REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129

Ref: 8WD-SD-F

SENT VIA EMAIL
DIGITAL READ RECEIPT REQUESTED

Addressee

Re: YYYY **Sanitary Survey Report**
PWS ID#:

Dear ,

Enclosed is a report prepared for the U. S. Environmental Protection Agency (EPA) following a sanitary survey of the [pws] water system on [date]. Please note each significant deficiency listed at the beginning of the report. To avoid receiving a violation, you must correct **each identified significant deficiency and submit documentation of the corrective action to the EPA within 6 months** from receipt of this letter and sanitary survey report.

If you will be unable to meet this standard corrective action timeframe, you must contact the EPA with a written justification and proposed completion schedule as soon as possible. Each significant deficiency for this water system is listed below:

Significant Deficiencies

[Put SD table here]

Within 6 months from receipt of this letter, you must do the following:

- Correct *each* significant deficiency.
- Provide a completed Significant Deficiency Correction Notice listing *each* individual deficiency and the date of correction.
- Provide labeled photos of *each* correction.

- **If you will be unable to meet the 6-month standard corrective action timeframe, you must contact the EPA as soon as possible with a written justification and proposed completion schedule to receive a time extension. Your time extension request must include:**

    - Your public water system name and number;
    - Description of why you will be unable to meet the 6-month timeframe;
    - Description of the corrective action(s) to be taken to address each significant deficiency;
    - A schedule including specific proposed dates for completing each corrective action, which may include short-term interim steps and long-term completion dates.

The Significant Deficiency Correction Notice is enclosed and can also be found at the following website: http://www.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms and by selecting the Sanitary Survey link. To avoid receiving a violation, please provide this documentation to:

Mr. Matthew Langenfeld, Groundwater Rule Manager
EPA Region 8, 8WD-SD-F
1595 Wynkoop Street
Denver, CO 80202

Email: langenfeld.matthew@epa.gov
Phone: (303) 312-6284

If you have any questions regarding a significant deficiency or your corrective action plan, contact Matthew Langenfeld. If you propose a different corrective action timeframe, Matthew will provide you with a confirmation email or letter.

Please refer to the survey report to determine if there are any recommendations to improve the operation of the water system and to protect public health. While not required, the EPA recommends that any identified recommendations be corrected.

Please contact us if your system has a change in the treatment process; you add or remove a water source; there is a change in the number of people served or the number of water connections; or different contact information becomes available for your water system. This allows us to keep you up to date on monitoring requirements and keeps our inventory current. Failure to notify EPA about water source or treatment changes may result in a violation. To access the EPA's change form, use the following link and send us the completed form or give us a call:

https://www.epa.gov/region8-waterops/epa-r8-public-water-system-inventory-change-form

EPA should also be notified if your system has a pressure loss (less than 20 psi for more than one hour), or if the system experiences any other emergency that may compromise water quality. Systems should call the appropriate number below:

- Tribal PWS in Utah, Wyoming, or Colorado: call 720-804-4672
- Tribal PWS in Montana: call 406-608-8849

- Tribal PWS in North Dakota, South Dakota: call 605-585-6741
- If outside of normal business hours, call the after-hours emergency and holiday number: 303-312-6327

Thank you for your cooperation during the sanitary survey. If you have any questions regarding the sanitary survey, please call Motaz Zarooq at 720-804-4672. If you have questions on specific regulations, please refer to the EPA Region 8 Drinking Water contact list, which contains the names and phone numbers for the EPA drinking water staff:

https://www.epa.gov/region8-waterops/epa-region-8-drinking-water-program-contact-list

Sincerely,

Field Services and Tribal Section
Drinking Water Program

Enclosures

cc:

EPA Region 8 Tribal Sanitary Survey Form
Inventory

Surveyor name:
System representatives present at survey:
Others present:
Comments:

Primary Administrative Contact (to receive all correspondence from EPA)

Name:	Title:
Address:	
Business phone:	Cell phone:
Email:	Comments:

System Owner or Municipal Legal Representative

Name:	Company:	Title:
Address:		
Business phone:	Cell phone:	
Email:	Comments:	

Emergency Contact

Name:	Title:
Address:	
Emergency phone:	Email:
Comments:	

Additional Contacts

Name:	Title:
Address:	
Business phone:	Cell phone:
Email:	Comments:

Designated Operator

Name:		
Operator Adequately Certified? Yes No Not required (NC)		
Certificate Level:	Area:	Expiration Year:
Contract operator?		
Address:		
Business phone:	Cell phone:	
Email:	Comments:	

Additional Operator

Name:	
Operator Adequately Certified? Yes No Not required (NC)	

Certificate Level:	Area:	Expiration Year:
Contract operator?		
Address:		
Business phone:	Cell phone:	
Email:	Comments:	

IHS Engineer	**IHS Sanitarian**
, Engineer	, Sanitarian
Phone:	Phone:
Email:	Email:

Water System Physical Address and Location

Address:	Reservation:
Physical Location and Directions:	

Service Connections

Total Service Connections:
Metered Service Connections:
Un-metered Service Connections:
Comments:

Period of Operation/Population

Period of Operation:
Residential:
Non-Residential Non-Transient:
Transient:
From to
Non-Residential Non-Transient:
Transient:
Comments:

Water System Classification

Source:
If mixed, does GW receive full SW Treatment?
Classification:

Owner Type: :
Is this PWS operating with a lease on federal land? :
Comments:
Service Categories: •
• Other:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Primary Service Category Description/Comments:

System Summary

Is the current water source adequate in quantity?
Yes No

Have there been any interruptions in service since the last survey?
Yes No

Have there been reports of a water borne disease?
Yes No

Have there been any changes to the water system since the last survey?
Yes No

Are there any changes planned?
Yes No

Summary:

The following abbreviations and font indicators are used throughout this document:
NI – no information; NA – not applicable; NM – not measured

Red font and hollow square (□) after the question or statement indicates a potential significant deficiency

Blue font and hollow triangle (Δ) after the question or statement indicates a potential Surface Water Treatment Rule violation

Significant Deficiencies

Significant deficiencies include, but are not limited to, defects in the design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system, that the EPA determines to be causing, or have the potential for causing, the introduction of contamination into the water delivered to consumers. Please note the instructions for responding to significant deficiencies in the attached cover letter. Failure to provide a response that includes documentation of corrective actions to the EPA could result in a violation.

1) No certified operator.

Certified drinking water operators are essential to providing safe drinking water and protecting the public health of tribal communities. Regulations promulgated under the Safe Drinking Water Act require that public water systems be operated by qualified personnel. The EPA Region 8 requires all community water systems and non-transient non-community water systems to have, or agree to obtain, a certified operator. Systems without at least one operator certified at the appropriate level are also ineligible to receive grant funding from THE EPA.

Operators can be certified under any the EPA approved program, which includes the EPA National Tribal Drinking Water Operator Certification Program (which offers a Very Small Water System Option), the Inter-Tribal Council of Arizona Certification Program and State operator certification programs. More information about the EPA program can be found at https://www.epa.gov/region8-waterops/drinking-water-system-operator-training-and-certification-wyoming-and-tribal-lands

To address this significant deficiency, submittal of an EPA-approved program's certificate or other documentation will be required to demonstrate that the operator has achieved the appropriate level of certification. Alternatively, the system could employ a certified contract operator; documentation will be required to show the contractual agreement and the contract operator's certification level

2) Facility ID:

Unknown integrity of master meter vault/building.

The master meter vault/building condition was not able to be determined during the survey. The system must submit photos of the vault or building showing the interior condition. EPA may require additional action based on photos submitted by the system.

3) Facility ID:

Master meter vault/building contains standing water from leaking water system components (see photo #).

The master meter vault/building at the connection to the wholesaler water system contained standing water caused by leaking water system components in the vault. This water could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main. The components must be repaired to halt the leakage.

4) Facility ID:

Master meter vault/building contains standing water from unknown origin (see photo #).

The master meter vault/building at the connection to the wholesaler water system contained standing water caused by unknown source(s). This water could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main. The source of the standing water must be identified. If the source of the water is leakage from water system components, these must be repaired.

5) Water Hauler:

The water system's fill port does not have a water tight cap.

The cap on the water system's fill port is not water tight. This could lead to the introduction of contamination into the distribution system. The cap must be repaired or replaced.

6) Connected system:

Unknown integrity of master meter vault/building.

The master meter vault/building condition was not able to be determined during the survey. The system must submit photos of the vault or building showing the interior condition. EPA may require additional action based on photos submitted by the system.

7) Connected system:

Master meter vault contains standing water from leaking water system components (see photo #).

The master meter vault at the connection to the consecutive water system contained standing water caused by leaking water system components in the vault. This water could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main. The components must be repaired to halt the leakage.

8) Connected system:

Master meter vault contains standing water from unknown origin (see photo #).

The master meter vault/building at the connection to the consecutive water system contained standing water caused by unknown source(s). This water could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main. The source of the standing water must be identified. If the source of the water is leakage from water system components, these must be repaired.

9) Well ID: -

Clarify Status of Groundwater Well and Perform Appropriate Monitoring, Physical Disconnection, or Abandonment.

During the sanitary survey, EPA was notified that this well is considered inactive and there are no plans to use it for potable water. Please note that if you intend to keep the existing well physically connected as a backup source, you must monitor this well for compliance in the same way you would if the well was used on a regular basis. This well will also be inspected as part of the sanitary survey and you must address any significant deficiencies related to this well. If you wish this well to be considered inactive, it must be either plugged and abandoned, or physically disconnected from the system. This means the line from the well to the pumphouse or to the transmission line must be severed (section of piping removed) and properly capped, or the pump must be removed. The well must also be valved off to keep stagnant water from entering the system.

If the pump is removed, documentation must be provided for the pump removal, including a signed work order or receipt indicating the pump has been removed, and a photo of the well pump and closed valve.

To correct this significant deficiency, please confirm whether this well is active or inactive. If this well is to be considered inactive, it must be physically disconnected or abandoned. Photos must be taken to document the inactive status of this well and should be provided to EPA with your completed correction notice.

10) Well ID: -

Well not adequately protected from vehicle damage (see photo #).

The wellhead must be adequately protected to prevent damage due to vehicle operations. Vehicle protection may include the installation of four steel bollards, large boulders, concrete jersey barriers, or an enclosed chain-link fence.

11) Well ID: -

Lack of drainage for well in pit or vault (see photo #).

When a well is in a pit or vault that is not water-tight, the pit or vault shall be constructed with proper drainage or an adequate permanent or portable pump that achieves proper drainage shall be provided. Adequate drainage means that the floor of the vault must be dry at all times and only the below-grade sump can retain a small amount of water between pumping events

12) Well ID: -

Well area subject to surface drainage (see photo #).

The wellhead is located in a low lying area where surface water may drain toward the wellhead. The area surrounding the well must be recontoured, raised and sloped to drain surface water away from the wellhead. Permanent casing for the well must remain at least 18 inches above the natural ground surface. Drainage away from the well may also be accomplished by utilizing diversionary structures such as berms, walls, or ditches.

13) Well ID: -

Insufficient well height (see photo #).

Permanent casing for all wells must project at least 12 inches above the concrete floor or apron and at least 18 inches above the natural ground surface.

14) Well ID: -

Holes or openings observed in the well or its appurtenances (see photo #).

To prevent contamination of the well, all openings must be sealed and watertight. [describe what must be sealed]. Caulking/sealer must not be used.

15) Well ID: -

Lack of a sanitary seal on the well casing (see photo #).

To prevent contamination, the well must be fitted with a functioning sanitary seal and a tightly bolted cap. Caulking/sealer must not be used. The sanitary seal must be a properly fitted neoprene gasket.

16) Well ID: -

Unknown integrity of sanitary seal on the well casing (see photo #).

To prevent contamination, the well must be fitted with a functioning sanitary seal and a tightly bolted cap. Caulking/sealer must not be used. The sanitary seal must be a properly fitted neoprene gasket. The surveyor was unable to determine the integrity of the seal during the survey. The well cap must be removed or cap plug/bolt be removed to determine the existence and adequacy of the seal (gasket). Refer to the attached Wellhead Tech Tip. If the seal (gasket) is not present, a seal (gasket) must be installed per manufacturer's specifications. If the well cap is not designed to provide a sanitary seal, the well cap will need to be replaced with a properly designed and functioning well cap that will provide an adequate sanitary seal. Photographic documentation of a functioning sanitary well seal (gasket) and tightly bolted well cap must be provided.

17) Well ID: -

Well vent height improvement needed (see photo #).

The height of the well vent must be at least as high as the well casing or pitless unit.

18) Well ID: -

Well vent position improvement needed (see photo #).

The vent must terminate in a downturned position.

19) Well ID: -

Well vent screening improvement needed (see photo #).

The well vent must be screened with a #24-mesh corrosion-resistant screen to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system.

20) Well ID: -

Well lacks Ground Water Rule sample tap.

As required under the Ground Water Rule, a raw water sample tap must be installed so that water samples can be collected directly from the water source to determine the quality of the groundwater supply. The sample tap must be installed prior to the water entering any treatment process or storage tank. The tap should be of the smooth-nosed type without interior or exterior threads, suitable for obtaining samples for bacteriological analysis, and should not have a screen, aerator, or other such appurtenance.

21) Well ID: -

Ground Water Rule sample tap must be relocated or reconfigured.

As required under the Ground Water Rule, the raw water sample tap must represent water collected directly from the water source to determine the quality of the groundwater supply. The sample tap for the well must be relocated so that it is prior to the water entering any treatment process or storage tank. The tap should be of the smooth-nosed type without interior or exterior threads, suitable for obtaining samples for bacteriological analysis, and should not have a screen, aerator, or other such appurtenance.

22) Well ID: -

Well air release-vacuum relief valve improvement needed. (see photo #)

For wells equipped with an air release-vacuum relief valve, the air release piping must terminate in a downturned position. The modified piping design must also maintain at least 8 inches above the floor.

23) Well ID: -

Insufficient height of well air release-vacuum relief valve. (see photo #)

For wells equipped with an air release-vacuum relief valve, the air release piping must terminate at least 8 inches above the floor. The modified piping design must still terminate in a downward position.

24) Well ID: -

Screening of well air release-vacuum relief valve improvement needed. (see photo #)

For well pipes equipped with an air release-vacuum relief valve, the air release piping must be covered with a #24 mesh corrosion-resistant screen.

25) Well ID: -

External pump on well subject to flooding.

Flood water could create a potential backflow problem if the system loses pressure and surface water is siphoned back into the well piping. The pump should be re-located or adequately protected from flooding.

26) Source of possible contamination in immediate area of well (see photo #).

In the vicinity of the well there is [describe sources of pollution] that can potentially impact the water quality. (Describe remedy)

27) Mice or other animals and their droppings in immediate area of the well (in well house, vault, or pit) (see photo #).

The mice or other animals and their droppings must be removed. Please refer to the Center for Disease Control (CDC) website regarding how to properly clean up this area to prevent contracting the Hantavirus pulmonary syndrome:
http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/prevent3.htm

28) Spring ID: -

Spring collection area and collection chamber/box not fenced to keep large animals away (see photo #).

The spring collection area and collection chamber/box must be enclosed by a fence to prevent stock and large wildlife from entering the spring area.

29) Spring ID: -

Spring lacks Ground Water Rule sample tap.

As required under the Ground Water Rule, a raw water sample tap must be installed so that water samples can be collected directly from the water source to determine the quality of the groundwater supply. The sample tap must be installed prior to the water entering any treatment process or storage tank. The tap should be of the smooth-nosed type without interior or exterior threads, suitable for obtaining samples for bacteriological analysis, and should not have a screen, aerator, or other such appurtenance.

30) Spring ID: -

Ground Water Rule sample tap must be relocated or reconfigured.

As required under the Ground Water Rule, the raw water sample tap must represent water collected directly from the water source to determine the quality of the groundwater supply. The sample tap for the spring must be relocated so that it is prior to the water entering any treatment process or storage tank. The tap should be of the smooth-nosed type without interior

or exterior threads, suitable for obtaining samples for bacteriological analysis, and should not have a screen, aerator, or other such appurtenance.

31) Spring ID: -

Spring collection chamber hatch/entry improvement needed (see photo #).

The cover must overlap the framed opening and extend down around the frame at least two inches.

32) Spring ID: -

Spring hatch/entry improvement needed (see photo #).

Spring hatches must be fitted with a solid, watertight cover with a rubber gasket.

33) Spring ID: -

Spring air vent improvement needed (see photo #).

The air vent must be screened with a #24-mesh corrosion-resistant screen to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system.

34) Spring ID: -

Spring hatch/entry not locked (see photo #).

Spring hatch covers must have a locking device.

35) Spring ID: -

Spring collection chamber overflow screening improvement needed (see photo #).

The overflow pipe must be fitted with non-corrodible #24-mesh screen, or a properly sealed flapper or duckbill valve on the exterior discharge ends to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system. The modified overflow design must also still freefall at least 12 inches above ground.

36) Spring ID: -

Spring collection chamber overflow improvement needed (see photo #).

The overflow pipe must freefall at least 12 inches above ground. The modified overflow must also be fitted with non-corrodible #24-mesh screen, or a properly sealed flapper or duckbill valve on the exterior discharge end.

Spring ID: -

Spring collection chamber not watertight (see photo #).

The chamber must be watertight to prevent inflow of unwanted surface water.

37) Spring ID: -

External pump on spring subject to flooding.

