

SECTION 02676

DISINFECTION OF WATER SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Disinfection of potable water storage facilities, testing and reporting results

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 1. B300 – Standard for Hypochlorites
 2. B301 – Standard for Liquid Chlorine
 3. C651 – Disinfecting Water Mains
 4. C652 – Disinfection of Water Storage Facilities
 5. C653 – Disinfection of Water Treatment Plants
- B. National Sanitation Foundation (NSF):
 1. Standard 60 – Drinking Water Treatment Chemicals – Health Effects

1.3 SUBMITTALS

- A. Test Reports: Indicate results comparative to specified requirements

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700
- B. Disinfection report; record:
 1. Type and form of disinfectant used
 2. Date and time of disinfectant injection start and time of completion
 3. Test locations
 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in parts per million (ppm) or milligram per liter (mg/L) for each outlet tested
 5. Date and time of flushing start and completion
 6. Disinfectant residual after flushing in ppm for each outlet tested
- C. Bacteriological (Bac-T) report; record:
 1. Date issued, project name, and testing laboratory name, address, and telephone number
 2. Time and date of water sample collection
 3. Name of person collecting samples
 4. Test locations
 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
 6. Coliform bacteria test results for each outlet tested

7. Bacteriologist's signature and authority

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with AWWA C651, C652, C653, and the Colorado Department of Public Health and Environment (CDPHE)

1.6 REGULATORY REQUIREMENTS

- A. Conform to AWWA C651, C652, C653, as appropriate, and CDPHE regulations for performing the work of this Section

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Calcium and sodium hypochlorite shall conform to AWWA B300 and B301
- B. Store hypochlorite in a cool, dark place away from flammable materials

PART 3 EXECUTION

3.1 CLEANING

- A. Verify that piping in work area and water storage tank has been cleaned and inspected
- B. Contractor work in tank is to be completed using “clean procedures”. Clean procedures require Contractor personnel to only have controlled access into tank wearing appropriate personal protective equipment and sanitized rubber boots prior to entry. No debris, foreign objects or materials to remain in tank after work is completed. Disinfection and filling of tank will then be completed by the Contractor

3.2 DISINFECTION

- A. Provide and attach required equipment to perform the work of this Section
- B. Tablet, continuous, or slug disinfection may be followed in accordance with AWWA C651
- C. The preferred method is continuous disinfection, summarized as follows:
 1. Inject treatment disinfectant, free chlorine in liquid form into piping system to obtain 50 to 80 ppm residual
 2. Bleed water from outlets to ensure distribution and test for disinfectant residual
 3. Maintain disinfectant in system for 24 hours
 4. If final disinfectant residual tests less than 25 ppm, repeat treatment
 5. Flush, circulate and clean until residual equal to that of incoming potable water or 1.0 mg/L is achieved

D. Replace permanent system devices removed for disinfection

3.3 FINAL FLUSHING

A. Maintain a flushing velocity of 2.5 feet per second in piping

B. Collect chlorinated water for proper disposal and/or dechlorinate to less than 0.1 ppm free chlorine prior to discharge in accordance with State, County, and local regulations

C. [CITY, TOWN, DISTRICT OR CONTRACTOR] to provide and pay for flushing water

3.4 FIELD QUALITY CONTROL

A. After final flush, and before tank is placed in service, collect water samples from representative points along the outlet and field test for chlorine residual

B. Chlorine residual shall be within 50 percent of the chlorine residual prevailing in the source

C. If initial disinfection fails to provide satisfactory samples, repeat disinfection until satisfactory samples have been obtained

3.5 TESTING AND ACCEPTANCE

A. If any portion of the tank fails Bacteriological testing, the Contractor is responsible for repeating disinfection procedures until passing Bac-T test is obtained

B. [CITY, TOWN, DISTRICT OR CONTRACTOR] shall provide and pay for services of a certified laboratory to complete Bac-T testing

C. Submit test reports per Section 01700

END OF SECTION