DATE: March 21, 2019

TO: Jeff Densmore, P.E.
Santa Barbara District Engineer

FROM: Jason Cunningham, E.I.T.
Water Resource Control Engineer, Santa Barbara District

SUBJECT: Cambria Community Services District – 4010014
2019 Sanitary Survey Report
San Luis Obispo County

I. INTRODUCTION

On March 14, 2019, Mr. Jason Cunningham of the Santa Barbara District, Division of Drinking Water (hereinafter known as "Division") of the State Water Resources Control Board (SWRCB) inspected the Cambria Community Services District (hereinafter known as "CCSD"). Mr. James Green, Water System Supervisor was in attendance. The last annual inspection was conducted by Mr. Kam Kei Chen on April 28, 2016.

The purpose of this sanitary survey report is to document the inspection of the CCSD, to describe the facilities and operational practices as they exist today, and to describe any deficiencies needing follow-up.

1.1 Sources of Information

Information for this sanitary survey report was obtained from CCSD personnel, Division files, and the 2019 Sanitary Survey of the water system.

1.2 Brief Description of System

CCSD is classified as a community water system and operates under the authority of domestic water supply permit number 04-06-14P-006, issued by the Division on August 15, 2014. CCSD is located in north-western San Luis County. CCSD operates five active groundwater wells, three booster stations, six storage reservoirs, two clearwell reservoirs for the Santa Rosa Well 3 treatment plant, two treatment plants, and the associated distribution system. CCSD provides potable water to approximately 6,032 customers through 4,028 service connections.

II. INVESTIGATION FINDINGS

2.1 Area Served

CCSD is physically located at 2021 Rodeo Grounds Road in Cambria, CA. According to the 2017 Electronic Annual Report (EAR), CCSD provides water to a permanent population of approximately 6,032 customers through 4,032 service connections. 90.28% (3,640) of the

service connections are single-family residential, 3.39% (137) are multi-family residential, 5.78% (233) are commercial, and 0.55% (22) are industrial.

2.2 Source of Supply

CCSD has five active groundwater wells as their source of supply. The active wells are Santa Rosa Wells 3 and 4; San Simeon Wells 1, 2 and 3. There are no sewer lines and sewage disposal facilities located within 50 or 100 feet of the well sites, respectively. The Santa Rosa Wells 3 and 4 are considered to be groundwater under the direct influence of surface water (GWUDISW) when surface water is within 150 feet of the wells. Santa Rosa Wells 3 and 4 each have their own filtration and disinfection treatment plants to meet the requirements of Surface Water Treatment Rule (SWTR) because they are determined to be groundwater under the direct influence of surface water (GWUDISW). The San Simeon Well 1 is also considered to be GWUDI when surface water is within 150 feet from its well site. The San Simeon Wells 2 and 3 are both located more than 150 feet from the San Simeon Creek and under these conditions are not considered to be GWUDISW.

2.2.1 Groundwater

San Simeon Well 01 – Active (PS Code 4010014-002)

The San Simeon Well 01 was drilled in 1978 to a depth of 110 feet. The well is equipped with a 110 foot 12-inch plastic casing that is gravel packed. The well contains a 30-foot annular seal that is surface sealed. The perforations begin at a depth of 30 feet below ground level. There are no clay layers above the well's perforations, but there are clay layers below the highest perforations. The San Simeon Creek normally flows 100 feet from the well. The well is considered to be GWUDISW when surface water is present within 150 feet from the well site. The well must comply with the SWTR when surface water is located within 150 feet of the well site. CCSD does not use the well when surface water is less than 150 feet from the well site.

The well is housed in a building for protection against vandalism. It has an electric motor powered deep well turbine pump that can produce about 370 gpm. The air release valve is screened. **The discharge to waste pipe is not screened. CCSD shall screen the pipe to prevent the entry of rain, runoff, insects, animals and/or other contaminants which might compromise the quality of water from the well.** The well is located in the San Simeon well field (also the location for San Simeon Wells 2 and 3). A dike is built around the well field to protect the San Simeon Wells 1, 2 and 3. The San Simeon Well 1's pedestal was raised about three feet to make it above the 100-year flood level.

When CCSD is operating the Emergency Water Supply Treatment Facility, San Simeon Well 1 and 2 may not operate at a combined capacity greater than 400 gpm to maintain the travel time of 2 months between the injection well and production wells: San Simeon Wells 1 and 2.

San Simeon Well 02 – Active (PS Code 4010014-003)

The San Simeon Well 2 was constructed in 1978 to a depth of 80 feet. The well is located at the San Simeon well field. The San Simeon Creek flows over 150 feet away from the well site. The well is located higher than the 100-year flood plain. The well is surface sealed and has an annular seal of 30 feet. It is equipped with an 80-foot 12-inch plastic casing and is packed with gravel. The perforations begin 30 feet below the ground surface. There are no clay layers above the highest perforations. The well is housed in a building for protection against vandalism. The air release valve for the well is screened. The well has an electric motor

powered deep well turbine pump with a capacity of 370 gpm. It discharges above ground. The well is one of the primary sources of potable water supply for CCSD.

When CCSD is operating the Emergency Water Supply Treatment Facility, San Simeon Well 1 and 2 may not operate at a combined capacity greater than 400 gpm to maintain the travel time of 2 months between the injection well and production wells: San Simeon Wells 1 and 2.

San Simeon Well 03 – Active (PS Code 4010014-004)

The San Simeon Well 3 was constructed in 1978 with a depth of 112 feet. It is equipped with a 112 foot 12-inch plastic casing and is packed with gravel. The well is located in the San Simeon well field. The San Simeon Creek flows over 150 feet away from the well site. The well's pedestal is raised five feet above ground and is located above than the 100 year flood plain. It is sealed at the surface and with a 32 feet annular seal. The depth to the highest perforations is 32 feet from the ground surface. There are no clay layers present above the highest 5

perforations. The well is housed in a building to protect against vandalism. The air release valve is screened. The well has a deep well turbine pump with a capacity of 370 gpm and discharges above ground. It is one of the primary potable water supply sources for CCSD.
When CCSD is operating the Emergency Water Supply Treatment Facility, San Simeon Well 3 shall not be operated, other than for water quality sampling purposes, because a tracer study showed it to be within 2 months travel time of the Emergency Water Supply Treatment Facility's injection well.

