 W-1 sent a plan dated October 14, 2011 and titled *Department of Public Health Bacteriological Sample Siting Plan and Groundwater Rule for County Service Area 70 W1 CA3610060*; however, this plan has not been approved.

Comments on bacteriological monitoring plan were provided in the February 29, 2012 e-mail to Steve Samaras. It is recommended that chlorine residual sample locations and frequency be noted. Updated frequencies noted in the monitoring section above should be noted as well as Department letter dated January 28, 2011

6. **Monitoring Reporting**
Is monitoring reported and annual **consumer confidence report** (CCR) distributed? Since the previous inspection, CSA 70 W-1 has adequately distributed the annual consumer confidence report. All source monitoring has been reported by electronic data transfer (EDT) and distribution monitoring submitted hard copy to the Department.

7. **Discussion and Appraisal:** CSA 70 W-1 has several monitoring deficiencies that need to be addressed. Nitrate is past due for Wells 1 and 2, EDB/DBCP is past due for Well 2, and distribution lead and copper is past due. The bacteriological monitoring plan has not been approved.

H. OPERATION AND MAINTENANCE

1. **Personnel and Planning**
Are system improvements made in accordance with the Waterworks Standards? Yes
Does the utility have up-to-date distribution system maps? Yes, maps of system improvements are maintained in Mylar and AutoCAD. The Special Districts Department reviews plans when there are new water services but may not view them when there are other changes.

Is up-to-date copy of system schematic on file: Yes, an undated distribution system map titled *C.S.A. Improvement Zone "W-1" Water Distribution System* that was included with the draft October 14, 2011 monitoring plan is on file. There is no hydraulic profile on file. A Department drawn profile is included in the appendix. Please update as needed.

List or tabulate certified personnel:

Table 13: Certified Operators at San Bernardino County Special Districts

Name	Title	Grade Certificate - Expiration	
		Treatment	Distribution
Steve Samaras	Interim Operations Manager	T3 - 11/1/2014	D5 - 1/1/2014
Manuel Benitez	Deputy Director	T2 - 7/1/2014	D3 - 1/1/2013
Greg Snydal		T2 - 7/1/2015	D3 - 4/1/2013
Robert Smith		T2 - 7/1/2015	D3 10/1/2013
Tracy Sanders		T2 - 4/1/2013	D2 - 7/1/2013
Steve Clark	Reg. Compliance Specialist	T2 - 3/1/2014	D2 - 11/1/2013
Nanta Baqai		T2 - 3/1/2014	D2 - 1/1/2013
Akeimo Eleasaro		T2 - 2/1/2013	D2 - 5/1/2013
Dennis McNeil		T2 - 2/1/2013	D2 - 4/1/2013
John Fish		T2 - 2/1/2013	--
Kevin Welch		T2 - 11/1/2014	D2 - 8/1/2012
James McDonald		T2 - 11/1/2013	D2 - 4/1/2012
Robert Renison		T2 - 10/1/2012	D2 – 10/1/2012
Eduardo Aguilera		T2 - 1/1/2015	D3 - 6/1/2015
Travis Payfer		T2 - 1/1/2015	D2 - 1/1/2015
Gerald Palmer		T2 - 1/1/2014	D2 - 8/1/2013
Michael Nolan		T2 - 1/1/2014	D2 - 4/1/2013
Teodulo Cabel		T2 - 1/1/2014	--
Don Heaton		T1 - 7/1/2014	D1 - 12/1/2013
Fred Murphy		T1 - 7/1/2015	D2 - 10/1/2012
Gus Olguin		T1 - 6/1/2013	--
John Tim Moore		T1 - 4/1/2013	D1 – 11/1/2012
Lisa Green		T1 - 2/1/2015	D2 - 2/1/2014
Laurie Hull		T1 - 11/1/2014	--
Timothy Galvin		T1 - 10/1/2013	D1 - 12/1/2013
Richard Warren		T1 - 1/1/2015	D2 - 6/1/2015
Steven Ottinger		T1 - 1/1/2015	D2 - 2/1/2014
Braden Hodges		T1 - 1/1/2015	--
Ricardo Sanchez		--	D2 - 3/1/2014
Johnny Cornejo		--	D1 - 5/1/2014
Kristy Kopelk		--	D1 - 5/1/2013

Name	Title	Grade Certificate - Expiration	
		Treatment	Distribution
Cynthia Martin		--	D1 - 5/1/2013
Deanna Wolf		--	D1 - 5/1/2013
Robert Walker		--	D1 - 4/1/2014
Gabriel Ledesma		--	D1 - 11/1/2012
William Mahaney		--	D1 - 11/1/2012

Does the system comply with **Operator Certification** regulations?: The distribution system is classified as a D2 system and there is no treatment classification. The Special District Department has adequately certified operators that meet this requirement.

