

Procedure: Water Compliance, Monitoring, and Operations		
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EMS Management Representative	Environmental Manager	Original Date: 20 Aug 2013

1.0 PURPOSE

This document provides procedure(s) and responsibilities for meeting the requirements to ensure safe drinking water to all personnel at Camp Stanley Storage Activity (CSSA). This document does **not** include surveillance and sampling of the following:

- Environmental monitoring wells (as those are included in the CSSA Data Quality Objectives [DQOs]);
- Operation and management of environmental specific systems related to the May 1999 3008(h) Administrative Order under the Resource Conservation and Recovery Act (RCRA); or
- Operation and management of treatment technologies at off-post privately owned drinking water systems.

While the preeminent policies and standards implemented by this SOP are intended to ensure production and distribution of clean, safe drinking water to consumers at CSSA, the water production and distribution systems used to supply drinking water also provide the means to fight fires, irrigate operational and residential grounds, and support other services on the post. This SOP addresses those collateral requirements and provides a management strategy and structure for coordinated use of water resources to meet all base needs.

2.0 REFERENCES

- EPA's Safe Drinking Water Act.
- TCEQ drinking water surveillance program (Title 30 of the Texas Administrative Code (30 TAC), Chapter 290, Subchapter F: Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).
- Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance).
- US Army Technical Bulletin-Medical (TB-MED) 576 (Sanitary Control and Surveillance of Drinking Water Sources at Fixed Sites).
- Monitoring Plan for Camp Stanley Storage Activity, December 2015.
Drought Emergency and Contingency Plan for Camp Stanley Storage Activity, December 2015.

3.0 APPLICABILITY

This Standard Operating Procedure (SOP) applies to all drinking water systems located at or near CSSA, for which CSSA has operational responsibility. This includes all water production and distribution infrastructure supporting public water supply (PWS), fire protection systems up to the isolation valve for building fire sprinkler systems, all fire hydrants, hydrant risers, and trunk lines, tank truck filling stations, and irrigation systems.

This SOP includes the responsibilities, authorities, and accountability for the following:

- Planning, programming, budget management, configuration management, and regulatory compliance monitoring;
- Design, procurement, and construction for the production and distribution of potable water;
- Testing, operation, maintenance of the water supply systems and infrastructure; and
- Decommissioning of water works, utility infrastructure and system components intended for the production, distribution and management of potable water at CSSA.

This SOP does **not** include infrastructure intended primarily for:

- Fire fighting and fire suppression;
- Irrigation and landscaping sprinkler systems;
- Operations or maintenance of the wastewater system (sewers and lift stations); or
- Maintenance of the Camp's swimming pool.

4.0 SYSTEM COMPONENTS

The Public Water System at CSSA is self-enclosed (meaning it only serves the post and its population and does not have any connections or service lines outside the perimeter of the installation) and it is composed of four (4) groundwater supply wells, three (3) chlorine disinfection systems, the storage reservoir, backflow preventers, booster pumps, pipes of different diameters, elements of the Supervisory Controls and Data Acquisition (SCADA) system, and fire hydrants. A map of the water system is shown in **Appendix A**. The drinking water supply wells are:

4.1 CS-1: CS-1 is located within Camp Bullis, approximately ¼ mile from the east of the CSSA perimeter fence line. The well house for this well was refurbished and serviced in early 2013 when it was modified from Gas Chlorine to Sodium Hypochlorite chlorination system. This well is directly connected into the drinking water distribution system, and backfeeds the storage reservoir. The TCEQ-designated entry point location (EP001) is located outside of the well house, after the disinfection process. This well is monitored and automatically operated via SCADA controls.

4.2 CS-10: CS-10 is located in the inner cantonment west of Bldg. 604. The raw groundwater is disinfected at Building 54 (located 175 feet west of CS-10) prior to being released directly to storage at the reservoir. The Building 54 chlorinator facility was refurbished and serviced in early 2015 when it was modified from Gas Chlorine to Sodium Hypochlorite chlorination system. This well is monitored and automatically operated via SCADA controls. The TCEQ-

designated entry point location (EP002) is located inside the chlorinator facility, after the disinfection process. This is monitored and automatically operated via SCADA controls.

4.3 CS-12: CS-12 is located in the North Pasture at the end of the road by gate 5C. CS-12 was constructed in 2011 and it is chlorinated on site using sodium hypochlorite solution. This well feeds directly into the distribution system to fill the reservoir, and it is monitored and automatically operated via SCADA controls.