Flood water could create a potential backflow problem if the system loses pressure and surface water is siphoned back into the spring transmission line. The pump should be re-located or adequately protected from flooding.

38) Spring ID: -

Spring collection or transmission system hatch/entry improvement needed (see photo #).

The cover must overlap the framed opening and extend down around the frame at least two inches. [identify location of hatch in collection or transmission system]

39) Spring ID: -

Spring collection or transmission system hatch/entry improvement needed (see photo #).

Hatches / manholes in the spring collection and transmission system must be fitted with a solid, watertight cover with a rubber gasket.

40) Spring ID: -

Spring collection or transmission system hatch/entry not locked (see photo #).

Hatch covers / manholes in the spring collection or transmission system must have a locking device.

41) Spring ID: -

Source of possible contamination in immediate area of spring (see photo #).

In the vicinity of the spring there is [describe sources of pollution] that can potentially impact the water quality. [describe remedy]

42) Spring ID: -

Mice or other animals and their droppings in immediate area of the spring (in spring house or collection box) (see photo #).

The mice or other animals and their droppings must be removed. Please refer to the Center for Disease Control (CDC) website regarding how to properly clean up this area to prevent contracting the Hantavirus pulmonary syndrome: http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/prevent3.htm.

43) Infiltration Gallery ID: -

Source of possible contamination in immediate area of infiltration gallery (see photo #).

In the vicinity of the infiltration gallery there is [describe sources of pollution] that can potentially impact the water quality. [describe remedy]

44) Stream Intake ID: -

Source of possible contamination in immediate area of stream (see photo #).

In the vicinity of the stream there is [describe sources of pollution] that can potentially impact the water quality. [describe remedy]

45) Reservoir Intake ID: -

Source of possible contamination in immediate area of reservoir (see photo #).

In the vicinity of the reservoir there is [describe sources of pollution] that can potentially impact the water quality. [describe remedy]

46) Emergency Source ID: -

Source of possible contamination in immediate area of emergency backup source (see photo #).

In the vicinity of the emergency backup source there is [describe sources of pollution] that can potentially impact the water quality. [describe remedy]

47) Customers connected to raw water transmission line.

Some customers are connected to the raw water transmission line to the treatment plant and are receiving untreated water. Delivery of non-potable water for human consumption is a public health risk. The service must be disconnected or appropriate treatment must be provided prior to use. [put site specific info about treating the water or disconnecting]

48) Booster Station ID:

Booster pump station subject to flooding [location of pump station].

Flood water could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main. The pump must be re-located or adequately protected from flooding.

49) Pressure Tank ID:

Hydropneumatic tank has evidence of severe rust (see photo #).

Failure to maintain the structural and sanitary integrity of the tank could lead directly to contamination within the tank, illness and/or the loss of property. The rust on the tank must be repaired or the tank must be replaced.

50) Pressure Tank ID:

Hydropneumatic tank has evidence of water leaks (see photo #).

Failure to maintain the structural and sanitary integrity of the tank could lead directly to contamination within the tank, illness and/or the loss of property. The leaks in the tank must be repaired or the tank must be replaced.

51) Pressure Tank ID:

Hydropneumatic tank has evidence of air leaks (see photo #).

Failure to maintain the structural and sanitary integrity of the tank could lead directly to contamination within the tank, illness and/or the loss of property. The leaks in the tank must be repaired or the tank must be replaced.

52) Pressure Tank ID:

Hydropneumatic tank in a vault with evidence of flooding (see photo #).

Standing water creates an environment that could damage the structural and sanitary integrity of the tank. The hydropneumatic tank must be re-located or adequately protected from standing water.

53) Pressure Tank ID:

Pressure tank that uses an air compressor is older than the manufacturer's life expectancy (see photo #).

In order to protect the structural integrity of the pressure tank (prevent tank explosion), tanks that exceed manufacturer's life expectancy must be replaced.

54) Storage Tank ID: -

Storage tank located in an area subject to flooding (see photo #).

[insert site specific problem and remedy]

55) Storage Tank ID: -

Storage tank not structurally sound or properly maintained (see photo #).

The storage tank does not appear to be structurally sound.Specifically, the [tank component] of the tank must be evaluated by a professional engineer familiar with the construction of water-storage tanks to determine the integrity of the tank's [tank component]. Failure to maintain the structural and sanitary integrity of the tank could lead directly to contamination within the tank, illness and/or the loss of property. The professional evaluation of the storage tank must be made as soon as possible and it must be repaired if necessary to ensure the structural integrity and reliability of the tank.

56) Storage Tank ID: -

Storage tank foundation does not appear to be structurally sound (see photo #).

The storage tank foundation does not appear to be structurally sound. It must be evaluated by a professional engineer familiar with the construction of water-storage tanks. Failure to maintain the structural and sanitary integrity of the tank foundation could lead directly to contamination within the tank, illness and/or the loss of property. The professional evaluation of the storage tank foundation must be made as soon as possible and the foundation repaired if necessary to ensure the structural integrity and reliability of the tank.

57) Storage Tank ID: -

Storage tank not sealed (see photo #).

Other than the openings afforded by the #24-mesh screens on the vents and overflows, all openings must be sealed completely to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system. [Describe specific openings such as: All openings between the roof and sidewalls must be sealed and watertight. Any openings from antennas, telemetry, and other appurtenances must be sealed and watertight.]

58) Storage Tank ID: -

Storage tank not cleaned and inspected within the last 10 years.

The tank must be cleaned and inspected. Please see the enclosed Finished Water Storage Tank Inspection/Cleaning Checklist for a list of items that must be evaluated during the inspection. Tanks need to be periodically cleaned and inspected to prevent the growth of potentially harmful pathogens in the accumulated sediments and to address construction issues before they require major repairs. Inspections and cleaning may be done by a third-party professional or appropriately trained in-house staff. Please be aware that some tanks may be considered as confined spaces or hazardous environments; personnel working in or near the tanks should have all OSHA-required training, and proper safety equipment and procedures should be used at all times. After inspection and cleaning the tank must be disinfected according to AWWA standards (C652-92: Disinfection of Water Storage Facilities).

In order to correct this significant deficiency, you must provide EPA with the following documentation:

- A completed copy of the Finished Water Storage Tank Inspection/Cleaning Checklist.
- A copy of inspection results and labeled photographs, which must include tank cleaning method, depth of sediment, disinfection method, and findings.
- The date that any corrective actions needed to address deficiencies with the tank components will be completed. EPA will review the results and may require additional corrective actions.

59) Storage Tank ID: -

Storage tank inspection/cleaning report not available.

During the sanitary survey, the water system could not provide a copy of the most recent storage tank inspection report to the surveyor. Systems are required to maintain all relevant

records from at least the past 10 years (Title 40 Code of Federal Regulations Section 141.33). The system must obtain documentation of the most recent storage tank inspection and/or cleaning and provide this documentation to EPA Region 8.

60) Storage Tank ID: -

No overflow on finished water storage tank.

In order to protect the integrity of the tank in the case of control system failure leading to overfilling, the tank must have an overflow that is separate from the vent.

61) Storage Tank ID: -

Unknown integrity of storage tank overflow [add other inaccessible components to consolidate language].

The sanitary surveyor was unable to evaluate the tank overflow [add other components to consolidate], and the water system was not able to produce documentation of the condition of these components. Each item that could not be inspected during the sanitary survey must be inspected and the structure/condition must be compared to the enclosed Tech Tips for Finished Water Storage Facilities to determine if corrective action is needed. Tank inspectors can be third-party professionals or appropriately trained in-house staff.

In order to correct this significant deficiency you must provide EPA with the following documentation:

- A completed copy of the Unknown Integrity Checklist.
- A copy of the inspection report. The inspection report must describe the condition of each specified tank component and include photographs.
- The date that any corrective actions needed to address deficiencies with the tank components will be completed. EPA will review the inspection report and may require additional corrective actions.

62) Storage Tank ID: -

Overflow screening on finished water storage tank improvement needed (see photo #).

Overflows must be fitted with non-corrodible #24-mesh screen, or a properly sealed flapper or duckbill valve to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system. The screen should preferably be installed within the pipe at a location least susceptible to vandalism. When a flapper valve is used, a screen must be placed inside the valve (EPA Region 8 recommends non-corrodible #24-mesh screen be used). In cold climates, use of a flapper or duckbill valve should be considered to minimize air movement and hence ice formation in the tank. In cold climates, provisions should be considered to prevent the flapper or duckbill from freezing shut.

63) Storage Tank ID: -

Overflow on finished water storage tank discharges at improper height (see photo #).

Overflow must be piped to an elevation between 12 and 24 inches above the ground surface and discharge over a drainage inlet structure, splash plate, or engineered rip-rap.

Storage Tank ID: -

Overflow discharge point on finished water storage tank improvement needed (see photo #).

Overflow must discharge over a drainage inlet structure, splash plate, or engineered rip-rap.

64) Storage Tank ID: -

Overflow on finished water storage tank is directly connected to a sanitary sewer, combined sewer or storm sewer drain (see photo #).

No overflow may be directly connected to a sanitary sewer, combined sewer or storm sewer drain. An air gap must be present such that the overflow pipe terminates at least three pipe diameters above the ground level at the sewer or storm drain, or over a splash pad.

65) Storage Tank ID: -

Overflow area allows pooling of water (see photo #).

The grading of the overflow area allows pooling of water. Water pooling around an overflow may build up biological contamination that can be inhaled back into the tank through the overflow. Water pooling next to the tank consistently may also cause structural damage to the tank base and foundation. The overflow area must be graded such that water drains away from the tank and does not stagnate.

66) Storage Tank ID: -

Unknown integrity of storage tank drain [add other inaccessible components to consolidate language].

The sanitary surveyor was unable to evaluate the tank drain [add other components to consolidate], and the water system was not able to produce documentation of the condition of these components. Each item that could not be inspected during the sanitary survey must be inspected and the structure/condition must be compared to the enclosed Tech Tips for Finished Water Storage Facilities to determine if corrective action is needed. Tank inspectors can be third-party professionals or appropriately trained in-house staff.

In order to correct this significant deficiency you must provide EPA with the following documentation:

- A completed copy of the Unknown Integrity Checklist.
- A copy of the inspection report. The inspection report must describe the condition of each specified tank component and include photographs.
- The date that any corrective actions needed to address deficiencies with the tank components will be completed. EPA will review the inspection report and may require additional corrective actions.

67) Storage Tank ID: -

Drain on finished water storage tank is directly connected to a sanitary sewer, combined sewer or storm sewer drain (see photo #).

No drain may be directly connected to a sanitary sewer, combined sewer or storm sewer drain. An air gap must be present such that the drain pipe terminates at least three pipe diameters above the ground level at the sewer drain, storm drain, splash pad or engineered rip-rap.

68) Storage Tank ID: -

No vent on finished water storage tank.

In order to protect the structural integrity of the tank during changes to tank water levels, and other events affecting the confined air space, the tank must have a vent that is separate from the overflow.

69) Storage Tank ID: -

Unknown integrity of storage tank air vent [add other inaccessible components to consolidate language].

The sanitary surveyor was unable to evaluate the tank air vent [add other components to consolidate], and the water system was not able to produce documentation of the condition of these components. Each item that could not be inspected during the sanitary survey must be inspected and the structure/condition must be compared to the enclosed Tech Tips for Finished Water Storage Facilities to determine if corrective action is needed. Tank inspectors can be third-party professionals or appropriately trained in-house staff.

In order to correct this significant deficiency you must provide EPA with the following documentation:

- A completed copy of the Unknown Integrity Checklist.
- A copy of the inspection report. The inspection report must describe the condition of each specified tank component and include photographs.
- The date that any corrective actions needed to address deficiencies with the tank components will be completed. EPA will review the inspection report and may require additional corrective actions.

70) Storage Tank ID: -

Air vent screening on finished water storage tank needs improvement (see photo #).

The vent must be fitted with non-corrodible #24-mesh screen to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system. The screen should preferably be installed within the vent at a location least susceptible to vandalism. Prior to installing the screen, the PWS should evaluate whether the tank needs a vacuum/pressure relief valve or another mechanism to prevent damage to the tank.

71) Storage Tank ID: -

Downturned air vent on finished water storage tank does not terminate at required height (see photo #).

The vent must terminate in an inverted U construction at least 24" above the tank surface to prevent inhalation of contaminants by the tank.

72) Storage Tank ID: -

Air vent on finished water storage tank does not have a solid cover (see photo #).

For non-downturned vents the screen must have a solid cover down to the bottom of the vent screen to prevent rain and blown debris from entering the tank.

73) Storage Tank ID: -

Air vent on finished water storage tank is not elevated above the roof at the required height (see photo #).

For non-downturned vents, the bottom of the vent screen must be at least 8" above the tank roof to prevent inhalation of contaminants by the tank.

74) Storage Tank ID: -

Unknown integrity of storage tank access hatch [add other inaccessible components to consolidate language].

The sanitary surveyor was unable to evaluate the tank access hatch [add other components to consolidate], and the water system was not able to produce documentation of the condition of these components. Each item that could not be inspected during the sanitary survey must be inspected and the structure/condition must be compared to the enclosed Tech Tips for Finished Water Storage Facilities to determine if corrective action is needed. Tank inspectors can be third-party professionals or appropriately trained in-house staff.

In order to correct this significant deficiency you must provide EPA with the following documentation:

- A completed copy of the Unknown Integrity Checklist.
- A copy of the inspection report. The inspection report must describe the condition of each specified tank component and include photographs.
- The date that any corrective actions needed to address deficiencies with the tank components will be completed. EPA will review the inspection report and may require additional corrective actions.

75) Storage Tank ID: -

Hatch on Finished Water Storage Tank is not elevated to the required height (see photo #).

The tank hatch must be elevated a minimum of 24 inches above the ground surface and 4 inches above the roof.

76) Storage Tank ID: -

Hatch on Finished Water Storage Tank is not elevated to the required height (see photo #).

The tank hatch must be framed at least four inches above the surface of the roof.

77) Storage Tank ID: -

Hatch on Finished Water Storage Tank does not have a shoe box lid (see photo #).

The tank hatch must be fitted with a solid watertight cover which extends down around the frame at least two inches.

78) Storage Tank ID: -

Hatch on Finished Water Storage Tank does not have a gasket that creates a water tight seal (see photo #).

The tank hatch must have a neoprene gasket to seal the hatch lid to the frame tightly to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system.

79) Storage Tank ID: -

Hatch on Finished Water Storage Tank does not have a locking device (see photo #).

The cover must have a locking device.

80) System has a potential violation for excess dosing of a chemical that contains epichlorohydrin or polyacrylamide (141.111).

81) Combined Filter Effluent (CFE) turbidity monitoring location is not representative of the filtered water.

The system's finished water (CFE) turbidimeter sampling location is not representative of the filtered water.

[describe system specific situation and remedy]

82) Turbidimeters Must Be Calibrated Quarterly.

Turbidity is used to measure filtration effectiveness, and incorrect turbidity monitoring has the potential to allow contamination to pass into the finished water. The Long Term 1 Enhanced Surface Water Treatment Rule requires that turbidimeter calibration be conducted using procedures specified by the manufacturer. To be consistent with typical manufacturer specifications for surface water treatment plants, turbidimeters for measuring individual filter effluent (IFE) and combined filter effluent (CFE) turbidity must be calibrated at least quarterly according to manufacturer procedures using a primary standard such as formazin.

83) Primary Standard Not Used to Calibrate Turbidimeters.

Turbidity is used to measure filtration effectiveness, and incorrect turbidity monitoring has the potential to allow contamination to pass into the finished water. The Long Term 1 Enhanced Surface Water Treatment Rule requires that turbidimeter calibration be conducted using procedures specified by the manufacturer. To be consistent with typical manufacturer specifications for surface water treatment plants, turbidimeters for measuring individual filter effluent (IFE) and combined filter effluent (CFE) turbidity must be calibrated at least quarterly according to manufacturer procedures using a primary standard such as formazin.

84) System has a potential violation for failing to maintain CFE turbidity records (141.33a).

85) Inadequate treatment process monitoring, recording, and recordkeeping for surface water treatment plants.

The SCADA system must be able to record and store combined filter effluent (CFE) turbidity values up to at least 5 NTU.

86) Inadequate Treatment Process Monitoring, Recording, and Recordkeeping for Surface Water Treatment Plants.

The IFE turbidity recording method employed by the system does not adequately identify the status of the filter at the time each turbidity reading is recorded (i.e. filtering to clearwell, backwashing, filtering to waste, offline). As a result, the surveyor was not able to determine which turbidity values were valid readings that counted toward compliance.

87) Inadequate filtration design or operation.

During the survey, the operators indicated that the depth of the filtration media is insufficient. The 2012 Recommended Standards for Water Works (10 States Standards) Section 4.3.1.6 Filter Material states that filter media depth for rapid sand filtration should not be less than 24 inches.

88) Inadequate treatment process operations. Operations at the water treatment plant create the potential for sending inadequately treated water to distribution.

The current operation of the filter exceeds the recommended loading rate.

89) System is using raw water to backwash conventional or direct filters that are the system's final filtration barrier. (no standard language)

90) System has a potential violation for failing to monitor the IFE turbidity as required by the regulations for conventional / direct filtration plants (141.560 or 141.174a).

91) System has a potential violation for failing to adequately record the IFE turbidity readings as required by the regulations for conventional / direct filtration plants (141.560c or 141.174a).

