



Ron Chapman, MD, MPH
Director & State Health Officer

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

DRINKING WATER FIELD OPERATIONS BRANCH
50 D STREET, SUITE 200, SANTA ROSA, CA 95404
PHONE: (707) 576-2145 / FAX: (707) 576-2722
INTERNET ADDRESS: www.cdph.ca.gov



EDMUND G. BROWN JR.
Governor

March 28, 2013

Billie Harrison, Owner
Redwoods River Resort & Campground
75000 Highway 101
Leggett, CA 95585

RE: 2012 Inspections and Compliance Order

Dear Billie Harrison:

The Department of Public Health (Department) conducted an inspection of Redwoods River Resort & Campground public water system (System) on November 2, 2012 and a follow up inspection on December 21, 2012. As part of the inspection process, the Department has issued the System a compliance order to reflect current state and federal drinking water regulation requirements. Enclosed, please find Compliance Order No. 02-03-13R-001-2300635-42 for the requirements associated with operating Redwoods River Resort & Campground public water system. Please read all conditions carefully and keep it on file for future reference as the conditions are significantly different from current operations and are legally binding.

We appreciate your cooperation during the inspections and look forward to continuing our partnership to ensure safe potable water is available. If you have any questions about this letter or the new permit, please contact Jo Wildflower or myself at (707) 576-2147 or (707) 576-2818.

Sincerely,

Michelle F. Frederick, P.E.
District Engineer
Mendocino District

c: Mendocino County Environmental Health

Enclosure: Compliance Order No. 02-03-13R-001-2300635-42

2300635/Compliance(4)/2012Dec-InspCvrLtr.doc/AJL

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Compliance Order No. 02-03-13R-001-2300635-42

**STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH**

IN RE: Redwoods River Resort & Campground
Water System No. 2300635
75000 North Highway 101
Leggett, CA 95585

TO: Billie Harrison
Owner
Redwoods River Resort & Campground

Date Issued: March 28, 2013

**COMPLIANCE ORDER FOR VIOLATION OF HEALTH AND SAFETY CODE
SECTION 116555(a)(3) AND TITLE 22, CALIFORNIA CODE OF REGULATIONS
SECTIONS 64652(a) AND 64653(a).**

Section 116655 of the California Health and Safety Code authorizes the issuance of an order for failure to comply with a requirement of California Safe Drinking Water Act (California Health and Safety Code, Division 104, Part 12, Chapter 4,

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2 commencing with Section 116270), or any permit, regulation, or standard issued
3 thereunder.
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6 The Division of Drinking Water and Environmental Management of the State of
7 California Department of Public Health hereby issues a compliance order
8 (hereinafter Order) to Redwoods River Resort & Campground for failure to comply
9 with Health and Safety Code Section 116555(a)(3) and Title 22, California Code of
10 Regulations Sections 64652 (a) and 64653 (a).
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12 **STATEMENT OF FACTS**

13
14 Redwoods River Resort & Campground (hereinafter System) is currently operating
15 its water system under Domestic Water Supply Permit 02-03-99P23002, issued by
16 the California Department of Public Health (hereinafter Department) on February 26,
17 1999. The System is a transient non-community water system, as defined in the
18 California Health and Safety Code (hereinafter H&S Code), serving water to
19 approximately 45 service connections within its service area located on Highway 101
20 a few miles south of the shared boundary of Mendocino County and Humboldt
21 County. The System serves motel rooms, an office, store, recreation room, pool,
22 seven cabins, playground, 56 camp sites, a laundry facility and two bathroom
23 facilities. The water system consists of one source, Well 01, and one pressure zone.
24 Well 01 is located in the bank of the South Fork of the Eel River. There is no well
25 construction information available. The raw source water is injected with sodium
26 hypochlorite prior to supplying a storage tank. Treated water is delivered to the
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distribution system by pumping water from the base of the storage tank if the distribution system pressure drops below a set point of approximately 75 psi.

Well 01 is the only permitted source water for the System. On December 6, 2012, Mr. Jack Harrison, (Title) with the System, reported a well turbidity of 13.5 NTU for samples collected on December 5, 2012. Public water systems in the region using the South Fork of the Eel River as a source reported peak turbidity events to have occurred on December 3 and December 4, 2012.

Department staff conducted a field inspection on November 2, 2012. There was no rain prior to this inspection. The raw water turbidity at Well 01 measured 0.16 NTU and *Escherichia coli* (*E. coli*) was present in the raw water.

Department staff conducted an additional field inspection on December 21, 2012. During the inspection, Well 01 was fully submerged and the raw water turbidity measured 20 NTU. *E. coli* was present in the raw water at Well 01 on December 21, 2012. The turbidity from the effluent of the storage tank measured 4.5 NTU.

Based on the Department's measurements and observations on November 2, 2012 and December 21, 2012, the Department determined that Well 01 was a ground water source under the direct influence of surface water.



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AUTHORITIES

H&S Code section 116655 states in relevant part:

(a) Whenever the department determines that any person has violated or is violating this chapter, or any permit, regulation, or standard issued or adopted pursuant to this chapter, the director may issue an order doing any of the following:

- (1) Directing compliance forthwith.
- (2) Directing compliance in accordance with a time schedule set by the department.
- (3) Directing that appropriate preventive action be taken in the case of a threatened violation.

(b) An order issued pursuant to this section may include, but shall not be limited to, any or all of the following requirements:

- (1) That the existing plant, works, or system be repaired, altered, or added to.
- (2) That purification or treatment works be installed.
- (3) That the source of the water supply be changed.
- (4) That no additional service connection be made to the system.
- (5) That the water supply, the plant, or the system be monitored.
- (6) That a report on the condition and operation of the plant, works, system, or water supply be submitted to the department.

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H&S Code section 116555 states in relevant part:

(a) Any person who owns a public water system shall ensure that the system does all of the following:

(3) provides a reliable and adequate supply of pure, wholesome, healthful, and potable water.

California Code of Regulations, Title 22, section 64652(a) states in relevant part:

(a) Each supplier using an approved surface water shall provide multibarrier treatment that meets the requirements of this chapter and reliably ensures at least:

(1) A total of 99.9 percent reduction of *Giardia lamblia* cysts through filtration and disinfection; and

(2) A total of 99.99 percent reduction of viruses through filtration and disinfection.

California Code of Regulations, Title 22, section 64653(a) states in relevant part:

(a) All approved surface water utilized by a supplier shall be treated using one of the following filtration technologies unless an alternative process has been approved by the Department pursuant to subsections (f), (g) and (h):

(1) Conventional filtration treatment

(2) Direct filtration treatment

(3) Diatomaceous earth filtration

(4) Slow sand filtration.



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DETERMINATIONS

Based on the above-described Statement of Facts, the Department determines that the System has violated the following:

1. H&S Code section 116555 (a)(3) in that the System does not have sufficient treatment to provide a reliable and adequate supply of pure, wholesome, healthful, and potable water.

2. Title 22, CCR, Section 64652 (a) in that the System does not have the necessary treatment capacity to achieve 99.9 percent reduction of *Giardia lamblia* and 99.99 percent reduction of viruses and does not provide multi-barrier treatment.

3. Title 22, CCR, Section 64653 (a) in that the System does not use any of the listed filtration technologies or an alternative process approved by the Department.