Santa Rosa Well 03 – Active (PS Code 4010014-007)

The Santa Rosa Well 3 was constructed in 1963 with a depth of 116 feet. It has a 116 feet 16-inch plastic casing and is gravel packed. CCSD constructed a new concrete surface seal and discharge piping for the well after the last Sanitary Survey and Permit field visit. The well site is fenced. The well has an annular seal of 40 feet deep and the perforations begin 56 feet below ground level. Three 3-feet thick clay layers are located at depths of 26, 32 and 39 feet. The well is surrounded by a secured fence. The well has a submersible pump which has a capacity of 425 gallons per minute (gpm). **The air release valve is not screened (Photos 48 and 49). CCSD shall screen the Santa Rosa Well 3 air release valve to protect the well's water from rain, runoff, insects and/or other contaminants.**
The well is located less than 20 feet from the Santa Rosa Creek. It sits on the creek bank which is approximately 10 feet above the creek bed. The well's construction features do not provide adequate protection against surface water influence. Therefore, it is considered to be GWUDISW when water is in the Santa Rosa Creek. The well has to comply with SWTR in order to be used when water is present in the creek. The raw water from the well discharges to the Santa Rosa Well 3 Filtration Plant. The filtration plant acts to remove iron and/or manganese and to provide chlorine contact time (CT) to meet the SWTR requirements. A coagulant shall be used to enhance flocculation and increase filtration efficiency.

Santa Rosa Well 04 – Active (PS Code 4010014-008)

The Santa Rosa Well 4 was constructed in 2000 with a depth of 130 feet. The well has a 12-inch polyvinyl chloride (PVC) casing and is packed with gravel. It has a 50 foot annular seal with perforations starting at 80 feet deep. There is a silty clay layer that goes from the surface to 55 feet deep. The well is fenced. The well has a deep well turbine pump powered by an electric motor which can produces about 490 gpm. The air release valve is screened. **There is**

a visible hairline crack at the surface seal. CCSD should make sure the crack is not going to affect the quality of the well's water. There is a gap between the connection of the well casing and the discharge pipe. CCSD shall seal the gap to prevent rain, runoff, insects or other contaminants from entering the well.

The Santa Rosa Creek runs within 100 feet of the well. The well is located 25 feet above the creek bed. The well's construction features do not provide adequate protection against surface water influence. Therefore, it is considered to be GWUDISW when water is in the Santa Rosa Creek. The well has to comply with SWTR in order to be used when water is present in the creek. The raw water from the well discharges to the Santa Rosa Well 4 Filtration Plant. The filtration plant acts to remove iron and/or manganese, other particulates and to provide chlorine contact time (CT) to meet the SWTR requirements. A coagulant shall be used to enhance flocculation and increase filtration efficiency.

2.3 Adequacy of Supply

Public water systems are required to have enough source capacity at all times to meet their maximum day demands, as determined from the past 10 years. CCSD has an active combined capacity of approximately 1,195 gpm with their largest source (Santa Rosa Well 04) offline. Based on the production numbers reported to the Division on the Electronic Annual Report (EAR) since 2010, CCSD's maximum day demand (MDD) is 864 gpm, which is less than the combined capacity of CCSD. The CCSD's average day and maximum day demands during the last eight years are listed in Table 2.

Table 1: Active Source Capacity

Source	Pump Capacity (gpm)
Santa Rosa Well 3	425
Santa Rosa Well 4	490
San Simeon Well 01	370
San Simeon Well 02	370
San Simeon Well 03	370
Total	**2,025**

Table 2: Production Data (2010-2017)

Year	Annual Production (MG)	Average Day Demand (gpm)	*Maximum Day Demand (gpm)	*Peak Hour Demand (gpm)
2017	188.3	358.2	702.8	1,054.3
2016	161.1	306.4	556.8	835.2
2015	152.2	289.5	494.6	741.9
2014	152.1	289.4	471.8	707.7
2013	238.6	454.0	864.3	1,296.5
2012	236.2	449.3	840.7	1,261.0
2011	222.5	423.4	804.7	1,207.0
2010	219.1	416.9	795.9	1,193.9

*These values were estimated using peaking factors. Calculations with peaking factors are provided below.

$$\text{Average Day Demand (MG)} = \frac{\text{Annual Production (MG)}}{\left(365\,\frac{\text{days}}{\text{year}}\right)}$$

$$\text{Max Day Demand (MDD)} = \frac{\text{Max Month (MG)}}{\left(31\,\frac{\text{days}}{\text{month}}\right)} * (1.5)$$

$$\text{Peak Hour (PHD)} = \left(\text{Max Day (gpm)}\right) * (1.5).$$

According to the California Waterworks Standards, a public water system serving more than 1,000 service connections, shall be able to meet four hours of peak hourly demand with source capacity, storage capacity, and/or emergency source connections. CCSD has a total of 1.84 MG of storage. Using the highest calculated PHD demand in the last nine years (1,297 gpm in 2013), CCSD could provide approximately 24 hours of storage. Therefore, CCSD has adequate storage capacity to meet the Division's PHD criteria.

2.3.1 Drought Impact and Preparedness

The State will continue to update water conservation measures depending on current weather conditions. Therefore, the States measures continue to change based on current conditions. The Division recommends that the CCSD stay informed by visiting the State's Water Conservation Portal at http://www.water boards.ca.gov/water_issues/programs/conservation_portal/.