92) Inadequate Treatment Process Monitoring, Recording, and Recordkeeping for Surface Water Treatment Plants

The Long Term 1 Enhanced Surface Water Treatment Rule requires that the turbidity of the finished water from the individual filters be monitored continuously and recorded at least once every 15 minutes. This data is used to determine whether an individual filter effluent (IFE) turbidity exceeds either 1.0 or 2.0 NTU in two consecutive 15 minute readings, which may trigger the need for corrective actions. The IFE turbidimeters must be calibrated to record turbidity values of at least 2.0 NTU.

93) System has a potential violation for failing to maintain IFE records for 3 years (conventional and direct filtration) (141.571a or 141.175b).

94) System has a potential violation for failing to report high IFE turbidities to the EPA and conduct a filter profile (141.175b1).

95) System has a potential violation for failing to report high IFE turbidity readings to the EPA and conduct a filter self-assessment following 3 months of IFE turbidity readings over 1 NTU (141.563b or 141.175b3).

96) System has a potential violation for failing to report to the EPA and have a CPE performed following 2 months of IFE turbidity readings over 2 NTU (141.563c or 141.175b4).

97) System has a potential violation for failing to report high IFE turbidities to the EPA and conduct a filter profile (IESWTR - systems greater than 10,000) (141.175b2).

98) System has a potential violation for exceeding the CFE turbidity limits for conventional or direct filtration and failing to report to the EPA (141.551a1 / 141.551b1 or 141.173a / 141.173a2).

99) System has a potential violation for failing to maintain the records required by the Filter Backwash Recycling Rule (141.76).

100) System has a potential violation for exceeding the CFE turbidity limits for membrane filtration and failing to report to the EPA (141.551a2 / 141/551b2 or 141.173b).

101) Inadequate Membrane Filtration Operation resulting in Inadequate Treatment (this is a violation of 141.719b3 for systems that receive credit for additional filtration under the LT2ESWTR):

Due to plant design and / or equipment problems, direct integrity tests (DIT) are not being performed on all membrane skids on a daily basis. Daily direct integrity testing is required to evaluate whether there are breaches in the membrane modules which would allow contamination to pass through to the filtered water. Membrane units that are not being

assessed for integrity by daily direct integrity testing are considered cartridge filtration rather than membrane filtration.

Cartridge filters are credited with only 2 logs removal of Giardia rather than the 3 logs Giardia removal credited to membrane filtration. To meet the treatment technique for 3 logs Giardia reduction of 40 CFR §141.70(a)(1) of the Surface Water Treatment Rule, cartridge filtration systems must achieve an additional 1.0 log inactivation of Giardia.

As documented in the sanitary survey, under winter conditions the plant disinfection process is not able to achieve 1.0 log inactivation of Giardia at the first user. Therefore, the system must resume conducting and passing daily direct integrity tests on both membrane skids to receive the higher Giardia removal credits associated with membrane filtration.

102) Inadequate Filtration Design or Operation, resulting in Inadequate Treatment (this is a violation of 141.719b4 for systems that receive credit for additional filtration under the LT2ESWTR):

The individual membrane filtration units are not equipped with a turbidimeter that continuously samples the individual filter effluent (IFE). Membrane units that do not (1) have an individual filter turbidimeter, and (2) are not continuously monitoring turbidity from each unit with a 0.15 NTU trigger for repeat direct integrity testing, are considered cartridge filtration rather than membrane filtration.

Cartridge filters are credited with only 2 logs removal of Giardia rather than the 3 logs Giardia removal credited to membrane filtration. To meet the treatment technique for 3 logs Giardia reduction of 40 CFR §141.70(a)(1) of the Surface Water Treatment Rule, cartridge filtration systems must achieve an additional 1.0 log inactivation of Giardia.

As documented in the sanitary survey, the plant disinfection process does not consistently achieve 1.0 log inactivation of Giardia at the first user. Therefore, the system must install an IFE turbidimeter on each membrane unit that triggers an integrity test when the turbidity exceeds 0.15 NTU in order to receive the higher Giardia removal credits associated with membrane filtration.

103) System has a potential violation for not monitoring IFE continuously and recording values once every 15 minutes (membrane filtration) (141.719b4) (systems not receiving additional filtration credit under the LT2ESWTR - considered a significant deficiency). (no standard language)

104) System has a potential violation - IFE turbidimeters not set with a trigger level of 0.15 NTU for longer than 15 minutes to initiate a DIT (membrane filtration) (141.719b4) (systems not receiving additional filtration credit under the LT2ESWTR - considered a significant deficiency). (no standard language)

105) System operators do not know how to check and repair membranes if a direct integrity test fails. (no standard language)

106) System has a potential violation for exceeding the CFE turbidity limits for bag / cartridge filtration and failing to report to the EPA (141.551a2 / 141/551b2 or 141.173b)

107) Inadequate filtration design or operation.

Adequate microbial removal requires that a cartridge system not be used at conditions exceeding its design specifications (flow rate, inlet pressure and pressure drop), and that the cartridge be properly installed in the housing for which it was designed. The current treatment system does not have flowmeters or flow restrictors, nor pressure gauges to monitor pressure drop across the cartridges. It is unclear what the system design limitations are.

The filter housings and cartridge elements should be evaluated to ensure that manufacturer's recommended flow and pressure limits are not exceeded; flowmeters and flow restrictors should be installed as needed if the filters are not designed for the maximum flow from the intake pumps. Pressure gauges should be installed up and downstream of the cartridges to allow daily monitoring and recording of pressure drops and to trigger filter change outs when manufacturer's limits are close to being reached.

108) Inadequate filtration design or operation.

Adequate microbial removal requires that a cartridge system not be used at conditions exceeding its design specifications (flow rate, inlet pressure and pressure drop), and that the cartridge be properly installed in the housing for which it was designed.

In order to ensure that these conditions are met, the differential pressure across the filter bags should be monitored and recorded daily and the filters should be changed out when the manufacturer's limits are close to being reached. The system is currently not monitoring and / or recording these values on a daily basis.

109) Inadequate filtration design or operation.

In order to ensure 99% removal of Cryptosporidium as required by the Long Term 1 Enhanced Surface Water Treatment Rule, the final cartridge filter must be one to two micron absolute pore size, unless the manufacturer can provide challenge testing results showing 99.9% removal of Cryptosporidium or a surrogate of the same size. According to the manufacturer, the bag filter currently being used as the final filtration barrier has not been certified for Cryptosporidium removal. The PWS should provide documentation indicating that the existing filter meets the above requirements, or use a different filter that does meet these requirements.

110) Inadequate filtration design or operation.

The bag filter currently being used as the final filtration barrier is being operated at a rate that exceeds the manufacturer's recommended maximum flow rate. Adequate microbial removal requires that a cartridge system not be used at conditions exceeding its design specifications (flow rate, inlet pressure and pressure drop).

111) System has a potential violation for exceeding the CFE turbidity limits for DE filtration and failing to report to the EPA (141.551a2 / 141/551b2 or 141.173b).
112) The Diatomaceous Earth filters are being operated at a rate that exceeds 1.5 gpm/sf. (no standard language)
113) The slow sand filters are being operated at a rate that exceeds 0.1 gpm/sf. (no standard language)
114) System has a potential violation for exceeding the CFE turbidity limits for slow sand filtration and failing to report to the EPA (141.551a2 / 141/551b2 or 141.173b)
115) The slow sand filters are being used to treat raw water that exceeds 10 NTU. (no standard language)
116) The depth of the water being maintained at the slow sand filters is less than 3 feet during operation. (no standard language)
117) The system is using slow sand filters as a final filtration barrier and not monitoring the head loss for process control. (no standard language)
118) System has a potential violation for failing to maintain UV operation records (141.722c)
119) The system does not have a means of ensuring that the flow rate through the UV unit does not exceed the manufacturer's maximum validated flow rate (less than 40 gpm UV). (no standard language)
120) The system does not have an intensity sensor alarm to indicate low UV intensity (less than 40 gpm UV). (no standard language)
121) The system does not have a UV lamp status alarm (less than 40 gpm UV). (no standard language)
122) The system does not have a UV lamp age counter / alarm (less than 40 gpm UV). (no standard language)
123) The UV disinfection unit is not equipped with a fail safe solenoid valve. A fail safe solenoid valve that shuts off flow through the units when an adequate UV dose is not being achieved must be installed.
124) The system has a potential violation. The UV unit being used by the system for Cryptosporidium inactivation credit does not have the required NSF 55A Certification (less than 40 gpm UV) or validation according to the UVDGM / DVGW (greater than 40 gpm UV).

125) The system does not check the calibration of their UV intensity sensors at least monthly.

As a system that utilizes UV disinfection to achieve *Cryptosporidium* inactivation credit to meet the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule, you are required to verify the calibration of all UV sensors monthly and recalibrate the sensors if they do not meet the quality control requirements specified in the EPA UV Disinfection Guidance Manual. The system currently does not conduct UV intensity sensor calibration verifications. The system must work with the UV unit manufacturer to begin performing and documenting monthly UV intensity sensor calibration verifications on all UV units. If any UV sensor does not meet the quality control requirements specified in the UV Disinfection Guidance Manual, it must be recalibrated.

126) The system does not check the calibration of their online UV transmittance analyzer on a weekly basis.

As a system that utilizes UV disinfection to achieve *Cryptosporidium* inactivation credit to meet the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule, you are required to continuously monitor the finished water UV transmittance. This parameter is a primary input into the calculated dose equation used to demonstrate that adequate inactivation is being achieved. The system currently does not conduct UV transmittance analyzer calibration verifications. The system must begin conducting weekly verification of the online UVT analyzer using a grab sample.

127) The system currently does not have a calibrated flow meter on one or more of the UV disinfection units.

As a system that utilizes UV disinfection to achieve *Cryptosporidium* inactivation credit to meet the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule, you are required to monitor the flow rate at each UV unit to ensure that the units are being operated within the validated conditions. Currently, the flow meter at one or more of the UV units is inoperable. The system must repair all flow meters as necessary to allow for direct monitoring of the flow rate at each UV unit.

128) System has a potential violation for failing to maintain UV operation records (greater than 40 gpm UV) (141.720d5).

129) The system operators do not know how to properly identify an off-specification event and report it to the EPA (greater than 40 gpm UV). (no standard language)

130) The plant's SCADA is not set up to alarm when an off-specification event occurs (greater than 40 gpm UV). (no standard language)

131) System has a potential violation for monitoring the POE chlorine residual at a point that is not prior to the first user of the water (141.74c2).

132) Inadequate Treatment Process Monitoring for Surface Water Treatment Plants.

The online chlorine residual analyzer at the point of entry was not adequately calibrated and periodically verified. The chlorine residual at the point of entry measured by the surveyor using a handheld DPD device varied substantially from the reading by the online analyzer. According to EPA Method 334.0: Determination of Residual Chlorine in Drinking Water Using an On-Line Chlorine Analyzer; during routine calibration checks of the online analyzer, the continuous analyzer chlorine residual reading must be within 0.1 mg/L or 15% (whichever is greater) of the grab sample measurement. If the readings are outside of this range, follow-up calibration procedures are required.

The following actions must be taken:

a. The online analyzer should be calibrated per manufacturer's specifications and then checked with a grab sample taken at the same location (using an accurate handheld DPD analyzer) to ensure that the variance is within the specified limits. If after calibration the device still does not meet the above requirements, the system should contact the manufacturer to troubleshoot the problem and calibrate the instrument.

b. The online analyzer should be verified with a grab sample once every seven days and records of the verifications kept in the operating logs. If the variance between the two readings is ever outside of the specified limits (0.1 mg/L or 15%, whichever is larger), the online chlorine residual analyzer should be calibrated and re-checked. If this does not bring the readings within the specified limits, the system should contact the manufacturer to troubleshoot the problem.

133) Inadequate Treatment Process Monitoring, Recording, and Recordkeeping for Surface Water Treatment Plants.

The online chlorine residual analyzer at the point of entry to the distribution system was not periodically verified to determine the need for calibration per the requirements of EPA Method 334.0: Determination of Residual Chlorine in Drinking Water Using an On-Line Chlorine Analyzer. The online analyzer must be verified with a grab sample once every seven days and records of the weekly verifications kept in the operating logs. The continuous analyzer chlorine residual reading must be within 0.1 mg/L or 15% (whichever is greater) of the grab sample measurement. If the readings are outside of this range, follow-up calibration procedures are required.

134) System has a potential violation for failing to monitor bromate at the point of entry according to the required frequency (system using ozone) (141.132b3).

135) System has a potential violation for failing to monitor chlorine dioxide at the point of entry according to the required frequency (system using chlorine dioxide) (141.132c2).

136) System has a potential violation for failing to monitor chlorite at the point of entry according to the required frequency (system using chlorine dioxide) (141.132b2).

137) One year disinfection profile not completed.

This public water system was required to conduct one year of disinfection profiling as part of the Long Term 1 Enhanced Surface Water Treatment Rule. The disinfection profile consists of

inactivation calculations for Giardia and viruses calculated once per week over a year's time. During this sanitary survey, a complete one year profile was not available for review. The system must collect information on the plant's flow rate, contact tank volume, pH, temperature, and chlorine residual on at least a weekly basis to calculate Giardia and virus inactivation levels for one year. This information should be used to complete the required one year disinfection profile and the profile should then be kept in the plant's records indefinitely. Failure to have the profile available for review during sanitary surveys is a recordkeeping violation of 40 C.F.R. §141.536.

138) System has a potential violation for failing to consult the EPA prior to making a significant change to their disinfection practices (141.570d or 141.172c).

139) Inadequate inactivation design or operation (CT).

The Surface Water Treatment Rule requires that water systems achieve at least 99.99% (4-log) removal and/or inactivation of viruses. The cartridge filtration system employed is not credited with any virus removal due to the large size of the pores in comparison with the size of viruses. In addition, the UV system is not credited with virus inactivation due to the relatively high UV resistance of viruses. The system must therefore achieve 99.99% inactivation of viruses through chemical disinfection.

Based upon calculations made in this sanitary survey using conservative values, the required level of virus inactivation is not achieved by the time the water reaches the first user. The system must ensure adequate inactivation; the disinfection profiling spreadsheet sent to the system should be used weekly for one year to document adequate inactivation. If the system is unable to achieve the required 4 log inactivation by adjusting the flow rate or chlorine residual, it is possible that modifications to the system design will be necessary.

140) Inadequate inactivation design or operation (CT).

The water treatment system operation and/ or design does not provide for adequate inactivation of *Giardia lamblia*. The SWTR requires that water systems achieve at least 99.9% (3-log) removal and/or inactivation of *Giardia lamblia* cysts and 99.99% (4-log) removal and/or inactivation of viruses. As documented in this sanitary survey, the filtration system when properly operated does not achieve the required reduction of Giardia; therefore, the system must achieve additional reduction of Giardia through inactivation.

The system does not routinely collect and record the data necessary to determine the level of inactivation. Inactivation calculations made based on data collected during the sanitary survey and standard conservative estimates for peak hourly flows and tank and pipeline volumes indicated that the system was not obtaining enough Giardia inactivation to achieve a total reduction (removal plus inactivation) of 99.9%.

The system must ensure adequate Giardia reduction; the disinfection profiling spreadsheet provided to the water system should be used weekly to document that the inactivation necessary to achieve the required total reduction of Giardia is achieved. A completed copy must be provided to EPA to show that this significant deficiency has been resolved. If the system is unable to obtain the required inactivation, the system should be modified to increase the level

of inactivation (i.e. installation of a second method of inactivation or installation of additional storage to increase contact time).

141) System has a potential violation for failing to maintain adequate treatment for Cryptosporidium as required in the LT2 rule (Bins 2 or higher system or system that committed to install maximum treatment) (141.711a).

142) Low pressure or loss of pressure (less than 20 psi).

Presently, some areas of the distribution system have pressure less than 20 psi. This low pressure creates significant risk for backflow and system contamination. In order to correct this significant deficiency, you must identify the cause(s) of the low pressure and provide documentation of how it was corrected.

143) Inadequate backflow prevention on bulk water fill station (see photo #).

Bulk water fill stations present a potential cross-connection. Cross-connections provide a pathway for contamination to enter the drinking water system during backflow events and therefore present a potential public health threat. A reduced pressure backflow assembly (RPZ) or permanent air gap device must be installed at this facility. An RPZ must be inspected and tested at least annually to ensure proper function.

144) Air relief valve (ARV) vault contains standing water (see photo #)

An ARV vault near [describe location] contained standing water from ground water intrusion or leaks in the pipes or valves. Standing water at the discharge point of the air relief valve could create a potential backflow problem if the system loses pressure and the water is siphoned back into the main.

145) Unprotected, severe hazard cross-connection present (see photo #). (see examples listed below)

Cross-connections provide a pathway for contamination to enter the drinking water system during backflow events and therefore present a potential public health threat. The survey identified [specify the cross connection found during the survey] as a severe hazard cross connection. A reduced pressure backflow assembly and air gap that is twice the size of the supply pipe diameter but always greater than one inch must be installed at the service connection to this facility and must be inspected and tested at least annually to ensure proper function.

146) Unprotected, high hazard cross-connection present (see photo #). (see examples listed below)

Cross-connections provide a pathway for contamination to enter the drinking water system during backflow events and therefore present a potential public health threat. The survey identified [specify the cross connection found during the survey] as a high hazard cross connection. A reduced pressure backflow assembly (RPZ) or air gap must be installed at the

service connection to this facility. An RPZ must be inspected and tested at least annually to ensure proper function.

