

STANDARD OPERATING PROCEDURE

Out-of-Range Distribution Results

SOP-S-2 Out-of-Range Distribution Results

Location:	
Reporting and mitigating out-of-range distribution system sampling results	SOP #: SOP-S-2-Out-of-Range Distribution Results
	Issue Date: March 31, 2023
	Date Revised: June 04, 2024
	Revision #: 3
Emergency Contacts: Superintendent 902-305-3192	
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Section 1: Purpose

The purpose of this procedure is to outline the steps for responding to out-of-range field measurements for turbidity and chlorine residual.

Section 2: Definitions / Acronyms

SOP Standard Operating Procedure

Section 3: Roles & Responsibilities

Everyone is responsible for making sure SOPs are followed safely.

Role	Responsibilities
Operator	Collect and analyze compliance samples and immediately report out-of-range values. Implement corrective actions to remediate out-of-range values. Report any safety and/or training deficiencies and participate in reviews.
Service Area Supervisor	Investigate out-of-range values and make sure appropriate corrective actions are taken to remediate out-of-range values. Help operators implement corrective actions.
Superintendent of Operations	Help supervisors investigate out-of-range values and make sure appropriate corrective actions are taken for this incident and to prevent occurrences in the future. Help operators implement corrective actions. Revise SOPs annually and make sure they are up to date.
Regulatory Compliance Coordinator	Help operators investigate out-of-range values and make sure appropriate corrective actions are taken. Data entry of additional field parameters to support corrective actions taken by Operations team.
Director of Operations Engineering and Compliance	Make sure SOPs are followed correctly. Revise SOPs annually and make sure they are up to date.

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Section 5: Procedure

NOTE: Turbidity and chlorine residual field measurements are taken by the Operator (or other trained AFNWA staff) at specific sample sites in the distribution system outlined in the community's Annual Sampling Plan.

Step 1: Field Data Entry

1. Field results are recorded by the operators on the Chain of Custody forms and are inputted into WaterTrax by the accredited laboratory. In some cases, operators may be responsible for inputting data into WaterTrax.
 - a. Parameter criteria, following Health Canada's guidance, has been set in WaterTrax System. Generally, free chlorine shall be between 0.20 and 4.0 mg/L; Turbidity shall be less than 5.0 NTU.
2. An auto-alert email is generated by WaterTrax upon entry or upload of data outside of established criteria. For the purpose of immediate notification, all field data are to be entered into WaterTrax on the date of collection. If the laboratory or operator is unable to enter their data on the same day as data collection, the Regulatory Compliance Coordinator must be notified.

Step 2: Out-of-Range Reporting

1. Operators must immediately report field measurements that are out-of-range (outlined below) to the Service Area Supervisor.
 - a. **Free chlorine residual less than 0.20 mg/L** (if still under after 30-minutes of additional flushing outlined in SOP-S-2).
 - b. **Free chlorine greater than 4.0 mg/L.**
 - c. **Turbidity greater than 5.0 NTU.**
2. If the Service Area Supervisor cannot be reached, the operator should notify the Superintendent of Operations and the Regulatory Compliance Officer.
3. The operator must send a follow-up email to the Service Area Supervisor, Superintendent of Operations, and the Regulatory Compliance Coordinator identifying the out-of-range result and relevant observations (including any additional flushing and parameter field profile data for 30 minute flushes).
4. If the measured free chlorine is greater than 0.20 mg/L after a 30 minute profile is collected, an email identifying the out-of-range chlorine result after 10 minutes and the relevant observations (including additional field parameter data) must be sent to all the individuals outlined in Step 3.
5. If a chlorine measurement is between 0.20 and 0.25 mg/L, or if measurements are otherwise noticeably different from expected or typical results, then the operator must give an email notice to the individuals identified in Step 3.

Step 3: WaterTrax Email Alerts

1. WaterTrax generates immediate e-mail alerts for any out-of-range values entered into the database. The Supervisors, Superintendent of Operations, and Regulatory Compliance Coordinator will receive these alerts.
2. The Interim Drinking Water Regulatory Compliance Guidance for the AFNWA requires notification of non-compliant (< 0.20 mg/L) chlorine residuals. To satisfy this requirement, WaterTrax alerts are sent to FNIHB Regional Manager and Community Environmental Public Health Coordinator.

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3. The Regulatory Compliance Coordinator (or a designate in their absence) must immediately notify low chlorine residuals and the associated 30-minute additional field parameter profile to a live person at FNIHB by phone. A follow-up email to FNIHB is provided by the Regulatory Compliance Coordinator with notification of the low residual, the 30-minute additional field parameter profile and any updated information from the associated water quality investigation.

Step 4: Out-of-Range Response

1. When an out-of-range value is recorded by the Operator, the Supervisor, with the support of the Superintendent of Operations, will initiate an investigation into its cause. The investigation may include a follow-up visit to the sample site for additional sample collection, parameter measurements and/or consultation with appropriate treatment supply plant and water distribution operations staff.
2. Mitigative measures are conducted as necessary. This may include actions such as distribution system flushing, valve adjustments and water treatment process adjustments.
3. The Regulatory Compliance Coordinator is responsible for documenting any additional 30-minute field parameter profile data onto a Microsoft Word template as part of a corrective action to any low chlorine residual results.
 1. Completed templates are to be saved by the Regulatory Compliance Coordinator and an e-mail copy sent to the Operations team.
 2. The Regulatory Compliance Coordinator is responsible for documenting any observations or corrective actions completed on the same template mentioned above and a final copy of the entire investigation is saved to SharePoint/OneDrive in .docx and .pdf formats.
 3. The Regulatory Compliance Coordinator is responsible for submitting the final .docx and .pdf versions in the appropriate alert action response and corrective action plan to appropriate FNIHB contacts by the following week.

Section 9: Referenced Documents

- SOP-S-2 Weekly Compliance Sampling

Document History Table

Date	Action	By	Revision #
March 31, 2023	Document Creation	CWRS	1
January 03, 2024	Administrative and final approval	JV	2
June 04, 2024	Revise to "Director of Operations Engineering and Compliance"	JV	3