

Guidance for Installation of Automatic Flush Hydrants in Distribution Systems

Division: DDAGW
Number: ENG-10-001
Category: Engineering - Guidance
Status: Final
Issued: September 17, 2007

I. PURPOSE

The purpose of this document is to provide guidance to the staff of the Division of Drinking and Ground Waters (DDAGW) and public water systems regarding installation of automatic flush hydrants in distribution systems.

II. BACKGROUND

The appropriate location and circumstances of automatic flush hydrants in distribution systems has been questioned. The unit leading to this issue is made by Hydro Guard. It is a battery operated flush hydrant that is programmed to automatically open at specific times for specific durations. The water discharged would be sent to a nearby storm sewer. For additional information go to www.hydro-guard.com and view the installation detail for the Longneck Subsurface model.

There are several issues of concern with these types of devices: The unit specifies an air gap, but it is located within an enclosed area, thereby defeating the air gap. This could potentially be re-engineered by opening areas of the housing to prevent retaining water and potentially sewage solids in the housing.

- The units are not heated; as such, the water may freeze in the housing.
- These units have a weep hole. If the line leading to the unit were to depressurize, the water around the weep hole could be suctioned back into the water main. A typical fire hydrant with a weep hole is required to be installed at least ten feet from any sewer.
- These units have a potential direct connection to the storm or sanitary sewer for discharge of the flushed water, due to the lack of a proper air gap. Even if the air gap issue were resolved, there is still a line from the storm or sanitary sewer running immediately adjacent to the unit. Because of this, the weep hole on the device is within 10 feet of the sewer, in direct violation of Ten States Standard 8.4.4.
- If these units discharge to storm sewers, the Division of Surface Water (DSW) may require both a permit to install (de-chlorination) and an NPDES discharge permit. Overland flow discharge may also require a PTI and an NPDES permit.

As important as resolving the issues around the installation of automatic flush hydrants is the concern over the reasons for their installation. The use of flush hydrants appears to be a quick fix for much larger distribution system problems. The most appropriate use of these devices may be to address taste and odor concerns and chlorine residual problems. The use of these devices to control disinfection by-products (DBP's) is not recommended. Such devices may address the issue of high disinfection byproduct levels in the short term, but may not be appropriate as long term solutions to larger problems. In cases where automatic flush hydrants are proposed to reduce DBP's, the system should contact the district office to discuss the most effective solution to the

problem, including but not limited to, completing and submitting a distribution system optimization plan.

III. GUIDANCE

The following installation guidelines should be followed at all automatic flush hydrant installations in public water systems.

- I. The use of these automatic flush hydrants to control disinfection by-products (DBP's) is not recommended.
- II. In cases where automatic flush hydrants are proposed to reduce DBP's, the system should contact the district office to discuss the most effective solution to the problem, including but not limited to, completing and submitting a distribution system optimization plan.
- III. Installation should occur only in areas not susceptible to flooding.
- IV. A weep hole should not be in the device.
- V. The unit should discharge through an external air gap to the sewer via an overland discharge by gravity. There can be no direct connection from the sewer to the housing.
- VI. The housing enclosing the device is not conducive to an appropriate air gap. A housing around the unit may be allowed if the housing can be shown to be modified such that there is no danger of water being held in the housing.
- VII. Collision barriers should be installed around the devices to prevent damage from vehicular traffic.
- VIII. The Division of Surface Water should be consulted to determine if a general permit and/or a facility specific NPDES permit is required for the discharge and whether dechlorination is required.
- IX. In order to determine if a plan approval package is required, the facility should submit the following information to the appropriate district office:
 - A. The number, make, model and diagram of flush hydrants to be installed
 - B. The location(s) of the flush hydrants
 - C. The proposed timing of the flush release
 - D. The amount of water to be discharged per cycle and cycles per day from each unit
 - E. The percentage of daily production to be wasted
 - F. The purpose for installing the automatic flush hydrants (taste and odor problems, discolored water complaints, etc.)

IV. HISTORY

The Division of Drinking and Ground Water issued this document in final form on September 17, 2007.