



SODIUM HYPOCHLORITE ADDITION AT DISTRIBUTION STORAGE FACILITIES SOP

SOP #132

Rev: 0.0

Date: 01/31/2018

SOP VERSION CONTROL

Revision No	Revision Date	Page No(s)	Description	Approved by

STAFF ACKNOWLEDGEMENT

I certify that the requirements of this SOP have been communicated to me and that I am trained in its use. A copy of this page will be distributed to the employee training record file.

Name	Date

APPROVAL SIGNATURES

Prepared by: Arcadis U.S., Inc. Date: 01/31/2018

Approved by: _____ Date: _____

1 DEFINITIONS AND ACRONYMS

CSII	Control Station 2
GLWA	Great Lakes Water Authority
gph	gallons per hour
lb/gal	pounds per gallon
MGD	million gallons per day
mg/L	milligrams per liter
mL	milliliter
mL/min	milliliters per minute
mL/hr	milliliters per hour
NaOCl	sodium hypochlorite
PPE	personal protective equipment

2 KEY PERSONNEL AND RESPONSIBILITIES

- Operator:
 - Complete a weekly check of the chlorine injection system, including all piping and connections for leaks.
- Operations Foreman:
 - Calculate applied dosage and injection system settings and communicate to operator.

3 SCOPE/PURPOSE

The purpose of this SOP is to operate and adjust (as needed) the sodium hypochlorite feed system flowrate at the Westside and Cedar Street Reservoirs to achieve the target distribution system free chlorine concentration.

4 HEALTH AND SAFETY

The following PPE is the minimum required while on-site at the pump stations and reservoirs:

- General
 - Closed-toed shoes
 - City employee identification
- While inside the building where the bulk sodium hypochlorite is stored
 - Chemical resistant apron

- Chemical resistant gloves
- Face shield

Additionally, each facility is equipped with an emergency eyewash station.

5 PROCEDURE

Prior to entering the premises, note surroundings and exterior building condition including exterior lights, doors, windows, and individuals. Do not enter the facility if it appears unsafe.

1. The Operations Foreman calculates the applied dosage and injection system settings using the CHEAT SHEET and notifies the Operator.
2. Enter the reservoir and disarm the alarm.
3. **Start the injection system:**
 - a. Open the sodium hypochlorite barrel valve.
 - b. Open feedline valve.
 - c. Turn on the LMI pump with appropriate setting.
4. Perform a draw down calibration ensuring the pump is working and the proper dosage is being injected into the reservoir. If dosage is incorrect, adjust the speed and stroke of the chemical feed pump accordingly.
5. **Note: If the injection system fails to start, notify the Operations Foreman immediately so that filling of the reservoir can be halted until the system is operating properly.**
6. Perform a chemical inventory of amount of sodium hypochlorite solution on hand and report to the Operations Foreman.
7. Manually check the injection lines and fittings for deformation and wear.
8. Visually inspect the chemical feed pump for leaks and proper operation.
9. Notify the Operations Foreman the time in which the injection system was turned on and the settings.
10. Prior to exiting the facility, ensure that the surrounding area is safe and re-arm the alarm, turn out the lights, and verify that the reservoir entry door is locked.
11. Return to check that the injection system after it has been running for 2 to 3 hours, noting any concerns with the pump or injection lines.
12. **Turn off the injection system when filling is almost completed:**
 - a. Turn power off.
 - b. Close injection valve.
 - c. Ensure proper operation.

- d. Notify the Operations Foreman time of shut-off.
13. Report back to the water treatment plant.
14. **Chlorine Injection System Failure Contingency Plan:**
- a. The operator is to notify the Operations Foreman immediately. The Operations Foreman will close the valve at the reservoir to avoid reduced chlorinated water from entering the reservoir. The operator will then assess to see why the failure occurred and make a plan to rectify the situation. If repair is needed and time is an issue than the original chlorinator can be used as a backup.

6 DATA RECORDING AND MANAGEMENT

Following the procedure, record the following data on the daily log sheet:

- Time injection system was turned on.
- Dosage of chlorinator solution.
- Inventory of sodium hypochlorite solution on site.
- Notes of any wear, deformation, or malfunction of equipment.
- Time injection system was turned off.

7 REFERENCES

None.