147) Leaking system components were identified:

[Describe potential concern and remedy]

148) Unprotected, high hazard cross-connection present (see photo #).(see examples listed below)

Stock tanks are high hazard cross connections because of the potential for protozoan, bacterial and viral contamination. An approved air gap or atmospheric vacuum breaker or greater backflow prevention device must be installed at the tank(s).

149) The treatment plant is not being operated to prevent inadequately treated water from being sent to the distribution system.

During the sanitary survey the operator demonstrated lack of operational understanding or other limiting conditions existed [describe]. [Describe potential concern and remedy]

150) No Emergency Procedure Plan (EPP).

The Emergency Procedure Plan (EPP) must detail emergency operations procedures for possible foreseeable emergencies such as power outage, loss of water, equipment failure, development of unsafe conditions, and other emergency conditions. Templates, including instructions, for developing EPPs may be found on the USEPA Region 8 Drinking Water Online website: http://www.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms. Select the "Emergency Procedure Plan Templates" link on the main page.

Uncorrected Significant Deficiencies from Prior Sanitary Survey

Numbered significant deficiencies and associated numbered photos, if applicable

Recommendations

1) Operator Training and Certification - Transient Non-Community Water System

Although not required by the state of Wyoming, water system operators should be trained and certified. Continued training is necessary for operators to develop comprehensive knowledge of water utility operation and to keep up with changes in requirements, technology, etc. Certification of a second person as a backup operator is also recommended.

2) Improvements and Changes to the System

When making changes to the drinking water system, or changing the water system configuration, please fill out the System Change Form that is located at the following EPA

website: https://www.epa.gov/region8-waterops/epa-r8-public-water-system-inventory-change-form

3) Water Must be Purchased from a Licensed Bulk Water Hauler

No information could be located verifying that , is licensed for hauling bulk quantities of water. Please submit documentation indicating that the water hauler is licensed to haul potable water.

4) Well ID: -
Well Pit/Vault Subject to Potential Flooding (See Photo #)

The well pit/vault should be made watertight to prevent surface or ground water from entering the pit/vault. The well pit/vault should be inspected regularly to ensure that the cover has a watertight seal to prevent potential contaminants (oil/fuel, surface runoff from drainage or snow melt) from entering the pit.

5) Well ID: -
Well Log or Statement of Completion

At the time of the survey, the Statement of Completion for the well could not be located. This document has construction information that is important for determining the threats to the water supply from various contaminants. This document may also be called “well logs”, “as builts” or “lithologic logs”. The water system owner/operator should obtain a copy of the well permit and/or well log by contacting the State agency. Should the document be located, please forward a copy to EPA Region 8.

6) Stream Intake ID: -
Multiple Intakes Should be Used

An intake structure with intakes at different depths allows the water system to draw the best quality water when there are fluctuations in water level and variability of water quality with depth. Seasonal turnover, algal blooms and thermal stratification can cause water quality problems at the treatment plant. Routine monitoring of raw water quality can help the operator determine the optimum intake level. EPA recommends utilizing the appropriate intake level to achieve best results in water treatment.

7) Reservoir Intake ID: -
Multiple Intakes Should be Used

An intake structure with intakes at different depths allows the water system to draw the best quality water when there are fluctuations in water level and variability of water quality with depth. Seasonal turnover, algal blooms and thermal stratification can cause water quality problems at the treatment plant. Routine monitoring of raw water quality can help the operator determine the optimum intake level. EPA recommends utilizing the appropriate intake level to achieve best results in water treatment.

8) Reservoir Intake ID: -
Reservoir Experiences Algal Blooms

Algal blooms occur when a flux of nutrients in surface waters causes rapid growth of algae. Raw water laden with algae can clog equipment and filters in the treatment plant, impart offensive taste and odor to treated water, and increase treatment costs. In extreme cases, algal blooms from cyanobacteria may present an acute health threat due to the release of toxins into the water. EPA recommends monitoring the waters around your intake for algal blooms. Develop a strategy to protect your water system from the effects of algal blooms.

9) Source of Possible Contamination in Immediate Area of Emergency Backup Source

Near the emergency backup source there is heavy agriculture activity that can potentially impact the water quality. The back up well is currently in use for a field pivot irrigation system but could be used in an absolute emergency. Water system personnel should consider other potential emergency backup sources.

10) Storage Tank ID: -
Visual Inspection of Storage Tank Components

The storage tank vent, hatch, and overflow should be inspected regularly to ensure that openings to not develop. EPA recommends the system visually inspect these components at least twice per year.

11) Storage Tank ID: -
Tank Drains

Storage tank drain lines should be screened with a #24-mesh screen or a properly sealed flapper valve to prevent entry of birds, insects, rodents, and other forms of contamination. Drain lines should terminate between 12 and 24 inches above a drainage area protected by an inlet structure, splash plate, or engineered rip-rap.

13) Storage Tank ID: -
Storage Tank Mixer

Long residence times in the storage tank can result in stagnant water, inconsistent water quality, or freezing issues in the winter. Storage tank mixers can help maintain water quality consistency and prevent freezing issues in the winter. The system should consider installing a mixer in the storage tank to address these potential issues. The mixer should be regularly maintained to ensure continued operation.

14) Storage Tank ID: -
Tank Cannot be Isolated from System

The Storage Tank cannot be taken out of service for inspection and maintenance without shutting down the rest of the water system. Storage facilities should be designed with a means to isolate the facilities by closing control valves. These valves, when in place, should be

exercised regularly as part of the maintenance program. EPA recommends an upgrade to your water system to allow for the isolation of your storage tank from the rest of the water system. If funding to install adequate tank controls is not available in the current budget, include funding to install these controls in a future budget.

15) Storage Tank ID: -
Adequate Tank Controls Should be Installed

Adequate controls must be provided to maintain water levels in the storage tank. Pumps to supply the tank should be controlled from tank levels with a signal transmitted by telemetering equipment. At the time of the survey, water level indicator equipment and associated controls for the storage tank were not in place. Filling of the tank was controlled by a timer on the well pumps. EPA recommends installing these controls.

16) Storage Tank ID: -
Continuous Overflow

The storage tank was continuously overflowing at the time of the survey and/or was reported to be continuously overflowing for at least a portion of each year. Continuous overflows may be considered a point source of pollution which may require a discharge permit. Additionally, overflows are designed to only operate in an emergency and continuously overflowing the tank may lead to structural damage. The system should consider implementing controls to prevent the tank from continuing to fill with water before the water level reaches the tank overflow outlet.

17) Storage Tank ID: -
Storage Tank Lacks Vacuum/Pressure Release Valve

A vacuum/pressure release valve can protect a storage tank by automatically preventing vacuum formations and pressure buildups. The Storage Tank did not have a means to break the formation of a vacuum or to relieve excess pressure inside of the tank. Damage to the tank and tank appurtenances that may result from vacuum formation and pressure buildup can lead to costly repairs and lost water service and may pose a threat to public health.

18) Storage Tank ID: -
Air Vent Screening Not Inside Vent Pipe

To discourage vandalism the screening on an air vent pipe should be attached inside of the pipe rather than wrapped or clamped around the outside of the pipe.

19) Pressure Tank ID:
Hydropneumatic Tank Cannot be Bypassed

The hydropneumatic tank cannot be taken out of service for inspection and maintenance without shutting down the rest of the water system. Hydropneumatic tanks should be

designed with a means to bypass the tank by closing control valves. These valves, when in place, should be exercised regularly as part of the maintenance program.

20) Treatment Plant ID: -
Treatment Step:
NSF Approved Disinfection Chemicals

For disinfection purposes, the system should purchase AWWA/ANSI or NSF-60 approved chlorine products for potable water supplies.

21) Treatment Plant ID: -
Treatment Step:
Treatment System Lacks Redundant Equipment

When treatment is used for the protection of the water supply, redundant equipment should be available. The treatment setup at the water system lacks redundant equipment and/or the spare parts to avoid an interruption of treatment should the treatment units go down. EPA recommends acquiring redundant treatment equipment to be employed in a standby mode to prevent an interruption in treatment.

22) Treatment Plant ID: -
UV System Lacks Flow Meter or Flow Restrictor

Each UV reactor should have a dedicated flow meter to confirm that the reactor is operating within the validated flow rate. In applications with widely varying flow rates, a flow meter and modulating control valve might be installed at each reactor to provide flow distribution and control. EPA recommends installing a flow meter or an appropriate means to measure and if necessary control the rate of flow through the UV reactor.

23) Treatment Plant ID: -
UV System Lacks Intensity Sensor and Alarm

Each UV reactor should have a dedicated sensor to confirm that the reactor is operating within the validated UV intensity. In most systems sensor readings can trigger an alarm when lamp intensity falls below validated conditions. EPA recommends installing an intensity sensor to measure UV intensity in the UV reactor. An alarm system triggered by sensor readings should also be installed to assure the reactor performs within the validated conditions.

24) Treatment Plant ID: -
UV System Lacks Alarms

In order to ensure proper operation and maintenance of the system, the UV reactor instruments and controls should be able to trigger visual or audible alarms to alert the operator to specific conditions within the reactor. Automatic UV reactor shut-down during critical alarm conditions (high temperature, lamp or sleeve failure or loss of flow) is essential

for all operating approaches. During the sanitary survey, the following conditions of inadequate instrumentation and controls were noted:

- UV lamp status alarm was lacking or inoperable
- UV lamp age counter was lacking or inoperable

EPA recommends installing and/or properly maintaining an alarm system to alert the operator to conditions in the UV reactor.

25) Treatment Plant ID: -
UV System Lacks Automatic Shut-off

Each UV reactor should have an automatic shut-off fail-safe solenoid valve to prevent water from flowing through the unit without receiving adequate treatment.

26) Low Chlorine Residual – Ground Water System

Weekly inspection of the chlorination equipment and testing for residual should be conducted. At the time of the survey a low chlorine residual was present in the system. While the system is not required to disinfect, it is recommended that a minimum residual of 0.2 mg/L free chlorine be maintained. The system may also consider a more active flushing program within the distribution system, to maintain a minimal chlorine residual to protect the disinfection integrity of the system.

27) Low Chlorine Residual – Ground Water System

Weekly inspection of the chlorination equipment and testing for residual should be conducted. At the time of the survey a low chlorine residual was present in the system. While the system is not required to disinfect, it is recommended that a minimum residual of 0.5 mg/L total chlorine be maintained. The system may also consider a more active flushing program within the distribution system, to maintain a minimal chlorine residual to protect the disinfection integrity of the system.

28) DPD Reagent Expiration

During the site visit, sampling of the chlorine residual revealed the DPD reagent was expired in [DATE]. DPD chlorine reagent can be degraded by high temperature, moisture, or light. The expiration date printed on the reagent package is an indication of the shelf life of the reagent when stored in a cool, dry, dark place, but should not be the only guide to the validity of the reagent. The operator should verify the chlorine analyzer results regularly by comparison with another reliable test kit or check the accuracy of the kit against a standard solution. The operator can then determine if new reagents need to be purchased or if the kit needs to be recalibrated, repaired or replaced.

29) Chlorine Sample Procedure

The operator should review the equipment and reagent used when sampling for chlorine residual and confirm that the proper equipment is being used and that the proper procedure is being followed to comply with manufacturer's procedures.

30) Low Chlorine Levels in Distribution System

The Surface Water Treatment Rule requires that chlorine residual be detectable in all RTCR samples. Data show that as chlorine residual is raised to 0.2 mg/L and above, the TC positive detections decrease. Therefore, it is recommended that in the distribution system the free chlorine level should be greater than or equal to 0.2 mg/L. Considering that the system does not have its own booster chlorination facilities, the following steps could be taken to boost chlorine residual: manage the tank level to promote turnover, install a mixing system or practice distribution system flushing.

31) Low Chlorine Levels in Distribution System

The Surface Water Treatment Rule requires that chlorine residual be detectable in all RTCR samples. Data show that as chlorine residual is raised to 0.2 mg/L and above, the TC positive detections decrease. Therefore, it is recommended that in the distribution system the free chlorine level should be greater than or equal to 0.2 mg/L. Considering that the system does not have its own booster chlorination facilities, the following steps could be taken to boost chlorine residual: manage the tank level to promote turnover, install a mixing system or practice distribution system flushing.

32) Treatment Plant ID: -
Turbidity Recorders

The 7-day circular chart recorder should be replaced with a strip chart recorder or other device capable of recording turbidities up to 5 NTU.

33) Treatment Plant ID: -
Observed Loss of Media

Some media loss is normal in conventional filters. If a large amount of media is being lost, the backwash operation should be evaluated. Frequently media loss may be attributed to an excessive backwash flow rate over-expanding the filter bed. EPA recommends that the system evaluate backwash operations to determine the cause of excessive media loss from the filters.

34) Treatment Plant ID: -
Filter Lacks Turbidity Alarm

In order to ensure compliance with turbidity standards, the Individual Filter Effluent (IFE) turbidimeter should be able to trigger visual or audible alarms to alert the operator whenever turbidity exceeds an alarm set point. During the sanitary survey, an alarm system for IFE was lacking or inoperable. EPA recommends installing and/or properly maintaining an alarm system to alert the operator to a high turbidity reading at the IFE turbidimeter.

35) Treatment Plant ID: -
Spare Membrane Cassettes

An inventory of spare parts necessary to keep the membrane filtration system up and running should be available to operators. Membrane cassettes are a vital part of the inventory. System records should indicate the service life of parts and provide a guide as to budgeting for spare parts inventory. EPA recommends budgeting for and maintaining an inventory of spare parts necessary to keep the membrane filtration system up and running.

36) Treatment Plant ID: -
Treatment Plant Lacks Adequate Storage of Cleaning Chemicals

The treatment plant that houses a membrane filtration system should have enough chemical storage to last through periods of severe weather when emergency conditions exist. EPA recommends budgeting for and maintain adequate storage of cleaning chemicals to provide for emergency weather conditions.

37) Treatment Plant ID: -
Filtration Unit not Allowed to Ripen

Slow sand filters should be operated to waste during a ripening period after scraping or re-bedding until the filter effluent turbidity meets the drinking water standard established for the system. EPA recommends establishing standard operating procedures that provide for operating your filter to waste following scraping or re-bedding.

38) Treatment Plant ID: -
Emergency Procedure Plan Needs Update

The Emergency Procedure Plan (EPP) for your water system does not include a section on breakage of UV lamps. UV lamps represent a mercury hazard that should be addressed according to OSHA Guidelines 1910 Subparts H, I, Z: Response to Breakage, Cleanup and Disposal of UV Lamps. EPA recommends updating your EPP to address breakage of UV lamps.

39) Treatment Plant ID: -
Disinfection System Lacks Redundant Equipment

When disinfection is required for the protection of the water supply, redundant equipment of sufficient capacity to replace the largest operational unit should be provided. The disinfection setup at your water system lacks redundant equipment and/or the spare parts to avoid an interruption of service should the main unit go down. EPA recommends acquiring redundant disinfection equipment to be employed in a standby mode to prevent an interruption in service or loss of disinfection capacity.

40) Treatment Plant ID: -
Ozone Monitors not Operational

For ozone disinfection systems, monitors should be provided to measure ozone residuals in the water. The number and location of the monitors should be such that the amount of time the water is in contact with the ozone residual can be determined. During the sanitary survey some or all of the ozone monitors were not operational. EPA recommends maintaining your ozone monitors in operable condition as part of your maintenance program.

41) Treatment Plant ID: -
Ozone Destruction Unit not Operational

A system for treating the final ozone off-gas from each contactor must be provided to meet safety and air quality standards. At least two units must be installed that are each capable of handling the entire gas flow. During the sanitary survey some or all of the units were not operational. EPA recommends maintaining your ozone destruction units in operable condition as part of your maintenance program.

42) Treatment Plant ID: -
Ozone Generator Maintenance Program Should be Developed

A maintenance program aims to provide better service, extend the service life of all equipment, and make efficient use of resources. To achieve the goals of a maintenance program, planned work orders, established work schedules and evaluation of system performance are utilized. EPA recommends preparing a written maintenance program or if a program has been prepared, implement the program in a consistent and diligent manner.

43) Treatment Plant ID: -
SCBA or Supplied-air Respirator not Available

Respiratory protection equipment meeting the requirements of the National Institute for Occupational Safety and Health (NIOSH) should be available and stored in a convenient heated location, but not inside any room where ozone is used. The units should use compressed air, have at least 30 minutes capacity and be compatible with units used by the fire department responsible for the plant. During the sanitary survey, respiratory equipment for operators was not available or was inoperable. EPA recommends maintaining functional respiratory protection equipment that meets applicable standards and provide appropriate training in the use of the equipment for operators assigned to the ozone unit.

44) Treatment Plant ID: -
Operators Exposed to Ozone Levels Greater than 0.1 PPM

Safety and air quality standards limit maximum allowable ozone concentration in the discharge and ambient air to 0.1 ppm by volume. An alarm should sound when ozone levels exceed 0.1 ppm and ozone generator shutdown should occur when ambient ozone levels exceed 0.3 ppm in either the vicinity of the generator or the contactor. During the sanitary survey it was determined that operators have been exposed to ozone levels greater than 0.1 ppm. EPA

recommends operating and maintaining ozone equipment to conform to prescribed standards of worker safety and air quality standards.

45) Treatment Plant ID: -
Chlorine Dioxide Monitors Not Operational

For chlorine dioxide disinfection systems, monitors should be provided to measure chlorine dioxide residuals in the water. The number and location of the monitors should be such that the amount of time the water is in contact with the chlorine dioxide residual can be determined. During the sanitary survey some or all of the chlorine dioxide monitors were not operational. EPA recommends maintaining your chlorine dioxide monitors in operable condition as part of your maintenance program.