2. Water System Management

Describe management structure: CSA 70 W-1 is a special district that is governed by the five-member San Bernardino County Board of Supervisors. The Supervisors meet on Tuesdays at least twice monthly. Day to day operation of CSA W-1 is vested in the Water/Sanitation Division of the Special Districts Department with supporting office and field staff. There is no current organization chart on file for the water system.

Is the system self-supporting?: Review of the CSA 70 W-1 2011-2012 Adopted Budget shows that revenue requirements are not met with financing sources. CSA 70 W-1 has reserves that are used to offset the imbalance.

Is there funding to provide the appropriate maintenance and to support the number of personnel to operate the system correctly? Wells, booster, and storage facilities were found to be well maintained during the survey. Funding for facility maintenance appears adequate.

Distribution maintenance activities, such as flushing and valve exercise have not been completed and there are several monitoring deficiencies. The San Bernardino County Special District staff is shared with other divisions in addition to water. There may not be adequate staffing in operations and management as these activities and monitoring have not been addressed.

3. Cross-Connection Control Program

Name of Cross-connection control inspector(s): Greg Snydal / Certified backflow tester
Does the utility have a Cross-Connection Control Ordinance on file? Yes, titled *An Ordinance of the San Bernardino County Department of Special Districts Instituting a Cross-Connection Control Program to Protect the Public Water System* and undated. A finalized signed copy is not file.

Discussion and Appraisal: The Special District Department administers the cross connection program for CSA 70 W-1. A Cross Connection Survey Program information form was not completed to review program elements. Please forward a completed form

for review. Customers are responsible for testing devices and are sent annual reminder notices. Records are maintained for testing.

Review of the number of backflow devices reported since 2002 show that there were no devices in the system until 2008. There was no cross connection survey performed in 2008 and the last one was in 2002. Since 2008 backflow devices have been consistently tested annually for the most part. As there is no documentation on the change in the number of backflow devices, a cross connection survey should be completed for the system.

Table 14: CSA 70 W-1 Landers Backflow Testing

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total Devices	0	0	0	0	0	0	6	6	0	6
Total Tested	0	0	0	0	0	0	6	6	0	6

Source: Annual Reports submitted to the Department. In 2008 it was reported that the last cross connection survey was in 2002. 2010 – No backflow devices were reported.

4. Complaints

Describe Complaint Program: Complaints are called in to front office and tracked through service orders. Service orders are passed to operators who follow up. Written records are maintained for service orders and resolution is noted in "comments" section.

Table 15: Number of Complaints Reported Since Previous Inspection

Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Taste and Odor	0	0	1	2	1	0	0	0	0	0
Color	0	0	0	0	0	0	0	3	0	1
Turbidity	0	0	0	0	0	0	0	0	0	0
Visible Organisms	0	0	0	0	0	0	0	0	0	0
Pressure (High or Low)	1	4	9	1	1	0	1	1	3	1
Illnesses (Waterborne)	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	1	0	0	0
Calls to Department	0	0	0	0	0	0	0	0	0	0

Notes: Source is Annual Reports submitted to the Department and Department files.

Discussion and Appraisal: Review of the number of complaints received since the previous inspection show that the majority of the complaints are due to pressure. The cause for pressure complaints was reported to be due to faulty pressure regulators, customer plumbing, and clogged sand filters at the water meter. The high end of the pressure zones ranges from 100 to 125 psi which is high but pressure regulators address this. The number of complaints does not indicate a water quality concern in the distribution system. CSA 70 W-1 adequately keeps track of complaints received and the resolution. The complaint program is adequate.

5. Emergency Response

Is up-to-date emergency notification plan on file? Yes, dated April 23, 2012
Notification of Office of Drinking Water of significant system problems? Yes, CSA 70 W-1 adequately notifies the Department of any planned outages or emergencies.
Emergency response plan: The District has an emergency response plan titled *San Bernardino County Service Area CSA-70-W-1 Landers Water System Emergency Response Plan,* dated December 23, 2004.

Discussion and Appraisal: CSA 70 W-1 sources feed the uppermost zone which then supply the lower zones by PRV. In the event of an extended power outage, CSA 70 W-1 has an emergency generator that can supply Wells 1, 2, and the booster station. The 500 kW diesel generator is tested quarterly and is on auto-switchover. The Special Districts Department maintains a supply of common distribution mains, fittings, and leak detection equipment.

CSA 70 W-1's emergency response plan (ERP) is based on the Standardized Emergency Management Systems/National Incident Management System (SEMS/NIMS). The Special Districts Department recently completed a tabletop exercise coinciding with the Statewide Medical/Health Exercise. The plan should be reviewed to ensure contacts are up-to-date. It is recommended that CSA 70 W-1 develop a training program where it sets regular training and that records be available for review. The Special Districts Department is looking into completing ICS 100 and 700 training for some of its staff.

