Environmental Health & Safety
THE UNIVERSITY OF TEXAS AT AUSTIN

Utilities & Energy Management

Purpose:

Dye testing of building sanitary sewer drains is performed to verify that all sanitary sewer drains are properly plumbed and to check for inadvertent cross connections to the storm drain system. Sanitary sewer drains connected to the storm drain system will cause illicit discharges to the creek which violate the minimum control measures in the campus Storm Water Management Program and expose the university to potential fines from the City of Austin and the TCEQ. Dye testing of sanitary sewer drains shall be performed during new building construction, building renovations, and any time a building plumbing fixture is connected to a drain line.

Test Preparation

1. Verify the discharge points of the sanitary sewer and the storm drain piping systems for the area of the test.
    a. Utilize available as-built and utility drawings to identify drains and the nearest exterior sanitary sewer manhole(s) to the building that receives wastewater flow from the building. Identify any sanitary sumps within the building that may receive flow prior to discharge to the exterior manhole.
    b. Identify nearest exterior storm sewer manhole(s) to the building that receives storm water flow from the building. Identify any storm sumps within the building that may receive flow prior to discharge to the exterior manhole.
    c. Determine if the building storm water drains to Waller Creek or to Shoal Creek. If the building drains to Waller Creek, select a day for testing when the water in Waller Creek is clear, not muddy, and monitor the creek for signs of dye during the test. If the building drains to Shoal Creek, watch for dye in the nearby manholes.

2. Prepare the following materials prior to the test.
    a. Liquid tracing dye (2 colors minimum). All dyes must be non-toxic, biodegradable and NSF certified
    b. Communications (radio preferred due to poor mobile phone reception in building lower levels)
    c. Outfall/manhole observers
    d. Building “as-built” plumbing drawings
    e. UT Austin Utility drawings
    f. Tools to open manholes, floor drains/covers, sump lids, etc.
    g. Dye Test Log
    h. Flashlights
    i. Cameras

Test Notification and Personnel

1. Notify UT Austin Environmental Health & Safety and UT Austin Mechanical Distribution at least two business days in advance of the proposed testing day to allow for dedication of staff and notification to utility provider.

2. Appropriate staff will be needed to administer and record dye introduction into the drains, as well as being posted at the designated sanitary and storm sewer manholes and outfalls. Typical roles involved include:
    a. PMCS Construction Coordinator or the OFPC Construction Inspector will request and coordinate dye test and provide the signed, final report
    b. EHS will contact the City of Austin for notification of testing and will witness or administer dye with PMCS/Contractor representative
    c. UEM Mechanical Distribution will provide support in identifying and opening manholes on the exterior of the building to observe/witness dye exiting the building.

Test Procedure

1. Station personnel at the identified manhole, sump, cleanout, outfall or other appropriate locations needed to watch for dye in the wastewater and storm water flows. Provide personnel with the appropriate communication devices.

2. Add about a tablespoon of dye to each fixture (toilet, floor drain, sink, etc.) plumbed to sanitary sewer to be tested. Make sure to record the time the dye was added on the Dye Testing Log. Mark the location on the record drawing of each fixture where dye was added. (Note: Drains and fixtures to be tested shall be left to the discretion of the UT Austin staff representative present. All drains/fixtures within the building or project shall be tested unless EHS or UEM staff can visually confirm that all fixtures drain to the same sanitary or storm sewer riser.)

3. Flush each fixture with 20-30 gallons of water minimum or until dye is observed in a manhole, storm sewer outfall, or sump. The more water flushed will shorten the time it takes for the dye to be observed.

4. Watch the sanitary and storm drain discharge points until the dye is observed. Once dye is observed, note the time, and repeat steps 2 and 3 at each drain being tested.

5. Document all observations and submit report to project manager, UEM Mechanical Distribution and EHS.

6. Dye Testing Tips:
    a. Liquid dye tracers include Kingscote Bright Dyes and Plant Pro Water Tracing Dyes available from Grainger or Pollard Water
    b. Test each drain individually by adding dye to the drain and waiting to observe in manhole or sump before proceeding to the next drain.
    c. Alternate the colors of dye so observers know the colored water seen is coming from the current drain being tested.
    d. The dye can be removed from the solution by adding chlorine. Add 4 grams of 12% bleach for every gram of dye in the solution.
    e. Ensure dye is observed at the final outfall of the building (i.e. nearest exterior sanitary or storm manhole, or storm drain outfall at the creek).

Test Results

1. If dye is observed in the sanitary sewer sump, cleanout, or manhole and *no* dye is observed in the storm drain sump, cleanout, manhole or creek, then the test is successful. Record the results and submit a report as noted below.
2. If *any* dye is observed in the storm drain sump, cleanout, manhole, or creek, immediately identify the Owner and proceed with the following steps (unless directed otherwise):
    a. Narrow the search by retesting about half of the fixtures
    b. Keep retesting until it is determined which fixture(s) or drain(s) are cross-connected
    c. Take the cross-connected fixtures out of service until they are properly connected to the sanitary sewer system

Test Report:

A written report that documents the activities and results of the test is **required** to be submitted to UEM_Mechanical Distribution and EHS. The format of the report is left up to the reporter; however, at a minimum, the report must contain the following:

1. Plumbing drawings for all drains tested. The drawing should be marked with numbered drains tested that could correspond to a Dye Test Log (example included)

2. A completed Dye Test Log indicating the drains tested and the result of each test.

3. A narrative description of why the Dye Test was performed (i.e. renovation, cross connection, etc.)

4. The results of all drains tested. For any drains that were found to be improperly plumbed, a timeline of necessary corrections needed, and follow up dye testing results to document the corrections made.

5. The report is to be signed with a certification statement stating the validity and accuracy of the report.

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Building/Area Description of Dye Test Location: _____

Fixture number	Fixture Name or Description	Color	Dye In Time	Dye Out Time	Observed in Grease Trap? (Y or N)	Observed in Sump? (Y or N)	Other Information / Notes
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							

Person Performing Dye Test: _____ Date: _____
(Print) (Signature)

Revised Date: 09/23/2014