

SIERRA PARK WATER COMPANY

Water System Operations Plan PWS: 5510016

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Prepare For:

State Water Resources Control Board
Division of Drinking Water

Prepared By:

SIERRA PARK WATER COMPANY

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ATTACHMENTS

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2. Bacteriological Sample Siting Plan
3. Water Main Repair Incident Report Form
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1.0 SYSTEM DESCRIPTION

The Sierra Park Water System is a small public water systems with 2 wells, 6 storage tanks and distribution system serving 345 service connections. The Sierra Park Water Company, Inc. (SPWC), owns and operates the water system. System Operator, Steve Wise takes water samples every month to Aqua Labs for analysis and reporting to the Division of Drinking Water. The system also contracts out a part time maintenance man.

See Attachment 1 for a site map. The following sections give a brief description of the source wells, storage tanks, and distribution system.

1.1 Wells

The water system is supplied by two groundwater wells. Well No. 5 was constructed in 1986, and is 350 feet deep with a 10 Hp pump. Well No. 6 was constructed in 1996 and is 403 feet deep with a 15 Hp pump.

Both wells are located at the bottom of the community next to the lake, and pump directly into the distribution system and up to the storage tanks. The wells are operated manually by the system operator who monitors the tank levels and alternates the wells. Each well is equipped with a flow meter to record water usage. Well flow is recorded manually by the system operator. Well flow rates are approximately 150 gpm with both wells running.

1.2 Storage Tank

There are total of 6 storage tanks located in two areas at the top of the community. Site 1: Isaac tank is a 210,000 gallon welded steel tank, and is the primary storage for the water system. Isaac Tank was constructed in 1975 and recoated in October 1999.

Site 2: The Farm Tanks consist of (1) 43,000 gallon tank bolted steel tank and (4) 12,500 welded steel tanks which were constructed in 1999. The Farm Tanks are lower than Isaac Tank and are primarily backup storage.

1.3 Distribution System

The distribution system consists of approximately 6 miles of 4" diameter mainline piping, and approximately 1200 feet of 2" diameter mainline piping. Mainline isolation valves and fire hydrant locations can be seen on the Water System Map in Attachment 1.

2.0 ROUTINE OPERATION PROCEDURES

2.1 Wells Inspection (daily).

1. Check for the following: leaks, loose fittings, lubricants, electrical hazards, chemical hazards, etc. (record observations and correct problem).
2. Check the pump for proper operation.
3. Record flow rate (GPM) on weekly basis,
4. Check well buildings for the following: damage, openings in the walls, roof and floor, weathering, rodents, etc. (record observations and correct problem)

2.2 Storage Tanks Inspection (daily).

1. Inspect for leaks, damage, and coating degradation (record observations and repair as required).
2. Check perimeter fencing for holes or damage (record observations and repair as required)
3. Cleaning around the storage tanks including vegetation control (semi-annually). Record date cleaned and observations.

2.3 Gauges and Meters Maintenance (daily)

1. Inspect all gauges and meters for leaks and proper function daily. Repair or replace as needed (keep record of date).

2.4 Valves Inspection and Exercising

1. Inspect valves for leaks (record observations, repair or replace if leaking).
2. Exercise valves (annually, record dates)

2.5 Distribution System Operation and Maintenance

1. Visually inspect the distribution system for leaks on a daily basis. Record date and observations.
2. Routine System Flushing will be held in the Spring and in the Fall each year.
3. Flush dead end mains (quarterly, record date and observations).

2.6 Water Main Repair Procedures:

A. Water Pressure Is Observed To Be Less Than 5 psi (Complete Outage):

In concurrence with the Chief Operator:

1. Identify the exact location of the leak by visual observation or pot holing. Confirm water pressure in the system by checking pressure at sentinel monitoring locations as described within and at the location of resident that reported the outage (if applicable). Start one of the wells if water pressure less than 50% of normal.
2. Once the leak has been located, isolate the section by closing all the associated mainline valves. Mark on the Water System Map which valves are being closed to determine the affected area that will be without water while the line is repaired.
3. Monitor and record the tank levels observed during the water main break. Record the information on the Pipeline Incident Report.
4. Inform the residents in the affected area by means identified in the Emergency Notification Plan (Attachment 4). Means of notification include initially placing sandwich board signs with notices in the affected area along with information on the front gate

entrance sign and the marquee. Prior to restoring service in the affected area, inform the Division of Drinking Water immediately for all breaks in the main distribution system or when pressure is lost.