46) Treatment Plant ID: -
Chlorine Dioxide Maintenance Program Should be Developed

A maintenance program aims to provide better service, extend the service life of all equipment, and make efficient use of resources. To achieve the goals of a maintenance program, planned work orders, established work schedules and evaluation of system performance are utilized. EPA recommends preparing a written maintenance program or if a program has been prepared, implement the program in a consistent and diligent manner.

47) Treatment Plant ID: -
Operators Exposed to Chlorine Dioxide Levels Greater than 0.1 PPM

Safety and air quality standards limit maximum allowable chlorine dioxide concentration in the discharge and ambient air to 0.1 ppm by volume. An alarm should sound when chlorine dioxide levels exceed 0.1 ppm and chlorine dioxide generator shutdown should occur when ambient chlorine dioxide levels exceed 0.3 ppm in either the vicinity of the generator or the contactor. During the sanitary survey it was determined that operators have been exposed to chlorine dioxide levels greater than 0.1 ppm. EPA recommends operating and maintaining chlorine dioxide equipment to conform to prescribed standards of worker safety and air quality standards.

48) High Distribution Water Loss Rate

The water system representative indicated a high distribution system water loss rate (%). The system should consider identifying potential leaks or areas of water loss in the distribution system and repair or replace pipes as needed to mitigate water loss.

49) Booster Station ID: -
Booster Pumps not Operable or in Good Condition

Water system pumps should operate properly and be properly maintained. Pump maintenance should be part of the maintenance program. A back up pump and spare parts should be

available to minimize down time and keep the system up and running. During the sanitary survey, the following conditions of inadequate maintenance were noted:

- Pump was noisy, hot and had excessive vibration
- Pump was hot and had smell of ozone or burning insulation
- No backup pump available
- All pumps are not operable
- Pump is leaking excessive water
- Dirt is present around the motor cooling fins and air intake ports
- Pump check valve is not operating correctly
- Pump does not have an isolation valve on the discharge line
- Pump does not have an operable pressure gauge and/or operable flow meter
- Booster pump does not have a pressure gauge on the discharge side and a compound pressure gauge on the intake side
- Pumping system does not have a blow-off line
- Pumping system does not have an air/vacuum relief valve
- Motor control system should be equipped with resets, manual override, pressure controls and failure alarm
- Elapsed time meters are not installed
- Control equipment is not enclosed in protective cabinets

EPA recommends implementing a sound maintenance program that keeps pumps and motors operating properly.

50) Distribution System Contains Asbestos-Cement Pipe

Asbestos contained in asbestos-cement (AC) pipe can be a health hazard to personnel that dislodge, remove, tap, or handle the pipe in a manner that breaks up or causes abrasions to the pipe. Industry standard procedures have been established for handling and disposing of AC pipe. Pipe replacement is considered a renovation activity which is subject to the Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, subpart M. Operators and contract personnel should follow approved procedures when repairing or replacing AC pipe.

51) Water Mains Broken due to Traffic Load or Freezing

Water mains should be covered with sufficient earth or other insulation to prevent freezing and to cushion pipe from traffic loading. A continuous and uniform bedding should be provided for all buried pipe, tamped in layers around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe. EPA recommends installing water mains at sufficient depth and with adequate cover to support and protect the pipe from freezing and traffic loading.

52) Distribution System Maps

The system should have a current map of the distribution system that shows pipe types and sizes, valves, flushing locations, wells, vaults, and other distribution system facilities.

53) Fire Protection

The system should consider installing fire protection in the distribution system (for example, fire hydrants), including expanding storage capacity if needed, to protect the distribution system from fires. A professional engineer must be consulted if the system decides to install fire protection.

54) A Flushing Program Should Be Developed

The whole system should be flushed at least once a year to clear out sediment deposited in the lines. Flushing should provide adequate water velocity to purge the system. This may also help reduce chlorine demand in the distribution system so that chlorine residual is detectable throughout the system.

55) Storage Capacity not Adequate to Meet Current or Future Needs

The minimum storage capacity (or equivalent capacity) for systems not providing fire protection should be equal to the average daily consumption. This requirement may be reduced when the source and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system. Where fire protection is provided, fire flow requirements are established by the appropriate state Insurance Services Office. EPA recommends initiating investigations into options available to increase system storage to recommended levels.

56) Properly Measure Chlorine Residual

Manufacturer instructions for the use of a DPD type chlorine residual test kit should be followed to achieve accurate and precise results. All operators should be appropriately trained on operation of the DPD chlorine residual test kit to obtain appropriate results.

57) Disinfection of Water Mains

Individuals responsible for the repair of water mains should be aware of the potential health hazards and should be trained to observe prescribed construction practices and disinfection procedures. Leaks or breaks that are repaired with clamping devices while the mains remain pressurized may present little danger of contamination and therefore not require disinfection. Repairs on mains that have been wholly or partially dewatered require disinfection according to accepted standards (e.g., AWWA C651) followed by bacteriological testing to verify that disinfection has been successful.

58) Backflow Prevention/ Cross Connection

The public water system should conduct an inventory of the system to determine the existence and degree of hazard of potential cross-connections and implement a cross-connection control program. Cross-connections in water systems are a significant sanitary risk that threatens drinking water quality and public health. Cross-connection control devices should be appropriate for the specific application. The water supplier should develop and maintain a

record keeping program and management procedures to ensure the following: a) installation and certification by test or inspection of all backflow prevention devices, and b) the annual testing and certification by a certified tester of all testable backflow prevention devices.

59) Frost Free Hydrants

Frost-free yard hydrants that drain into the soil (e.g. through a weephole or stop and waste valve) should not be used in public water systems as this drain-back feature allows the possibility of siphoning of contaminated water into the distribution system. The most protective frost-proof hydrants are those which utilize a reservoir built into the hydrant and set below the frost line. Because no external drain is necessary, the possibility of contamination from back-siphonage is eliminated. When any frost-free hydrants are replaced or when any new hydrants are installed, they must be either sanitary hydrants with a reservoir or hydrants that have a check valve and looped drain line.

60) Yard Hydrants Connected to Trailers/Mobile Homes (See Photo #)

Cross connections can exist when a connected hose or other plumbing provides a potential pathway for contamination to enter the drinking water system during a backflow event, which are a potential public health threat. Yard hydrants or hose bibs that connect trailers or mobile homes to water systems should be protected by a double check valve assembly. The water supplier should also develop and maintain a record keeping program and management procedures for cross connections. These procedures should ensure the installation and certification by test or inspection of all backflow prevention devices, with annual testing and certification by a certified tester of all testable backflow prevention devices.

61) Threaded Yard Hydrants

Cross-connections exist when plumbing provides a pathway for contamination to enter the drinking water system during backflow events, which are a potential public health threat. The survey identified threaded yard hydrants in the distribution system, which are potential high hazard cross connections if connected to hoses used for irrigation or other potential contaminating activities. An approved pressure vacuum breaker, atmospheric vacuum breaker, or double check valve assembly should be installed at the hydrants. The water supplier should also develop and maintain a record keeping program and management procedures for cross connections. These procedures should ensure the installation and certification by test or inspection of all backflow prevention devices, with annual testing and certification by a certified tester of all testable backflow prevention devices.

62) Low Pressure in Distribution System (Less than 35 psi)

Presently, some areas of the distribution system have pressure less than 35 psi. This low pressure creates a risk for backflow and system contamination. Steps should be taken to raise the pressure in these parts of the system.

63) Gas Chlorine Room

A gas chlorine room should be equipped with a ventilation system that provides at least one room air exchange per minute. The intake for the exhaust fan should be located near the floor, and the fresh air intake should be located near the ceiling. The chlorine room doors should be equipped with panic hardware, open outward, and be provided with a "Danger: Chlorine Gas" placard. A shatter-resistant inspection window should be installed in a door or interior wall of the gas chlorine room. Separate switches for the chlorine room fan and lights should be located outside the gas chlorine room doors and at the inspection window. Outside switches should be protected from vandalism and have a signal light indicating fan operation. Pressure relief valves for the chlorine regulators should be vented to the outside atmosphere and screened. A continuous electronic chlorine leak detector that is equipped with both an audible alarm and a warning light should be installed.

64) Chlorine Gas Cylinders

Full and empty cylinders of chlorine gas should be isolated from operating areas, restrained in position (securely attached to a fixed object) to prevent upset, and stored in areas not in direct sunlight or exposed to excessive heat.

65) Chlorine Gas Leak Detection Kit

A bottle of concentrated ammonium hydroxide (56 percent ammonia solution) should be available for chlorine leak detection. Personnel should be trained in the use of the leak detection kit.

66) OSHA Training

Operators should seek relevant Occupational Safety and Health Administration (OSHA) regulations (e.g., confined space, hazard communication, trenching/shoring, lock out/tag out) training to understand and avoid the hazards of these environments in the workplace.

67) Fire Department not Familiar with Facilities

EPA recommends familiarizing your local fire and police departments with the water system facilities and contents. In the event of a fire or other emergency that calls for first response, familiarity with the water facilities and chemicals contained therein is necessary to respond to the emergency.

68) Operation and Maintenance (O&M) Manual

An Operation and Maintenance manual should be developed that includes manufacturers' literature and standard operating procedures (SOPs). An O&M manual promotes consistent operation of the water system from operator to operator and helps to document system operating parameters. Written procedures should cover items such as daily operations, start-up and shutdown procedures, scheduled maintenance, response to equipment failure, and other emergency conditions. An attempt should be made to collect any records pertaining to the water system, including water testing results, as-built drawings, distribution

maps/schematics, master meter water usage, and any other records pertaining to the operations and management of the water system.

A safety plan should be part of the O&M manual. All facilities should be inspected for potential hazards. Safety equipment, procedures, and training should address any hazards likely to be encountered by the operators or public.

69) Security

Water system facilities should be protected against vandalism and unauthorized entry. Facilities should not be accessible by the public. The perimeter of all properties should have security-type fencing, locks, and other precautions to prevent trespassing.

70) Water System Resilience

Water systems should evaluate all of their facilities to determine if they are within the 100 and/or 500 year flood plains. This information can be used to evaluate your facilities' ability to withstand and continue operating during these types of events.

71) Rules Governing New Hookups

EPA recommends developing rules governing new hookups to protect the integrity of the water system. Policies and rules are necessary to ensure that adequate water is available and that hookups will not incur excessive costs or adversely affect other service connections.

72) Emergency Procedure Plan Accessible to Operator

The system's Emergency Procedure Plan (EPP) should be accessible to the operator, preferably on-site, in the event it is needed for reference or implementation during an emergency. EPA recommends making a copy of the EPP accessible to each system operator.

73) WARN Membership

EPA recommends that water systems become members of the Water and Wastewater Agency Response Network. This network is comprised of "utilities helping utilities" within a state that respond to and recover from emergencies by sharing resources with one another. More information can be obtained at the website: https://www.epa.gov/waterutilityresponse/mutual-aid-and-assistance-drinking-water-and-wastewater-utilities and for Wyoming at: http://www.wyowarn.org/.

74) Technical Assistance

The Midwest Assistance Program (MAP) offers technical, managerial, and financial technical assistance to help rural drinking water, wastewater, and solid waste utilities find solutions to infrastructure needs. They can help with infrastructure development and management, source water protection and training programs specifically for board members, council members, city clears and operators. Learn more at https://www.map-inc.org/ .

The Bipartisan Infrastructure Law (BIL) presents an opportunity to address water infrastructure needs by providing $50 billion in new funding via a new EPA program called WaterTA (Water Technical Assistance). WaterTA is EPA's free water technical assistance program that aims to assist small, rural, tribal, and disadvantaged communities with applications for federal funding and water infrastructure challenges. To find out more, go to this link: https://www.epa.gov/water-infrastructure/water-technical-assistance-waterta.

If your community is experiencing water infrastructure challenges, consider completing the WaterTA request form that is located at the following link to be potentially matched with a technical assistance provider: https://www.epa.gov/water-infrastructure/forms/water-technical-assistance-request-form.

75) Water System Budget

Your water system should review the current water rate structure and increase water rates as necessary. Good financial management provides for capital construction and replacement of equipment while maintaining routine operation and maintenance at reasonable levels. Ultimately, financial management is reflected in the customers' utility rates. User fees, commercial fees, and the financial management of funds should be reviewed to ensure adequate user fees are being collected to cover all water system costs. A policy should be adopted whereby all water users pay for the service. The policy should also include a provision for timely disconnection of users who fail to pay for their water service. You may want to access EPA's asset management tool; CUPSS (Check Up Program for Small Systems) at www.epa.gov/cupss to help you develop or improve your asset management capabilities.

76) Delinquent Accounts

Your water system should review the current procedures for handling delinquent accounts and consider options to collect service fees from these accounts. Having a significant number of delinquent accounts can impact water system budget and ability to purchase chemicals, maintain facilities, and send samples in for lab analyses.

77) Sample Siting Plan for the Revised Total Coliform Rule

A sample siting plan for the Revised Total Coliform Rule (RTCR) could not be provided to the surveyor for review. The RTCR requires public water systems to sample for coliforms according to a sample siting plan, which must be made available to the primacy agency for review. Having a written sample collection protocol helps ensure that all sampling is done correctly, even when there is a change in the water system's personnel. The sample siting plan specifies where in the building or in the distribution system routine samples are taken to ensure that they are "representative" of the water supplied to consumers. All Public Water Systems must have completed a Revised Total Coliform Rule (RTCR) sample siting plan. For the RTCR, please contact the Rule Manager, Jamie Harris at 303-312-6072 or harris.jamie@epa.gov, for information about this requirement. If the System has not previously completed and submitted an RTCR sample siting plan to EPA, please use the template located at www.epa.gov/region8-waterops/revised-total-coliform-rule-sample-siting-plan to complete this requirement.

78) Sample Siting Plan for the Lead/Copper Rule is Needed

A sample siting plan for the Lead and Copper Rule (LCR) could not be provided to the surveyor for review. Having a written sample collection protocol helps ensure that all sampling is done correctly, even when water system personnel change. For the LCR, please contact the Rule Manager, Chelsea Ransom at 303-312-6876 or ransom.chelsea@epa.gov for more information about this requirement.

79) Sample Siting Plans for Multiple Rules are Needed

Sample siting plans for the Revised Total Coliform Rule (RTCR), and Lead and Copper Rule (LCR) could not be provided to the surveyors for review. The RTCR requires public water systems to sample for coliforms according to a sample siting plan, which must be made available to the primacy agency for review. Having a written sample collection protocol helps ensure that all sampling is done correctly, even when there is a change in the water system's personnel. The sample siting plan specifies where in the building or in the distribution system routine samples are taken to ensure that they are "representative" of the water supplied to consumers. All Public Water Systems must have completed a Revised Total Coliform Rule (RTCR) sampling siting plan. For the RTCR, please contact the Rule Manager, Jamie Harris at 303-312-6072 or harris.jamie@epa.gov for information about this requirement. If the System has not previously completed and submitted an RTCR sample siting plan to EPA, please use the template located at www.epa.gov/region8-waterops/revised-total-coliform-rule-sample-siting-plan to complete this requirement.

For the LCR, please contact the Rule Manager, Chelsea Ransom at 303-312-6876 or ransom.chelsea@epa.gov for more information about this requirement.

80) Drinking Water Online and Drinking Water Watch

Access EPA's Drinking Water Online website to find useful information for water systems and operators, including how to handle contamination incidents, reporting forms, etc. This site can be accessed using the following link: https://www.epa.gov/region8-waterops.

To see EPA's publicly available information about your water system, including sample results, monitoring requirements, contact information, etc., see EPA's online Drinking Water Watch (DWW) at the following link: https://sdwisr8.epa.gov/Region8DWWPUB/default.jsp. No registration is needed to access the public version of DWW.

81) Response to Positive Total Coliform Sample

EPA recommends operators receive instruction in the proper procedure following notification of a total coliform or *E-coli* positive sample. Please review the instructions at the following link on EPA's web site: https://www.epa.gov/region8-waterops/addressing-total-coliform-positive-or-ecoli-positive-sample-results-epa-region-8 for proper procedures.

82) Extra Bottles for RTCR and GWR Sampling.

At the time of the survey, extra bottles were not kept on hand in case of need for repeat Revised Total Coliform Rule (RTCR) sampling and for Ground Water Rule (GWR) sampling. Repeat samples must be collected within 24 hours or as soon as possible following notification of a positive sample (Total Coliform or *E. coli* positive). Response time delays due to lack of available sample bottles may pose a threat to public health. EPA recommends maintaining a supply of sample bottles suitable for repeat TCR and GWR sampling. The number of bottles to be kept on hand will depend on the number of routine samples and groundwater sources, but no fewer than five bottles are advised for any system.

83) Ground Water Rule (GWR) Sampling Instruction

EPA recommends operators receive instruction in the proper procedures for Ground Water Rule triggered sampling following notification of a total coliform or *E. coli* positive sample. Please review the instructions at the following link on EPA's web site: https://www.epa.gov/region8-waterops/addressing-total-coliform-positive-or-ecoli-positive-sample-results-epa-region-8 for proper procedures.

84) Disinfection Byproduct Rule (DBPR) Monitoring Plan

The system's DPBR Monitoring Plan should be accessible to each system operator, preferably on-site, in the event it is needed for reference or implementation or for review during a sanitary survey.