2.3.2 Climate Change

California is making efforts to adapt to a changing climate. A principle of the state's adaptation strategy document, Safeguarding California, is to prioritize actions that not only mitigate greenhouse gas emissions, but also help the state prepare for climate change impacts. Improved coordination, implementation, and integration of adaptation planning efforts and funding of the state's climate policies can directly protect the state's natural and built infrastructure, communities, environmental quality, public health, safety and security, natural resources, and economy from the unavoidable impacts of climate change. Drinking water systems are encouraged to use U.S. EPA's Climate Resilience Evaluation and Awareness Tool (CREAT); https://toolkit.climate.gov/tool/climate-resilience-evaluation-awareness-tool-creat

2.3.3 Groundwater Management

In 2014, California signed historic legislation for groundwater management throughout the State, specifically providing local agencies (also known as Groundwater Sustainability Agencies, or GSA's) the authority to manage groundwater basins and usage through the Sustainable Groundwater Management Act of 2014. This is important as groundwater levels are declining, water quality contamination is increasing, and the drought persists. GSA's located in high and medium priority basins in critical overdraft as identified by DWR need to develop groundwater sustainability plans by 2020 and adopt and implement the plan by 2040. GSA's are made up of local public water agencies such as Cities, Counties, Public Utility Districts, Community Services Districts, Irrigation Districts, Water Conservation Districts, etc. CCSD is encouraged to attend and engage in the local GSA meetings to provide input in the process.

2.3.4 Large Water System Resiliency and Preparedness

The effects of extreme weather on community water system (CWS) facilities and operations is a concern and priority of the State Water Resources Control Board (SWRCB), which is documented by the SWRCB in its Comprehensive Climate Change Resolution No. 2017-12, adopted in March 2017. The Division is reviewing each water system's level of resiliency and preparedness for changing climate conditions and extreme weather increase awareness to the potential effects to facilities and operations and encourage the use of EPA's Climate Resilience Evaluation and Awareness Tool (CREAT).

As part of the 2017 EAR, CWSs were asked to identify their vulnerabilities, and rank them as either high, medium or low sensitivity, and proposed or implemented projects to prepare for the impacts from climate change. CCSD did provide responses to these questions. CCSD listed they are highly sensitive to fires and have medium sensitivity to flooding. CCSD has implemented, or is considering implementing, the following projects to address current identified needs and which also reduce the impacts to these vulnerabilities:

- Relocate facilities, construct or install redundant facilities,
- Conservation measures (demand management, enhanced communication and outreach),
- Fire prevention – brush management, partnerships and,
- Alternative or backup energy supply.

CCSD indicated that they were not aware of the CREAT tool developed by USEPA for identifying climate vulnerabilities. CCSD has not used CREAT (or similar tool) to identify vulnerabilities to the water system sources and facilities. The SWRCB strongly encourages utilities to evaluate infrastructure and operational vulnerabilities to extreme weather and other emergency conditions using tools such as CREAT and engaging in a conversation both within your water system organization and with customers on how to plan and prepare for being resilient to provide clean and safe water reliably and adequately under all current and future conditions.

2.4 Treatment

CCSD operates two filtration treatment plants for the Santa Rosa Wells. Each of the Santa Rosa Wells has its own filtration plant and chlorination system. CCSD provides chlorination to the San Simeon Wells. The San Simeon Wells each have their own chlorination system located at each's well site. Chlorination is provided to the wells due to the shallow depth to the wells' perforations, shallow annular seals and to comply with SWTR when any well is within 150 feet of surface water.

2.4.1 Wellhead Chlorination

San Simeon Well Field

Chlorination is provided to the San Simeon Wells at each well's site. The sodium hypochlorite solution tanks are located in storage lockers next to the well housings. A 12-gallon per day (gpd) metering pump is used to inject a 12.5 percent sodium hypochlorite solution into the wells raw water. The sodium hypochlorite is stored in 200-gallon polypropylene containers. A 1.5 milligrams per liter (mg/L) of chlorine residual is targeted for the water leaving the San Simeon Well field. The chlorinated water is monitored continuously for the chlorine residual level. The monitoring system is located at the San Simeon Well 3 well housing.

Santa Rosa Wells

The Santa Rosa Well 3 chlorination facility is located at well's treatment plant. It has a 500-gallon chlorine storage tank and a metering pump. The chlorine is injected into the raw water

at the inlet to the first reaction vessel before the filtration process. A continuous chlorine analyzer is used to monitor the chlorine residuals. The chlorine analyzer is equipped with alarms that will warn CCSD's operators and/or personnel of low chlorine residual.

The Santa Rosa Well 4 chlorination facility is located in a concrete block building at the well's treatment plant. It also has a disconnected old venturi chlorination system next to the filtration unit. The sodium hypochlorite is stored in a 1,000-gallon plastic container. The treated water leaving the Santa Rosa Well 4 Treatment Plant is monitored continuously. The ideal chlorine residual in the treated water is maintained at approximately 1.5 mg/L. The low chlorine level alarm is set at 0.5 mg/L. CCSD's operators will be alerted through an auto dialer when the low chlorine level alarm is triggered.

2.4.2 GWUDISW Treatment Plants

Santa Rosa Well 3 Treatment Plant

The Santa Rosa Well 3 sits on a bank approximately 10 feet above the Santa Rosa Creek. It is considered to be GWUDISW when there is surface water in the Santa Rosa Creek. CCSD treats Santa Rosa Well 3 raw water at a filtration plant similar to that of Santa Rosa Well 4 filtration plant. The Santa Rosa Well 3 Filtration Plant utilizes a Filtronics pressure filter system with an approximate treatment capacity of 425 gpm.

Raw water from Santa Rosa Well 3 is first chlorinated with NSF 60 approved 12.5 percent sodium hypochlorite using a metering pump. The free chlorine residual is enough to carry through the treatment plant. The sodium hypochlorite is stored in a 540-gallon storage tank with a secondary containment behind a secured gate. Ferric chloride is added after the chlorine as a coagulant using a 12 pgd metering pump. NSF 60 approved ferric chloride helps to improve the efficiency of the filtering process. The NSF 60 approved ferric chloride is stored in a locked building at the treatment plant. CCSD shall continuously feed the ferric chloride prior to the filtering process when Santa Rosa Well 3 is used.