6. Main Disinfection Program

Describe main disinfection program (i.e. method, contact time, chlorine residual, bacti. tests, records) for new and repaired mains: Disinfection of all new and repaired mains is done by CSA 70 W-1 per AWWA Standards. Records are maintained of bacteriological verification.

Does the main disinfection program comply with AWWA standards? Yes.

Discussion and appraisal: The main disinfection program is in compliance.

7. Valve Maintenance Program

Describe Program: CSA 70 W-1 has a goal to exercise system valves every two years.

Is number and location of valves satisfactory? (i.e. mainline, ARVR, blowoff valves, etc.) Current number appears adequate.

Table 16: Valve Exercise

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of valves	323	323	323	323	323	323	323	323	NA	NA
Number exercised	323	323	323	44	5	35	0	1	NA	NA

Notes: Figures are from Annual Reports submitted to the Department. NA = not available.

Discussion and appraisal: (i.e. are valves recorded on maps available to field crews? Are all valves located with valve covers raised to grade?) Since 2005 CSA 70 W-1 has not exercised valves every two years per its plan. CSA 70 W-1 needs to ensure that all valves are exercised within two years. It is recommended that system crucial valves be exercised annually.

8. **Flushing**

Describe flushing program: (i.e. deadends, records, etc.): CSA 70 W-1 flushes dead-ends annually. Logs are maintained for flushing.
Approx. No. of dead ends: 12 Number with flushing valves? 12
Discussion and Appraisal: Flushing of dead ends has not been performed. At a minimum, flushing should be completed annually for dead-ends.

9. **Recycled or Non-Potable Water Distribution Systems**

Are there recycled water projects in the service area? (irrigation, industrial, dual-plumbed, etc.): There is currently no recycled water or non-potable use.
Does the system have an approved ordinance for using recycled water?: N/A

I. OVERALL SYSTEM APPRAISAL

Overall, the water system facilities were found adequately maintained but several deficiencies were found in monitoring and operations. The following is a summary of evaluations for specific system elements.

Sources: Wells were found to be in sanitary conditions with areas around the well sites protected against unauthorized entry and vandalism. CSA 70 W-1 is in compliance with the source capacity requirements Waterworks Standards.

Treatment: Chlorination facilities were found in sanitary and good working condition.

Distribution System: A cross connection survey should be performed. CSA 70 W-1 has not exercised all system valves since 2005 and flushing is not performed annually for dead-ends.

Finished Water Storage: All storage tanks were found in sanitary conditions. The storage capacity requirements of the waterworks Standards have been met.

Pumps: Well pumps and booster stations were found to be adequately maintained and sanitary conditions.

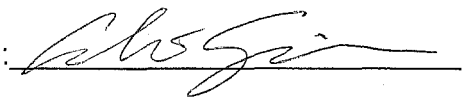
Water Quality Monitoring: There are several source and distribution monitoring deficiencies. A finalized bacteriological monitoring plan has not been submitted.

Operations and Management: The Special Districts Department has adequately certified distribution operators. Review of the 2011-2012 Adopted Budget shows that revenue requirements are not met with financing sources. Facilities were found in sanitary conditions indicating that funding for facility maintenance is adequate; however, distribution maintenance activities have not been performed. Operations/management staffing levels may not be adequate.

J. APPENDIX

- Deficiency List
- October 2012 *CSA 70, Zone W-1 Water System Schematic*
- Chlorination Data Sheet
- Distribution Data Sheet
- Reservoir Data Sheets
- Booster Station Data Sheet

Report prepared by: Andrés Aguirre, P.E.