4.4 CS-13 (FUTURE): CS-13 is located in the East Pasture just east of Bldg. 711. This well was installed in 2012 and it is expected to be placed in service in the near future. The supply well has interim approval from the TCEQ for groundwater production. New facilities for housing, disinfection, and distribution are anticipated to be constructed in 2016.

4.5 Reservoir: The storage reservoir is a vintage 1940's underground 660K gallon concrete tank (clearwell). Four booster pump systems are utilized to ensure that adequate water pressure is delivered to the residential housing area for domestic water use. Booster tank systems are also employed at the facility administration buildings (1 and 9) and the Viking Compound. In addition, a separate booster pump is installed on the residential water main to ensure adequate water pressure and flow in case of a fire emergency. All other components have been installed at different times.

5.0 RECORDKEEPING REQUIREMENTS

All drinking water records are required to be kept for a minimum of three years. These records will be consolidated and stored in the environmental management office. These records are comprised of all correspondence with the TCEQ, water sample results, well operation logs, backflow preventer checks, flow meter calibrations, notices of exceedances, notices of violation, etc. It is recommended that the records be kept for as long as it is feasible. CSSA is in the process of scanning all records so that they can be kept in an electronic format indefinitely for future use.

6.0 RESPONSIBILITIES

The following are the responsibilities in order to meet the requirements of this SOP: (see **Appendix B** for matrix of responsibilities).

6.1 Installation Manager: The Installation Manager is responsible for providing an adequate amount of potable water that is free from disease-producing organisms, hazardous concentrations of toxic materials, and objectionable color, odor, or taste. The Installation Manager in coordination with Chief MMA will implement the Drought Contingency Response Plan and the Well Head Protection Plan as recommended by the Chief of Environmental Management and Chief of Facilities/Engineering.

6.2 Chief of CSSA Logistics Support Division: The CSSA Chief of Logistics Support Division is responsible for the routine maintenance of the drinking water system. He/she must

ensure that Public Works personnel are properly trained and equipped to maintain the drinking water infrastructure of the base.

6.3 Chief of Facilities/Engineering: The Chief of Facilities/Engineering is responsible for the design, construction, renovation, alterations, and repair of the drinking water infrastructure. The Chief of Facilities/Engineering will plan and budget for major repairs and alterations to the system. He/she will inform the Chief of Environmental Management on any planned or emergency alteration to be or performed in the system so that proper notifications to the TCEQ can be accomplished in a timely manner. The Chief of Facilities/Engineering will contract out the annual inspection and the triennial cleaning and visual inspection of the reservoir. The Chief of Facilities/Engineering, in collaboration with the Chief of Environmental Management, will develop a plan to span the coverage of SCADA systems on all occupied buildings to monitor the usage of water and electric services and implement designs. The Chief of Facilities/Engineering is responsible for contracting annually the inspection and certification of the fire pump and sprinkler systems on post that are connected to the drinking water lines.

6.4 Chief of Public Works: The Chief of Public Works (PW) is responsible for the operation of the water distribution system from the point it leaves the well house to termination (delivery to consumers). Chief of Public Works is also responsible for performing backflow prevention checks, system flushing, fire hydrant servicing, repairs to mains and service lines, and maintenance of the exterior of the well facilities. The Chief of Public Works will immediately notify the Chief of Environmental Management on any water main break so that testing for pressure and sampling (if needed) can be accomplished in a timely fashion. Chief of Public Works will ensure that proper disinfection during water main repairs is performed in accordance with 30 TAC requirements. The Chief of Public Works is responsible for the procurement of chlorine to maintain and run the water wells. The Chief of Environmental Management will place a PO two weeks in advance when a new supply of Chlorine is needed.