After the chlorine and coagulant injection, the water will go through two pretreatment reaction vessels. The reaction vessels help to improve mixing and to provide reaction time between the injection points and filtration. Each vessel provides about two minutes of detention time. The first vessel is used for chlorine oxidation. The water exiting the first vessel is injected with sodium bisulfate. The second vessel acts as a dechlorination vessel to provide reaction time for the sodium bisulfate to bring the chlorine residual down to the desired level. The vessels also remove hydrogen sulfide from the water. M

The water is then filtered through the Filtronics pressure filter system. The pressure filter system is a 10 feet diameter filter vessel which has one filter cell. The maximum filter run times are expected to be 8 hours or 5 pounds per square inch (psi) of differential pressure. Currently, CCSD backwashes the filters about every four hours or when 4.5 psi differential pressure is reached. The filtration plant was built in 1999 by Filtronics and inactivated in 2001 due an MTBE contamination plume affecting Santa Rosa Well 3. The plant was rehabilitated in 2014 with the help of Filtronics. The chlorine residual and turbidity in the filtered water is measured through a continuous chlorine analyzer and turbidimeter. A low chlorine and high turbidity alarm can alert CCSD's operators remotely. The filtered water goes to the western tank (Clearwell 1). From the western tank, water overflows to the 12,000-gallon east tank (Clearwell 2) through an overflow pipe. A booster pump station draws water from the east tank and sends the water to the distribution system and the Pine Knolls Reservoirs.

Water from the 12,000-gallon western tank is used for the filter backwash by using a backflow pump. The backwash lasts four minutes. The backwash water is sent to the sewer through an

air gap. The filter will go through a one minute purging process, through the same air gap, before sending water to the western tank.

For CT inactivation calculations, the filtration treatment plant is granted a 2-log removal of Giardia and 1-log removal of virus. Additional 0.5-log removal of Giardia is granted for bank filtration because water is taken from a well, not directly from a surface water intake. The 8

treatment plant needs to provide 0.5-log inactivation of Giardia and 3-log inactivation of virus through disinfection. CCSD must have approved CT calculations and DDW approval to use the Santa Rosa Well 3 when surface water is present in the creek. DDW is currently working with CCSD and its consultant, Water Systems Consulting, Inc., on the CT calculation and approval. DDW staff provided the final comments to CCSD's consultant on April 26, 2016. **The Santa Rosa Well 3 CT calculations showed that the disinfection process provided just enough CT to meet the SWRT inactivation requirements with minimal safety factor. It is strongly recommended that CCSD provides more storage or a high chlorine residual which would provide some extra CT at the treatment plant.**

There is manual power back-up for the treatment plant and the Rodeo Grounds Booster Pump Station at the Santa Rosa Well 3 Treatment Plant. CCSD plans to remove two poly-plastic tanks (which were used to dispense irrigation water for City of Cambria residents) and put in two more clearwell tanks at the Santa Rosa Well 3 Treatment Plant to provide more CT for the treated water before reaching the first connection. CCSD also plans to replace the old raw water turbidity meter because it does not provide reliable readings and needs constant calibration.

Santa Rosa Well 4 Treatment Plant

The Santa Rosa Well 4 is located within 100 feet of the Santa Rosa Creek. The well is required to comply with the SWTR because it is considered GWUDISW. The water from the well is treated through the Santa Rosa Well 4 Treatment Plant. The treatment plant is capable of treating 720,000 gallons of water per day (gpd) as reported in CCSD's 2015 Annual Report. The raw and treated water turbidity and chlorine residual leaving the treatment plant is continuously monitored by CCSD through a continuous analyzer. Alarms are set for low chlorine residual, high differential pressure across the filter bed, high turbidities in the treated water and low chemical supply. Besides meeting the SWTR requirements, the treatment plant also removes iron and manganese. A manual power backup generator is located onsite.

The raw water from Santa Rosa Well 4 is chlorinated with NSF 60 approved sodium hypochlorite prior to the filter. The sodium hypochlorite is pumped from a 1,000-gallon tank located in a concrete block building. Next, ferric chloride is added as a coagulant at a dosage of approximately 1 mg/L. The ferric chloride is stored in a 50-gallon drum. The ferric chloride tank is refilled every three months. The sodium hypochlorite and ferric chloride are mixed in-line with static mixers before the filtering process. CCSD has a 30-gallon drum available for sodium bisulfite which could be used to remove chlorine from the water before the filters. CCSD currently does not use the sodium bisulfate for dechlorination at the Santa Rosa Well 4 Treatment Plant.

The pre-treated water goes to the filtration treatment system and undergoes a filtering process. An 84-inch diameter and 92-inch long Pureflow Filtration filter vessel (Model FV-C-1200-H) is used for filtering the pre-treated water. The filtration unit can process up to 10 gpm of pre-treated water per square feet. The treated water leaving the treatment plant is monitored for low chlorine level and high turbidity through continuous analyzers. The low chlorine alarm is set at 0.5 mg/L and is connected to an auto dialer to alert CCSD operators. The alarm can

remotely alert the operators. The treated water then fills up a 16,000-gallon tank. Water from the tank will be used for backwashing the filtration unit. When the tank is filled, the treated water is being sent to the distribution system and storage reservoirs. The tank's overflow is screened.

Filter backwashes are based on the filter differential headloss or filter run times. Water from the 16,000-gallon tank is used for the filter backwash. The filter is backwashed at 1,200 gpm and uses about 4,700 gallons of water in one backwash. The backwashed water is stored in a reclaim tank for three hours to allow suspended solids to settle to the tank bottom. The settled backwash water is recycled to the headworks of the treatment facility (before the chlorine and ferric chloride feed) equal to or less than 10 percent of the raw water flow rate at 60 gpm. CCSD uses a flow control valve to keep the recycled backwash water rate at or under the 60 gpm limit. This ensures that the backwash return is less than the 10 percent of the overall flow through the filter. CCSD shall collect a turbidity sample and document the recycled backwash water flow rate daily.