Signature:  Date: December 19, 2012

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF DRINKING WATER

2012 DEFICIENCY LIST

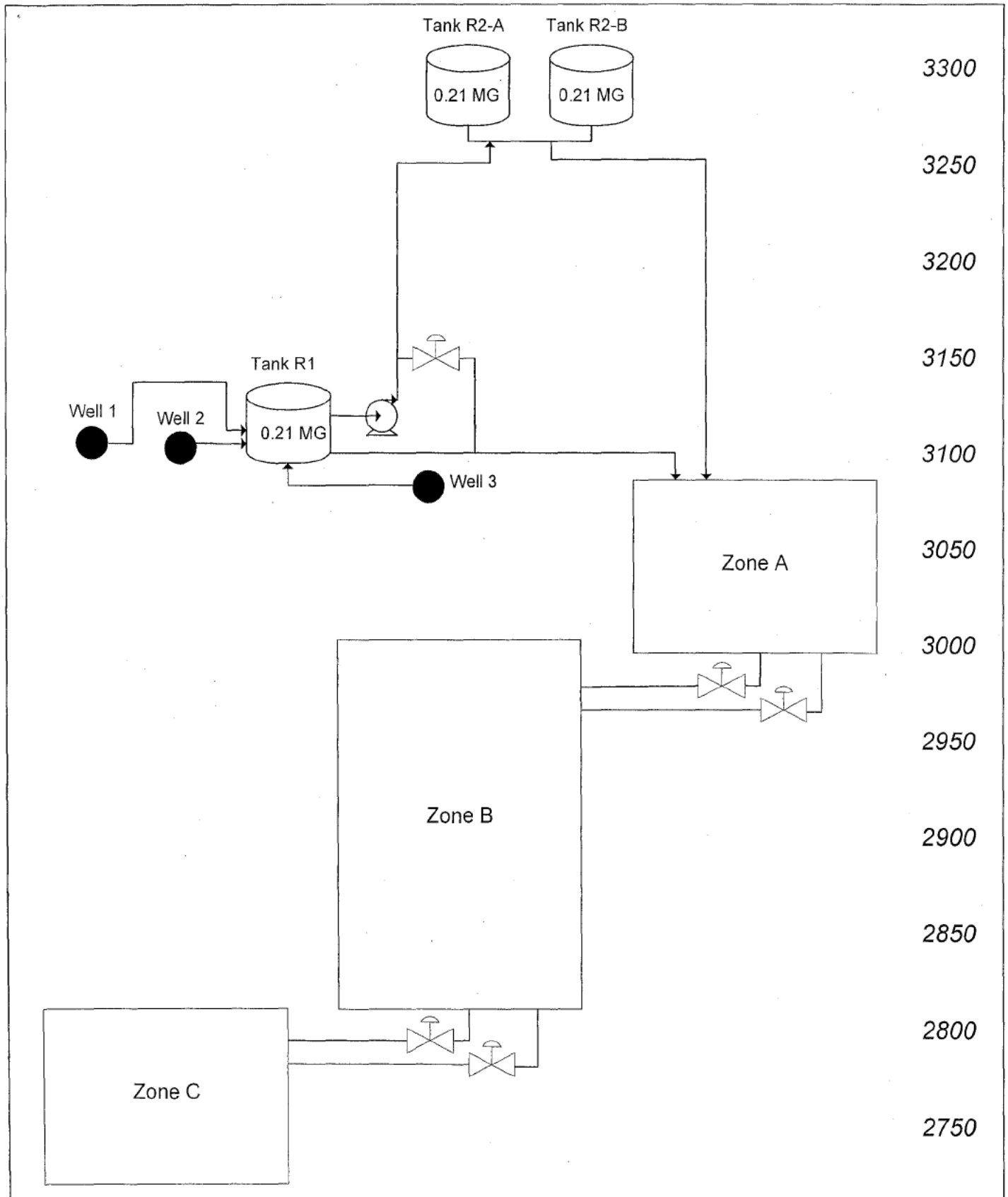
System Name: San Bernardino County Service Area 70 W-1 – Landers **System No.:** 3610060
Source of Information: Sanitary Survey
Collected by: Andrés Aguirre **Date:** October 23, 2012

Date Found	DESCRIPTION OF DEFICIENCY	Order of Hazard	Date Corrected - Reported	Date Corrected - Confirmed
	SOURCES:			
10/23/12	**Well 1 hose bib:** A hose bib vacuum breaker is needed.	D		
10/23/12	**Well 2 hose bib:** A hose bib vacuum breaker is needed.	D		
10/23/12	**Well 3 raw sample tap:** Sample tap needs to be upstream of chlorination and check valve.	D		
10/23/12	**Well 3 well cap:** Need to ensure the well cap is adequately sealed. An NSF approved epoxy may be used	D		
	TREATMENT:			
10/23/12	**Well 3 chlorination:** A hose bib vacuum breaker is needed on the hose bib in the chlorination shed. The hole for the chlorine pump suction line should be more fitted to prevent debris from falling in to the chlorine tank.	D		
	DISTRIBUTION:			
10/23/12	**Cross-connection survey:** There is no documentation on the change in the number of backflow devices. A cross-connection survey needs to performed and documented to verify current number of devices.	D		
10/23/12	**Backflow testing:** In 2010 it was reported there were no backflow devices tested. Please verify if testing was completed.	D		
10/23/12	**Dead-end flushing program:** Dead ends should be flushed a minimum of annually.	D		
10/23/12	**Valve exercise program:** CSA 70 W-1 needs to develop a valve exercise program to ensure all valves are exercised annually or within a fixed time frame with crucial valves exercised annually.	D		
	MONITORING:			
10/23/12	**Well 1 nitrate:** Nitrate must be sampled this year.	B		
10/23/12	**Well 2 nitrate:** Nitrate must be sampled this year.	B		
10/23/12	**Well 2 EDB and DBCP monitoring:** Monitoring is past due.	C		