ORDER

Pursuant to Section 116655 of the California Health and Safety Code, the Department and its Director hereby orders the system to do the following:

Directive 1. By August 1, 2013, the System shall submit to the Department for its approval a proposal that is based on an engineering assessment and that either: (a) identifies a reliable groundwater source that meets the requirements of Title 22 of the California Code of Regulations and the

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2 California Well Standards Bulletins 74-90 and 74-81 and specifies how the
3 source will be connected to the water system, OR (b) proposes a plan and
4 time schedule to bring the water system into compliance with the Surface
5 Water Treatment regulations found in Chapter 17, Sections 64650 through
6 64666, of Title 22 of the CCR. If the System chooses to comply with
7 subdivision (b) above, the proposed plan must identify the source to be
8 treated; if the System proposes to use its existing source, then the plan shall
9 include, at minimum, a preliminary design and specifications for the proposed
10 surface water treatment plant. The System shall ensure that the Department-
11 approved proposal required by this Directive is operational by **February 15,**
12 **2014.**
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16 **Directive 2. Effective immediately,** the System shall post in public places
17 and provide weekly notification to its visitors, staff, residents and all
18 customers that the Department is advising that boiled tap water or bottled
19 water be used for drinking and cooking purposes as a safety precaution. The
20 public notification documents and procedure shall be approved by the
21 Department. **The boil water advisory requirements shall remain in effect**
22 **if the System cannot meet the requirements in Directive 3.**
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25 **Directive 3. Until the System has complied with Directive 1,**the System
26 shall maintain a minimum chlorine disinfection residual of **1.8 milligrams per**
27 **liter (mg/L),** or otherwise demonstrate that disinfection treatment is



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continuously achieving 99.9 percent reduction of *Giardia lamblia* and 99.99 percent reduction of viruses. The System shall also do the following:

- a. Inject sodium hypochlorite at a point upstream of the concrete storage tank during well pump operation.

- b. Ensure that a certified operator monitors and records the chlorine residual at the effluent of the storage tank on a WEEKLY basis and that a certified operator or an individual trained by a certified operator monitors and records the chlorine residual at the effluent of the storage tank on a DAILY basis.

- c. Measure and record the flow rate of the active booster pump. Measure and record the flow rate of Well 01 during normal operations.

- d. **By April 30, 2013**, submit to the Department for its approval a Disinfection Operations Plan, which contains the following:
 - i. The minimum chlorine residuals, maximum booster pump and well pump flow rates and minimum storage tank level during all normal operations.

 - ii. A list of all water quality parameters to be monitored, including the monitoring location, instruments used to measure the water

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quality parameters, and the planned monitoring frequency. These shall include, at minimum, daily raw water turbidity measurements and storage tank levels, daily chlorine residual measurements, and weekly raw water bacteriological quality measurements.

The System shall ensure that disinfection operations are maintained in accordance with the Department-approved Disinfection Operations Plan at all times.

- i. The System shall provide a Department-approved monthly water quality and operations report on the tenth day of each month following a month of operation, for operations beginning on **May 1, 2013** and continuing until the month in which the Department advises the System that the reporting may cease. The monthly report shall be reviewed and signed by the licensed Water Operator for the System.

Directive 4. If, in carrying out Directive 3, the System determines the chlorine residual is less than 1.8 mg/L, the booster pump flow rate is greater than 45 gpm, or the storage tank level is less than 4.5 feet during any day, the System shall immediately contact the Department to confirm virus and *Giardia lamblia* cyst inactivation. If the Department determines that the treatment



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2 objectives have not been met, the System shall comply with Tier 1 (24-hour)
3 public notification requirements in conformance with Section 64463.1, Title 22
4 of the CCR, which requires that the System issue a boil water advisory to its
5 customers. The public notification documents and procedure shall be
6 approved by the Department prior to distribution to its customers.
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9 **Directive 5. By May 1, 2013**, the System shall submit to the Department for
10 its approval public notification to its customers of inadequate surface water
11 treatment in conformance with Section 64463.4, Title 22 of the CCR. By the
12 10th day of each month, beginning on **May 10, 2013**, and continuing until the
13 month in which the Department advises the System that the notification may
14 cease, the System shall provide the Department-approved notification to its
15 customers and a copy to the Department.
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18 **Directive 6. By May 1, 2013**, the System shall begin collecting weekly
19 bacteriological raw water samples and weekly bacteriological distribution
20 samples. The System shall collect and analyze samples for chlorine residual
21 at the same times and locations that the distribution system bacteriological
22 samples are collected. The bacteriological samples shall be analyzed by an
23 approved laboratory. The raw water bacteriological quality must be analyzed
24 by a method that enumerates for total coliform and *E. coli* levels in the
25 sample. The locations of the bacteriological sampling in the distribution
26 system shall be in accordance with a revised bacteriological sampling plan, to
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2 be submitted to the Department for its approval by **May 15, 2013**. Sampling
3 in accordance with this directive **shall continue until the Department**
4 **advises the System that it may cease the sampling.**
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7 **Directive 7. By June 1, 2013**, the System shall complete a cross connection
8 control survey. The survey shall include a field assessment of the premises
9 within its service area to evaluate the potential for backflow into the public
10 water system. The survey shall consider the existence of cross-connections,
11 type and use of materials handled at user premises, and the degree of
12 plumbing system complexity and accessibility. The survey must be
13 conducted by a cross-connection control specialist certified by the California-
14 Nevada Section of the American Water Works Association. **The System**
15 **shall submit a copy of the survey report to the Department by July 1,**
16 **2013.** All recommendations contained within the report shall be implemented
17 and a status report on the recommendations submitted to the Department by
18 **November 1, 2013.**
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22 **Directive 8.** The System shall contact the Department within 24 hours by
23 telephone for any of the following events: (1) An illness complaint is reported
24 to any water system staff that may be related to the water quality; (2) total
25 coliform or *E. coli* is detected in the distribution system; (3) the raw water
26 source turbidity measured prior to treatment is greater than 2.0 NTU; (4) short
27 periods of pressure loss (less than 5 psi) and major water outages; or (5) any



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event that water system is aware of that may affect the ability of the treatment plant to produce safe, potable water including, but not limited to, spills of raw sewage or other hazardous chemicals.

The Department reserves the right to make such modification to this Order as it may deem necessary to protect public health and safety. Such modifications may be issued as amendments to this Order and shall be effective upon issuance.

Nothing in this Order relieves the System of its obligation to meet the requirements of the California Safe Drinking Water Act (CHSC, Division 104, Part 12, Chapter 4, commencing with Section 116270), or any permit, regulation, standard or order issued thereunder,

All submittals required by this Order shall be submitted to:

Ms. Michelle F. Frederick, District Engineer
Mendocino District
California Department of Public Health
50 D Street, Suite 200
Santa Rosa, CA 95404

PARTIES BOUND

This Order shall apply to and be binding upon the System, its officers, directors, agents, employees, contractors, successors and assignees.



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SEVERABILITY

The directives of this Order are severable, and the System shall comply with each and every provision thereof notwithstanding the effectiveness of any provision.

FURTHER ENFORCEMENT ACTION

Division 104, Part 12, Chapter 4, (commencing with section 116270) of the H&S Code authorizes the Department to: issue a citation with assessment of penalties for failure to comply with any order, in an amount not to exceed one thousand dollars (\$1,000) per day for each day the violation continues; take action to suspend or revoke a permit that has been issued to a public water system if the system has failed to comply with an order of the Department; and petition the superior court to take various enforcement actions against a public water system that has failed to comply with an order of the Department. The Department does not waive any further enforcement action by issuance of this Order.



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The State of California shall not be liable for any injuries or damages to persons or property resulting from acts or omissions by the System, its employees, agents or contractors in carrying out activities pursuant to this Order, nor shall the State of California be held as a party to any contract entered into by the System or its agents in carrying out activities pursuant to the Order.