85) Location of Entry Points

EPA recommends operators receive instruction on the location of entry points to the distribution system in order to comply with monitoring requirements under the Safe Drinking Water Act.

86) Records Must be Kept

The SDWA requires public water systems to maintain certain records pertaining to monitoring and reporting, sanitary surveys, and official correspondence (Title 40 Code of Federal Regulations Section 141.33). Complete records of system activities are essential to addressing existing problems and planning for future needs. EPA recommends maintaining updated records to include the following:

1. Correspondence and official notices
2. Laboratory results and sampling records
3. Records of system repairs and purchases
4. Routine maintenance records
5. Manuals and service reports
6. Maps and plans, including sample siting plans for regulatory monitoring under the TCR, Lead and Copper Rule, and Stage 2 Disinfectants/Disinfection Byproducts Rule

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Consecutive Systems

Wholesale System: -

Population:	Facility ID:	
How many master meter connections exist?		
Connection Type:		: Days/Yr
Water Source Type:		
Does GW receive full SW Treatment?		
Type of residual disinfectant in supplied water:		
Type of corrosion inhibitor in supplied water:		:

Connection Maintenance

Who is responsible for maintenance of master meter connections?
How often are inspections and maintenance performed?
Is there standing water in any meter pit/vault/building?
What is the source of the standing water? □
What evidence exists for groundwater as the source?
Comments:

Water Purchased from a Water Hauler:

License #:	Supplying system:
Is there a water-tight cap on the water system's fill port? □	
How is the chlorine residual checked at the time of delivery?	
Comments:	

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Wholesale Systems

Consecutive System: -
Contact:

Population:	
How many master meter connections exist?	
Connection Type:	: Days/Yr

Connection Maintenance

Who is responsible for maintenance of master meter connections?	
How often are inspections and maintenance performed?	
Is there standing water in any meter pit/vault/building?	
What is the source of the standing water? □	
What evidence exists for groundwater as the source?	
Comments:	

Comments:	
How many master meter connections exist off the wholesale system?	

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Wells and Well Pumps

Facility ID & Name: -

Well permit #:	Who has statement of completion on file? EPA & SystemEPASystemNo statement of completion found
Should this well continue to be considered active? □	
Total Well Depth:	ft
Depth range of shallowest casing perforations:	ft to ft
Current yield:	gpm
Well Location:	
Is the well protected from vehicle damage? □	
Is the pit or vault completely watertight?	
Is the pit or vault completed with drainage or a sump pump for permanent or portable use? □	
Does runoff drain away from the wellhead? □	
Well casing height:	
Does well casing terminate at least 12” above the concrete floor? □	
Does well casing terminate at least 18” above natural ground surface? □	
Height OK	
Are there any holes or openings observed in the well? □	
Description: □	
Does the well have a sanitary seal with a tightly bolted cap? □	
Explain why unable to verify: □	
Is a gasket visible?	
Explain:	
Is well vented?	
Does the vent terminate at or above the top of the casing? □	
Is the vent screened with #24-mesh? □	
Is there a source water sample tap for GWR compliance? □	
Is the tap located prior to any treatment or storage? □	
Where is the source water tap located relative to other water system facilities?	
What wells does the sample tap represent?	
Is there an air release/vacuum relief valve?	
Does it terminate in a downward position? □	
Does it terminate at least 8” above the floor? □	
Is it screened with #24 mesh? □	
Comments:	

Artesian Well; no pumps

Well Pump

Is the pump submersible?	

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Controlled by variable frequency drive?
Normal operating pressure at the pump house
Date pump last replaced:
Pump run time (min):
NSF-60 lubricant used?
Maintenance program in place?
Is the external pump subject to flooding? □
Spare parts or pump available?
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

All Wells
Are there known sources of pollution near the wells which may impact water quality? □
Type of pollution and distance from well(s):
Are there mice, other animals, or their droppings near the well? □
Are there seasonal variations in the quantity or quality of the water?
Describe variations:
System sewage system:
System sewage system:
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Springs and Associated Pumps

Facility ID & Name: -
Spring construction permit #:

Description of spring intake:
How often is the spring collection area inspected?
Current yield (gpm):
Comments:

Spring Collection Box

Is the spring collection area fenced to keep large animals away? □
Does runoff drain away from the collection area?
Is there abundant vegetation around the spring collection area?
Vegetation description:
Does the collection box have the following features:
Shoe box cover for the access hatch? □
Watertight gasket on the access hatch cover? □
Air vents screened with #24-mesh? □
Locked hatch cover? □
Overflow screened with #24-mesh? □
Does the overflow free fall at least 12 inches? □
Is the spring collection box watertight? □
Comments:
Depth to water (ft):
Depth to intake pipe (ft):
Do water levels change?
Are the changes seasonal?
Does the water rise to the surface within 100 ft of the sources during parts of the year?
Marshy, standing water, or saturated soil conditions around spring or infiltration collection area?
Comments:

No pumps associated with spring

Source Pumps

Location:
# of pumps:
Type of pump:
Are NSF-60 lubricants used?
Are pumps in good condition?
Is there a maintenance program?
Is the pump station subject to flooding? □

Are spare parts available?
Comments:

No additional hatches or manholes

Hatches/Manholes

Proper shoe box cover on the access hatch? □
Rubber gasket on the access hatch? □
Locked hatch cover? □

Source Water Sample Tap

Is there a source water sample tap? □
Is the tap located prior to treatment or storage? □
Where is the source water tap located relative to other facilities?
What sources does the tap represent?

Pollution Sources

Are there any known sources of pollution near the spring? □
Comments on pollution (see areal map and photos):
How far from the spring is the source of pollution?
Are there mice or other animals and their droppings in the immediate area? □
Are there seasonal variations in water quantity or quality?
Variation description:
System sewage system:
System sewage system:
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Intake Located in Infiltration Galleries and Associated Pumps

Facility ID & Name: -
Permit #s:

Physical Description:
Inspection frequency:
Are there seasonal algal blooms?
Describe bloom:
Is algaecide used?
Algaecide use description:
Gallery depth:
Yield (gpm):
Depth to water (ft):
Depth to intake pipe (ft):
Do water levels change?
Are the changes seasonal?
Does water rise to the surface within 100ft?
Comments:

Intake Pumps
Location of pump station:
# of pumps:
Type of pump(s):
Are any lubricants used NSF-60 certified?
Are pumps operable and in good condition?
Is there a maintenance program?
Is the pump station subject to flooding?
Are spare parts available?
Comments:

Pollution Sources
Are there any known sources of pollution nearby? □
Comments on pollution (see areal map and photos):
How far from the infiltration gallery is the source of pollution?
Are there seasonal variations in water quantity or quality?
Describe variation:
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Intake Located in Streams and Associated Pumps

Facility ID & Name: -
Permit #s:

Is the area around the intake(s) restricted?
Are there multiple intakes located at different levels?
Describe intake locations:
Are all intakes screened?
Frequency of intake inspection:
Date of last inspection:
Are there seasonal algal blooms?
Describe bloom:
Is algaecide used?
Describe algaecide:

Intake Pumps
Location of pump station:
# of pumps:
Type of pump(s):
Are any lubricants used NSF-60 certified?
Are pumps operable and in good condition?
Is there a maintenance program?
Is the pump station subject to flooding?
Are spare parts available?
Comments:

Pollution Sources
Are there any known sources of pollution nearby? □
Comments on pollution (see aerial map and photos):
How far from the stream is the source of pollution?
Are there seasonal variations in water quantity or quality?
Describe variation:
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Intake Located in Reservoirs, Lakes, and Ponds and Associated Pumps

Facility ID & Name: -
Permit #s:

Is the area around the intake(s) restricted?
Are there multiple intakes located at different levels?
Describe intake locations:
Depth of intake(s):
Distance from shore:
Are all intakes screened?
Frequency of intake inspection:
Date of last inspection:
Are there seasonal algal blooms?
Is algaecide used?
Describe:

Intake Pumps
Location of pump station:
# of pumps:
Type of pump(s):
Are any lubricants used NSF-60 certified?
Are pumps operable and in good condition?
Is there a maintenance program?
Is the pump station subject to flooding?
Are spare parts available?
Comments:

Pollution Sources
Are there any known sources of pollution nearby? □
Comments on pollution (see aerial map and photos):
How far from the reservoir is the source of pollution?
Are there seasonal variations in water quantity or quality?
Describe variation:
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Emergency Backup Source Water

System has no backup source water.

System has multiple sources that are separate and redundant upon each other.

In the case of emergency, the system can have water hauled to it.

Name of hauler:
License number:
Name and PWS # of the water system supplying water to the hauler:

Facility ID & Name: -
Permit #:
Describe the system's backup source water:
Is the backup water source physically disconnected from the system?
Are there seasonal algal blooms?
Is algaecide used?
Describe algaecide:

Pollution Sources
Are there any known sources of pollution nearby? □
Comments on pollution (see aerial map and photos):
How far from the water source is the source of pollution?
Are there seasonal variations in water quantity or quality?
Describe variation:
Comments:

Raw Water to Treatment Plant Transmission Line

Raw Water Line Name:	**Line Length:**
Water Type:	**Pipe Material:**
Line from to	

Is there any asbestos pipe along the transmission line?
Location and length of asbestos pipe:
Has all asbestos pipe been removed?
When was it removed?
Are there any service connections off the transmission line? □
What does each connection serve?
Is there a legal agreement or contract in place?
Is the water treated at the connection?
Describe:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Water Treatment Data: GW and Consecutive Systems

Facility ID & Name: -	
Treatment process:	
Design output rate: gal/day	Max output rate: gal/dayN
Any changes to treatment since last survey?	
Describe changes:	

Step #: Treatment type:	
Manufacturer:	
Product:	
NSF 60 certified?	
Filtration type:	
Describe treatment:	
Dosage:	
Objective:	:
Is the process adequate to meet the objective?	
Is this process required by EPA?	
Location:	:
Frequency of use:	
Is there redundant equipment?	
Comments:	

UV Treatment Details
Is there a mechanism to ensure the max flow rate is not exceeded?
Describe:
Is there an intensity sensor and alarm to indicate low intensity?
Is there a UV lamp status alarm to indicate lamps off?
Is there a UV lamp age alarm?
Is there an automated shut off so water does not flow leave unit without treatment?
Are there spare bulbs?
How often are units cleaned and bulbs changed?

Point of Use Treatment Details
Is the system adhering to the O&M plan approved by EPA and conducting maintenance according to the manufacturer's recommendations?
Describe those practices and records:
Is the system following the POU sampling plan approved by EPA?
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Water Treatment Data: Surface Water/GWUDI System

General Info	
Plant location and directions:	
Date plant put online:	
Have there been any modifications since last survey?	
Modification description:	
Description of water source(s):	
Is the treatment impacted by algae?	
Description of algae impact:	
Plant output:	
Design: gal/day	Maximum: gal/day
Summer avg: gal/day	Winter avg: gal/day
Description of treatment processes:	
Flow measurement points and instruments:	
Waste disposal methods:	
Description of waste disposal:	

Pre-filtration processes	
Pre-filtration processes:	
Chemicals added pre-filtration?	
Description of presedimentation and volume:	
Presedimentation ID:	
Description of rapid mixing:	
Description of flocculation:	
Description of sedimentation:	
Description of other processes:	
Does the system use any chemicals containing epichlorohydrin or polyacrylamide in excess of the NSF 60 maximum allowable dose? Δ	

Pre-filtration chemicals	
Manufacturer:	
Product name:	
Location of chemical addition:	
Maximum dose used in the last 12 months?	
NSF-60 certified?	
NSF 60 maximum allowable dose:	

Filtration Processes: General Info and Turbidity

Filtration processes:	
Final filtration barrier:	
Type and model of combined filter effluent turbidimeter:	
Location of turbidimeter:	
Does the location comply with EPA policy SWTR #5? □	
Frequency of all turbidimeter calibration(s):	
Date(s) of last calibration(s):	
Are turbidimeters calibrated at least once a quarter? □	
Method used for calibration:	
Does the system use a primary standard to perform the calibration? □	
Are CFE turbidity records available for the last 5 years? Δ	
Can CFE turbidities be recorded up to 5 NTU? □	
How high can turbidities be recorded?	
Can turbidities associated with off-periods be identified so they are not counted for compliance? □	
Finished water CFE turbidity:	Time of analysis:
PWS measurement: NTU	Surveyor measurement: NTU

Conventional and Direct filtration

# of filters:	
Filter type:	
Make and model:	
Sand depth:	in
Anthracite depth:	
Garnet depth:	
Filter depth is at least 24”? □	
Has operator observed any loss of media?	
Has the operator inspected the media for mudball formation?	
Average length of filter run:	hours
Maximum filter loading rate:	gpm/ft^2
Is the filtration rate less than 2 gpm/sf (mono-media), 4 gpm/sf (dual media), or 6 gpm/sf (deep bed)? □	
What determines when backwash occurs?	
Backwash rate:	gpm/ft^2
What is used for backwash? □	
System starts up with clean filters (if not running 24/7):	
System performs filter to waste before putting filters back online:	
Description of where recycle enters treatment process:	
Is recycle location before TOC monitoring point?	

Are records of recycle practices kept in an acceptable format for each year? Δ

Conventional and Direct Filtration as Final Barrier

How are IFE records maintained?		
Does each filter have an (IFE) turbidimeter? Δ		
Types and models:		
Are there alarms on each filter?		
Alarm set point:		NTU
Are IFE turbidities measured continuously and recorded every 15 min? Δ		
Is IFE turbidity record calibrated to ≥ 2 NTU? □		
Are IFE records kept for the last 3 years? Δ		
Did any single filter IFE exceed 1 NTU in 2 consecutive 15 min readings during the last 12 months?		
Did they report to EPA and do a filter profile? Δ		
If this occurred 3 months in a row, did they conduct a filter self-assessment? Δ		
Did any single filter IFE exceed 2 NTU in 2 consecutive 15 min readings during the last 12 months?		
Indicate dates of all occurrences:		
If this occurred 2 months in a row for the same filter, did they report to EPA and have a CPE performed? Δ		
For systems serving ≥ 10,000, did the IFE of any filter exceed 0.5 NTU in 2 consecutive 15-minute readings after being online 4 hours (following backwash or other reason offline) in the last 12 months?		
Indicate dates of all occurrences:		
Did they report to EPA and do a filter profile? Δ		
How are CFE records maintained?		
Has the system consistently met the CFE turbidity requirements for this type of filtration during the last 12 months? Δ		
Dates of all occurrences:		
Log removal credited for filtration barrier		
Giardia:	Viruses:	Cryptosporidium:

Membranes

Number of membrane skids:	
Configuration:	
Type:	
Make and Model:	
Absolute pore size:	
Skid capacity:	gpm

Has the PWS consistently been meeting the CFE turbidity requirements? Δ
Are direct integrity tests (DIT) performed at least daily? Δ
Description of DIT procedure and frequency:
Specify pressure or vacuum method and how often tests are performed:
For continuous indirect integrity testing, does each unit/skid have its own online turbidimeter? Δ
Is filtrate turbidity monitored continuously and recorded at least once every 15 minutes? Δ
Is it set with a trigger level of 0.15 NTU for > 15 minutes? Δ
Do operators know how to check and repair membranes when a DIT fails? □
How/when are membranes cleaned?
Are spare membrane cassettes available?
Is there adequate storage of cleaning chemicals in case of emergency weather?
Comments:
Log removal credited for the type of filtration barrier for
Giardia: Viruses: *Cryptosporidium*:

Bags/Cartridges

Number of parallel filter trains:	
Each train capacity:	gpm
Pre Filter	
Housing Manufacturer and Model Number:	
Filter Manufacturer and Model Number:	
# per housing:	
Final Filter	
Housing Manufacturer and Model Number:	
Filter Manufacturer and Model Number:	
# per housing:	
Manufacturer's recommended maximum flow rate:	gpm
Pore size rating (microns – indicate absolute or nominal):	
Replacement frequency of all filters:	

Has the PWS consistently been meeting the CFE turbidity requirements for this type of filtration? Δ
Are there working pressure gauges before and after filters? □
Does the PWS keep daily records of monitoring the pressure drop across the filters, and know when to change out filters? □
Has the final filter or pre/final filter combination been demonstrated to remove at least 99.9% of *Cryptosporidium* or

equivalent size particles or have a 1 or 2 micron absolute pore size rating? □		
Does the flow rate through the final filter exceed the manufacturer's maximum recommended flow rate? □		
Log removal credited for the type of filtration barrier for:		
Giardia:	Viruses:	*Cryptosporidium*:

Slow Sand Filtration

Number of filters:	
Each filter capacity:	gpm
What is the rate of filtration?	gpm/ft^2
Is the filtration rate <0.1 gpm/sf? □	
Has the PWS consistently been meeting the CFE turbidity requirements for this type of filtration? Δ	
Is turbidity of raw water to filters always <10 NTU? □	
Is water depth over sand at least 3 feet during operation? □	
Can plant meet design capacity with one unit out of service?	
Do they ripen after scraping (filter to waste) and how long?	
Is head loss across filters monitored and used for process control? □	
How is head loss monitored?	
How often is each unit scraped?	
Log removal credited for the type of filtration barrier for:	

Giardia:	Viruses:	*Cryptosporidium*:

Diatomaceous Earth Filters

Number of Filters:
System Type:
Filter Manufacturer and Model Number:
Each filter capacity (gpm):
Describe pre-coat and body feed systems:
Has the PWS consistently been meeting the CFE turbidity requirements for this type of filtration? Δ
Max filter loading rate (gpm/ft^2):
Is the filtration rate less than 1.5 gpm/sf? □
Maximum head loss allowed:
What determines when backwash occurs?
Log removal credited for the type of filtration barrier for:

Giardia:	Viruses:	*Cryptosporidium*:

Disinfection Process

Processes used:
Description:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

UV Disinfection

Flow rate:		
Point of application:		
UV make and model:		
Validated maximum flow:		gpm
Validated dosage:		mJ/cm^2
Giardia:	*Cryptosporidium*:	

Does the system keep records of UV reports sent monthly to EPA?	
Does the system's emergency procedures plan address breakage of UV lamps? Δ	
Are there spare bulbs?	
How often is the unit cleaned and the bulbs changed?	
Is there a flow meter to monitor/alarm or a flow restrictor valve so the max flow rate is not exceeded? □	
Describe how the system ensures the flow does not exceed max flow rate:	
Is there an intensity sensor and alarm (visible/audible) to indicate low intensity? □	
Is there a UV lamp status alarm (visible/audible) to indicate lamps off? □	
Is there a UV lamp age counter/alarm? □	
Is there an automatic shut-off fail-safe solenoid valve so that water does not flow through the unit without adequate treatment? □	
Does this UV unit have an NSF Standard 55A Certification or has it been validated according to the requirements of the 2006 UV Disinfection Guidance Manual? Δ	
How is the unit monitored?	
Is the calibration of the UV intensity sensor checked at least monthly? □	:
Is the calibration of the UV transmittance analyzer checked at least weekly? □	:
Is there a calibrated flowmeter to ensure max flow rate is not exceeded? □	
Are daily operational records kept of flow rates/production, run time, lamp status, UV intensity, UVT and UV dosage? Δ	
Does the operator know how to identify and report an off-specification event? □	
Does the system alarm when an off-specification event occurs? □	

Chlorine Disinfection

Type and Dosage:	
NSF 60 Certified Chlorine?	
Point of free chlorine application:	
Point of ammonia application:	
Is there redundant disinfection equipment?	
Where does the PWS measure disinfectant residual?	
Is this before the first user of the water? Δ	
How is the residual measured?	
Equipment model number:	
Measurement type:	
PWS Measurement of Chlorine residual at POE:	mg/L
Surveyor Measurement of Chlorine residual at POE:	mg/L
Time of analysis:	
Are the two measurements within 15% or 0.1 mg/L of each other? □	
If measuring residual continuously, is the PWS conducting weekly verifications with a grab sample? □	

Ozone Disinfection

Number of generators:	
Percent ozone generated:	
Ozone applied at:	
Residual:	at %
Purpose of ozone:	
Are all residual monitors operational?	
Are ozone destructors operational?	
Is there a maintenance program for generators?	
Is a SCBA available for operators working with ozone?	
Are operators exposed to ozone above 0.1 mg/L?	
Does the system monitor bromate?	

Chlorine Dioxide Disinfection

Number of generators:	
Chlorine Dioxide applied at:	
Residual:	at
Purpose of chlorine dioxide:	
Are all residual monitors operational?	
Is there a maintenance program for generators?	
Are operators exposed to ozone above 0.1 ppm?	
Does the system monitor chlorine dioxide daily at the point of entry?	

Does the system monitor chlorite at the point of entry daily and monthly in the distribution?	

Inactivation Calculations

Is the system seasonal?	
Is the system exempt from disinfection profiling?	
Location of first user:	
Summer	
Lowest free chlorine residual:	mg/L
Lowest water temperature:	°C
Highest water pH:	
Maximum flow through segment:	gpm
Segment:	
Volume of segment at minimum operating height:	gallons
Volume of segment at maximum volume:	gallons
Segment baffling factor:	
Comments:	
Total logs *Giardia* inactivation:	Total logs virus inactivation:
Winter	
Lowest free chlorine residual:	mg/L
Lowest water temperature:	°C
Highest water pH:	
Maximum flow through segment:	gpm
Segment:	
Volume of segment at minimum operating height:	gallons
Volume of segment at maximum volume:	gallons
Segment baffling factor:	
Comments:	
Total logs *Giardia* inactivation:	Total logs virus inactivation:

Disinfection Profiling

Does the system have a disinfection profile on site?	
Has the PWS make a significant change to disinfection practices since 2003?	
Was EPA consulted?	
Describe the change and the date made:	
When was the profile conducted?	
Month and value of lowest *Giardia* inactivation:	in
Month and value of lowest virus inactivation:	in

Virus Inactivation

Filtration removal:	log

Free chlorine removal:	log
UV removal:	log
Other removal:	log
Total removal:	log
Total removal: □	log
Comments:	

Giardia Inactivation

Filtration removal:	log
Free chlorine removal:	log
UV removal:	log
Other removal:	log
Total removal:	log
Total removal: □	log
Comments:	

Cryptosporidium Inactivation

Committed to install maximum treatment?
What is the system's bin number?
System classification:
Comments:

Total logs Cryptosporidium inactivation required:
Date required by:
Toolbox components utilized:
Filtration removal:
Free Chlorine removal:
UV removal:
Other removal:
Total removal:
Total removal: □
Comments:

Additional Treatment

1.

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Water Treatment Data: Corrosion Control

Does this system treat the water for corrosion control?
Treatment:

NSF 60 certified?
Dosage:
System Type:
Addition schedule:

Does this PWS monitor corrosion control treatment chemical concentration, pH or any other water quality parameters at the entry point to the distribution system or at customer taps to evaluate the process?
What parameters are measured, where are samples taken, and how often?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Storage Tanks

Tank ID & Name: -	
Location:	
Year put into service:	
Tank type:	
Tank capacity:	gallons
Is the site subject to flooding? □	
Can the tank be isolated from the system?	
Is the water level indicator accurate?	
Does the tank have a mixer?	
Does the tank appear structurally sound? □	
Does the foundation appear structurally sound? □	
Are there unprotected openings in the tank? □	

Tank inspection and cleaning	
How often are the tank hatch, vent, and overflow visually inspected?	
Was the tank inspected (and cleaned if necessary) within the last 10 years? □	
When was it last cleaned and inspected?	
How was it cleaned and inspected?	
Who cleaned and inspected it?	
How was it disinfected after cleaning?	
Was surveyor able to view inspection report? □	
Major concerns and recommendations from report:	
Were carcasses or debris found in the tank?	
Describe debris:	
Was EPA notified immediately?	
Was the entry point for debris eliminated?	

Overflow	
Does tank have an overflow separate from the vent? □	
Is the overflow accessible for inspection? □	
Does the overflow discharge continuously? □	
Does the overflow have #24 mesh screening, a duckbill valve, or a properly sealed flapper valve with a screen of any size inside? □	
Does the overflow terminate 12 to 24 inches above the ground? □	
height OK	
Does the overflow discharge over an inlet structure, splash plate, or engineered rip-rap? □	
Is overflow discharge visible?	

Does the overflow have an air gap of 3 or more pipe diameters above the entrance to any storm or sanitary sewer? □

Does water pool or stagnate in the overflow area? □

Comments:

Drain Line

How is the tank drained?

Is the drain accessible for inspection? □

Drain has #24 mesh screening, a duckbill valve, or a properly sealed flapper valve with a screen of any size inside:

Does water accumulate in drain area?

Does the drain pipe have an air gap of 3 or more pipe diameters above the entrance to any storm or sanitary sewer? □

Does the drain pipe terminate between 12 and 24 inches above a drainage area?

Does the drain terminate above an inlet structure, splash plate, or engineered rip-rap?

Comments:

Air Vent

Does the tank have a vent separate from the overflow? □

Is the vent accessible for inspection? □

Is there #24 mesh screening? □

Does the tank have a vacuum/pressure release valve to prevent damage?

Is the screen on the inside of the vent to discourage vandals?

Downturned vent: is the vent at least 24” above the roof? □

Downturned indoor vent: is the vent at least 8” above the roof? □

Height OK

Non-downturned vent: is the screen at least 8” above the roof surface? □

Non-downturned vent: is there a solid cover to the bottom of the vent screen? □

Comments:

Access Hatch

Are all hatch components accessible for inspection? □

Is the hatch raised at least 24” above ground and 4” above the roof? □

Height OK

Is the hatch raised at least 4” above the roof? □

Height OK

Actual height of the hatch above the ground/roof (in):

Does the hatch have a shoebox cover? □
Design OK
Is the hatch cover tight and sealed with a rubber gasket? □
Is the hatch cover locked, or is the tank located in a secured area? □
Hatch comments:
General tank comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Pumps

Total # of pump stations:

Are there any new pump stations?
Are there any pump stations the system has had problems with?
Are there any pump stations where chlorine is added?
Comments:

Pump station ID and name: -

Number of pumps:
Pump details:
Are pumps operated with variable frequency drives?
Pressure change: psi to psi
Run time of pumps during visit:
Are lubricants NSF-60 certified?
Is the pump station subject to flooding? □
Is there a maintenance program in operation?
Are there spare pumps or parts available?
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Pressure/Retention Tanks

Tank ID and type: -	
Tank type:	
Number of tanks:	
Dates put into service:	
Is there an operable pressure gauge?	
Operation range:	psi to psi
Is there evidence of severe rust? □	
Is there evidence of water leaks? □	
Is there evidence of air leaks? □	
Is there evidence of flooding (if in vault)? □	
Is there a pressure release valve?	
Can tank(s) be by-passed for repair?	
Is the tank older than the life expectancy?	
Make and model:	
Comments:	

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Distribution Data

Description of distribution system:

Is there asbestos pipe in the distribution system?
What is the location of the pipe in the distribution system?
Estimated linear feet of asbestos pipe in the distribution system?
Has all the asbestos pipe been removed?
If so, when was it removed?
Have lines broken due to freezing or traffic load?
Description of line break issues:
Are lines properly disinfected after repairs are made?
Does the system provide fire protection?
Describe:

Water Use:
Annual volume distributed (MG/yr):
Peak month and volume distributed in peak month (MG):
Total number of days of storage (summer):
Total number of days of storage (winter):
Is the storage capacity adequate to meet current needs?
Is the storage capacity adequate to meet future needs?

Are there any bulk water supply/fill stations attached to this station?
Describe:
Station Name:
Location:
Appropriate Air Gap or RPZ? □
Comments:

Are there any air relief valves in vaults/pits located in the distribution system?
Are they regularly inspected and maintained?
Do they have any leaks and/or standing water that covers the discharge point? □
Are there long dead end lines in excess of 500 feet in the distribution system?
Does the system have a flushing plan to ensure all fire hydrants and valves are exercised regularly?
How often does the system perform flushing operations in the distribution system?
Comments related to dead ends and flushing in the system:
Are distribution system drawings maintained?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

For systems that add chemical disinfectant/receive disinfected water from a wholesaler:
Is equipment available for measuring chlorine residual in the distribution system?
Describe equipment:
Are reagents up to date?
Does the operator know how to properly measure chlorine residual?
Measured chlorine residual distribution system location:
Time of analysis:
Residual measured by Surveyor (mg/L):
Residual measured by PWS (mg/L):
Was free or total chlorine measured?

Distribution pressure:
According to the system representative, is there at least 35 psi pressure in the distribution system at peak flow?
According to the system representative, is there at least 20 psi at all points in the system at all times? □
How does the water system monitor distribution pressure?
Was the pressure measured at the time of the survey?
Pressure measurement and location:
Distribution water loss rate (%):
Comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Cross Connection Control

Has the system conducted a service connections audit to determine if any high or severe hazard connections exist?
Does the system have a cross connection control/backflow prevention program in place?
Comments

Hazardous connections

Are there any severe hazard connections to the system?
Does each severe hazard connection have the appropriate reduced pressure backflow assembly installed at the meter/service connection and approved air gap? □
Describe each severe hazard and its location:
Are there any high hazard connections to the system?
Does each high hazard connection in the treatment plant or distribution system have the appropriate air gap or reduce pressure backflow assembly installed? □
Describe each high hazard and its location:
Do all low hazard connections have the appropriate dual check valve assemblies installed at the meter or service connections?
Comments

Other potential cross connections

Do trailers or mobile homes connected directly to the PWS via a yard hydrant have a dual check valve at each connection?
Are any frost free hydrants that drain into the soil directly connected to this PWS?
Are there any leaking system components in the water system observed by the surveyor that are not previously noted? □
Explain where and what was leaking:
Approved air gap or atmospheric vacuum breaker at stock tanks? □
Describe:
Vacuum breaker or double check valve assembly at threaded yard hydrants?

Does the system have a record keeping program and management procedures to ensure:

The installation and certification by test or inspection of all backflow preventers (BFPs) at new service connections:
The annual certification by a certified tester of all high-hazard BFPs in the system:
Additional cross connection comments:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Safety

General Safety
Is the fire department familiar with the facilities and their contents?

Personnel Safety
Are all personnel trained in proper handling of all utilized chemicals and materials?
Are adequate masks, protective clothing, and safety equipment provided?
Does the operator understand relevant Occupational Safety and Health Administration (OSHA) regulations?

Chlorine Gas Safety
Are there chlorine warnings posted on the outside of chlorine room doors?
Do they open outward and to the exterior of the building?
Are chlorine room doors equipped with crash bars?
Are there viewports in the interior wall and/or the doors of the chlorine room?
Is there a leak detector in the chlorine room with an audible alarm?
Are chlorine feed and storage areas isolated from other facilities?
Are chlorine areas adequately ventilated?
Are all chlorine cylinders adequately restrained?
Are self-contained breathing apparatus (SCBA) available for use in emergencies?
Are the SCBA in good working condition?
Are water system personnel trained in the use and maintenance of the SCBA?
Where are the SCBA stored?
Are chlorine leak kits available?
Are all personnel trained in their proper use?
Chlorine Gas Safety Comments:

Chemical Safety
Are oxidizers, corrosives, and flammables stored in separate areas and in closed, marked containers?
Are flammables stored in appropriate containers and cabinets away from combustion sources?
Is there adequate ventilation in the areas where solvents, aerosols, and chemical feeders are in use?

Are bulk storage areas physically isolated from treatment areas to prevent spills from entering the water system?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Management Data

Are there rules governing new hookups to protect the integrity of this water system?

Is the treatment plant being properly operated to prevent inadequately treated water from being sent to the distribution system? □

Does the system have arrangements in place to assure prompt supply and repair service?

Does the system have a current operations and maintenance manual which describes all procedures, equipment, sampling schedules and inspection data?

Is there a schedule for routine preventative maintenance for all facilities and equipment?

Does the system (treatment plant, finished water storage) have security measures in place (fencing, locks, lighting, alarms, etc.)?

Does the system have an Emergency Procedure Plan (EPP)? □

Does the plan include:

- Emergency contact phone numbers?
- Procedures to respond to a pressure loss/water outage?
- Procedures to respond to a water contamination incident?
- Is the EPP accessible to the operator on-site?

Comments:

Is the system part of the state Water/Wastewater Agency Response Network (WARN)?

Is the system familiar with technical assistance programs and providers in the area?

Have you evaluated possible impacts to your system from extreme weather events?

Have you evaluated your facilities to see if they are in the 100 and 500 year flood plains?

Describe any outcomes to extreme weather or floodplain evaluation:

Is emergency power available to the system?

Description:

For Community Systems (including consecutives):

Does the water system have an adequate budget, including income from water charges and other sources, that includes maintenance, upgrades, and purchasing procedures?

Does the water system have a significant number (>10%) of delinquent accounts?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Monitoring and Records

Revised Total Coliform Rule (RTCR) monitoring

Does the operator know how to collect and label samples for total coliform analysis?
Does the operator know what to do in the event of a total coliform positive result?
Are extra bottles available on site in case of need for repeat total coliform sampling?
Does the system have an RTCR sampling plan available for the surveyor's review?
Date of plan:
Is the system following their RTCR sampling plan?
Explain any difficulties

Ground Water Rule (GWR)

Does the operator know when they have to collect a triggered GWR source sample
Does the system know how to submit source water sample results utilizing the triggered Ground Water Source Sampling Form located on the Drinking Water Online site?
Are extra bottles available on site in case of the need for GWR source sampling?
Comments:

Community and NTNC Systems (including consecutives)

Is there a Disinfection Byproducts Rule Monitoring Plan on-site available for review?
Does the plan have an exhibit representing the current distribution system layout?
Does the operator feel that the current Total Trihalomethanes (TTHM) sample is at the oldest water age in the distribution system?
Is there a Lead & Copper Tap Sample Site Plan on site and available for review?
Is the system following the tiering criteria in the rule?
Does the system reach out to the LCR Manager when there are issues accessing sites?

All Systems

Does the operator know the location of each sample tap that represents the entry point(s) to the distribution system?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Does the operator know how to properly label samples taken from the entry point(s) to the distribution system?
Comment:
Has the PWS completed the monitoring that is specified in the EPA-provided monitoring schedule so far for this calendar year?
Are copies of all monitoring results filed and readily accessible?
Is the operator familiar with the Drinking Water Online and Drinking Water Watch?

