



GLOBAL WATER RESOURCES (“GLOBAL WATER”)

DESIGN STANDARD

ACCEPTANCE AND RE-COMMISSIONING OF GROUND STORAGE TANKS

PURPOSE

The purpose of the Ground Storage Tank (“GST”) acceptance Design Standard is to establish a standardized method and means by which the operations and engineering teams will disinfect and test a GST to be placed back into service after construction, maintenance or repair.

STATEMENT

This Design Standard applies specifically to the disinfection of GSTs following their construction, maintenance or repair in order to destroy any bacteriological contamination incidental to such work. It is extremely important to ensure that no bacteriological contamination exists during this process in order to ensure there is no introduction of contamination into the distribution system.

PROCEDURE

After new construction, maintenance or repair of a GST, the contractor shall follow the necessary steps before the GST is introduced into the system:

1. After completion of work in the tank, the contractor shall assure the walls and bottoms of the structure are thoroughly cleansed to remove all dirt and loose material. A visual inspection by Global Water is required on completion of this cleaning activity.
2. The disinfection method is obtained from ADEQ Engineering Bulletin #8 for Disinfection of Water Systems. This method consists of direct application of a strong chlorine solution to the inner surfaces of the structures. The strong chlorine solution may be prepared by dissolving one ounce of chlorinated lime (25% available chlorine) to each ten gallons of water or one ounce of Calcium Hypochlorite (70% available chlorine) to each twenty-six gallons of water. The powder should be made into a paste and then added to the water. If liquid bleach or sodium hypochlorite is used, solutions of 200mg/L available chlorine are required. This strong solution is sprayed over the inner surfaces of the empty structure by using a fruit-tree spraying type of equipment or the solution may be applied with whitewash brushes. The



surface should remain in contact with the strong solution no less than thirty minutes before the structure is filled with water.

NOTE

The disinfectant procedure shall be accomplished in the presence of a Global Water employee. If liquid chlorine is the choice of disinfectant, the liquid shall be NSF certified.

3. Prior to filling the GST with water, the chlorine injection shall be adjusted to achieve a 3 ppm Cl_2 concentration in the fill water. This concentration level will further assure the destruction of any possible bacteriological pollution while allowing a buffer of 1ppm so as not to exceed the maximum chlorine concentration allowable (4 ppm). The GST shall be filled to the top of the structure until an overflow condition is achieved.
4. The tank shall stand filled with chlorinated water for 24 hours. After the 24 hour period, the first set of two samples shall be pulled. Dependant on sample tap availability, the sample may be pulled at either a sample tap, at the opening of the hatch by dipping the sample container or at the overflow assuring the sample is a clean catch and ensuring there are no rust or other particles visible in the water. The water in the tank shall be checked for Free and Total Chlorine during sampling and noted on the laboratory chain of custody.
5. 48 hours after the tank has been filled and 24 hours after the first samples have been pulled, another set of samples should be pulled for bacteriological analysis and chlorine testing.
6. If both sets of bacteriological samples test negative, the tank can be introduced into the system for service.

NOTE

The contractor shall provide a certificate of the disinfection procedure for record.

7. If any of the bacteriological samples test positive, a determination will be made as to whether or not the tank will need to be drained and inspected for probable causes of contamination. If the tank is drained for further maintenance, the procedure must be repeated.



FINAL ACCEPTANCE

All data must be reviewed by Global Water prior to final acceptance that all procedures were followed and the bacteriological data is valid.