Stefan Cajina, P.E., Chief
North Coastal Region
Drinking Water Program

March 28, 2013

Date

CERTIFIED MAIL #

c: David Jensen, Director, Mendocino County Environmental Health

2300635/Compliance File-4
02-03-13R-001-2300635-42/AJL



IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

**Redwoods River Resort & Campground
Does Not Meet Treatment Requirement (Filtration)**

Our water system recently violated a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what you should do, what happened, and what we are doing to correct this situation.

On March 28, 2013, the California Department of Public Health ordered us to filter our water in addition to disinfecting it. We are required to install this filtration because we are using a surface water source and do not have adequate treatment in place. However, we have not yet installed a filtration system.

What should I do?

- **You do not need to boil your water or take other actions.**
- This is not an emergency. If it had been, you would have been notified immediately. We do not know of any cases of contamination. However, until improvements are made, there is an increased chance that disease-causing organisms could contaminate the water supply.
- *Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. These symptoms, however, are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.*
- A home filter will not necessarily solve the problem, because not all home filters protect against parasites. For information on appropriate filters, call NSF International at 1(800) NSF-8010, the Water Quality Association at (630) 505-0160, or the Department of Health Services Water Treatment Device Unit at (916) 449-5600 or visit the Department's website at <http://www.cdph.ca.gov/certlic/device/Pages/watertreatmentdevices.aspx>.
- People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from U.S. EPA's Safe Drinking Water Hotline at 1(800) 426-4791.
- If you have other health issues concerning the consumption of the water, you may wish to consult your doctor.

ATTACHMENT A

What happened? What is being done?

A combination of filtration and disinfection is the best method for removing these organisms found in surface water. We are in the process of evaluating whether we should install a filter system to treat this water or identify a new source. We anticipate resolving the problem by **November 1, 2013**. Until filtration is installed, you will receive a notice similar to this every three months.

For more information, please contact Jack or Billie Harrison at 707-925-6249 or 75000 Highway 101, Leggett, CA 95585.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail.

Secondary Notification Requirements

Upon receipt of notification from a person operating a public water system, the following notification must be given within 10 days [Health and Safety Code Section 116450(g)]:

- **SCHOOLS:** Must notify school employees, students, and parents (if the students are minors).
- **RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS** (including nursing homes and care facilities): Must notify tenants.
- **BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS:** Must notify employees of businesses located on the property.

This notice is being sent to you by Redwoods River Resort & Campground.

State Water System ID#: 2300635. Date distributed: _____.

**Small Water System Inspection Form
California Department of Public Health
Drinking Water Field Operations Branch**

Water System Name: Redwood River Resort & Campground		Water System No.: 2300635
Person Contacted: Jack Harrison		Type of System: Transient
Position/Title: Manager		Telephone No.: 707-925-6249
Inspection Date: Nov 2 and Dec 21, 2012	Type of Inspection: ANNUAL	Inspector: AJL Reviewed by: MFF
Legal Entity or Owner: Billie Harrison		<input checked="" type="checkbox"/> PUC system
Date last permit issued: February 26, 1999		Issued by: CDPH
CDPH Copy Available: <input type="checkbox"/> org chart <input type="checkbox"/> water rights <input type="checkbox"/> dist map <input type="checkbox"/> sys schematic <input type="checkbox"/> well log(s) – checked with DWR <input type="checkbox"/> TMF docs		
<input type="checkbox"/> Source Info <input type="checkbox"/> Treatment Info <input type="checkbox"/> Ops Plan (treatment) <input type="checkbox"/> Ops Plan (Distribution) <input checked="" type="checkbox"/> ENP <input checked="" type="checkbox"/> BSSP <input type="checkbox"/> Storage Data <input type="checkbox"/> CIP		
<input type="checkbox"/> Master Plan <input type="checkbox"/> Emergency Response Plan <input type="checkbox"/> Emergency Disinfection Plan <input checked="" type="checkbox"/> Source Monitoring Schedule		
Inspection Activities: <input checked="" type="checkbox"/> review last inspection/permit <input checked="" type="checkbox"/> Contact Info reviewed/updated		<input checked="" type="checkbox"/> Add inspection to SDWIS
<input type="checkbox"/> County File Review <input type="checkbox"/> Bacteriological WQ at source(s) <input type="checkbox"/> Disinfect Res in dist <input type="checkbox"/> DB Updates (source/treatment/inventory/schedules)		
Background (describe jurisdiction issues, complaints, aspects that will impact maintenance or operations): Well 01 is located in the south fork of the Eel River. Previously, the source has been characterized as a groundwater source. Based on a review of the data collection by the manager and the lack of construction information associated with the source, the Department is characterizing this as a surface water source and the well is considered an intake structure. The Department plans to monitor the raw water turbidity continuously this winter in order to monitor water quality fluctuations. The manager describes their mail to be subject to regular theft in the area – all mail should be certified . Mendocino County was contacted on November 28, 2012 and no county use permit is on record for the system.		
System Operator(s): Jerry West, state certified contract operator		<input checked="" type="checkbox"/> Contract in Place
Role & Responsibilities: Jack Harrison has been operating and maintaining all aspects of the water system.		
Schedule: Jack Harrison evaluates the system on a daily basis (amount of chemical, measuring the chlorine residual), weekly basis (reads the production meter, tank level and measures the chlorine in the storage tank effluent) and monthly basis (operates the generator). He would like to incorporate flushing the distribution system on an annual basis.		
Who performs maintenance and repairs? Jack Harrison manages the operations at this facility.		
SERVICE AREA & BRIEF DESCRIPTION		
Headquarters and Treatment facility location(s): 75000 Highway 101, Leggett, CA 95585 (Mendocino County)		
Active Service Connections: 45 Population ¹ : 30 (includes 5 residents and 25 visitors)		
Area served: <input checked="" type="checkbox"/> residential <input type="checkbox"/> commercial <input type="checkbox"/> light industry <input type="checkbox"/> agricultural <input checked="" type="checkbox"/> other: recreation The area served includes 8 motel rooms, office/store/recreation room, pool, 7 cabins, Fort Mcafison/Camp Jordan, 56 camp sites (combination), a bathroom/laundry facility and a second bathroom facility.		
No. Storage tanks: 1	Total Storage Avail: 22,620 gallons	No. Treatment Facilities: 1

¹ As reported in the 2011 Annual Report to the Department. 1997 records indicate more connections are in the system. Historical Annual Reports indicate the population fluctuates between x – 200 people.

Sources (Name, measured capacity, gpm, status):

Well 01 (ACTIVE GWUDI SOURCE): unknown production capacity; production meter is located between booster pump(s) and distribution system; unable to measure change of storage level during well pump operations due to pump cycling on and off approximately every 10 seconds during operation; a Goulds Aquaboo pump operated during well pump operations – the operator attributed this to the demand in the system at the time.