Date Found	DESCRIPTION OF DEFICIENCY	Order of Hazard	Date Corrected - Reported	Date Corrected - Confirmed
10/23/12	**Distribution lead and copper monitoring:** Monitorig is past due. Monitoring was required to be completed between June and September 2013.	C		
10/23/12	**Raw bacteriological sampling:** Please review sampling procedures. Raw water samples show a chlorine residual. During the field inspection it was noted that all raw water sample taps are upstream of chlorination.	D		
	OPERATIONS:			
10/23/12	**Operations/management staffing:** Staffing levels may be inadequate as distribution maintenance activities and system monitoring have not been completed. Need to review organization chart with duties.	D		
	INFORMATION REQUESTED:			
10/23/12	**Pump tests:** Please forward recent pump tests for all wells.	N/A		
10/23/12	**Distribution main summary:** Please submit a summary of the current mainlines in the system, which includes type, diameter, length, and condition/age.	N/A		
10/23/12	**Hydraulic profile:** Please verify features in enclosed system schematic are correct or provide updated schematic.	N/A		
10/23/12	**Cross-connection Control Program Information Form**: Please forward a completed form and copy of cross-connection ordinance for review.	N/A		
10/23/12	**Cross-connection control ordinance:** Please forward a copy of the finalized cross-connection control ordinance.	N/A		

Shaded areas indicate past deficiencies that have been corrected and verified by the Department

ORDER OF HAZARD
A. CRITICAL HEALTH HAZARD - CORRECTIVE ACTION MUST BE TAKEN IMMEDIATELY
B. SERIOUS HEALTH HAZARD - ACTION MUST BE TAKEN AS SOON AS POSSIBLE
C. POTENTIAL HEALTH HAZARD - MUST BE CORRECTED AS WORK LOAD PERMITS
D. SYSTEM OR OPERATIONAL DEFECT RESULTING IN POOR WATERWORKS PRACTICE
N/A. NOT APPLICABLE



CSA 70, Zone W-1 Landers Water System Schematic

San Bernardino County Special Districts Department

DATE
October 2012

DRAWN BY
CDPH

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF DRINKING WATER

CHLORINATION DATA

System Name: San Bernardino County Service Area 70 W-1 – Landers **System No.:** 3610060
Source of Information: Sanitary Survey
Collected by: Andrés Aguirre **Date:** October 23, 2012

Reason for chlorination (emergency, mandatory or optional):	Optional
Water Source:	**Well 1**
Water treated (raw/filtered etc.):	Raw
Chlorine demand character:	Low
Dosage and control method (manual/flow paced):	1.9 mg/L with manual dosage setting. Chlorinator turned on/off when well motor on/off.
Point of application:	Downstream of check valve and sample tap
Mixing:	In Tank R-2A
Contact time before use:	
Contact time for residual test:	
Water Flow: Variation:	238 gpm (0.34 MGD)
How measured:	Flow meter
Equipment: Type:	Diaphragm electronic metering pump
Make / Model:	Pulsafeeder / PULSAtron E Plus LPD48A-VHC1
Capacity:	22 gpd
Condition:	Good
Automatic switchover capability?	N/A
Portable emergency chlorinator available?	Yes
Chlorine residual monitored continuously?	No
Low level residual alarm?	No
At what level of chlorine residual is the alarm activated?	N/A
How often are residual analyses conducted?	Daily
Type of residual measured (free or combined):	Free
Type of residual test used:	DPD
Chemical added: (% available chlorine, form):	12.5% liquid sodium hypochlorite
Cylinder or crock capacity:	50 gallons
Stock on hand/days supply:	
Chlorine brand/product name, ANSI/NSF 60:	HASA , ANSI/NSF 60 certified
Housing and Safety Features: Housing:	Concrete block building
Insulation:	No
Heating:	No
Locks:	No
Lighting:	Yes
Ventilation:	Yes
Leak detector with alarm:	N/A
Switches outside chlorination room:	N/A
Gas mask:	N/A
Is an emergency plan of action posted?	No
Operation and maintenance: Lapse during changes:	Minimal
Ability to make repairs:	Yes
How often is the equipment inspected?	Daily
Operations records kept:	Yes
Condition of scales(chlorine gas):	N/A
Remarks and deficiencies:	May wish to move raw water sample tap upstream of check valve. Recent raw bacteriological samples show chlorine residual.

