

City of Chattanooga Water Quality Program



Smoke Testing Standard Operating Procedures (SOP)

PW-SWQ-SOP 03

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Authorized By: **Revision** **Date**

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PURPOSE

The purpose of this document is to provide Standard Operating Procedures (SOP) for smoke testing of sanitary infrastructure, compliance and enforcement of anomaly detection. These procedures shall be followed by Public Works employees throughout the implementation of smoke testing activities. This SOP is to be updated and reviewed annually.

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Introduction

The City of Chattanooga's Municipal Separate Storm Sewer System (MS4) NPDES Permit No. TNS068063 requires the development and implementation of a program "in cooperation with the Chattanooga Waste Resources Division to reduce and eliminate the inflow, infiltration and discharge of sanitary sewage into the storm water system and community waters." The purpose of the program is to identify potential points of pollution and, by communicating with the public, to reduce the discharge of pollutants from sanitary sewerage into the City's MS4 and the waters of the State.

This guide is to serve as a performance standard by which all employees conduct field activities associated with smoke testing.

Smoke Testing Policies

In cooperation with Moccasin Bend WWTP staff, Chattanooga Water Quality Program, WQP, staff will plan on conducting smoke testing every other week when conditions allow. This will hopefully ensure that we reach our goals and continue to address illicit discharges and infiltration problems across the City.

Spot Smoke Testing

The City will conduct selected spot smoking on a quarterly basis. Spot smoke testing will be performed at sites that are in line for compliance letters to guarantee that we have pinpointed the problem and be ready for court cases.

Inter-Departmental Cooperation

It is the responsibility of the WQP staff to follow-up anomalies discovered on private property. It is the responsibility of Waste Resource Division/Interceptor Sewer System, WRD/ISS, to follow-up anomalies discovered on the municipal system. Information regarding the project status and correction of discovered anomalies shall be shared and status reports shall be developed.

Memorandum Of Understanding (MOU)

The July 09 MOU documents the roles and responsibilities of the WRD/ISS and the WQP associated with identification, remediation and elimination of SSOs and Inflow and Infiltration (I&I) and funding obligations of the Combined Sewer Overflow (CSO) mitigation program.

Residential Cleanout Caps/Plugs

If during, or as a result of, smoke testing a residential cleanout cap/plug is found to need replacement, the City will repair the cleanout if deemed cost effective. This will be done at the discretion of the Water Quality staff in respect to available parts. If the residential property has two or more anomalies and all of them can not be repaired for any reason (such as broken clean out that can not be capped or accessible problems such with dog) then none will be repaired.

Vacant Lots

It will be documented as any other anomaly.

A determination will be made as to if there is a likelihood that it is a city property. If it is a city property, then a decision will be made if to put large nails near the anomaly so it can be found with a metal detector in the future. MBWWTP owns a detector.

If it is a city property, a second sheet will be filled out in the field and given to a MBWWTP personal before the end of the day and pictures and other documentation will be sent to them upon return to the office to document the site. MBWWTP personnel will determine the priority of the anomaly.

Nonresidential Lateral Sewage Line repair

All nonresidential sewer line laterals will be documented and letters will be sent. No repairs will be made in the field.

Illicit Discharge

Any illicit discharge in the field will be documented as such. If it is coming from a lateral sewer line then it will also be documented as such. Upon return from the field, proper documentation will be filled out. If it is decided that this needs a city funded emergency repair, purchasing will be notified.

Employee Training, Health and Safety

The employee(s) shall become familiar with the protocols outlined in this SOP. The field team(s) shall have a basic working knowledge of:

- Safety
- Sanitary infrastructure identification
- Record keeping procedures
- Traffic safety protocols (for field team and smokers)
- Smoke testing principles (activities and protocols).

On a yearly basis the Water Quality Manager, or representative, shall review this document to ensure continuing applicability and shall train employees with regards to proper inspection activities.

Safety is our first concern

Smoke testing activities present a variety of potentially hazardous situations. As a result of the innate hazard potentials, special attention should be paid with regards to employee safety. General safety equipment and protocol shall include:

- Fully equipped first aid kit
- Radio or cell phone
- List of emergency contact names and numbers
- Safety/traffic vest
- Proper dress for weather and field conditions
- Minimize contact with Liquid Smoke and Smoke coming from sewer lines

Smoke Testing Equipment List

What Items are Needed for Inspection?