Currently CCSD has a rental baker tank onsite for capturing overflows from the reclaim tank through a pipe from the reclaim tank's overflow. CCSD plans to stop the backwash water reclamation in July 2016 and terminate the lease on the rental baker tank. CCSD wants to dispose of the backwashed water to the sewer line instead of reclaim the backwashed water. CCSD shall use an air gap to discharge the backwashed water from the filtration unit into the reclaim tank when the reclaim tank is used for discharging into the sewer system. CCSD shall physically disconnect the backwashed water reclaim pipe leading up to the headworks of the filtration plant.

For CT inactivation calculations, the filtration treatment plant is granted a 2-log removal of Giardia and 1-log removal of virus. Additional 0.5-log removal of Giardia is granted for bank filtration because water is taken from a well, not directly from a surface water intake. The treatment plant needs to provide 0.5-log inactivation of Giardia and 3-log inactivation of virus through disinfection. The 14-inch water line leaving the treatment facility provides adequate CT before the first service connection to meet SWTR requirements. CCSD must periodically verify the chlorine residual leaving the treatment plant is maintained in the water line and all the way up to the end of the contact time.

CCSD sent CT inactivation calculations to DDW Santa Barbara District office for review and approval in July 2003. In the Santa Rosa Well 4 Treatment Plant CT calculation, CCSD uses a maximum flow rate of 575 gpm through a contact pipe. The contact pipe has a total volume of 8,460 gallons and provides 15 minutes of chlorine contact time. A 1.0 mg/L chlorine residual and 7.5 pH is used to calculate the CT provided by the disinfection process.

From reviewing the 2013 to present Santa Rosa Well 4 Treatment Plant monitoring data (See II.f Element 6 for the monthly average numbers), there were numerous days that CCSD just met the 0.5 log inactivation of Giardia over that time period. There were other days that CCSD provided just over 0.5 log inactivation of Giardia. There were four different days in January and February of 2015 that CCSD provided less than the required 0.5 log inactivation of Giardia when there was surface water within 150 feet of Santa Rosa Well 4. It is strongly recommended that CCSD provide extra contact time using additional storage for the treated water at the Santa Rosa Well 4 Treatment Plant.

2.5 Storage Facilities

CCSD storage consists of six treated water storage reservoirs providing a total storage capacity of 1.83 million gallons (MG). Two clearwell reservoirs are located at the Santa Rosa Well 03 Treatment Plant and can store approximately 50,000 gallons of water. Each of the reservoirs are equipped with an alarm system which is connected to the reservoir level controls and an automatic dialing machine. At the time of the inspection, photographs of the Fiscalini Tank were not taken due to a tree blocking the roadway to the reservoir. **By April 30, 2019, CCSD needs to submit photographs to the Division of the Fiscalini Tank that include the roof of the reservoir, screened vents, screened overflows, and secured hatches.** The remaining reservoirs all included secured hatches and screened vents and overflows. According to CCSD staff, all eight storage facilities are going to be inspected by a drive team in 2019. **CCSD needs to submit the report with the findings from the reservoir inspection to the Division when the report is made available to CCSD.**

Table 3: Storage Tank Facilities

Storage Facility Name	Capacity (Gallons)	Year installed	Type	Date of last inspection	Date of last cleaning	Date re-lined or coated
Santa Rosa Well 03 Treatment Plant Clearwell 1	20,570	1984	Steel			
Santa Rosa Well 03 Treatment Plant Clearwell 2	29,620	1984	Steel			
Fiscalini Tank	325,000	1992	Steel	2018	2017	2017
Leimert Tank	120,000	1988	Steel	2014	2014	1988
Pine Knoll Tank #1	483,000	2007	Steel	2016	2007	2007
Pine Knoll Tank #2	483,000	2007	Steel	2016	2007	2007
Stuart Street Tank #1	212,000	1992	Bolted Steel	2017	2013	1992
Stuart Street Tank #2	212,000	1992	Bolted Steel	2017	2017	1992

2.6 Distribution System

CCSD water distribution system consists of nine pressure zones. The pressure in those zones are maintained by three booster pump stations and the distribution system storage reservoirs. CCSD's water mains consists primarily of polyvinyl chloride pipe while the rest is either asbestos cement pipe or ductile iron pipe. The pressure in the distribution system typically ranges from 45 to 130 pounds per square inch (psi).

The distribution system includes 62 dead ends and 973 valves. The dead ends are flushed as needed and the valves are flushed on a semi-annual basis. During 2017, there were seven service connection breaks/leaks reported by the system. CCSD investigated each problem and listed the corrective actions taken to fix the problems.

CCSD is required to maintain adequate separation between its water supply lines and any pipelines conveying non-potable fluids and/or any waste disposal sites or other potential sources of contamination, as described in the California Waterworks Standards.

New lines are disinfected and retained for 24 hours. Bacteriological tests are made after disinfection. Repairs to fractured mains are made under partial pressure or if a section of the line is replaced, all parts used and the fittings are swabbed with sodium hypochlorite and flushed in accordance with AWWA disinfection procedures.

2.6.1 Lead Service Line Inventory Requirement

Existing law prohibits the use of any pipe, pipe or plumbing fitting or fixture, solder, or flux that is not “lead free” in the installation or repair of any water system or any plumbing in a facility providing water for human consumption. Senate Bill (SB) 1398 became effective on September 27, 2016, and added Section 116885 to the Health and Safety Code (HSC). HSC Section 116885 requires water systems to compile an inventory of known lead user service lines in use in its distribution system and identify areas that may have lead user service lines in use in its distribution by July 1, 2018. After completing the inventory, water systems are required to provide a timeline for replacement of known lead user service lines in the distribution system to the SWRCB. In addition, water systems with areas that may have lead user service lines in use in its distribution system must either determine the existence or absence of lead service lines in these areas and provide that information to the SWRCB, or provide a timeline for replacement of the user service lines whose content cannot be determined by July 1, 2020. The SWRCB must approve the replacement timeline. CCSD indicated there are no lead service lines on the 2017 EAR.

2.7 Booster Stations

Three booster pump stations are used to maintain adequate pressure in the distribution system: Rodeo Grounds Pump Station, Leimert Booster Station, and Stuart Street Booster Station.