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CHLORINATION DATA

System Name: San Bernardino County Service Area 70 W-1 – Landers **System No.:** 3610060

Source of Information: Sanitary Survey

Collected by: Andrés Aguirre **Date:** October 23, 2012

Reason for chlorination (emergency, mandatory or optional):	Optional
Water Source:	**Well 2**
Water treated (raw/filtered etc.):	Raw
Chlorine demand character:	Low
Dosage and control method (manual/flow paced):	1.6 mg/L with manual dosage setting. Chlorinator turned on/off when well motor on/off.
Point of application:	Downstream of check valve and sample tap
Mixing:	In Tank R-2A
Contact time before use:	
Contact time for residual test:	
Water Flow: Variation:	189 gpm (0.27 MGD)
How measured:	Flow meter
Equipment: Type:	Diaphragm electronic metering pump
Make, Model:	Pulsafeeder / PULSAtron E Plus LPD3SA-VTC1
Capacity:	12 gpd
Condition:	Good
Automatic switchover capability?	N/A
Portable emergency chlorinator available?	Yes
Chlorine residual monitored continuously?	No
Low level residual alarm?	No
At what level of chlorine residual is the alarm activated?	N/A
How often are residual analyses conducted?	Daily
Type of residual measured (free or combined):	Free
Type of residual test used:	DPD
Chemical added: (% available chlorine, form):	12.5% liquid sodium hypochlorite
Cylinder or crock capacity:	50 gallons
Stock on hand/days supply:	
Chlorine brand/product name, ANSI/NSF 60:	HASA , ANSI/NSF 60 certified
Housing and Safety Features: Housing:	Concrete block building
Insulation:	No
Heating:	No
Locks:	No
Lighting:	Yes
Ventilation:	Yes
Leak detector with alarm:	N/A
Switches outside chlorination room:	N/A
Gas mask:	N/A
Is an emergency plan of action posted?	
Operation and maintenance: Lapse during changes:	Minimal
Ability to make repairs:	Yes
How often is the equipment inspected?	Daily
Operations records kept:	Yes
Condition of scales(chlorine gas):	N/A
Remarks and deficiencies:	May wish to move raw water sample tap upstream of check valve. Recent raw bacteriological samples show chlorine residual.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH
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CHLORINATION DATA

System Name: San Bernardino County Service Area 70 W-1 – Landers **System No.:** 3610060
Source of Information: Sanitary Survey
Collected by: Andrés Aguirre **Date:** October 23, 2012

Reason for chlorination (emergency, mandatory or optional):	Optional
Water Source:	**Well 3**
Water treated (raw/filtered etc.):	Raw
Chlorine demand character:	Low
Dosage and control method (manual/flow paced):	0.9 mg/L with manual dosage setting. Chlorinator turned on/off when well motor on/off.
Point of application:	Downstream check valve, upstream raw sample
Mixing:	In pipe
Contact time before use:	
Contact time for residual test:	
Water Flow: Variation:	346 gpm (0.49 MGD)
How measured:	Flow meter
Equipment: Type:	Diaphragm electronic metering pump
Make, Model:	Pulsafeeder / PULSAtron E Plus LPB3SA-VTC1
Capacity:	12 gpd
Condition:	Good
Automatic switchover capability?	N/A
Portable emergency chlorinator available?	Yes
Chlorine residual monitored continuously?	No
Low level residual alarm?	No
At what level of chlorine residual is the alarm activated?	N/A
How often are residual analyses conducted?	Daily
Type of residual measured (free or combined):	Free
Type of residual test used:	DPD
Chemical added: (% available chlorine, form):	12.5% liquid sodium hypochlorite
Cylinder or crock capacity:	50 gallons
Stock on hand/days supply:	
Chlorine brand/product name, ANSI/NSF 60:	HASA , ANSI/NSF 60 certified
Housing and Safety Features: Housing:	Concrete block building
Insulation:	No
Heating:	No
Locks:	No
Lighting:	Yes
Ventilation:	Yes
Leak detector with alarm:	N/A
Switches outside chlorination room:	N/A
Gas mask:	N/A
Is an emergency plan of action posted?	
Operation and maintenance: Lapse during changes:	Minimal
Ability to make repairs:	Yes
How often is the equipment inspected?	Daily
Operations records kept:	Yes
Condition of scales(chlorine gas):	N/A
Remarks and deficiencies:	Raw sample tap needs to be moved upstream of chloinration and check valve.