- Maps of the area
 - Include parcels (labeled), streets (labeled), sewer lines (with directional arrows), and manholes
- Survey Marking Spray paint – to mark discovered anomalies. Paint sticks (with paint cans) are used to mark anomalies in the field
- Flags (if available) (optional)
- Digital Camera/extra charged batteries

- Pens
- I.D. Badge/business cards
- iPAQ (optional)
- Smoke test datasheets to document anomalies (Figure 1)
- Clip board or something to write on (optional)
- Smoke machine
- Communication devices: phone, walkie talkie, etc.
- Gloves

Pre-Inspection Activities

(This is done by Moccasin Been WWTP Staff)

1. Identify area of investigation, create maps and isolate manholes most appropriate to install smoke.
2. Notification:
 - a. Initiate a press release (include councilperson of area to be tested) ten (10) days to two (2) weeks ahead of time, if possible.
 - b. Provide ancillary information such as door hangers, pamphlets, or street signs for public notification, when possible.
 - c. Contact 311 center.
 - d. Contact Fire Dispatch and Administration (providing a list of proposed streets to the inspected and a map).
3. Coordinate activities prior to deployment of smoke.

Field Activities

1. Smoke shall be placed in a designated sanitary main trunk line determined by Waste Resource Division/Interceptor Sewer System (WRD/ISS).
2. Ground Crews should include two (2) people. There should be at least two (2) ground crews able to canvas the smoke test area for each smoke test. The number of staff necessary to cover the field activities shall be governed the size of the area that is smoked. We usually try to have three teams of two for most non-spot smoke trips. **ALWAYS HAVE TWO PEOPLE. NO ONE INVESTIGATES A SECTION ALONE.**
3. Ground crews shall canvas the area looking for smoke emissions in areas other than through the sanitary vent lines of buildings. Smoke emitting from areas such as the ground, side walk, retaining walls, basements, utilities, etc. shall be classified as anomalies.
4. Anomalies will be marked with paint sticks to stay a distance from the smoke exposure. Documentation of the anomaly (ex: address, location in relation to



property, type) shall be completed on the smoke test datasheet (see Figure 1) and/or iPAQ device (if the iPAQ is in the field). **Again, documenting the correct property address is a very important step to guarantee we have the correct property owner.**

5. Photographic documentation **MUST** be made. Photographs shall include the anomaly and **ALL distinguishable landmarks**. It is important to thoroughly document anomalies with pictures in order to make the location clear for the property owner and for other WQP staff returning to the site.

6. The sidewalk (or road), at which point an anomaly was discovered, shall be marked with spray paint to designate the presence of the anomaly. In addition to the marking on City structures, the actual location of the anomaly shall be marked. Care shall be taken not to mark buildings or other permanent structures. Mark on pavement/sidewalk, if possible, an arrow that points to the anomaly. If it has not been repaired place a line through it creating an **X**.



An arrow with a line thru it means it has not been repaired

7. After the anomalies have been documented with the smoke in a sub area, the smoke will be turned off and a crew (the same crew or different) will investigate if the anomalies are to or can be repaired on site.
8. Any 'city property anomalies' found in the field should be noted and documented and Sandy Barbee (or other MBWWTP that is supervising in the field) should be notified and she/he will make a decision in the field what level of priority it is to the city. We will send her/him pictures and a pdf of the field sheet when we return to the office to remind her.

Post-Inspection

1. Data associated with the smoke testing shall be assimilated for data entry and subsequent follow-up. All addresses shall be double-checked in accordance with GIS, and corrections should be made on the smoke test data sheets. The data sheets shall then be given to those in charge of updating the information in the database, GIS layer and the spreadsheet.
2. **Photographs:** Label photos and place into the correct folder under the correct street folder in the L:\SMOKETEST\Smoke Test Photos\Streets. If there is no folder corresponding to the property address, a new one may be created, and labeled with the street address only.(See **Appendix A** for labeling specifics)
3. **Property information:** Information such as ownership, type and location of anomaly, etc. shall be entered into the database. One (1) person shall be designated to update the database, the GIS layer and the spreadsheets. Non-compliance associated with anomalies discovered shall result in enforcement. (See **Appendix B** for database specifics)
4. Within three (3) weeks of the original smoke test, notification letters shall be sent to property owners in which an anomaly was discovered. (See **Appendix C** for letter specifics)
5. **Follow-up investigation and communication:**
After the Water Quality staff is notified of a repair being performed at a specific address a Water Quality staff member shall be assigned to check this property, or conduct a “Follow up Inspection”.

The member of the staff that is assigned to check on the property should have the following items with them:

1. A copy of the original photos that were taken the day of the smoke test.
2. A camera with charged batteries.
3. A note pad with the address and space to write notes if needed.
4. Upon returning to the office, all responsible Water Quality Staff members should be notified via e-mail with the details of the Follow up Inspection so updates may be promptly made.
5. The staff member is also liable for labeling the new photos (follow up or closed), and making sure they are placed in the proper folder (under post-inspection 2, page 8 of this SOP)

If while conducting the Follow up Inspection the anomaly or reported repair can not be found, then a spot smoke of this property may be conducted.