6.5 Chief Environmental Management: The Chief of Environmental Management (Environmental Manager) will be responsible for the operation, maintenance, and testing of the wells. He/She will ensure that a water monitoring plan is properly developed and submitted to the State, that the collection of bacteriological samples be performed in accordance with Department of the Army and TCEQ requirements. The Chief of Environmental Management will ensure that collection of compliance samples for metals, inorganic, organic, and radiological constituents be performed at the regulatory intervals. The Environmental Manager is responsible for the submission of sample results to the state, development of monthly reports, development and submission of the consumer confidence report, drought contingency emergency response plan, and any other notifications required such as violations of standards, boil water orders, etc. The Environmental Management office is responsible for the procurement, installation, calibration, servicing, and operation of all SCADA components connected into the drinking water system at the well houses. The Environmental Manager is responsible for the submission of engineering design and specifications for changes to the water system provided. Close coordination between the Chief of Facilities/Engineering and the environmental management office will be exercised for the TCEQ notification of construction activities and determinations of “significant changes” which would require TCEQ approval. The Environmental Manager in

collaboration with the Chief of Facilities/Engineering will develop a plan to span the coverage of SCADA systems on all occupied buildings to monitor the usage of water and electric services.

7.0 PROCEDURES

7.1 Daily: The environmental management office, in coordination with the Public Works (PW) Water Operator, will operate the wells and systems inside the well house, and review the water utilization, well production, and well water level reports. In addition, weather data from the weather stations at Bldgs. 261, 606, and 90 will be reviewed and compared to the levels of the well at MW18-LGR (across from Bldg. 606) to determine the overall condition of the aquifer. PW will review and act on any drinking water line work order of issue encountered. Any major repair work, emergency work, water main tapping, or potential cross connection issues encountered by PW in the performance of their duties, will be notified to the Environmental Manager no later than the end of the day where the issue was encountered. In the case of loss of pressure in a water main, PW will notify the Environmental Manager immediately so that the emergency procedures in Section 10.2.2 may be initiated.

7.2 Weekly: The environmental management office, in coordination with the PW Water Operator, will collect, no later than Tuesday of every week, a chlorine residual and pH at one of the sampling locations listed in the sampling plan (Buildings 1, 45, 95, 401, and 606), and shown in **Appendix A**. The environmental management office will record the level of chlorine in the tanks at the wells and will coordinate with PW if additional chlorine is required. All weekly activities will be captured on the Activity Checklist included as **Appendix C**. If this checklist or other weekly operations are updated, this SOP will be reviewed and changed accordingly.

7.3 Monthly: The environmental management office will submit to the TCEQ the monthly chlorine, bacteriological, and operational reports. The monthly bacteriological sample will be collected on the first Tuesday of each month from one of the five established monitoring locations. The sampling locations are rotated monthly, resulting in multiple samples from each sampling point over a 12-month period. Quarterly and Annual maintenance is also performed at the water production wells, disinfection systems, and SCADA control systems. The monthly, quarterly, and annual activities will be captured on the Activity Checklist included as **Appendix C**. If this checklist or other operations are updated, this SOP will be reviewed and changed accordingly.

7.4 Annually: The environmental management office, in coordination with PW, will compile the backflow checks from PW, arrange for an annual inspection of all the fire pumps and sprinkler units in the buildings that have sprinkler systems, submit the consumer confidence report as soon as the fourth quarter compliance sample results have been received, and track the total water production for the post. The Chief of Facilities/Engineering and Chief of PW will schedule the annual inspection and maintenance of the storage reservoir.

7.5 Triennially: Drought conditions permitting, the Chief of Facilities/Engineering will contract out the cleaning and visual inspection of the reservoir. This inspection will be recorded using the appropriate TCEQ form and submitted to the state by the Environmental Manager. In addition, the environmental management office will schedule the calibration of all water flow meters.

7.6 Regulatory Reviews: A regulatory review will be conducted at least annually to verify that the requirements of this SOP are compliant with current or pending regulatory statutes. Furthermore, periodic regulatory reviews will be conducted following the receipt of compliance sampling results as required by the TCEQ. These sample results will be compared to current standards, limits, or action levels that mandate additional sampling, reporting requirements, or notifications to the TCEQ and public. Examples include notices for boil orders, notices for the violations of the Total Coliform Rule (TCR) or Lead-Copper Rule (LCR), or Corrosion Control Studies.

8.0 CONTACT

The CSSA Environmental Manager at 210-295-7067, is the point of contact for remedial actions performed at CSSA.

9.0 IMPLEMENTATION

9.1 Configuration Management: Operating configuration of the production and distribution infrastructure will be maintained by Environmental Management. Any changes to normal operating configuration will be requested through the Chief of PW to Environmental Manager. Configuration changes required to support construction or repair will be coordinated through the Chief of Facilities/Engineering office for approval by the Environmental Manager at least 24 hours in advance of planned work and as soon as practicable in the event of emergency repairs.