Table 4: Booster Pump Station Info

Booster Station	# of Pumps	Capacity (gpm)	Delivers Water From	Delivers Water To
Rodeo Grounds Pump Station	4	600 each		
Leimert Booster Pump Station	4	Two 125, one 375, and one 1,000		
Stuart Street Booster Pump Station	2	455 each		

2.8 Operation and Maintenance

The CCSD’s distribution system is classified as a D2 distribution system and the Santa Rosa Well 3 and Santa Rosa Well 4 Treatment Plants are classified as T3 treatment facilities. CCSD employs five certified distribution operators to meet the distribution operator requirements. Four of the five certified distribution operators also have treatment operator certification to meet the treatment operator requirements. All operators’ certifications are up to date.

Water systems shall utilize either certified distribution operators or treatment operators to make decisions addressing the following operational activities:

1. Operate pumps and related flow and pressure control and storage facilities manually or by using a system control and data acquisition (SCADA) system.
2. Maintain and/or adjust system flow and pressure requirements, control flows to meet consumer demands including fire flow demands and minimum pressure requirements.

Water systems shall utilize either certified distribution operators or treatment operators to make decisions addressing the following operational activities:

1. Determine and control proper chemical dosage rates for wellhead disinfection and distribution residual maintenance.

2. Investigate water quality problems in the distribution system.

DISTRIBUTION OPERATOR CERTIFICATION REQUIREMENTS
Regulations require the chief distribution operator to have at least a D3 certification and the shift distribution operator to have at least a D2 certificate. Water systems shall utilize only certified distribution operators to make decisions addressing the following operational activities:

1. Install, tap, re-line, disinfect, test and connect water mains and appurtenances.
2. Shutdown, repair, disinfect and test broken water mains.
3. Oversee the flushing, cleaning, and pigging of existing water mains.
4. Pull, reset, rehabilitate, disinfect and test domestic water wells.
5. Stand-by emergency response duties for afterhours distribution system operational emergencies.
6. Drain, clean, disinfect, and maintain distribution reservoirs.

2.9 Cross-Connection Control Program

CCSD has an established cross-connection control program, which is coordinated by Eric Erland. CCSD is required to ensure that all of the necessary backflow prevention devices are tested annually. According to the 2017 EAR, all 763 backflow prevention devices were tested and 35 of them failed. The 35 backflow prevention devices that failed were repaired or replaced.

2.10 Emergency Notification Plan

CCSD has an Emergency Notification Plan (ENP) dated March 28, 2014. The ENP is no longer accurate since the emergency contacts have changed. The Division gave Shaun Ryan an ENP template to complete at submit. **By April 30, 2019, CCSD needs to submit an updated ENP to the Division.** The ENP shall be updated whenever necessary, although the Division recommends submitting the ENP on an annual basis to ensure that the information remains current.

2.11 Emergency Response Plan

CCSD has an Emergency Response Plan (ERP) on file with the Division dated March 2003. The ERP lists the actions CCSD will undertake in event of emergency situations. The Division recommends reviewing the ERP to ensure the information is current. If changes are made to the ERP, the updated ERP needs to be submitted to the Division for review and approval.

2.12 Bacteriological Sample Siting Plan (BSSP)

CCSD has a Bacteriological Sample Siting Plan (BSSP) on file with the Division dated June 1, 2016 and entails the collection of a minimum of 10 samples per week from within the distribution system. Based on the size of the population served and the amount of service connections, CCSD is required to collect a minimum of 12 samples per month from within the distribution system. Historically, CCSD collects between 56 and 70 samples per month. The BSSP must be updated any time there is a change in the procedures used for bacteriological monitoring or at a minimum, once every ten years.

2.13 Consumer Confidence Report (CCR)

CCSD is required to distribute a CCR to each customer in their service area by July 1st of each year. A copy of the CCR for the year ending December 31, 2017 was submitted to the Division on September 7, 2018. CCSD did not submit a the CCR certification form to the Division by October 1, 2018. The CCR certification form details which methods were used to distribute the CCR to each customer and on which date. **By March 31, 2019, CCSD needs to submit the CCR certification form to the Division.**

2.14 Electronic Annual Report (EAR)

The California Health and Safety Code Section 116530 states that all public water systems shall submit a technical report as required by the Division on an annual basis. The Division requires all water systems to submit the Electronic Annual Report (EAR) each year for the previous year, detailing population served and number of service connections, water produced and used status of various monitoring requirements and operator certification, system improvements and other information. The 2017 EAR was due to the Division by June 1, 2018 and the Lead Service Line Inventory section of the 2017 EAR was due by July 1, 2018. CCSD submitted the 2017 EAR to the Division on March 29, 2018. However, the Lead Service Line Inventory section needed to be revised. CCSD resubmitted the 2017 on December 12, 2018 and the Division deemed the EAR complete. **The 2018 EAR is now available for public water systems to submit and is due by May 1, 2019. Failure to submit the 2018 EAR by May 1, 2018 could result in enforcement action on the water system.**

III. WATER QUALITY MONITORING

CCSD has two types of water quality monitoring requirements: source water and distribution system. The source water quality monitoring is collected from the active wells and the distribution system monitoring is collected from sample sites within the distribution system. The sampling requirements and frequencies for the two types of monitoring are discussed in the subsequent sections.

3.1 Vulnerability Assessment for Sources

A Source Water Assessment Program (SWAP) for each active source haven been assessed, with the exception of Santa Rosa Well 03. Copies of the SWAP's are on file with the Santa Barbara District office. The Division recommends that SWAPs be updated when changes are made to the source or changes to the surrounding area that have the potential to affect the water quality of the source. The active sources are considered most vulnerable to the following activities not associated with any detected contaminants:

Table 4: Possible Contaminating Activities

Source	Report Date	Possible Contaminating Activity
San Simeon Well 01	April 2003	Other animal operations
San Simeon Well 02		
San Simeon Well 03		Other animal operations and agricultural drainage
Santa Rosa Well 04	May 2003	Agricultural drainage, septic systems – low density [<1/acre], wells – agricultural irrigation

3.2 Source Water Monitoring

For purposes of water quality monitoring, the CCSD is classified as a community water system. This designation determines the chemical monitoring schedule for CCSD. All source water quality monitoring compliance is based on the Division's Water Quality Inquiry (WQI) database. All chemical water quality monitoring from the sources must be submitted to the Division via electronic data transfer (EDT). In order for EDT to work properly, the CCSD must identify the samples with the correct primary station code. The past water quality monitoring results for the CCSD are included in the WQI database. Attachment A contains a summary of the last samples collected along with the next sample due dates.