Court Cases

Those property owners that have not responded in the specific time delineated in the letters (see **Appendix A**) or have not repaired the anomalies that were found during the smoke testing will be taken to court under the citations of:

City Code Section 31-345(c) which states *“It shall be unlawful for any person to: ...(c) fail or refuse to comply with any lawful notice to abate issued by the Manager, which has not been timely appealed to Storm Water Regulation Board, within the time specified by such notice;”*

In addition, City Code Section 31-342 (c) (6) that states *“it shall be unlawful for any person to ... discharge ... sewage, industrial wastes or other wastes into waters, or a location from which it is likely that the discharged substance will move into waters;”*

For those properties that will be cited to court a special folder should be prepared with ALL photos, letters, and property tax information that is available to us. Before a landowner is taken to court, the property shall be **spot smoked** to verify the anomalies' locations and that they have not been repaired.

Grant Money (CDBG or City funds):

At the point that a property owner has received a compliance letter they are ineligible to receive CDGB city assistants grant money.



SMOKE TEST COLLECTION DATA SHEET

DATE:

Address:						# of photos
Anomaly(s) Location:						Residential
						Business
PVC CLAY METAL						
Type of Anomaly:	Other	Cleanout Stubout	Ground	Foundation	Sidewalk	Drainageway
	Retaning Wall	Catchbasin	Manhole	Roof Gutters	Utility Pole	Utily Meter
Initials:						

Address:						# of photos
Anomaly(s) Location:						Residential
						Business
PVC CLAY METAL						
Type of Anomaly:	Other	Cleanout Stubout	Ground	Foundation	Sidewalk	Drainageway
	Retaning Wall	Catchbasin	Manhole	Roof Gutters	Utility Pole	Utily Meter
Initials:						

Address:						# of photos
Anomaly(s) Location:						Residential
						Business
PVC CLAY METAL						
Type of Anomaly:	Other	Cleanout Stubout	Ground	Foundation	Sidewalk	Drainageway
	Retaning Wall	Catchbasin	Manhole	Roof Gutters	Utility Pole	Utily Meter
Initials:						

Address:						# of photos
Anomaly(s) Location:						Residential
						Business
PVC CLAY METAL						
Type of Anomaly:	Other	Cleanout Stubout	Ground	Foundation	Sidewalk	Drainageway
	Retaning Wall	Catchbasin	Manhole	Roof Gutters	Utility Pole	Utily Meter
Initials:						

Sheet:

Figure 1: Smoke Test Collection Data Sheet
 L:\SMOKETEST\Smoke Test Letters\Templates\Smoketest data sheet.pdf