STATE OF CALIFORNIA
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DISTRIBUTION DATA

System Name: CSA 70, Zone W-1 Landers System No.: 3610060
Source of Information: Sanitary Survey, Joseph Mathein/CSA 70 W-1, Vlad Rakhamimov/DHS
Updated by: Andrés Aguirre/CDPH Date: 10/23/2012

Mains:

Material	Amount (ft or %)	Size	Class/Gage	Condition or Install Year
Asbestos cement	244,750 ft	6"	Class 150	Installed 1983
Asbestos cement	14,000 ft	8"	Class 150	Installed 1983
Asbestos cement	~5,136 ft	12"		Installed 1983?
TOTAL	**~263,886 ft**	**50 mi**		

Joints (type): O Rings, rubber O gaskets on AC. Welded on steel and solvent welded on PVC.
Amount of pipe less than four inches in diameter: Unknown, need current breakdown
Minimum size of new mains installed: 6 inch
Type of pipe used for new and replacement mains: Asbestos cement
Minimum depth of cover: 36 inches
Distance from sewers and/or sewage disposal (practice or policy): Per Waterworks Standards

Infiltration Hazard:

Relationship of water lines to groundwater table: No less than two hundred feet above water table.
Extent of low head or gravity lines: None, all pressurized

Disinfection (method):

New mains: Follow AWWA disinfection criteria
Repaired mains: Try to repair under pressure. Following significant dewatering of a transmission line, the water main is disinfected per AWWA criteria.

Pressure Zones and Ranges: 3 zones, pressure from 40 to 125 psi.

Dead Ends (extent): 12 dead ends, all can be flushed

Flushing: Hydrants by fire department. Program for dead ends is annually but has not been completed.
Characteristics of water flushed: Clears up within seconds.

Valves:

Is number and location of valves satisfactory? Yes
Main line isolation provided: System isolation valves.
Air release/vacuum relief valves provided: Adequate. All above ground.
Other: Clayton flow control valves configured for pressure reduction from higher zones to lower zones.
Valve exercise program: 323 valves are reported in 2009 Annual Report. Program is to exercise all valves within two years but has not been completed.
Valve maps maintained? Yes

Cross-Connection Control Program:

Type and extent of cross-connections: 6 devices as of 2011.
Compliance with Title 17: Yes
Operating rules/ordinance: Yes
Last cross-connection survey by certified specialist: Reported in 2002. Need a more recent survey.

Service Connections:

Materials: Plastic or copper

Defects and Remarks: Deficient in valve exercise and flushing program. Distribution appears to be in adequate condition. Need recent main composition.

STATE OF CALIFORNIA
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RESERVOIR DATA

System Name: San Bernardino CSA No. 70, Zone W-1 Landers **System No.:** 3610060
Source of Information: Field Survey, System files, and Joseph Mathein
Updated by: Andrés Aguirre/CDPH **Date:** 10/23/2012

Number or Name:	**Reservoir No. 1**	**Reservoir No. 2-A**
Date constructed:	1992	1979, installed 1981
Purpose (storage, etc.):	Gravity storage& booster forebay	Gravity storage
Capacity:	210,000 gal	210,000 gal
Location (specific):	[redacted]	[redacted]
Controlled Access:	Chain link fence with barbed wire	Chain link fence with barbed wire
Distance to: Sewer:	N/A	N/A
Sewage Disposal	> 200 ft	> 200 ft
Construction:	Bolted steel	Bolted steel
Material:	Galvanized steel	Galvanized steel
Sides:	Galvanized steel	Galvanized steel
Floor:	Galvanized steel	Galvanized steel
Cover or roof:	Galvanized steel	Galvanized steel
Height top of walls above ground:	24 ft	24 ft
Overflow elevation	El. 3100 HWL	23 ft-3 in, El. 3290 HWL
Dimensions (diameter, length x width)		38 ft-7 in diameter
Surface drainage to res. possible?	No	No
Ventilation:	Yes	Yes
Screening:	Yes	Yes
Inlet & Outlet Arrangement:	Separate inlet/outlet	Common inlet/outlet
Inlet: Location:	[redacted]	[redacted]
Distance above bottom:	18 inches	18 inches
Outlet: Distance from inlet:	10 ft- East side (gravity) and booster suction on southeast side	Common
Distance above bottom:	12 inches	12 inches
Drain to where:	West	Northeast
Overflow to where:	West to wash	Northeast to wash
Sewer or other hazardous connection (make sketch):	None- good flapper valve	None-good flapper valve
Estimated maximum residence time	---	---
Relation to system:		
Receives from:	Well Nos. 1 and 2	Booster station at Tank No. 1
Delivers to:	Zone B/gravity, Zone C/PRV's	Zone A/gravity
Date of last tank coating & material:		
Interior: Date/material	N/A – galvanized steel	N/A – galvanized steel
Exterior: Date/material	1992	1981
Tank Maintenance:		
Date of last comprehensive inspection:	2005	2005
Date of last cleaning/refurbishment:	1992	1996
Defects and Remarks: (Include statements on cleaning practices, condition of structure, overflow condition, etc.)	Serves as booster forebay and gravity reservoir.	Serves exclusively as gravity reservoir.

