DISINFECTION OF POTABLE WATER MAINS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Disinfection of potable finished water transmission main and water distribution system mains and any surfaces that will be in contact with potable water.

B. Testing and reporting results.

1.2 RELATED SECTIONS

A. Section 02665 - Potable Water Mains

B. Section 02670 - Water Main Testing and Acceptance

C. Section 02676 – New Construction Water Usage

1.3 REFERENCES (LATEST EDITION)

A. AWWA B300 - Standard for Hypochlorites.

B. AWWA B301 - Standard for Liquid Chlorine.

C. AWWA B303 - Standard for Sodium Chlorite.

D. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water (Reference Section 7.4 - Disinfecting).

E. AWWA C651 - Standard for Disinfecting Water Mains.

F. South Carolina State Primary Drinking Water Regulations: R.61-58 (Reference paragraph R.61-58.4(D)(f)).

1.4 SUBMITTALS FOR INFORMATION

A. Section 01300 – Submittals: Procedure for submittals.

B. Test Reports: Include results comparative to specified requirements.

C. Cetificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

1.5 PROJECT RECORD DOCUMENTS

A. Disinfection report:
   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 ppm for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

B. Bacteriological report:
   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. Certification that water conforms, or fails to conform, to bacterial standards of zero coliform and <80 non-coliform bacterial colonies per 100 ml.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AWWA C651.

B. Testing Firm: Laboratory contracted to analyze samples shall be certified by the SCDHEC for coliform and non-coliform bacteria testing.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

A. Chemicals: AWWA B300, Hypochlorite, AWWA B301, Liquid Chlorine, and AWWA B303, Sodium Chlorite.

2.2 WATER

A. Once the new water mains are connected to the BCWS water system, the Contractor shall coordinate the delivery of water for the purpose of filling, pressure testing, disinfection, and flushing of the new mains with the BCWS.

B. Any use of BCWS water must be coordinated with BCWS (843 572-4400) in accordance with Section 02676 – New Construction Water

Usage. BCWS will set water flow rates and volumes as well as the time and duration of availability.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that piping system has been cleaned, flushed, and pressure tested.

B. Perform scheduling and disinfecting activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

C. Engineer's representative shall verify chlorine residual levels to confirm that it is within the range of the existing distribution system, preferably using the Hach Pocket Colorimeter Model 46700-00 on the Low-End Levels.

3.2 EXECUTION

A. Perform disinfection of new water mains in accordance with AWWA Standard for Disinfecting Water Mains, C651. Use one of three methods of chlorination: Tablet Method, Continuous-Feed Method, or Slug Method.

B. Exercise all valves and hydrants contained within the section of main being tested. Maintain isolation of water mains to be disinfected and tested.

C. Dependent upon chlorination method used, achieve required chlorine concentrations and maintain disinfectant in system for the prescribed periods. At the end of the test period, check for the presense of the required free chlorine residual. Flush the tested section until free chlorine residual is no higher than that generally prevailing in the existing distribution system or is acceptable for domestic use. Include the chlorine residual reading on the Chain of Custody form.

D. Flush heavily chlorinated water in such a manner as not to damage the environment. Use neutralizing chemicals as may be required.

E. Two consecutive satisfactory bacteriological tests, taken at least 24 hours apart, are required at each sample site. The number of sample sites varies depending on the amount of new construction, but must be representative of the water in the newly constructed mains. Samples will be taken at each dead end and at a minimum of every 1,200 linear feet of

new water main. Include a schedule of how to determine the number of samples to be taken.

F. Upon completion of the disinfection procedure, reduce the chlorine residual to levels required for discharge to the environment. Treat disposed water with sulfur dioxide or other reducing agent to neutralize chlorine residual.

G. The lab report for analytical testing must provide the chlorine residual at each sample point as well as the bacteriological test result for each sample point. If the membrane filter analysis method is used for bacteriological testing, non-coliform growth must also be provided. If the non-coliform growth is greater than 80 colonies per 100 milliliters, the sample result is invalid and must be repeated. All samples analyzed must show the water line to be absent of total coliform bacteria. The Contractor is responsible for coordinating and providing these services.

3.3 FIELD QUALITY CONTROL

A. Representative of BCWS may be present during sample collection but is not required. It is the contractor's responsibility along with the Design Engineer to ensure new water main has been disinfected, flushed and sampled according to AWWA specifications and SCDHEC regulations.

B. Collect and transport samples in accordance with the quality control procedures of the contract laboratory.

END OF SECTION