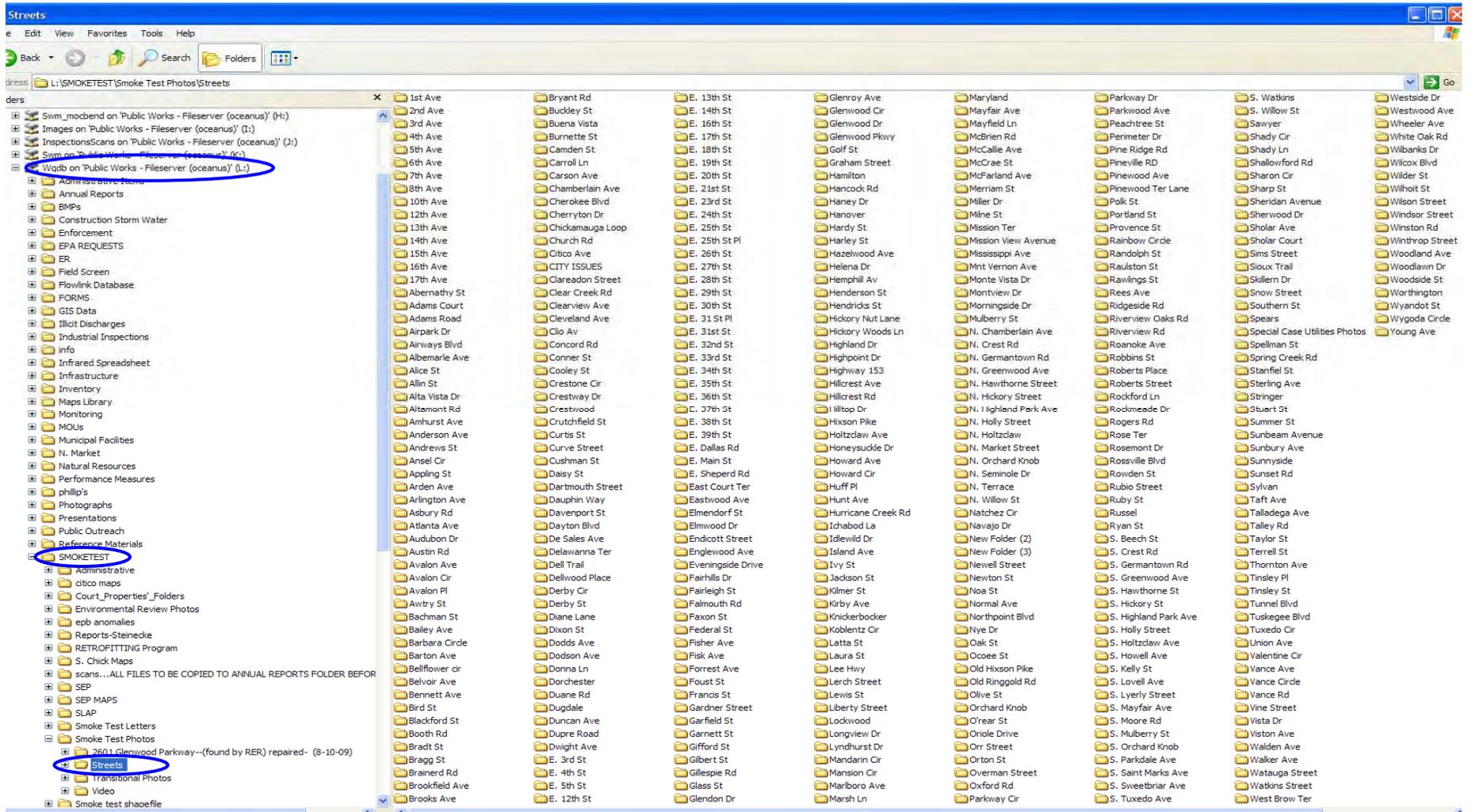


Figure 2: Photo Placement

Appendix A

Community Development Block Grants

The funds for each fiscal year are limited and the grant is meant to address anomalies in residential sewer lateral lines that are discovered during routine city wide smoke testing.

- Property owner will need to contract the water quality office and request a SLAP application and completely fill it out.
- Pertinent information will be collected and updated: income eligibility, tax payments, etc.
- The properties will be presented, first come, first serve, to Neighborhood Services to determine eligibility for CBDG HUD Grant money.
- If after approval/disapproval the Water Quality Program Manager will decide if properties are eligible for funding with other monies.
- Some outstanding eligibility problems will be: floodplain problems, city employees, etc. and others.

If at all possible, the camera in the field should stay with the clipboard datasheets. This will give some consistency to the effort.

* The more pictures to get a complete lay of the area the better.

* **PLEASE TAKE A PICTURE OF THE ANOMALY WHILE IT IS SMOKING ESPECIALLY ONES THAT COULD POSSIBLY BE CITY ISSUES.** This will help determine the amount of smoke and better rate the City anomaly.

Photograph taking sequence

- When an anomaly is found and after it is marked:
 - Picture number one should be the anomaly that has been marked. A reference picture that shows where the anomaly is in reference to the house or the site (if it is in a field) and last picture of the anomaly sequence should be a picture of the **house number or mail box number** that clearly shows the address of the anomaly. You might have other pictures in this sequence of the area, but the address picture should end this sequence. The next anomaly should start after the address picture of the last and also end with the address picture.

Photograph labeling and placement:

- After the pictures are downloaded to your computer label them with the address and date (if the address is a 0000 place the tax map number in parentheses (*) before the data
Ex: 0000 Some Street (123A B 456) mm-dd-yy

- After the photos are properly labeled they should be placed in a folder labeled with just the street address (ex. 1234 Some Street). Leaving off the date will be okay at this point because other photos with different dates will be placed in this folder as well.
- Then move that folder to the Water Quality Database folder on the WQDB server. Under the folder marked SMOKETEST Photos place the pictures in the subfolder named Streets in the folder corresponding to the address. (Figure 2).
- If a follow-up inspection is conducted in which the anomalies have been repaired, then the photos should be labeled with the street address, date, and the CLOSED label, and then placed into the proper folder.