9.2 Resource Planning:

9.2.1 Water production rates are monitored by Environmental Management and PW and reported annually to HQ.

9.2.2 Water usage is monitored and tracked via SCADA and quantities are forecasted based on historical use and current construction activities. In the event that water usage increases beyond the production capabilities due to construction, the contractor will be required to purchase its own water from SAWS and bring it onto the post.

9.2.3 Water usage policy is developed by the Installation Manager and Chief/MMA and implemented by Facilities Engineering, Environmental Management, and Public Works.

9.2.4 Future water demands and allocation planning is reviewed annually by Environmental Management and Facilities Engineering, for reporting to Chief/MMA and HQ Environmental.

9.2.5 Chief of Facilities/Engineering factors future water demands for public consumption into master planning forecasts and develops project plans to recapitalize, improve, and add production and distribution capacity.

10.0 EMERGENCY PROCEDURES

10.1 Mandatory water restrictions and use as detailed in the Drought Emergency Contingency Plan date December 2015 will be implemented:

- When triggers identified in the Plan have been reached;
- When a water conservation/restriction is announced by the Trinity-Glen Rose Groundwater Conservation District;
- If water recharge rates fall below the requirements stated in the installation's Drought Management Plan of combined consumer demand and fire protection utilization rates, this plan will be implemented immediately.

10.2 Emergency Repairs, Contamination, Interruption of Services:

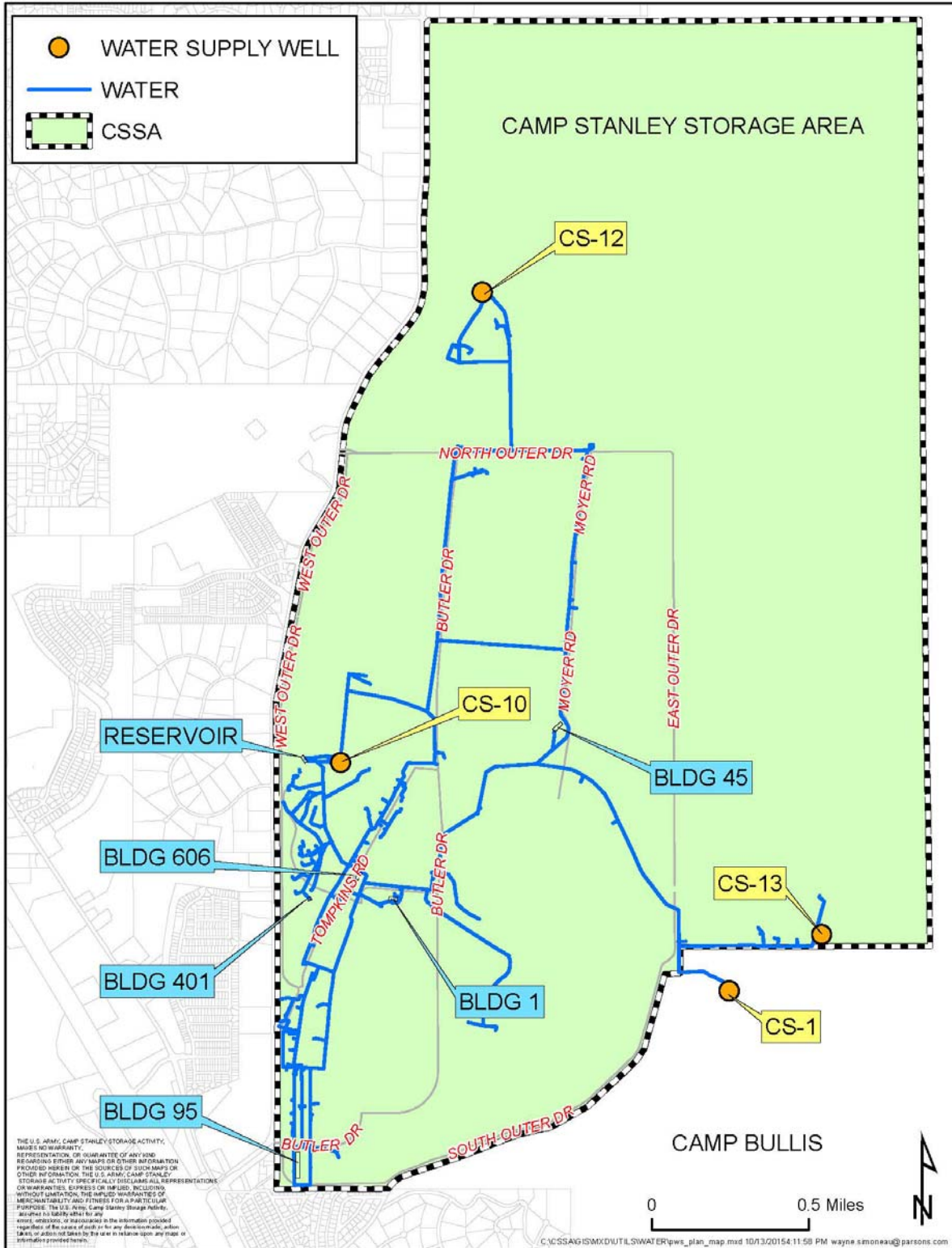
10.2.1 All emergencies to include contamination, interruption of service, main line water ruptures, etc. will immediately be reported to:

- Chief, Facilities/Engineering, 210 295-7034/7033 (Office), 210 336-2372 (Cell);
- Chief, Environmental Management 210 295-7067 (Office), 210 240-0146 (Cell);
- Chief, Logistics Support Division, 210 295-7420 (Office), 210 336-2367 (Cell);
- Chief, Public Works 210 295-7422 (Office), 210 336-2376.

10.2.2 Loss of pressure in the distribution water system has the potential to allow groundwater, swimming pool water and other waters of unknown quality to backflow into the pipes. In the event of pressure loss within the distribution system, the Environmental Manager shall enact the decision flowchart included in **Appendix D** (from 30 TAC §290.47(e) of the Texas Administrative Code). If the water system pressure falls below 20 psi, public water systems are required to rigorously flush the system, carefully monitor the chlorine levels, and take a number of bacteriological samples for lab analysis. A boil water notice may need to be issued the distribution system was partially dewatered, cannot be adequately disinfected, or samples indicate the presence of bacteriological contamination.

The flowchart found in **Appendix D** shall be used to determine if a boil water notification must be issued in the event of a loss of distribution system pressure. If a boil water notice is issued under this section, it shall remain in effect until water distribution pressures in excess of 20 psi can consistently be maintained, a minimum of 0.2 mg/L free chlorine residual is present throughout the system, and water samples collected for microbiological analysis are found negative for coliform organisms.

APPENDIX A: MAP OF DRINKING WATER SYSTEM



APPENDIX B: MATRIX OF RESPONSIBILITIES

Task	Office of Primary Responsibility	Alternate
Implementation of the Program	Installation Manager	Designee
Routine Maintenance and Operation of Water System (Beyond Wells)	Chief of CSSA Logistics through Public Works	Chief of Facilities/Engineering
Routine Maintenance of Well Houses, Chlorinators, SCADA System in Well Houses	Chief of Environmental Management in Coordination with PW Water Operator	Chief of Facilities/Engineering
Routine Maintenance and inspection of Backflow Preventers, Pump Houses, and Irrigation Systems	Chief of CSSA Logistics through Public Works	Chief of Facilities/Engineering
Line Repairs and Disinfection	Chief of CSSA Logistics through Public Works	Chief of Facilities/Engineering
SCADA Planning Upgrades	Chief Environmental Management and Chief Facilities/Engineering	No Alternate
Design	Chief of Facilities/Engineering	Deputy Chief of Facilities/Engineering
Construction	Chief of Facilities/Engineering	Deputy Chief of Facilities/Engineering
Renovation	Chief of Facilities/Engineering	Deputy Chief of Facilities/Engineering
Alteration	Chief of Facilities/Engineering	Deputy Chief of Facilities/Engineering
Inspections of the Reservoir	Chief of Facilities/Engineering	Deputy Chief of Facilities/Engineering
Reporting to TCEQ (Including NOVs, Sampling Results, Boiling Orders, Chlorine Usage, etc.)	Chief of Environmental Management in Coordination with PW Water Operator	Environmental Lawyer
O&M Testing and Calibration of the Flow Meters (Basewide)	Chief of Environmental Management	Deputy Chief of Facilities/Engineering
Collection of Compliance Samples (Routine and Special)	Chief of Environmental Management in Coordination with PW Water Operator	Deputy Chief of Facilities/Engineering
Annual Inspection of Fire Pumps and Fire Sprinklers	Chief of Facilities/Engineering (Via Environmental Contract)	Chief of Environmental Management
Maintenance, Procurement, Installation, Calibration, and Operation of SCADA Systems	Chief of Environmental Management and Chief of Facilities/Engineering	No Alternate
Sustainability Reporting and Tracking	Chief of Environmental Management and Chief of Facilities/Engineering	No Alternate
Ordering Chlorine for Drinking Water Wells	Chief of PW	No Alternate