PRODUCTION INFORMATION

Maximum system production in last 10 years: 15,109 gallons (2004) or 11.4 GPM **MDD²: 11.4 GPM (2004)**

Adequate source capacity? YES NO UNKNOWN – no means to measure the capacity of the source

Adequate storage capacity? YES NO

Emergency Sources: Haul Water intertie

SYSTEM VIOLATIONS:

CITATION NO. /REFERENCE	VIOLATION(S):	VIOLATION PERIOD(S):
02-03-13CO-001	GWUDI SOURCE; NEED TO INSTALL SWTP OR ID NEW SOURCE	2012
02-03-12C-033	FAILED TO OPERATE SYSTEM WITH REQUIRED CERTIFIED OPERATOR	1996-2012
02-03-10C-034	FAILED TO COLLECT AND REPORT BACTERIOLOGICAL WATER SAMPLES	3 rd Q 2010
02-03-06C-034	FAILED TO COLLECT AND REPORT REPEAT BACTERIOLOGICAL WATER SAMPLES	AUGUST 2006
03-03-99C-043	SYSTEM DID NOT RECEIVE THE MAIL, THEREFORE CDPH RESCINDED ORIGINALLY ISSUED DUE TO LACK OF SOURCE MONITORING	1999
02-03-97C-074	FAILED TO COLLECT AND REPORT REPEAT BACTERIOLOGICAL WATER SAMPLES	AUGUST 1997
02-03-96C-124 02-03-96C-123	FAILED TO COLLECT AND REPORT BACTERIOLOGICAL WATER SAMPLES	2 nd Q 1996

System Source(s): Include purchased water sources. Comment on source construction if inadequate.

Name/PS-Code	Type	Capacity, GPM	Status	Source Class Code	Construction
WELL 01 (-001)	GWUDI	UNKNOWN	ACTIVE	NCWS	UNKOWN

Adequate Water Rights? Yes No (not reviewed)

DWSWAP complete for all active sources? Yes (only as GW) No

Any sources exceed primary MCL standards? Yes No

Adequate source construction? Yes No

Well 01 consists of a vertical 8-inch steel casing within the confines of the South Fork of the Eel River (on the eastern side). There is no construction information available for this source. There is no vent, meter, sample tap located near the well head. The wellhead consists of a plate (seal is missing at the perimeter), a check valve, a debris redirection cover to protect wellhead, electrical conduit and a transmission main to the tank. It is not equipped with a means to pump to waste.

Based on a review of local precipitation data available from Department of Water Resources California Data Exchange Center (Station ID: LEG located in the Eel River at 128.720581054688W, 39.8745956420898E operated by DWR and

² As it applies for source capacity analysis, assuming 22 hours of operation are available at all times.

USGS; the station is approximately 2.5 miles upstream of Redwoods River Resort and Campground) from January 1, 1998 through May 31, 2012 and a review of the turbidity sample dates collected by Mr. Harrison, weekly turbidity collected from the well included limited monitoring and demonstrates avoiding periods of inundation. On January 13, 1998, CDPH staff observed Well 01 to be in a flooded state. Over the course of three days, January 11-13, 1998, 6.8 inches of precipitation had accumulated. Between 1998 and May 31, 2012, there were 332 events for which 2 inches of precipitation had accumulated over three days. On average, Well 01 is subject to comparable precipitations events observed by CDPH staff on January 13, 1998 approximately 42 times a year.

In January 2000, Mr. Harrison did not collect turbidity samples at Well 01 for two consecutive weeks. Mr. Harrison collected a sample on January 10th and January 24th. The precipitation event in January 2000 was as follows:

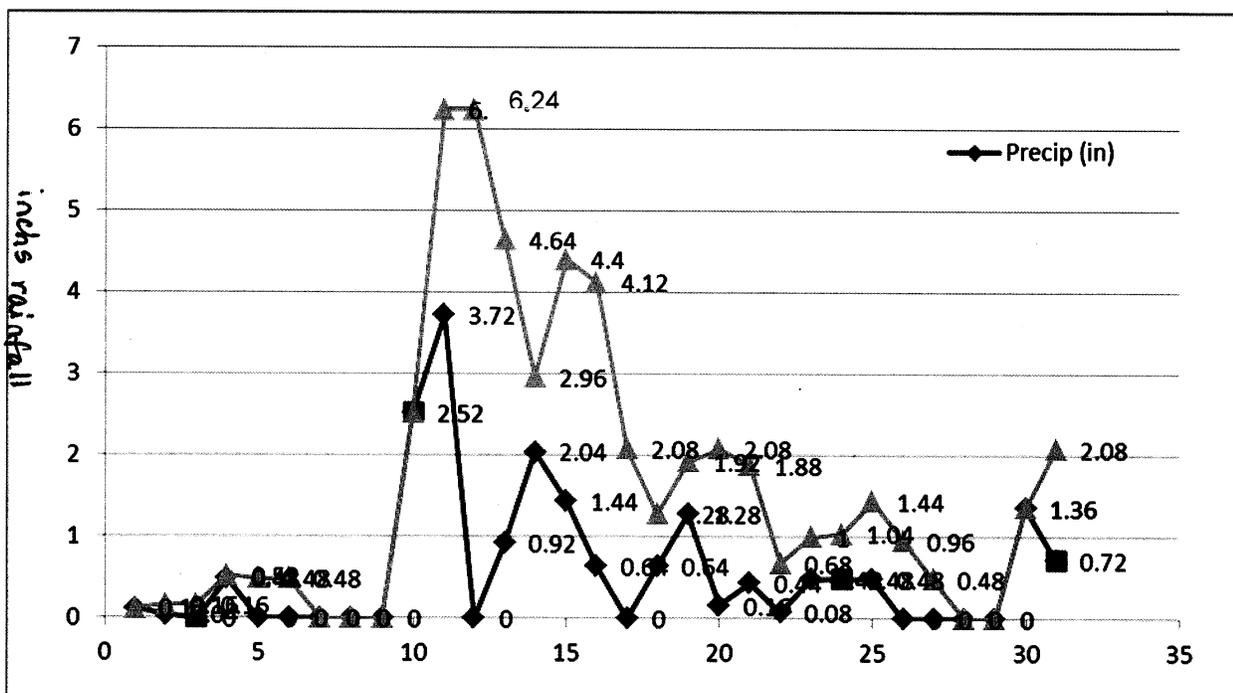


FIGURE 1. An example of when samples were collected relative to precipitation events. The x-axis describes the day in January. The y-axis describes the precipitation in inches. The red squares indicate the daily precipitation accumulated on the day Redwood River Resort sampled Well 01 for turbidity (inches). The blue line indicates the precipitation accumulated each day in January 2000. The green line represents an accumulated sum of the precipitation on that day and the 2 days prior.