Appendix B

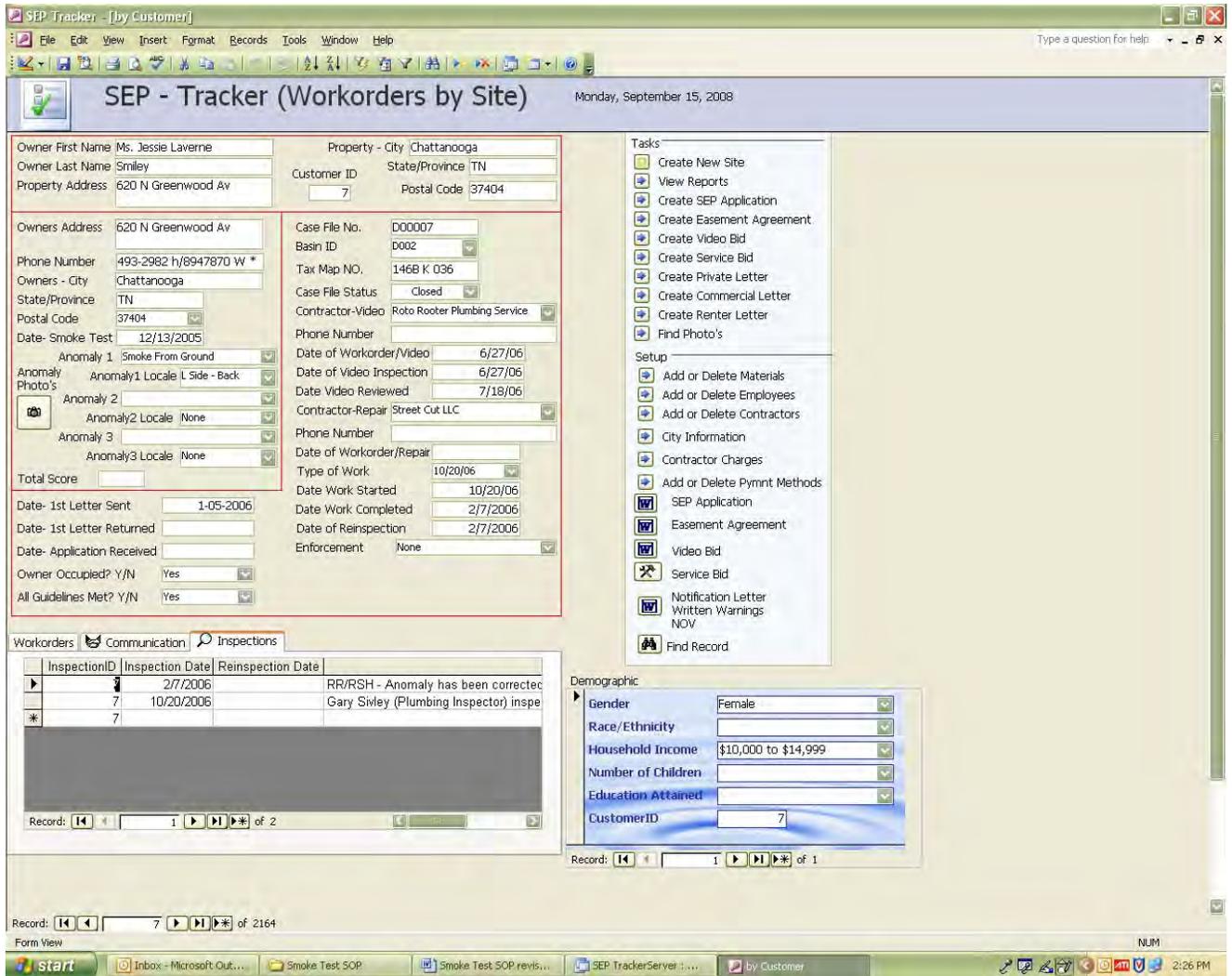


Figure 3: SEP – Tracker database

“SEP – Tracker” Database

Smoke testing data is held in a Microsoft Access database entitled “SEP – Tracker” (figure 3), GIS, and on a spreadsheet. For proper QA/QC, one (1) team member shall be designated to update all three after a smoke test. When all teams have labeled and placed the photos in the proper place, the original smoke test collection data sheets should be given to the designated person to double check all addresses and photos of properties then input the information into the database, GIS layer and the spreadsheet.

All correspondence information shall be recorded in the correspondence part of the database under the corresponding ID number of the address with the anomaly.

To open the SEP – Tracker: Go to the Water Quality Database (wqdb) drive – Water Quality Database – SEP – SEP TrackerServer.mdb (L:\Water Quality Databases\SEP\SEP TrackerServer.mdb). The database has been password protected to

insure the right of privacy and to make sure only one person can be in the database at one time.