3.2.1 General Mineral and General Physical Monitoring Requirements

The CCSD is required to monitor the raw water for general mineral and general physical (GM/GP) chemicals every three years. Based on the last round of GM/GP chemical monitoring, the groundwater wells exceed the MCL for iron, manganese, specific conductance, sulfate, total dissolved solids, and turbidity. The raw water from the wells receive treatment through the City of Lompoc's Softening and DE Filtration Treatment Plant. Following treatment, iron and manganese are non-detect, and specific conductance, sulfate, total dissolved solids, and turbidity are less than their respective MCL's.

3.2.2 Inorganic Chemical Monitoring

Inorganic chemical monitoring is required once every three years from the raw water. Based on the last round of inorganic chemical monitoring, the results from the active sources were all less than their respective MCL's.

3.2.3 Nitrate

CCSD is required to monitor the raw water for nitrate (as N) on an annual basis. The MCL for nitrate (as N) is 10 milligrams per liter (mg/L). Based on the last round of nitrate (as N) monitoring from the active sources, the results were all non-detect.

3.2.4 Volatile Organic Chemicals (VOC)

Monitoring for VOCs is required once every three years from the raw water. Based on the last round of VOC monitoring from the active sources, the results were all non-detect.

3.2.5 Synthetic Organic Chemicals (SOC)

Monitoring for SOCs is required once every nine years from the active sources. Based on the last round of SOC monitoring from the active sources, the results were all non-detect.

3.2.5.1 1,2,3-Trichloropropane (1,2,3-TCP)

1,2,3-TCP is a manufactured chemical that is found at industrial and hazardous waste sites. It is typically found in discharges related to cleaning and degreasing solvents and it is also associated with pesticide products. Groundwater wells that are located in agricultural areas are, in particular, vulnerable to 1,2,3-TCP contamination. In 1999, the Division established a 0.005 µg/L drinking water notification level for 1,2,3–TCP. Notification levels are health-based advisory levels established by the Division for chemicals in drinking water that currently lack MCLs, but in the future will be regulatory candidates based on numerous source detections and potential for adverse health effects. 1,2,3-TCP is reasonably anticipated to be a human

carcinogen based on sufficient evidence of carcinogenicity from various experimental studies of animals.

On December 14, 2017, the California regulation for 1,2,3-TCP became effective. The 1,2,3-TCP's MCL and DLR are both set at 0.005 µg/L or 5 ppt. The regulation requires public water systems to begin quarterly monitoring for 1,2,3-TCP in their drinking water sources in January of 2018. All water systems (community and non-transient non-community) need to begin quarterly monitoring of their sources, groundwater and surface water, in January, February or March 2018. All water systems need to complete four quarters of monitoring in 2018 unless a previous "grandfathered" request has been approved by the Division (explained below).

Water system compliance with 1,2,3-TCP is determined by the average of four consecutive quarterly samples. Results from groundwater samples collected during 2016 and 2017, using the laboratory method, SRL 524M analytical method, may be used to satisfy initial monitoring requirements ("grandfathered") based on a written request to the Division. Water systems may only substitute samples in like calendar quarters (e.g. Q2 2016 for Q2 2018) and only three out of the four quarterly samples may be substituted. Grandfathered data needs to be submitted to the Division via hardcopy with a written request.

Unless a grandfathered request has been approved by the Division, water systems were required to sample all of their active sources by March 31, 2018 using the SRL 524M testing method. Then quarterly for all of 2018. No distribution samples or treated water samples are required at this time. Water systems need to monitor standby sources once every three years for three consecutive cycles, before water systems may be reduced to monitoring once every nine years. The first round of monitoring for 1,2,3-TCP for standby sources is due by January 1, 2021. CCSD completed the quarterly monitoring requirement for 1,2,3-TCP from their active wells, and the results were non-detect. Well 01 and Well 02 have been out of service since April 2017 and October 2015, respectively. CCSD plans to repair Well 01 and Well 02 and will need to complete four consecutive quarters of 1,2,3-TCP to determine compliance.

3.2.6 Radiological Monitoring

The California Radionuclide Rule became effective on June 11, 2006. Initial monitoring requirements under the California Radionuclide Rule consist of four consecutive quarters of sampling. If the first two quarterly sample results are less than the DLR of 3 pCi/L, the final two quarters may be waived. If the gross alpha (GA) activity is more than 5 pCi/L, uranium must be analyzed from the same sample and the analysis results for uranium may be used to obtain the total radium activity (gross-alpha – uranium = total radium). If the GA activity is below the DLR, the GA monitoring frequency is set to once every nine years. The MCL for GA is 15 pCi/L.

CCSD completed the initial monitoring and the subsequent monitoring frequency for GA is based on the most recent sample result. Table 5 list the last gross alpha sample date, result, and next due date for each active source.

Table 5: Gross Alpha Monitoring Results

Source	Sample Date	Result (pCi/L)	Sample Frequency	Next Due
Well 01	9/3/2014	2.45	9 years	9/2023
Well 02	7/1/2015	7.70	3 years	7/2018
Well 03A	9/6/2011	1.25	9 years	9/2020
Well 04	7/1/2015	3.91	6 years	7/2021
Well 05	5/3/2017	3.00	6 years	5/2023

Well 06	9/7/2011	1.77	9 years	9/2020
Well 07	4/27/2016	1.42	6 years	4/2022
Well 08	9/3/2014	2.79	9 years	9/2023
Well 09	5/16/2018	6.17	6 years	5/2024
Well 11	1/11/2012	1.84	9 years	1/2021
Frick Springs	7/1/2015	4.14	6 years	7/2021

3.2.7 Bacteriological Monitoring – Raw Water

CCSD is required to conduct monthly bacteriological monitoring of raw water. The bacteriological samples must be collected at a location ahead of the water treatment plant and shall be analyzed for total coliform and *E. coli* bacteria. All bacteriological monitoring shall be submitted directly to the Division by the 10th day of the following month.