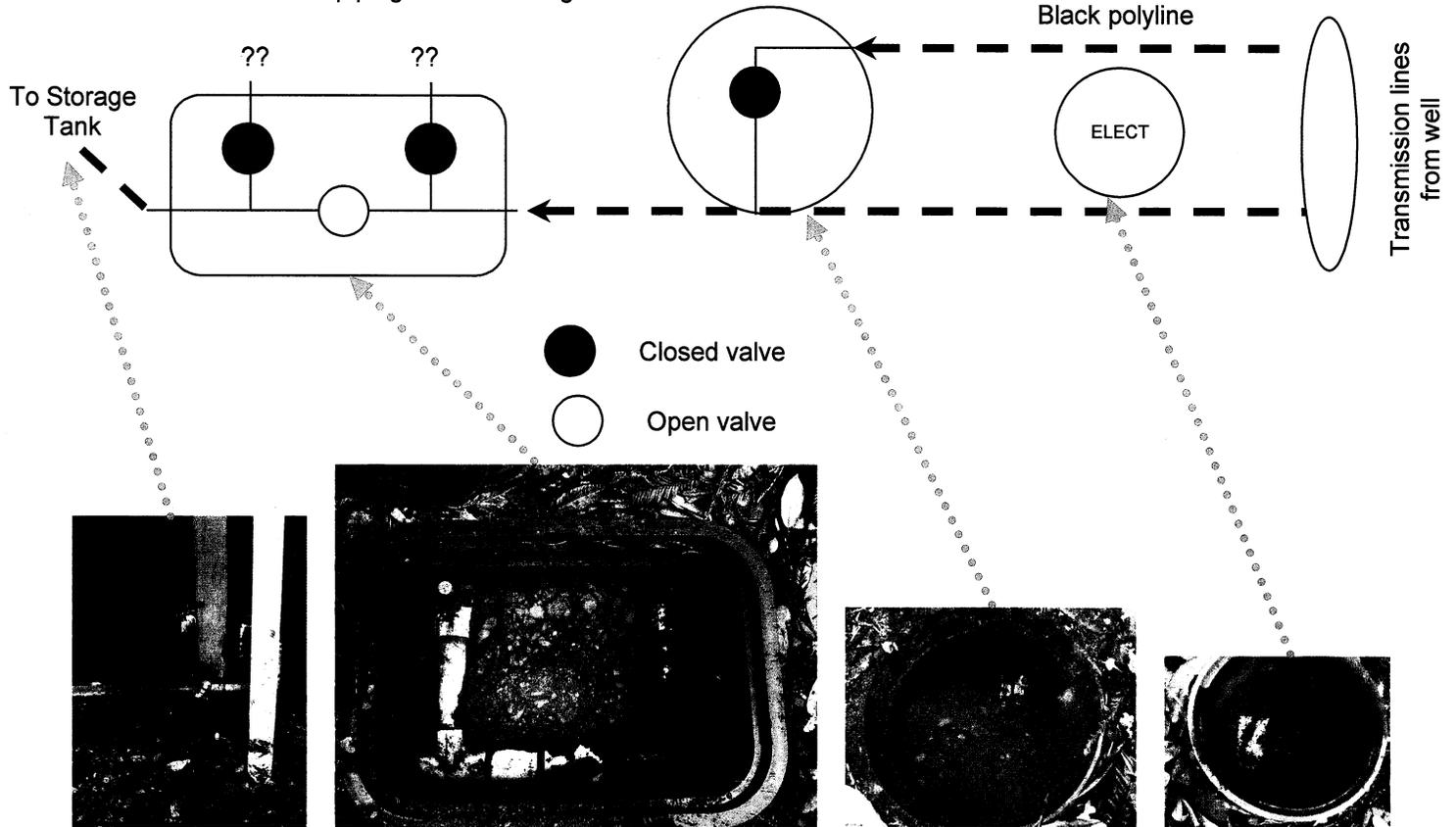
Redwood River Resort was directed to sample turbidity on a weekly basis. The graph above indicates that critical monitoring periods were skipped in order to document whether or not surface water indeed influenced the water quality at Well 01. Only two events in the month were comparable to the day CDPH observed the source to be flooded and these days were missed. Therefore, the Department requires future monitoring associated with demonstrating the characterization of this source to be by a certified operator and raw water turbidity monitoring to be on a 15-minute basis.

CDPH Bacteriological Sample Results:

Date	Total Coliform	<i>E. Coli</i> , MPN	Location	Comments
11/2/2012	A	A	Front Office	Chlorine residual ~ 0.09 mg/L
11/2/2012	88.9	2.0	Well 01	No rain prior to visit; NTU = 0.16
12/21/2012	228.2	15.6	Well 01	NTU ~ 20 NTU; well is completely submerged

12/21/2012	A	A	Effluent of tank	NTU ~ 4 NTU
12/21/2012	A	A	Campground site	

Well 01 Transmission Schematic at Tank and WTP site: considering the simplicity of the system, there is a considerable amount of piping into the storage tank.



Jack Harrison did not know where the other two lines led but explained the connections in grey as depicted in the diagram above.

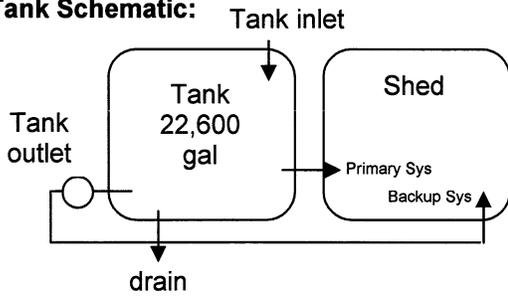
Transmission Line(s): We are unclear why a secondary polyline is involved in transmission. I asked if Jack Harrison was operating a recirculating system and he said that was not the case. When asked to run the well, the water operated in an oscillatory way and did not operate continuously. Further, the constant pressure system operated. A subsequent visit confirms that no recirculating system is in place.

Describe System Operations and Maintenance:

(Manual vs. Automatic, controls, typical maintenance & any problems)

The automated system operates in the following way: a well pump is operated when the float valve in the tank signals the water level has dropped below a set point. The operator was uncertain of the set point. The active pressurized system is controlled by a Goulds Aquaboost. This device maintains a constant pressure in the distribution system. The device receives a signal from a pressure sensor and activates a variable frequency drive when the pressure drops below a set point. Based on observations, the pressure set point is approximately 75 to 80 psi.

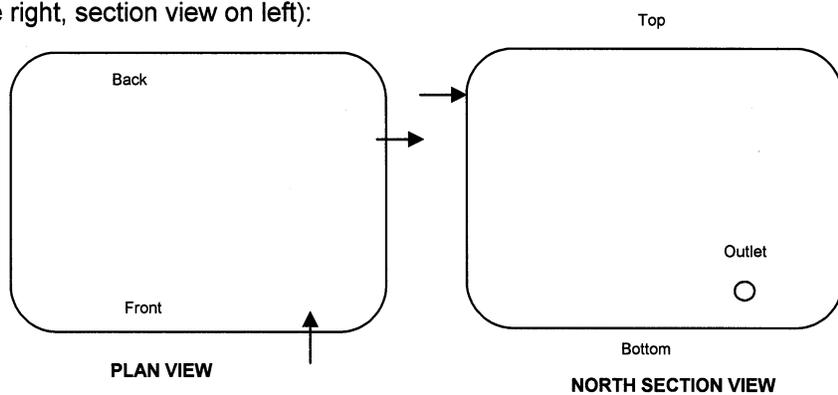
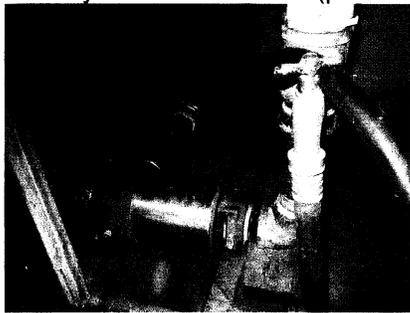
Tank Schematic:



Tank dimensions:
 24' x 24' x 63-inches (full)

On November 28, 2012, Jack Harrison indicated that the piping would be re-routed for the tank inlet. The current tank inlet location would be moved to a location near the hatch (the farthest point from the primary system inlet from the storage tank).

Primary Tank Out location (plan view to the right, section view on left):



Treatment:

Treatment Type/Capacity	Purpose	Condition	Operating Parameters/Maintenance/NSF
NaOCl	disinfectant	FAIR	HasaChlor, 12.5% NaOCl solution; NSF; peristaltic FlexFlo A-100N; assuming fixed feed model A-100NS (need to verify) GPD = 9.5; at 25% setting observed at inspection and average production in log sheets from October at the park

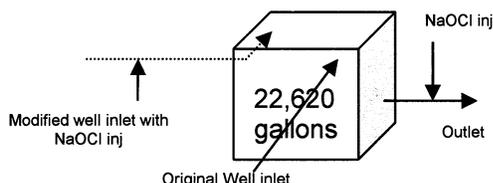
CDPH field visit observations on July 24, 2006 indicate that sodium hypochlorite was injected at a point upstream of the storage tank. At the November 2012 inspection, the sodium hypochlorite was injected at a point downstream of the storage tank. At the December 2012 inspection, the sodium hypochlorite injection was at a point upstream of the tank.