STATE OF CALIFORNIA
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DIVISION OF DRINKING WATER

RESERVOIR DATA

System Name: San Bernardino CSA No. 70, Zone W-1 Landers **System No.:** 3610060
Source of Information: Field Survey, System files, and Joseph Mathein
Updated by: Andrés Aguirre/CDPH **Date:** 10/23/2012

Number or Name:	**Reservoir No. 2-B**	
Date constructed:	1996	
Purpose (storage, etc.):	Gravity storage	
Capacity:	210,000 gal	
Location (specific):	[redacted]	
Controlled Access:	Chain link fence with barbed wire	
Distance to: Sewer:	N/A	
Sewage Disposal	> 200 ft	
Construction:	Bolted steel	
Material:	Galvanized steel	
Sides:	Galvanized steel	
Floor:	Galvanized steel	
Cover or roof:	Galvanized steel	
Height top of walls above ground:	24 ft	
Overflow elevation	23 ft-3 in, El. 3290 HWL	
Dimensions (diameter, length x width)	38 ft-7 in diameter	
Surface drainage to res. possible?	No	
Ventilation:	Yes	
Screening:	Yes	
Inlet & Outlet Arrangement:	Common inlet/outlet	
Inlet: Location:	A common inlet/outlet on west side	
Distance above bottom:	12 inches	
Outlet: Distance from inlet:	Common	
Distance above bottom:	12 inches	
Drain to where:	Southwest side – ties into overflow	
Overflow to where:	Southwest side – flapper provided	
Sewer or other hazardous connection (make sketch):	None- good flapper valve	
Estimated maximum residence time	Unknown	
Relation to system:		
Receives from:	Booster station at Tank No. 1	
Delivers to:	Zone 2 via booster	
Date of last tank coating & material:		
Interior: Date/material	N/A – galvanized steel	
Exterior: Date/material	1996	
Tank Maintenance:		
Date of last comprehensive inspection:	2005	
Date of last cleaning/refurbishment:	1996	
Defects and Remarks: (Include statements on cleaning practices, condition of structure, overflow condition, etc.)	Reservoir floats with Tank No. 2-A. Oil film on the water surface. Reservoir needs to be overflowed.	

BOOSTER STATION DATA

System Name: CSA 70, Zone W-1 Landers **System No:** 3610060

Source of Information: Sanitary survey

Updated by: Andrés Aguirre/CDPH **Date:** October 23, 2012

Number or Name	**Tank R-1 Boosters**			
Date Constructed	1979			
Purpose (system pressure, standby, etc.)	Water transfer to R-2 Tanks			
Total Pumping Capacity (gpm)	400 gpm			
Location				
Specific Location (Cross Streets, etc)				
Neighborhood	Rural, desert residential			
Size of Lot				
Enclosure:	Yes			
Type	Concrete block building with wood roof			
Floor	Concrete			
Insulation	No			
Heating	Yes			
Drainage	Yes			
Flood Alarm	No			
Flood Hazard	Immediate area no. Unknown if within 100 year flood as FEMA flood map 06071C74000H is not available online.			
Relation to System				
Receives Water From	Wells 1, 2, and 3			
Delivers Water To	Tanks R-2A and R-2B.			
Portable Pump Connections Available	No			
Station has Capacity to Reduce Pressure From High Side to Low Side of Booster	No			
Standby Power Available on Site	Yes, 500 kW diesel generator on auto switchover.			
Portable Standby Generator Connection Available	No			
Instrumentation and Control	SCADA on levels in R-2 tanks.			
Pumping Units	**1**	**2**		
Make	Goulds	Goulds		
Capacity	200 gpm	200 gpm		
Lubrication	Water	Water		
Power	Electric / 20 hp	Electric / 20 hp		
Date Installed				
Sewer or Other Hazardous Connections(s)	No	No		
Defects and Remarks:	Need recent pump tests. 19.6 ft of suction head and 100 psi discharge pressure. On at 19. 5 feet in R-2 tanks, off at 21 ft. Boosters alternate operation.			

bcc: Inspections – 3610060
Reading
Andrés (w/o enclosure)

Letter-Sanitary_Survey_CSA_70_W-1_Landers_2012.docx – CSA 70 W-1 – Andrés – 12/17/12

CHECKLIST:

Inspections
- ☐ System information changes reflected in SDWIS (Eric)
- ☐ Treatment Summary Spreadsheet updated (Engineer)
- ☐ Flow Path Schematic updated (Engineer)
- ☐ Enter Site Visit (Engineer)
- ☐ Add findings to PICME (Engineer optional)
- ☐ Update deficiency list spreadsheet

All Letters
- ☐ Entered into PICME as an enforcement action, citation or CO
- ☐ Electronic files moved from Sean's review folder to system file (Engineer)