5. Proceed to repair the line. Record observations, document repair procedures, and list the materials and equipment needed for the repair. Fill out the Water Main Repair – Incident Report (Attachment 3), and forward a copy to the Division of Drinking Water for all breaks in the main distribution system or when pressure is lost. Contact the Division of Drinking Water once the repairs have been completed.
6. **Prior to restoring service, all residents in the affected area must be notified by handbill of the need to boil their water until further notice.**
7. Turn the water main valves back on. Flush the section that was repaired until water is clear; use a clear container and check the water every minute for cloudiness and sediment. Check and record system pressure at the sentinel monitoring locations and at the residence of the person reporting the pressure loss, if applicable. Take a special bacteriological sample from the closest service to the main repair location and residence to the repair and deliver to Aqua Lab for analysis. If the sample comes back positive follow the procedures in the Emergency Disinfection Plan below. If negative inform the Division of Drinking Water. Inform the residents in the affected area by means identified in the Emergency Notification Plan (Attachment 4).
8. Upon notification from the laboratory and concurrence with the Division of Drinking Water, notify the residents in the affected area that there is no longer a need to boil the water given the receipt of analytical results that show the water is free from coliform bacteria.
9. Follow-up with the Customer Complaint and close the report and send to the Division of Drinking Water.

2.6B Water Main Repair Procedures – System Pressure Remains Above 5 psi:

In concurrence with the Chief Operator:

1. Start one of the wells if water pressure less than 50% of normal.
2. Identify the exact location of the leak by visual observation or pot holing. Confirm system pressure at sentinel monitoring locations and at location of resident that reported the leak, if applicable. Record the system pressures observed.
3. Once the leak has been located, isolate the section by closing all the associated mainline valves. Mark on the Water System Map which valves are being closed to determine the affected area that will be without water while the line is repaired.
4. Monitor and record the tank levels observed during the water main break.
5. If customers are going to be without water during the main line repair, inform the residents in the affected area by means identified in the Emergency Notification Plan (Attachment 4). Means of notification include initially placing sandwich board signs with notices in the affected area along with information on the front gate entrance sign and the marquee. Prior to restoring service in the affected area, inform the Division of Drinking Water immediately for all breaks in the main distribution system or when pressure is lost.
6. Proceed to repair the line. Record observations, document repair procedures, and list the materials and equipment needed for the repair. Fill out the Water Main Repair – Incident Report (Attachment 3), and forward a copy to the Division of Drinking Water

- for all breaks in the main distribution system or when pressure is lost. Contact the Division of Drinking Water once the repairs have been completed.
7. **If pressure in the system remained above 5 psi, it is not necessary to issue boil notices. Notify customers by means identified in the Emergency Notification Plan (Attachment 4) that the break has been repaired and boil notice are not needed.**
 8. Turn the water main valves back on. Flush the section that was repaired until water is clear; use a clear container and check the water every minute for cloudiness and sediment. Check and record system pressure at the sentinel monitoring locations and at the residence of the person reporting the pressure loss, if applicable. **Collect special bacteriological samples from the affected area and submit to the analytical laboratory for analysis for total coliform bacteria.**
 9. If applicable: upon notification from the laboratory and concurrence with the Division of Drinking Water, notify the residents in the affected area that there is no longer a need to boil the water given the receipt of analytical results that show the water is free from coliform bacteria.
 10. Submit Main Line Repair Incident Report (Attachment 3) to the Division of Drinking Water.

3.0 MONITORING AND REPORTING

3.1 Bacteriological Monitoring

Reference the approved Sample Siting Plan (see Attachment 2), required monthly; report to the Division of Drinking Water by the 10th of each month. Bacteriological sample results shall be kept on record for 5 years, and corrective action for sampling for 3 years.

Total coliforms, Fecal Coliforms and E. coli are indicator organisms. Fecal Coliform is a subset of Total Coliform; E. coli is a subset of Fecal Coliform. Detection of Total Coliform is a warning sign that the water system is vulnerable to fecal contamination. Detection of Fecal Coliforms or E. coli is a danger alarm that the water system is contaminated with fecal waste and that pathogens may be present.

Total Coliform Positive Result

The following actions shall be taken in the event of a Positive Total Coliform result in a routine sample:

1. Confirm that the laboratory tested the Total Coliform positive sample for the presence of Fecal Coliforms and E. coli bacteria. The lab typically does this automatically.
2. Notify Division of Drinking Water immediately after being notified of the positive sample.
3. Within 24 hours of being notified of the positive Total Coliform result, collect five (5) repeat samples for total coliform testing. Repeat samples shall be collected from the following locations:
 - Location of the positive sample
 - Location within 3 service connections upstream of the positive sample
 - Location within 3 service connections downstream of the positive sample

- Well 5 and Well 6
4. If the repeat samples come back positive than the following Emergency Disinfection Plan must be followed in order to disinfect the distribution system.
 5. In the following month take a minimum of 5 bacteriological samples from the distribution system.