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo Log

Photo #-:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #WH-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-C1: As-built -
Infiltration gallery construction diagram

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-C1: As-built -
Stream intake construction diagram

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-C1: As-built -
Reservoir intake construction diagram

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-C1: As-built -
Emergency source construction diagram

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #CCT-1

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-: -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-R1: Reference -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-I1: Interior -
Booster pump station interior photo

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-R1: Reference -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #-I1: Interior -
Pressure tank photo

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #DIST-D1: BFP Device -

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #DIST-A1: Representative distribution representative air release valve

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #DIST-S1: Sample tap

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Photo #A-1:

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

EPA Region 8 Significant Deficiency Correction Notice

Public Water System Name _____

Public Water System ID# _____

Public Water System Source Type: ☐Groundwater ☐Surface Water ☐Mixed

Contact Name _____ Phone Number _____ Email _____

Instructions:
Please use this form to report the correction of sanitary survey significant deficiencies identified during your sanitary survey. List the individual significant deficiencies (SDs) and the date of correction below. Include the Sanitary Survey (SS) year and individual SD number. Labeled pictures of corrections and a description of each correction is required. Label all pictures and correlate them to a specific significant deficiency. Include the ID of the facility. Entries beyond 4 on the next page.

Facility ID	Survey Year and SD #	Significant Deficiency	Correction Date	Photos? Yes/No

I certify that the information submitted within this report is true and accurate.

_____ _____ _____
Print Name Signature Date

Corrections described on attached Significant Deficiency Letter ☐

Supportive documentation and picture attached ☐

Email to: Langenfeld.Matthew@epa.gov & R8DWU@epa.gov, or fax to 303-312-7517

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

Facility ID	Survey Year and SD #	Significant Deficiency	Correction Date	Photos? Yes/No

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

EPA Region 8 Drinking Water Unit Tech Tips

Sanitary Protection of Drinking Water Storage Tanks: Overflows

Finished Water Storage Sanitary Protection: An overflow releases water when controls fail to shut off the incoming water at the high water mark; it is an integral component that protects the tank from damage from overfilling. The overflow allows an emergency release of water when telemetry fails, which should be a rare occurrence. Because water would only be flowing out of an overflow when another system has failed, it is important that the discharge is visible, so that the flow of water can be observed and reported. All key components of storage tanks must be protected to maintain sanitary conditions inside the tank. Also, storage tank overflows cannot serve as the only vent, and tanks must have an air vent separate from the overflow.

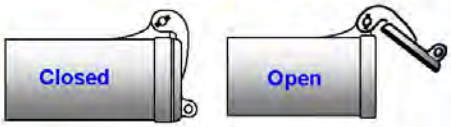
Overflow screen requirements

Not implementing one of these options will trigger a significant deficiency.

Option 1 No. 24 Mesh

The #24 mesh screen can be used to keep contamination out. The screen should be inspected after overflow events and replaced, if necessary.

Option 2 Flapper Valves



Flapper valves with a screen meeting local minimum size requirements can also be used to keep contamination out. Each valve design can get stuck open and therefore should be fitted with a screen inside. EPA recommends a #24 mesh screen. **A flapper valve with no screen inside will trigger a significant deficiency.**

Option 3 Duckbill Valves

Duckbill Valves which seal under normal dry conditions can be used to keep contamination out. EPA recommends having a screen fitted inside.

Overflow height requirements

Protection of tank structure and water quality

An overflow inhales just like a vent but through a pipe that extends to the ground. Having the overflow opening at least 12 to 24 inches above an inlet structure, splash plate or engineered rip-rap protects against the inhalation of contamination (dried feces, leaves, dried plants, dust, etc.).

The other reasons to bring the overflow within 12 to 24 inches above a inlet structure, splash plate, or engineered rip-rap are for safety reasons and to prevent erosion that can washout the tank supports or foundation.

Not having the overflow piped to 12 to 24 inches above an inlet structure, splash plate, or engineered rip-rap will trigger a significant deficiency.

Not having access to inspect the overflow will trigger a significant deficiency.

EPA also recommends that overflows be visible so that any discharge can be observed and reported to identify possible problems.

Overflows cannot be directly connected to a sanitary sewer or storm drain

Overflows directly connected to a sanitary sewer or storm drain will trigger a significant deficiency; there must be an air gap of at least 3 pipe diameters above the sanitary sewer or storm drain.

An air gap is needed to prevent a cross connection between the sewer or storm drain and the overflow pipe. This air gap also prevents the tank from inhaling air from a sewer or storm drain when the overflow is not spilling water, which should be most of the time.

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

EPA Region 8 Drinking Water Unit Tech Tips
Sanitary Protection of Drinking Water Storage Tanks: Drains

Finished Water Storage Sanitary Protection: A drain allows the water in the tank to be removed for cleaning and inspection, and is an integral component of tank design. A drain is located at a designed low point in the tank such that any accumulated sediment can easily be washed out during cleaning events. At all other times the drain valve remains closed. The system should be designed such that the tank can be cleaned while continuing to maintain pressure in the distribution system. A drain valve can leak due to constant pressure from the height of water in the tank, creating a moisture rich environment that can attract rodents, snakes, insects, and any pathogens they may be carrying. All key components of a tank need to be protected against conditions that would jeopardize the sanitary conditions of a drinking water storage tank, including the tank drain.

Drain cannot be directly connected to a sanitary sewer or storm drain

Drains directly connected to a sanitary sewer or storm drain will trigger a significant deficiency; there must be an air gap of at least 3 pipe diameters above the sanitary sewer or storm drain.

An air gap is needed to prevent a cross connection between the sewer or storm drain and the drain pipe.

Drains must be accessible

Not having access to inspect the drain will trigger a significant deficiency

The area around the drain needs to be cleared of overgrowth such that it can be easily observed and inspected.

Recommendations for screen size and height for drains

The best design is to install the #24 mesh screen between two flanges.

EPA recommends that a removable #24 mesh screen be used to keep contamination brought in by insects, rodents, snakes, and birds from entering through the drain, even though it is valved off. The screen can be removed for cleaning events.

EPA recommends raising the drain 12 to 24 inches above an inlet structure, splash plate, or engineered rip-rap to minimize rodent access and prevent pooled water from entering the drain.

System Name: PWS ID:

Date of Survey: Document Control Number: R8FQPForm-1010 R10

EPA Region 8 Drinking Water Unit Tech Tips

Sanitary Protection of Drinking Water Storage Tanks: Vents

Finished Water Storage Sanitary Protection: Vents release air and are a dynamic and integral part of tank operation. The air pressure inside of a tank is always trying to equalize with the air pressure outside as the water level rises and falls in the tank. When the tank is filling with water, displaced air has less space and puts pressure on the tanks. The air is forced out of the tank through the vent and overflow as well, if it is not overflowing with water (see Tech Tip on Overflows). When water is drawn out of the tank, the air has more space and creates a vacuum. Outside air is pulled into the tank through the vent and overflow. Thin walled metal tanks can be protected against excessive pressure and vacuum with a pressure/vacuum relief mechanism. Also, storage tank vents cannot serve as the overflow; tanks must have a vent separate from the overflow.

Downturned vent

Protection from contamination entering through the vent.

#24 mesh screen is needed to keep out contamination carried by insects, rodents, and birds. (See Tech Tip on #24 Mesh)

Not having a #24 mesh screen on a vent will trigger a significant deficiency

The #24 mesh screen can be installed between two flanges. The flanges allow the #24 mesh screen to set flush, which creates a better seal than wrapping the screen around the pipe and securing it with a band. Also, the flange will place the screen inside the vent to dissuade vandalism. A heating coil can be installed if freezing is a concern.

Protection from contamination being inhaled through the vent

Vents present a pathway for contamination to enter the tank. Having the vent opening at least 24 inches above the nearest horizontal surface protects against the inhalation of contamination (dried feces, dust, etc.). A bird dropping can contain thousands of salmonella.

Vents less than the 24 inches above the roof will trigger a significant deficiency. Also, if vents on buried or partially buried tanks are not downturned or facing the ground, it will trigger a significant deficiency.

Non-downturned vent (Elevated or Ground Level Tanks Only)

For elevated tanks, having fewer than 8 inches from the bottom of the #24 mesh to a horizontal surface will trigger a significant deficiency

The vent must have a watertight cover that extends down to the bottom of the #24 mesh screen. The cover will prevent the entry of rain and snow as well as minimize the entry of dust.

Not having a solid cover that extends to the bottom of the #24 mesh screen will trigger a significant deficiency

Recommendation only: Having the vent opening at least 24 inches above the horizontal surface protects against the inhalation of contamination (dried feces, dust, etc.). In addition to the #24 mesh screen, the vent should also have a bird screen to prevent any birds from nesting on top of a horizontally placed screen.

Bird spikes can be added to any intermediate horizontal surfaces. In some cases, the height of the vent should be raised higher than 24 inches to address severe problems with birds or other animals.

Vents not accessible for inspection can trigger a significant deficiency.

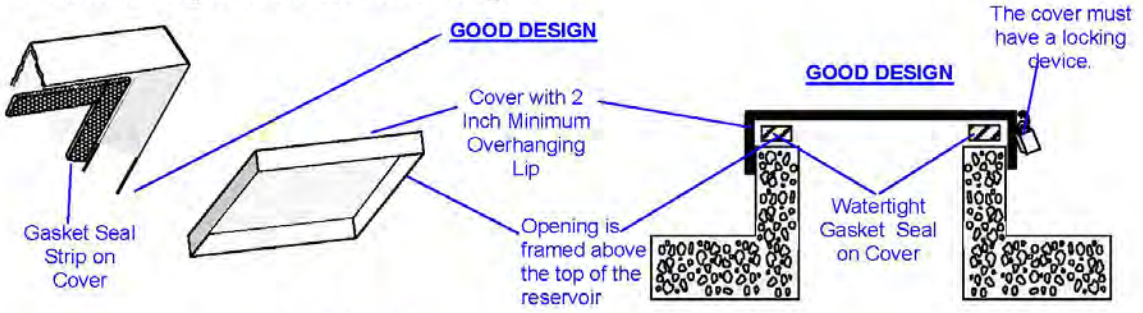
System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

EPA Region 8 Drinking Water Unit Tech Tips
Sanitary Protection of Drinking Water Storage Tanks: Hatches
(Does not pertain to buried fiberglass tanks with dual hatches)

Access hatches must be as watertight as possible to exclude surface runoff, debris, bats, insects, birds, and other animals. You must install locks and keep them locked at all times to prevent unauthorized access. The hatch must be fitted with a solid watertight cover which extends down around the frame at least 2" and have a neoprene gasket seal on the hatch cover to prevent contamination from entering the water system.

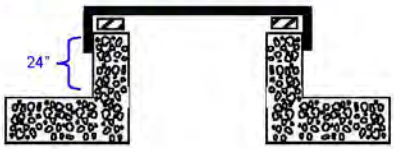
On elevated and ground level tanks, where the bottom of the hatch is greater than 4 feet above the ground level, the hatch must be framed at least 4" above the surface of the tank roof.

On below ground (buried and partially buried) structures, the hatch must be elevated a minimum of 24" above the top of the tank surface or ground surface, whichever is higher.



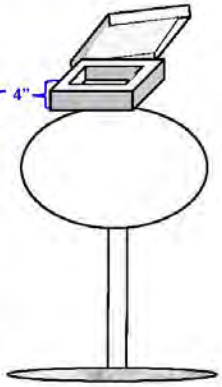
GOOD DESIGN

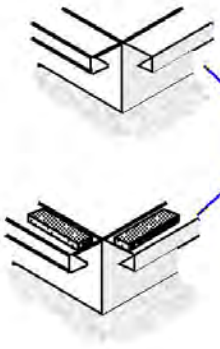
On buried and partially buried tanks, the hatch must be elevated a minimum of 24" above the top of the tank surface or ground surface, whichever is higher.



GOOD DESIGN

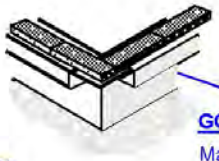
On elevated and ground level tanks, the hatch must be framed at least 4" above the top of the tank surface or ground surface, whichever is higher.





POOR DESIGNS

Insects and spiders can enter the reservoir between the framed section and cover. A seal strip can improve sanitary protection.



GOOD DESIGN

Make sure the gasket seal provides a tight connection by filling in the corner area when installing the seal. The preferred location to install the seal is on the cover.

6/2020

System Name: PWS ID:
Date of Survey: Document Control Number: R8FQPForm-1010 R10

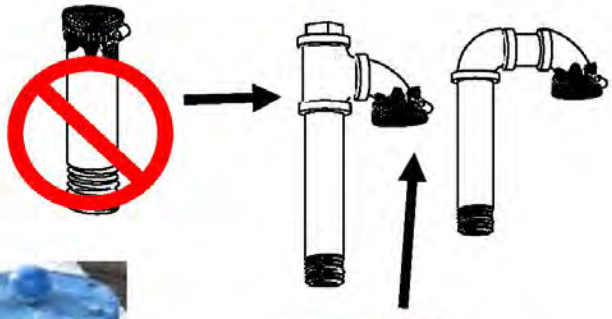
EPA Region 8 Drinking Water Unit Tech Tips

Simple Fixes for Wellheads

WELL CAP
Tighten and replace any missing bolts to ensure a proper sanitary seal is created by the well cap.

Replace any damaged well cap gaskets between the top and bottom plate and/or the compression seals on the outside diameter of the well casing.

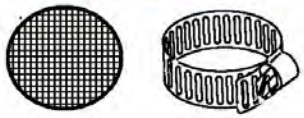
WELL VENTS
Well vents (if applicable) must be at least as high as the well casing or pitless adapter. Replace straight, open well vents with inverted screened vents such as those below. Use non-corrodible #24-mesh screen on all configurations of well vents to exclude insects, rodents and other small animals.



WELL HEIGHT
Permanent casing for all groundwater wells must project at least:

- 12 inches above the concrete floor; or
- 18 inches above natural ground surface.

#24-MESH SCREEN
Non-corrodible #24-mesh screen (wire diameter 0.014 inches) and a stainless steel adjustable clamp



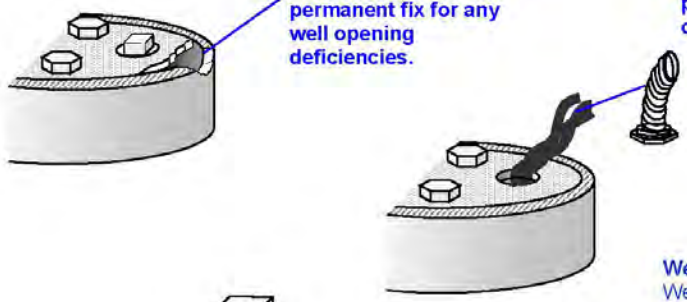
PROPERLY DESIGNED WELL CAPS & SANITARY SEALS
Replace damaged or non-watertight well caps with vermin-proof, premium watertight wellhead caps. Vented caps must use #24-mesh screen.

FOR WELLS INSIDE A BUILDING
Eliminate rodents from the well house and the area around the wellhead. Airborne fecal material can contaminate the well or coliform samples. To keep rodents out, seal all entry points.

NON-PREFERRED DRINKING WATER WELL CAPS
Well caps with set screws on the side of the cap may not have a sanitary seal gasket. They are not to be used on a drinking water well if a gasket is not part of the assembly.

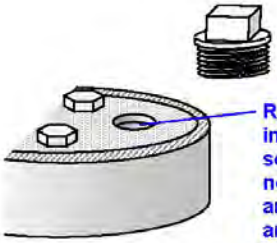
AVOID HANTAVIRUS: Please refer to the Center for Disease Control (CDC) Website regarding how to properly clean up mice infested areas to prevent contracting the Hantavirus pulmonary syndrome:
www.cdc.gov/ncidod/diseases/hanta/hps/noframes/prevent3.htm

1 of 2



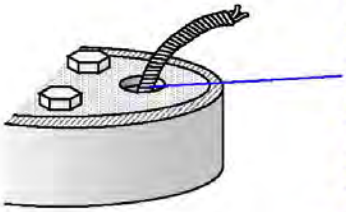
Replace damaged seal and repair well casing. Repairs must be durable and watertight. Silicone is not an acceptable permanent fix for any well opening deficiencies.

Install an appropriately sized conduit with an electrical grommet to seal the opening around the wires on a submersible pump. Silicone is not an acceptable permanent fix for any well opening deficiencies.

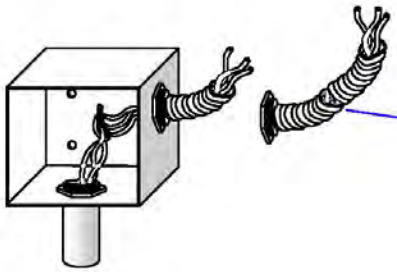


Replace access plug or install an inverted, screened well vent if one is not present. Silicone (or any other caulking) is not an acceptable permanent fix for any well opening deficiencies.

Well in a Pit or Vault
Wells in pits are not appropriate in areas prone to flooding or elevated water tables. The pit or vault should be watertight; however, when a well is located in a pit or vault that is not watertight, the pit or vault must be constructed with proper drainage or an appropriately sized permanent or portable pump shall be provided.



To seal the opening remove the rope, or attach it to an eyebolt on the sanitary seal bottom or drop pipe, and use an access plug. Silicone is not an acceptable permanent fix for any well opening deficiencies. Pump hoisting methods (rope, chain, etc.) extending through the well cap should be removed due to difficulty in providing adequate seal to prevent contaminants from entering the well through the opening. Pump removal can be accomplished per manufacturer's configuration recommendations. Afterwards, replace the opening with an access plug.



An electrical junction box shall be watertight (including at box attachment to the well casing and electrical conduits attached to the box) to prevent contaminants from entering the well. Replace damaged flexible conduit.

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