

SOUTH CENTRAL REGIONAL WASTEWATER TREATMENT PLANT & DISPOSAL BOARD

FIELD MEASUREMENTS

GENERAL

FT 2000 “Field Measurement of Residual Chlorine”

For field measurements to be acceptable, bracket results between acceptable calibration data. Refer To DEP Field Activities Manual FT 1000. FDEP categorizes the following analytes as field measurement parameters and therefore they do not require NELAC Certification.

- Prior to use, calibrate the instrument.
- In the event that the instrument fails to meet the acceptance criteria, immediately recalibrate or remove from service; send the instrument for service or repair.
- If a calibration check fails to meet acceptance criteria and it is not possible to reanalyze the sample or back up instrumentation is not readily available, report all results between the last acceptable calibration check and the failed calibration check as “estimated” and report with a “J” value.
- Conduct calibration verification immediately.
- Include a narrative describing the problem.
- For continuous in-line monitoring equipment, bracket all data by acceptable calibration checks or qualify the data.

CONTINUOUS MONITORING WITH IN-LINE CHLORINE MONITOR

FT 1900 “Continuous Monitoring with Installed Meters”

South Central Regional Wastewater Treatment Plant & Disposal Board utilizes continuous monitoring instrumentation for recording of Total Residual Chlorine in our Reclaim Wet Room. The HACH CLT10 analyzer uses exclusive self-diagnostics to alert users when the process has changed or the instrument needs servicing. Diagnostic features include the Cal Watch algorithm for warning of pH and chlorine calibration deviation and a non- contacting flow sensor for notification of insufficient sample flow. Total chlorine measurement with an amperometric analyzer, such as the CLT10, does not require reagents or have mechanical moving parts that can fail. The system allows for real-time control and monitoring of the disinfection processes by providing continuous readings that indicate when treatment conditions have changed. The complete system includes a total chlorine sensor, chlorine sensor block, sc200 controller, sc Gateway, stainless steel panel, pH flow cell and pH sensor. The sc200 controller facilitates user defined operating parameters and the sc Gateway stores all of the data logged which can then be downloaded to a micro SD card for review. The lower limit of detection is 0.03mg/L with a resolution of 0.001mg/L. The chlorine range is 0-20mg/L. The chlorine range is 0-20mg/L. Operation temperature range is 0 to 45 °C (32 to 113 °F) and the system is equipped with internal automatic temperature compensation with a sample operating range of 5 to 45 °C.

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Maintenance of Continuous Chlorine Monitor

- Perform maintenance monthly or sooner if problems arise.
- Perform prior to daily verification of the monitor.
- Isolate the water supply to the monitor.
- Remove the CLT10 probe from the reservoir by unscrewing the black lock ring at the top of the reservoir; be careful not to lose the gaskets housed underneath.
- Inspect the membrane for signs of damage or wear.
- If experiencing problems, remove the membrane and top up with clean electrolyte solution.
- Lift the rubber band covering the vent hole and remove the membrane cap. Empty the electrolyte solution and refill so that the surface of the solution is convex, taking care not to create bubbles.
- Replace the membrane cap, allowing the electrolyte solution to overflow through the vent hole.
- Wipe excess electrolyte solution and replace the rubber band. NB: failure to remove the rubber band may cause damage to the probe.
- Clean the membrane using a soft brush or cloth and lanolin free soap eg: Liquinox.
- Clean all surfaces of the monitor with a soft cloth.
- Allow the analyzer to stabilize and check that chlorine readings are established.
- Refer to Hach CLT10sc Manual for instructions.

Verification of Chlorine Monitor by Sample Comparison

- Perform daily verification of the Chlorine Monitor.
- Observe the chlorine readings on SCADA (Supervisory Control and Data Acquisition) until readings are stable. Samples taken when the chlorine levels are rising or dropping too fast may yield biased results.
- Collect a sample from the sampling sink and record the chlorine analyzer value.
- Using a Hach Pocket Colorimeter II Mid Range/High Range to analyze the sample in our Reclaim Wet Room to compare results with the CLT10's readings.
- Then calculate the percent difference via the FDEP comparison criteria of +/- 20%.
- Calibrate as needed. Refer to Hach CLT10sc Manual for 1 point calibration.

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Contingencies for Unacceptable Data

If the chlorine analyzer fails to meet acceptance criteria for verification, by sample comparison refer to South Central Regional Wastewater Treatment Plant and Disposal Board's Reuse Operating Protocol.

Troubleshooting the Continuous Chlorine Monitor

- Check that the flow sensor light is on to ensure adequate flow of sample through the sample block..
- Check the flow range of the level indicator is within range between min and max flow..
- Change the chlorine sensor electrode tip cap and/or electrolyte solution.
- Check the electrode tip and polish using the abrasive paper strip provided.
- When verification of the analyzer is not achievable or when diagnostics dictate, replace the probe.