

METROPOLITAN UTILITIES DISTRICT	Construction Standard	No: 1.4.3
	Disinfecting and Flushing New Water Mains	Page: 1 of 3
Prepared by: D.J. Satterfield		<u>Supersedes:</u> 1-16-15
Approved by: Jeff Schovanec		Effective: 1-18-23

GENERAL

1. This Standard describes the procedures for disinfection, flushing, and bacteriological sampling of newly installed water mains.
2. Only trained personnel shall be in charge of disinfecting new water mains.
3. All mains remaining still in service shall be separated by the section being disinfected through the use of a chlorine tube or closed valves.
4. All necessary air taps and hydrants shall be installed prior to the disinfection process. A suitable sized outlet such as a fire hydrant shall be required to thoroughly flush out all disinfecting solution.
- * 5. Any storm sewers, sanitary sewers, disposal drains for septic tanks, cesspools, or any waste disposal systems which were broken and may have resulted in the contamination of the new main during installation, shall be reported to the Director or Foreman of Water Distribution prior to disinfection.
- * 6. Any unusual circumstances that occurred during construction of the new main which could increase the difficulty of disinfection or may result in a heavily contaminated main shall be reported to the Director or Foreman of Water Distribution prior to disinfection.

PREPARING THE MAIN TO BE CHLORINATED

All valves including main line and hydrant branch valves shall be opened prior to beginning the disinfection process.

PRE-FLUSHING OF MAINS

If, during the construction of the new main it became filled with rain or ground water or an unusual amount of mud the new main should be flushed with system water prior to disinfection.

APPLICATION OF CHLORINE

1. The preferred point of application of the chlorine solution is at the lowest point of the main to be chlorinated. The preferred connection of the chlorine van to the main being disinfected is through a full chlorine tube. If a full chlorine tube is not available a fire hydrant may be used for source water provided that the hydrant is not more than 150' away from a half chlorine tube. (Ex. Parallel main relocation projects).
2. Water from the existing distribution system shall be run through the chlorine van and chlorinating equipment. A concentration of at least 100 ppm free chlorine shall be continually fed into newly installed water mains smaller than 24" in diameter. A concentration of at least 50 ppm free chlorine shall be continually fed into newly installed water mains 24" and larger in diameter.

NOTE: *When disinfecting HDPE mains, do not exceed 12% active chlorine.*

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3. All hydrants and air taps shall be operated while the pipeline is filled with the disinfection solution to disinfect these items. Water flowing out of hydrants shall be tested with chlorine test paper to ensure a minimum of 100 ppm free chlorine for mains smaller than 24" in diameter and a minimum of 50 ppm for mains 24" and larger in diameter.
4. The contact time of the solution with the pipe shall be at least three hours. Preferably the contact time will be a minimum of 12 hours.

FINAL FLUSHING

1. Following the required period of contact time the heavily chlorinated water shall be thoroughly flushed out of the pipeline at its extremities until entirely replaced by system water. All hydrants shall be operated to ensure all heavily chlorinated water is removed from the system.
2. Flushing shall be done at appropriate velocities so the pipeline is scoured and any build up of dirt and debris is removed. Refer to Table 1 in Construction Standard [1.4.4](#).

DE-CHLORINATION

Care shall be taken to ensure heavily chlorinated water does not enter lakes, ponds, or creeks. In cases where heavily chlorinated water will/may enter a lake, pond, or creek, the discharge shall be de-chlorinated according to Water Distribution's de-chlorinating standards.

BACTERIOLOGICAL TESTING

1. In order to ensure the disinfection and flushing process was successful, two sets of negative samples, approximately 24 hours apart, shall occur.
- * 2. All water samples taken shall be from taps in the main or from a water service line. Under unusual circumstances water samples may be taken from hydrants with approval of the Director or Foreman of Water Distribution.
3. If water samples are taken from a house service tap, a sufficient amount of water shall be flowed through the service line to ensure water being supplied from the main is being tested.
4. Samples shall be taken in sterile sealed bottles which are supplied by the chemists at the Florence Water Treatment Plant. These bottles are available at the Florence Chemical Building or the Water Distribution Office. All water sample bottles shall be properly and clearly labeled with the location of where the sample was obtained, the time, the date, and by whom the sample was taken.



* Revised Text

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5. Water samples shall be taken to either the Florence Chemical Building or the Douglas County Department of Health lab within 8 hours after the sample is taken. If it is not possible to get the samples to Florence or Douglas County within 8 hours, the samples may be placed in the refrigerator in the Water Distribution Offices.

POSITIVE SAMPLES

1. Should the initial or second set of samples test positive, the main shall be re-flushed and re-sampled as outlined above.
- * 2. The Water Distribution Division will put the main into service after two (2) consecutive negative samples have been taken.
 - a. For pre-chlorinated HDPE water mains, after two (2) consecutive negative samples, the pipe will be cleared for installation. Following installation and final connections, the main shall be flushed and placed in service. Two (2) additional samples shall be taken in accordance with Construction Standard [1.4.4](#).

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