Estimated dosage calculation based on observations:

- Pump setting at 25% for a 9.5 GPD pump injects approximately 2.375 GPD
- October log sheet indicates an average demand of 7,800 gallons per day
- Solution strength of active NaOCl delivered is 12.5%
- Amount of chemical injected is 2.375 GPD x 1.3 SG x 0.125 = 0.39 GPD of NaOCl injected
- 0.39 gallons = 1,460 mg of NaOCl
- 7,800 gallons = 29,500 L of water produced daily
- Dosage ~ 1,460 mg/29,500 L or 0.05 mg/L (0.09 mg/L was detected in the distribution system)

Calibration cylinder in place for all chemical delivery? No

4-log virus evaluation:



The short circuit factor needs to reflect the current configuration. Recommend the pipe inlet is moved to the opposing wall of the outlet and diverted to the back corner; move chlorine injection point to inlet.

Distribution chlorine residual: 0.09 mg/L
 Chlorine injection location: post storage tank
 Transmission line to distribution main is approximately 50 feet of 2-inch main, or ~ 8 gallons
 At a flow of approximately 7,800 gallons per day or a contact time of 1.5 minutes
 Current CT is (1.5 minutes) x (0.09 mg/L) = 0.14

CT required to obtain 4-log virus (assuming pH of 7.5 and temperature of 10 °C): 6

There is not adequate chlorine contact to ensure 4-log virus inactivation at this time.

Per discussions on December 6, 2012 with Mr. Harrison, once the chlorine injection was relocated, the chlorine residual leaving the tank dropped so he increased the dosage to 2.4 mg/L. He sampled the turbidity in the river (233 NTU) and in the well (13.5 NTU) on December 5, 2012. Other systems in the Eel River watershed reported peak turbidity occur on 12/3 and 12/4.

Storage

Tank Name	Capacity	Material	Comments
Concrete Tank	22,620 gal	Concrete	Hatch was locked; considerable debris on surface; screens over vent require minor repairs; drain is not screened; no perimeter security; no evidence of vandalism; tank cleaned in 1999. The dimensions of the inside of the storage tank are 24 feet by 24 feet; the well pump operates by turning off at 63-inches and turning on at 56-inches.

Distribution System Description: no flushing

Pressure Zone(s)	Connections	Hydrant Flow (gpm)	Pressure Range (psi)	Comments
BOOSTED	45	Stand pipe(s)	~70	Pressure regulating valve operates pumps

Pipe material/distribution: not reviewed

Pumping Stations:

Pump Station	# pumps	Capacity (gpm)	Redundancy?	Comments
Booster Pump (Active)	1	Unknown	YES	3 hp baldor motor pump operated by Goulds Aquabost (a constant pressure system)
Inactive System	2	Unknown	YES	Available if primary system is not operated.

Distribution System Operation: Accurate distribution system map? Yes No Accurate schematic of WTP? Yes No

Water Main Disinfection Program? Yes No Water Main Flushing & Valve Maintenance Program? Yes No

Pressure Problems? Yes No – but several leaks reported annually

Operator Certification:

Treatment Certification Required: **T1** Distribution certification Required: **D1**

Operator Name	Treatment Certification	Distribution Certification
Jerry West	T2	D2

* chief operator

On February 17, 1998, Department staff discussed the need a requirement to obtain a certified operator. Jack Harrison indicated that additional time would be needed to study for the water treatment exam. The Department extended the deadline to January 15, 1999. On September 6, 2012, the Department informed Jack of the requirement for a certified

operator and indicated that a contract must be submitted to demonstrate a certified operator had been hired. On November 2, 2012, the Department located several operators in the area and Jack Harrison made efforts to identify certified operators. On November 26, 2012, Mr. Jeffery Allen communicated to Mr. Harrison that he would not be available as a certified operator and encouraged him to take the courses to become a certified operator. On November 28, 2012, Mr. Jeffery Allen informed Amy Little that he would not be available as a contract operator. Amy Little contacted Mr. Harrison for an update on the certified operator and he indicated that Mr. Allen would likely be available. After being informed that Mr. Allen would not be available for service, Mr. Harrison informed the Department on November 28, 2012 by telephone that several operators had not gotten back to him and he wanted to know what was involved to get certified. I explained that an exam is available twice a year to become certified and that there are both online courses and other courses available to prepare for the exams. Citation No. 02-12C-033 was issued to the System on November 30, 2012. Jack Harrison hired Mr. Jerry West to satisfy the requirements associated with Citation No. 02-12C-033.

Records

(Description of all records kept by the water system. Treatment, operations, maintenance, cross-connection, etc.)

At the water treatment plant, the operator visiting is logged ("R" in the October 2012 log sheet), chlorine residual in the distribution system, beginning and end meter reading, water used (gallons), beginning and end sodium hypochlorite level in the crock (inches) and chemical used (inches). The October 2012 log sheet demonstrates weekly visits to record all parameters and daily readings of the disinfectant residual are recorded.

A chlorine dosage worksheet is maintained in the office. Based on the October 2012 log sheet, Mr. Harrison calculates the dosage of the disinfectant in mL/L which should be equivalent to mg/L once specific gravity is taken into account. Assuming a specific gravity of 1.3, the dosages calculated should be 1.3 times those recorded by Mr. Harrison. Mr. Harrison calculates a dosage of 0.5 mL/L or 0.65 mg/L sodium hypochlorite dosage. That calculation does not represent the system given the chlorine residuals are approximately 0.09 mg/L. If those dosage calculations are accurate, that would suggest the system has a disinfectant demand of 0.56 mg/L. Based on the method of measurement (change of inches in the crock), this dosage calculation does not appear to be accurate.

Water Quality Monitoring and MCL Compliance

Source Chemical Monitoring Status: Up-to-date on monitoring? Yes No

Chemicals above the MCL – primary stds? Yes No Chemicals above the MCL – secondary stds? Yes No

Well 01 (-001): the following constituents were detected and below the MCL unless otherwise noted: chloride, nitrate, specific conductance, sulfate, total dissolved solids and zinc.

Bacteriological & Groundwater Rule Monitoring

Number of samples required per Table 64423-A: **1 per month** Additional monitoring required considering other risks: **1 monthly raw sample**

BSSP sample site number matches? Yes No Disinfectant residual EDT

Date of BSSP: **August 2012** Approved BSSP on file? Yes No Up-to-date? Yes No

Compliance with plan over last 12 months? Yes No Sampling sites are representative of pressure zones/system? Yes No

GWR incorporated into the plan? Yes No Sources appropriate? Yes No

Operator familiar with repeat sampling procedures in the event of a positive TC or FC routine sample? Yes No N/A

Correct procedures were followed for last positive TC or FC routine sample? Yes No

The System is transitioning from collecting samples in the distribution system once per quarter to collecting samples both at the source and in the distribution system once per month. Disinfectant residuals are not reported on the sheet submitted to the laboratory. The correct procedures were reviewed at the time of the inspection. The last positive routine sample in the system did coincide with a weak rain event.

Other Monitoring

LT2 monitoring required? Yes No Daily Raw turbidity collected at sources? Yes No

Monthly raw bacteriological samples at sources collected? Yes No – initiate but required to in November results.