The SEP – Tracker is designed to hold all relevant information for each property,

1. Property owners' name
 - a. First and last name
 2. Property address
 - a. Get information from the GIS layer and then double check with Telnet using the Tax Map Number from GIS
 - b. Street, city, state and postal code
 3. Owners mailing address
 - a. Get information from the GIS layer and double check with Telnet using the Tax Map Number from GIS
 - b. Street, city, state, and postal code
 4. Customer ID number is assigned
 - a. This ID is unique in that we started at one (1) and followed in chronological order
 5. Watershed basin ID
 - a. An alphabetical value
 - b. Determined in GIS and noted in the database
 6. Case File number
 - a. A six-digit, alphanumeric value consisting of both the Watershed Basin ID, and the Customer ID
 - b. EX: A01234
 7. Tax Map Number
 - a. Determined in GIS and noted in the database
 8. Phone number
 - a. For the property owner
 9. Date of original smoke test
 - a. In mm-dd-yy format. This should also be noted in the inspection section
 10. Anomaly 1, 2 and 3
 - a. Drop down selection (consisting of: LIST OPTIONS)
 11. The location of the anomaly
 - a. Drop down selection (consisting of: LIST OPTIONS)
 12. Date the first letter was sent out
 - a. This is also noted in the communication section
 13. Date the letter was returned
 - a. This is also noted in the communication section
- and to hold all of the information for the SEP and/or CDBG program information,
14. Date of the Application sent out (if applicable)
 - a. In mm-dd-yy format
 15. Owner occupied

- a. Drop down Y/N
- 16. All guidelines met
 - a. Drop down Y/N
- 17. Contractor- Video
 - a. Contractors name
- 18. Phone number
 - a. For the contractor
- 19. Date of workorder/Video
 - a. mm-dd-yy
- 20. Date of Video Inspection
 - a. mm-dd-yy
- 21. Date Video Reviewed
 - a. mm-dd-yy
- 22. Contractor-Repair
 - a. Name of contractor
- 23. Phone number
 - a. For the contractor that repaired the line
- 24. Date of workorder/Repair
 - a. mm-dd-yy
- 25. Type of work
 - a. Drop down
- 26. Date work Started
 - a. mm-dd-yy
- 27. Date work completed
 - a. mm-dd-yy
- 28. Date of reinspection
 - a. mm-dd-yy
 - b. This field should be filled in all closed cases. The Inspections field also needs to have all pertinent information, ex. The inspectors name and what date it was inspected
- 29. Enforcement
 - a. What type of letter did we send out last, ex. Notification, Warning, Notice of Violation (NOV), or Compliance.
- 30. Payments
- 31. Invoice Preview

and any other pertinent information.

- 32. Case file status
 - a. Drop down
 - i. Active, Closed, Other
- 33. Workorders
- 34. Communication
 - a. Any type of communication should be noted here
 - i. Written, oral, or email communication with a plumber (about the property) or with the home owner themselves.

35. Inspections

- a. Should have the date of the original smoke test and any inspections of the property. It should also have a note of who was the inspector of the property in question and the notes that are pertinent to the property.

36. Demographics (all are drop down)

- a. Gender
- b. Race/Ethnicity
- c. Household income
- d. Number of children
- e. Education attained
- f. Customer ID