3.3 Treatment Plant Monitoring

CCSD's treatment plant is designed to reduce arsenic, turbidity, total dissolved solids, total hardness as calcium carbonate ($CaCO_3$), iron and manganese levels to blow the primary and secondary MCL's. The following tables provide the average monthly effluent concentrations for the above constituents since 2016.

Table 6A: Arsenic Monthly Results (µg/L)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	9	ND	2	3	2	ND	3	3	3	4	4	3
2017	ND	ND	ND	3	3	3	3	5	7	4	5	3
2018	3	3	2	3	ND	2	3	2	3	4	ND	3

Table 6B: Turbidity Monthly Average Results (NTU)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.09	0.10	0.07	0.07	0.07
2017	0.08	0.07	0.06	0.06	0.06	0.07	0.06	0.06	0.07	0.07	0.07	0.10
2018	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.07	0.06

Table 6C: Total Dissolved Solids Monthly Average Results (mg/L)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	852	831	833	872	871	832	871	836	848	797	798	860
2017	815	804	807	803	884	837	804	812	786	830	847	829
2018	802	846	785	824	842	832	856	810	866	829	831	815

Table 6D: Total Hardness as $CaCO_3$ Monthly Average Results (mg/L)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	294	292	312	305	296	304	300	359	366	293	293	308
2017	298	300	295	298	317	311	306	309	299	297	295	296
2018	294	299	291	293	295	296	296	300	298	296	295	351

Table 6E: Iron Monthly Results (µg/L)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6F: Manganese Monthly Results (ug/L)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	2	3.8	2.5	1.3	1.6	ND	ND	ND	ND	ND	ND	ND
2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

3.4 Surface Water Treatment Rule Monitoring

The Surface Water Treatment Rule (SWTR) requires continuous turbidity monitoring and 15-minute recording of the individual and combined filter effluents. CCSD is required to submit a monthly report to the Division that includes the total number of turbidity measurements recorded and turbidity results recorded at intervals of no greater than every four hours. CCSD is also required to report all results that exceeded 0.5 NTU and the number and percent of turbidity measurements that were less than or equal to 0.5 NTU, based on measurements recorded at intervals of no greater than every 15 minutes.

For compliance with the SWTR, CCSD monitors chlorine residual as it enters the clearwell storage. The results are used to determine adequate disinfection of microbes that may be in the water. CT (disinfection concentration multiplied by contact time) is calculated and compared to minimum values as required by the SWTR in the form of a CT ratio. CT requirements are met before entering the distribution system.

3.5 Distribution System Monitoring

3.5.1 Bacteriological Monitoring

CCSD is required to routinely monitor its distribution system for total coliform bacteria, fecal coliform bacteria, disinfection byproducts, and chlorine residuals. CCSD tests either 60 or 75 samples for coliform bacteria per month from its distribution system, as outlined by its approved Bacteriological Sample Siting Plan. The most recent positive total coliform bacteriological sample from its distribution system occurred in October 2016. CCSD collected three repeat samples and one of the samples was positive for total coliform bacteria. A second set of repeats were absent for total coliform bacteria.

3.5.2 Stage 2 Disinfection Byproduct Monitoring

The CCSD is required to comply with the Disinfection Byproduct (DBP) Rule. The Stage 2 DBP Rule took effect on October 1, 2013. To comply with the Stage 2 DBP Rule monitoring requirements, CCSD is required to collect three annual samples for trihalomethanes (TTHM) and haloacetic acids (HAA5). The results of Stage 2 DBP monitoring must be submitted to the Division via EDT.

3.5.3 Maximum Residual Disinfection Level (MRDL)

To comply with the maximum disinfection level for chlorine of 4.0 mg/L, CCSD monitors its distribution systems for the total chlorine residual. CCSD takes weekly samples from the distribution system. The Maximum Residual Disinfectant Level (MRDL) of 4.0 mg/L needs to

be complied with based on a running annual average (RAA). The chlorine residual RAA is 0.76 mg/L.

IV. SYSTEM APPRAISAL

The CCSD water supply facilities are in good sanitary condition and appear to be operating satisfactorily under competent supervision. CCSD uses 10 active wells to regularly meet system demand. The Frick Springs is used to regularly meet the demand of the separate system. According to CCSD staff, there are plans to remove the Frick Springs treatment plant and the water supply will come from a separate outlet from the Miguelito Reservoir. CCSD's storage consists of a total of 12 MG. CCSD has adequate storage capacity to meet the Division's MDD and PHD based on historical production values. Currently, Well 01 and Well 02 are out of service due to equipment failures. When Well 01 and Well 02 are back in operation, CCSD needs to complete four quarters of monitoring for 1,2,3-TCP.

V. CONCLUSION AND RECOMMENDATIONS

The CCSD must address the following items that were noted during the 2019 inspection and a subsequent file review:

1. By **March 31, 2019**, CCSD needs to submit the most recent Watershed Sanitary Survey Report to the Division for the system file.

2. By **March 31, 2019**, CCSD needs to submit photo documentation to the Division of the screened vents and secured hatch doors on Miguelito Reservoir, O Street Reservoir, Clearwell Reservoir 01, and Clearwell Reservoir 02.

3. By **March 31, 2019**, CCSD needs to submit the CCR certification form to the Division.

4. By **April 30, 2019**, CCSD needs to submit an updated ENP to the Division.

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Water Resource Control Engineer

ATTACHMENT A

Last Sample/ Next Due Water Quality Monitoring Schedule