Source Water Assessment and Protection: SWAP conducted for source(s)? Yes Date: October 2002 No

The physical barrier effectiveness score was LOW. Distance to surface water is 0 feet.

Source class codes are appropriate given information above? Yes No

Open SWRCB GeoTracker Cases in the vicinity: none

Cross Connection Control Program

Cross connection survey completed? Yes No Backflow prevention devices in system? Yes No
 Devices are tested annually? Yes No Cross connections observed at plant? Yes No

Annual Report: Reports are submitted annually? Yes No Reports are adequate? Yes No
 No Annual Report was submitted in 2009.

Emergency Notification Plan: Approved Plan on file? Yes No Is Plan up-to-date and still adequate? Yes No

Complaint Program:

Complaints are handled appropriately? Yes No Written records are maintained? Yes No Unknown
 No complaints reported in Annual Reports between 1998 and 2011.

02-03-99P23002 Permit Conditions:

Condition No.	Requirement/Status
1	Comply with all State laws
2	Well 1 is a source that requires hypochlorination treatment.
3	MPA analysis required during March or April 1999.
4	Track turbidity in South Fork of Eel River once per month.
5	Measure and record turbidity of water pumped from well once per week.
6	Monthly turbidity reports shall be submitted to the Department.
7	Measure production once per week and retain for a period of five years.
8	Calculate and record chlorine dosage once per week and during adjustments.
9	Measure and record free chlorine concentration in distribution system once per week.
10	Submit an annual report to the Department.

Previous Permit/Inspection Findings from January 13, 1998:

Item	Status
Overdue nitrate monitoring at Well 01	Completed
Install a sample tap at Well 01 (not at the inlet of the storage tank)	Completed December 2012
Well 01 evaluation must be conducted	Completed
Replace chemical feed pump	Completed
Inject sodium hypochlorite upstream of the 22,620 gallon tank	Due March 1998; completed as observed on July 24, 2006; modification made based on November 2, 2012 observation
Install a hatch lock and reattach screening on tank	Completed
Submit your operator certificate or hire a state certified operator	Completed December 2012

Water System Management: send Evaluation Form
Financial Management: send Evaluation Form

System Deficiencies and Areas of Concern:

(List deficiencies found during the inspection whether or not they will be addressed in the inspection letter.)

- Well 01 was not properly evaluated to assess whether it is a groundwater source or GWUDI source. Until such time, Well 01 is considered a surface water intake facility because it is fully submerged by the river during the winter and Department inspections indicate this is probable. Condition 5 of the domestic water supply permit required weekly turbidity samples to be collected from the source and this was not monitored by the System during high precipitation events.
- The System has made treatment modifications without Department approval. Specifically, the sodium hypochlorite system was relocated to the inlet of the storage tank as directed by the Department. The sodium hypochlorite injection point observed on November 2, 2012 was located after the storage tank.
- Based on a review of communication between the Department and the System, basic requirements have not been completed by the System (e.g. obtaining a state certified operator, installing a sample tap at Well 01, relocating the sodium hypochlorite injection site, turbidity samples were not collected on the weekly frequency specified in the permit).
- The System indicates that the mail is stolen frequently and unless our mail is delivered certified, it will not reach them.
- Production at Well 01 cannot be evaluated based on the location of the production meter; therefore, source capacity cannot be evaluated.
- There is miscellaneous piping at the introduction of the raw water line that cannot be explained by the operator. The operator manually operated the well but operations were atypical: the constant pressurized system was activated and the water pulsed into the tank (e.g. it was not operating at a constant rate). Based on my observations, this would suggest a recirculation system was in place. The operator indicated that was not the case. Black polypipe (which was not explained) was observed at the following locations: as a secondary transmission main, within the maze of valves freshly dug on the way to the storage tank, at the entrance to the storage tank, within the storage tank near the float valve, on a hose bib post chlorination and various sizes were cut and left on top of the storage tank with debris. Based on observations made December 2012, the well operated continuously and the miscellaneous pipe lead to the smaller enclosed shed (which contained nothing).
- The disinfectant system is not adequate and must be modified. At 1.8 mg/L chlorine residual leaving the storage tank, a virus and *Giardi lamblia* cyst inactivation of >4.0 and 2.3, respectively. The chlorine residual during the November inspection was 0.09 mg/L.
- There is no calibration system installed to properly calculate chemical dosages. Permit condition 8 requires chlorine dosages to be calculated weekly and during adjustments.
- There is no security at either the source or the storage tank.
- The 2009 Annual Report was not submitted to the Department.
- Chlorine residuals in the distribution system are not reported to the laboratory and electronically submitted to the Department.
- The storage tank needs the debris removed from the roof.
- A source water assessment needs to be conducted for a surface water source.
- Recommend a GWR 4-log virus inactivation using chlorination monitoring and operations plan be completed.

Water System Schematic: see below

Directions to the system: see attached

For GW Community Systems: Does the System have an Outstanding Performance Record? Yes No Unk N/A

Must be able to answer yes to all below over the last five years:

- o No MCL violations? No M&R violations? Certified Operator? No Significant Deficiencies identified?

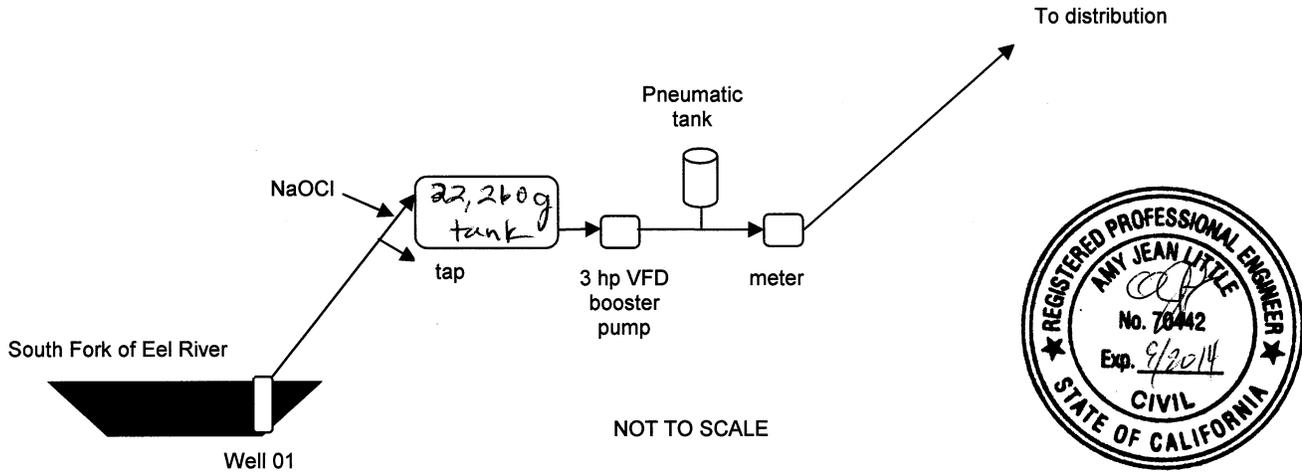
Recent changes in system:

1. A new pressurized system was added to maintain the distribution pressure.
2. The water treatment is covered with a shed.
3. The chemical feed pump was replaced with a peristaltic chemical feed pump.
4. Per discussions with Amy Little in November 2012, Mr. Harrison modified the raw water feed line to the far side of the storage tank and moved the sodium hypochlorite injection to a point upstream of the storage tank.