APPENDIX C: DRINKING WATER WELL OPERATIONS ACTIVITY CHECKLIST

**Drinking Water Well Operations
Activity Checklist**

Operators: _____ Date: _____

Calibration Record - pH Meter and Cl ₂ Pocket Colorimeter II						
calibration preformed: Y / N	pH Meter			<i>Meter used:</i> 51 / 59	Cl₂ Pocket Colorimeter	
	Before:	7.00	<u>temp</u>		Which standards are you using:	
	After:	_____	C		(circle one)	
	Before:	10.00	<u>temp</u>		A5097 or A5110	<u>Reading</u>
	After:	_____	C	0.22	0.23	_____
	Before:	_____	C	0.91	0.93	_____
	After:	_____	C	1.61	1.63	_____

LOCATION	TIME	TEMP (°C)	pH	Cl	BacT	COMPLIANCE	SAMPLER
Building 45 (SW corner left of sidewalk)					Y / N	Y / N	
Quarters 401 (side of garage)					Y / N	Y / N	
Building 606 (back of building, bay 3)					Y / N	Y / N	
Building 1 (left of front entrance)					Y / N	Y / N	
Building 95 (shipping & receiving, in utility closet)					Y / N	Y / N	

Location:	Bldg. 95	Bldg. 201
Well house chlorine meter:		pH=
Pocket Colorimeter (if off by 0.5 calibrate inline meter):		Temp.=
Calibrated:	Y / N	Y / N

Weekly	CS-1	Bldg. 54 / CS-10	CS-12	CS-13
well house chlorine meter:				
Colorimeter (if off by 0.5 calibrate inline meter):				
Calibrated:	Y / N	Y / N	Y / N	Y / N
Temp. °C:				
pH:				
Flow total:				
Flow rate:				
chlorine system leaks:	Y / N	Y / N	Y / N	Y / N
chloritrol leaks/corrosion:	Y / N	Y / N	Y / N	Y / N
rinse Chloritrol pistons w/ water from squirt bottle:	Y / N	Y / N	Y / N	Y / N
run well to exercise Chloritrol:	Y / N	Y / N	Y / N	Y / N
chlorine remaining in tank:	(gal)	(gal)	(gal)	(gal)

Monthly				
verify transducer water level (eline):				
SCADA water level reading:				
spray lube Chloritrol pistons with FGL-1:	Y / N	Y / N	Y / N	Y / N
hose down/sweep well house floors and containment:	Y / N	Y / N	Y / N	Y / N
verify operations of pressure gauges:	(psi)	(psi)	(psi)	(psi)
verify operations of eyewash:	Y / N	Y / N	Y / N	Y / N
Inspect fire extinguisher for charge:	Y / N	Y / N	Y / N	Y / N
clean injection quills:	Y / N	Y / N	Y / N	Y / N
clean screen before PRV:	Y / N	Y / N	Y / N	Y / N
reservoir:	2 flappers closed: Y / N	hatches and gate locked: Y / N	reservoir level:	

Quarterly (January, April, July, October)				
adjust climate controls to match season:	Y / N	Y / N	Y / N	Y / N
clean AC filters:	Y / N	Y / N	Y / N	Y / N
Grease piston drive pins using green syringe:	Y / N	Y / N	Y / N	Y / N

Annually (September)				
winterization:				
Chloritrol maintenance:				
clean chlorine flow cell and probe:	Y / N	Y / N	Y / N	Y / N
replenish chlorine probe w/ electrolytes:	Y / N	Y / N	Y / N	Y / N

Comments:

OFFLINE

APPENDIX D: LOSS OF PRESSURE FLOWCHART

Figure: 30 TAC §290.47(e)

Public Water Supplier Response to Loss of Pressure to All or Parts of the Distribution System