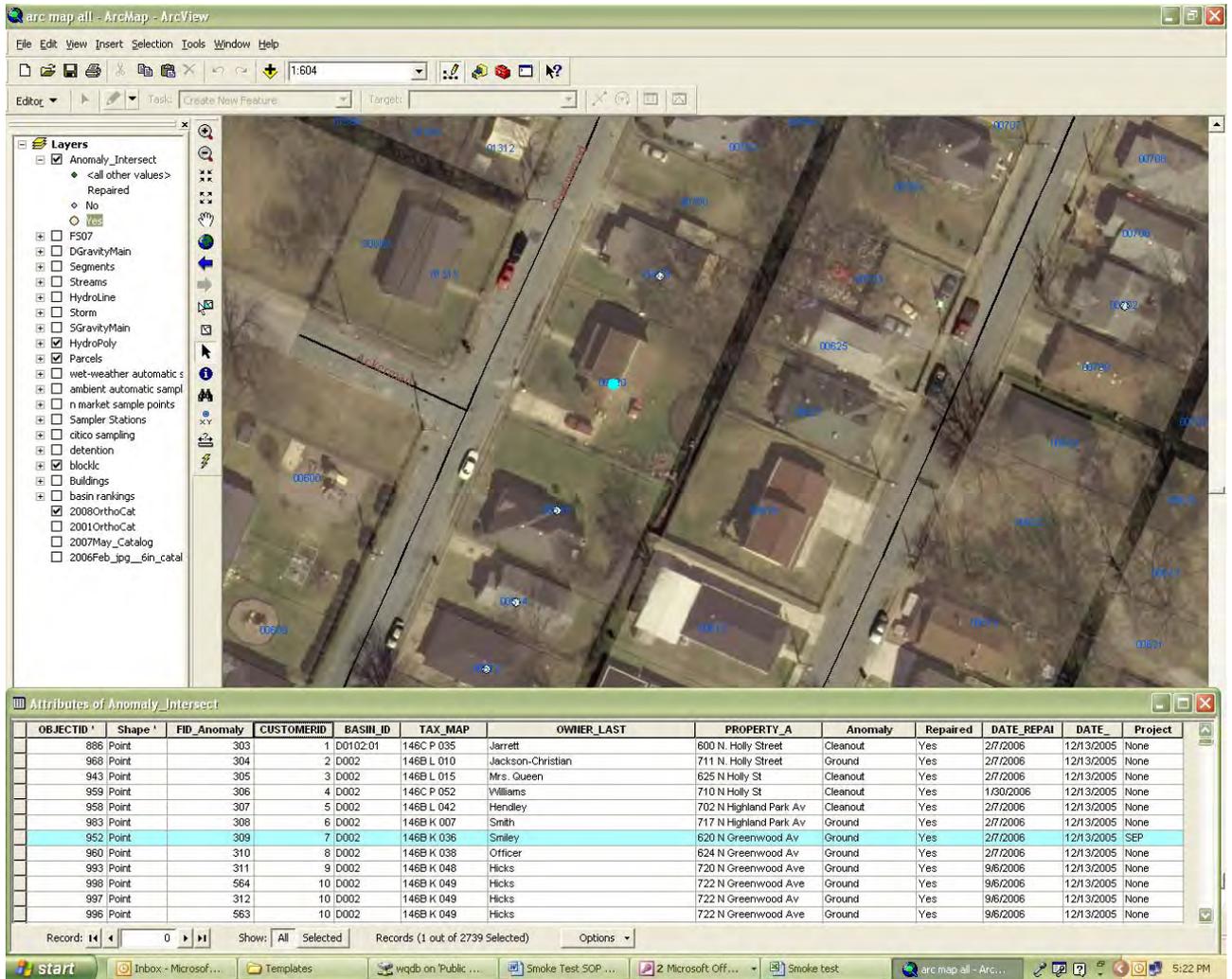


Figure 4: The GIS layer

GIS layer update

Data shall be put into the SEP – Tracker database at the same time as it is being put into the GIS layer and Excel spreadsheet. The layer should be edited and a point shall be added to the property for each anomaly. One ID will be added for up to three (3) anomalies that are reported in the data base.

All of the following information needs to be added to the attribute table:

Customer ID – the customer ID from the SEP - Tracker

Basin ID – from GIS

Tax_map – from GIS

Owner_last – from GIS

Property address – from GIS

Anomaly – from the team notes

Repaired – drop down

Date repair – (mm-dd-yyyy)

Date – the original smoke test (mm-dd-yyyy)

Project – is it being repaired by a city founded project? If so which one?

Smoke test Microsoft Excel spreadsheet

As the SEP – Tracker and the GIS layer are being updated the smoke test Excel spreadsheet shall also be updated. Because of Excel's sorting capabilities, the spreadsheet is used to determine which properties should receive which type of letter and when they should receive them.

Oftentimes a case will be closed in between the time letters are generated and the time they are printed, signed, scanned, and ready to be mailed. To prevent these letters from being mailed, the spreadsheet should not be updated until the letters are ready to be mailed.

Appendix C

Letters and E-mails

All letters are generated through a Microsoft Word mail merge template system using the information from the SEP – Tracker data table. All mail merges are e-mailed to the manager for revisions. After the merge is revised the letters should be printed and signed. The signed letters shall be scanned and two (2) sets of copies made for the Water Quality program secretary.

A copy of the scanned documents file (as a whole) should be made and placed into the corresponding Permit Year and watershed folders inside the “Annual Reports” folder, which can be found at: L:\Annual Reports. The original file should be split into individual letter files, and each one placed into the corresponding “Streets” folder along with the letters, which can be found at: L:\SMOKETEST\Smoke Test Letters\Streets. (Figure 5)

Notification letters:

Notification letters should be written within three (3) weeks of the day smoke testing was conducted.

The letters should be broken up into four (4) groups: owner with cleanout issues; owner with ground issues; rentals with cleanout issues; rentals with ground issues. (Also make sure to note in which watershed the properties lie.)

The notification letter states:

“You are **required to investigate** the defectiveness of your sanitary sewer service line and have **repairs** made as needed to prevent infiltration **within 30 days** of your receipt of this letter. Any work other than the simple replacement of a cleanout cap must be completed by a licensed plumber and inspected by a City of Chattanooga Plumbing Inspection official. *When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.* Additionally, we are requiring all non-sanitary discharges such as roof drains and basement sump pumps and drains be separated from the sanitary sewer system.”

“Non-compliance with sanitary service lateral repairs may result in future enforcement actions.”

“Failure to notify this office upon completion of the repair will result in further correspondence concerning this matter.”