SOURCES OF INFORMATION USED TO GENERATE THIS REPORT

- DEPT FILES GEOTRACKER GOOGLE EARTH INSPECTION VISIT SYSTEM PERSONNEL
 COUNTY FILES DIVISION OF WATER RIGHTS

S:\Staff\AJL\03 District_Projects\Ongoing\SWS_InspectionForms\Permit Inspection Form 2012.docx Edits by: Amy Little on 2/5/2013

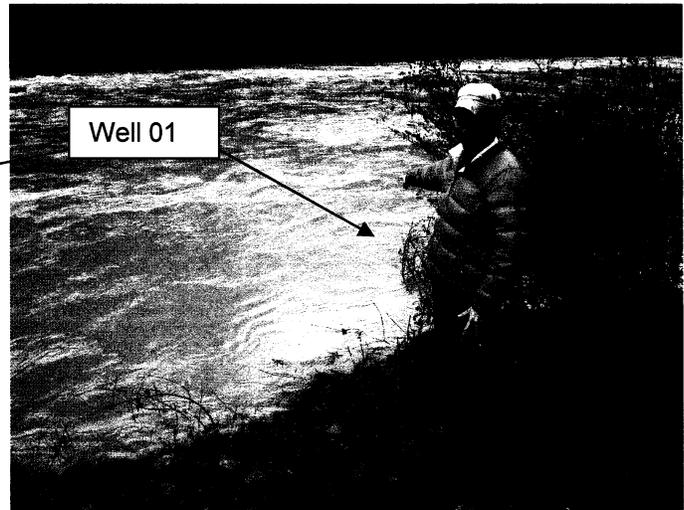
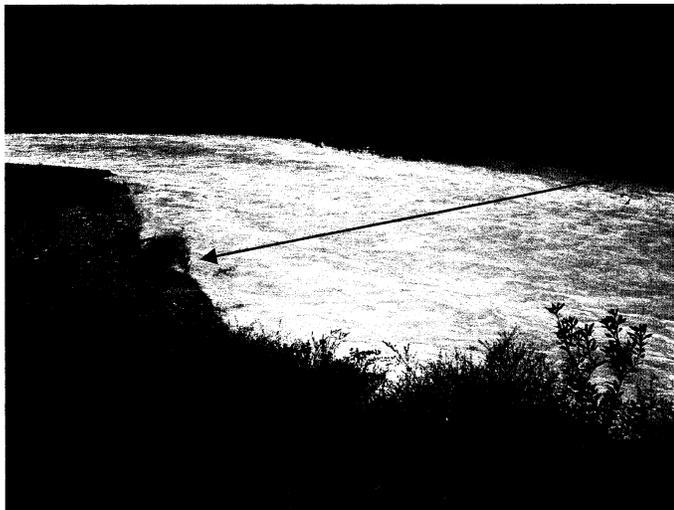


Inspection Follow Up Visit on December 21, 2012 (AJL/YAN):

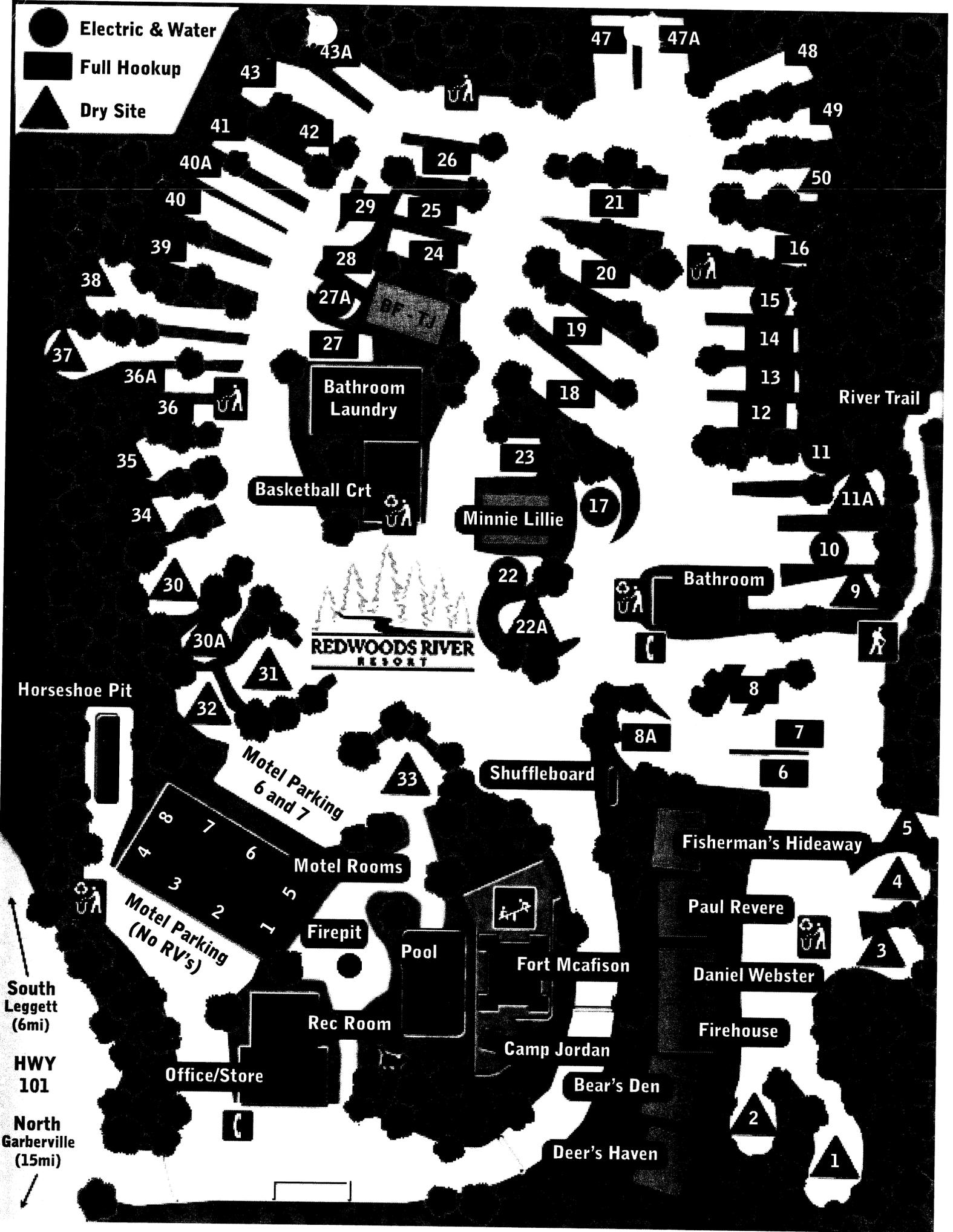
The purpose of this site visit was to install a continuous turbidity meter to monitor the raw water. Jack Harrison installed a port upstream of the chlorine injection point. CDPH brought a Hach 1720C unit with a datalogger (recording every 10-minutes). There was a storm event during our site visit and the amount of precipitation that accumulated over the last several days exceeded 6-inches. The wellhead was completely submerged, raw turbidity was ~20 NTU and *E. coli* was present in raw source waters. By re-locating the chlorine injection point to a location upstream of the storage tank, the contact time increased. The turbidity from the effluent of the storage tank was ~4.5 NTU, a chlorine residual was detectable and no total or fecal bacteria were present.

The operator indicated that the miscellaneous piping lead to the smallest shed and there was nothing in the shed. CDPH staff confirmed there was nothing in the shed and it may be remnants from the older system.

Well 01 is classified as a ground water source under the direct influence of surface water.



-  Electric & Water
-  Full Hookup
-  Dry Site



South Leggett (6mi)
 HWY 101
 North Garberville (15mi)