Emergency Disinfection Plan

Disinfection procedures and subsequent bacteriological monitoring will be performed per AWWA C651-05. In the event that a water sample tests positive for bacteriological organisms the following steps shall be performed by a qualified operator:

1. Notify residents as well as Division of Drinking Water within 24 hours of being notified of the positive sample. Post "BOIL WATER" Notification (see Attachment 5 for Boil Water Notification).
2. Manually turn off the source wells.
3. Add the required amount of NSF 60 certified chlorine to the tanks to achieve a 5 ppm Cl₂ residual. Use the following formula to calculate the required amount of Cl₂ solution to add (assume 10% Cl₂ Solution):

$$\text{Volume Cl}_2 = \frac{\text{Tank Volume (gal)} \times 5 \text{ ppm}}{100,000 \text{ ppm}} \longrightarrow (10\% \text{ Cl}_2 \text{ Solution}) = \text{gal Cl}_2$$

$$\text{Tank Volume} = 0.785 \times \text{Diameter}^2 \times \text{Height} \times 7.48 = \text{gal}$$

4. Open a hydrant at the end of the line to flush chlorinated water from the tank into the distribution system. It may be necessary to open up a second hydrant to completely flush the system.
5. Continue to take samples at the end of the line to test for Cl₂ residual. Once the chlorinated water has reached the end of the line close the hydrants.
6. Let the system sit for 24 hrs.
7. Turn the wells back on and flush the distribution system to evacuate the chlorinated water. Take samples within the distribution system to test for Cl₂ residual. There must be no chlorine residual when samples are taken.
8. Collect bacteriological samples in accordance with the section above, and deliver to the lab for testing of Total Coliform.
9. If samples come back negative for bacteriological organisms move on to step 10. If samples come back positive repeat steps 1 – 8.
10. Notify residents that the Boil Water notice has been lifted.

NOTE: The above work will be performed by the qualified operator listed below in Section 3.

3.2 Chemical Monitoring

Chemical constituent sampling and reporting is a requirement of any water distribution system. Constituent sampling and frequency is defined by the Division of Drinking Water. Samples are taken to a certified laboratory for testing, and results are forwarded to the Division of Drinking Water for compliance.

1. Keep chemical results for ten years.
2. Keep variance and exemptions for five years.

4.0 RESPONSE TO THE PUBLIC

4.1 PUBLIC NOTIFICATION of Violation required.

1. Notification shall be given as per "Emergency Public Notification Plan" method on record with the Division of Drinking Water (see Attachment 4), or in a manner directed by the Division of Drinking Water.
2. State problem and what has been done to correct it.
3. Send a copy of the notification to the Division of Drinking Water.

4.2 CONSUMER COMPLAINT Procedures.

1. Record in complaint log (name, address and nature of the problem).
2. Investigate the complaint.
3. Verify or dismiss the complaint.
4. Record the steps taken to address or correct the problem.
5. Notify complainant of action taken.
6. Keep complaint records with corrective action for five years.

5.0 CONTACT PERSONNEL

5.1 Operations, Contractors, Equipment/Material Suppliers

SERVICE	DESCRIPTION	CONTACT	PHONE #
System Operator	Certified Water Operator	Steve Wise	209-768-0385
Maintenance	Digging, Generator, Chemicals	Steve Wise	209-768-0385
Wells & Tanks	Well and Tank Contractor	Tanko Bros	209-532-7797
Electrician	Electrical Contractor	Barry Electric	209-532-7710
Plumbing Equipment & Materials	Pipe & fittings, valves, pumps, meters, gauges, etc.	General Plumbing Supply	209-532-5573
Electrical Equipment & Materials	Wire, conduit, panels, breakers, lighting, etc.	General Electric Supply	209-532-5576
Testing Laboratory	Bacteriological testing, water quality testing	Aqua Lab	209-586-3400
Chemicals	Disinfecting Chemicals	Splash Pool & Spa	209-532-7724

5.2 Emergency Contacts

ENTITY	CONTACT	PHONE #
Sierra Park Water Company, Inc.	Answering System	209-586-7998
System Operator	Steve Wise	209-768-0385
Division of Drinking Water	Kassy Chauhan	559-447-3316
Tuolumne County Health Department		(209) 533-7401
Law Enforcement	-	911