A copy of the scanned documents file (as a whole) should be made and placed into the corresponding Permit Year and watershed folders inside the “Annual Reports” folder, which can be found at: L:\Annual Reports. The original file should be split into individual letter files, and each one placed into the corresponding “Streets” folder along

with the letters, which can be found at: L:\SMOKETEST\Smoke Test Letters\Streets. In addition, the staff should scan the envelope with both the address and ID number visible and save it in the "Letters" folder with all other e-mails and letters that have been scanned and/or saved.

Warning Letters:

Warning letters should be sent 35 days after the Notification letters, if possible no later than 55 days. Warning letters should be sent out in the Certified Mail.

These letters should be broken up into watersheds.

The Warning letters state:

“Failure to respond to the previous notice constitutes a violation of Chattanooga City Code Section 31-345(c). In order to come into compliance with City Code, you are required to repair your sanitary sewer line at your property within 10 days of receiving this Written Warning and/or attend, on Month day, year at 10:00 AM, a **Compliance Review Meeting with this office at the Development Resources Building, 1250 Market Street, Room 1A. *When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.*”**

“Failure to respond to this Written Warning and/or failure to correct this violation will result in enforcement actions that may include court citations and/or the issuance of civil penalties.”

“Failure to notify this office upon completion of the repair will result in further correspondence concerning this matter.”

In the case the Warning letter is returned. One (1) certified letter and one (1) non-certified letter of the same content will be sent.

If the Certified letter is not returned but the Non-Certified letter is, the next legal action (letter) should be pursued. In the case both letters are returned, and to determine if there has been a change in the property's status, all address information should be compared with that of both (Chattanooga) City and (Hamilton) County Tax records, by the Water Quality staff, as is the case with other returned letters.

If there has been no change in status of the property the next legal action (letter) should be pursued.

If there is a change in status of the property, the letter process will start over; a Notification letter will be sent to the new owner and/ or new mailing address.

In addition, the staff shall scan the envelope with both the address and ID number visible and save it in the “Letters” folder with all other e-mails and letters that have been scanned and/ or saved.

Notification of Violation (NOV):

The Water Quality staff shall wait until 5 days after the compliance meeting has been held, if possible no later than 15 days to send a Notification of Violation (NOV). All NOV letters should be Certified Mail.

These letters state:

“Failure to respond to the previous notices constitutes a **violation** of the City Code Section 31-345(c). In order to come into compliance with City Code, **you are required to repair your sanitary sewer line immediately and to contact this office within 7 days of receiving this letter to have the repair inspected by my staff.** *When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.*”

“Failure to respond to this **NOV** will result in **court citations** and/or the **issuance of civil penalties.**”

In the case the NOV letter is returned one (1) certified letter and one (1) non-certified letter of the same content should be sent.

If the Certified letter is returned, but the Non-Certified letter is not, the next legal action (letter) should be pursued. In the case both letters are returned, and to determine if there has been a change in the property’s status, all address information should be compared with that of both (Chattanooga) City and (Hamilton) County Tax records, by the Water Quality staff, as is the case with other returned letters.

If there has been no change in status of the property the next legal action (letter) should be pursued.

If there is a change in status of the property, the letter process will start over; a Notification letter will be sent to the new owner and/ or new mailing address.

In addition, the staff shall scan the envelope with both the address and ID number visible and save it in the “Letters” folder with all other e-mails and letters that have been scanned and/ or saved.

Compliance Order:

Compliance Order letters shall be mailed within eight (8) weeks of a court date being set. All Compliance Orders should be Certified mail. The Water Quality team shall have, at this time, tried to contact the home owners up to, but not limited to, at least five (5) times by means of mail. In addition, the Water Quality team shall have at this time re-smoked the property to make sure that the anomalies have not been repaired. If the Certified NOV has not been returned, the Compliance Order should be sent out __days after a spot smoke test has been done and eight (8) weeks before a court date being set.

The Compliance Order states:

“Failure to respond to the previous notices constitutes a **violation** of the City Code Section 31-345(c) which states *“It shall be unlawful for any person to: ...(c) fail or refuse to comply with any lawful notice to abate issued by the Manager, which has not been timely appealed to Storm Water Regulation Board, within the time specified by such notice;”*

“In addition, you have failed to comply with City Code Section 31-342 (c) (6) that states *“it shall be unlawful for any person to ... discharge ... sewage, industrial wastes or other wastes into waters, or a location from which it is likely that the discharged substance will move into waters;”*

“In order to come into compliance with City Code, you are required to repair your sanitary sewer line immediately and to contact this office within 7 days of receiving this letter to have the repair inspected by my staff.”

“Failure to respond to this **Compliance Order** or **appeal it in writing** within **fourteen (14) days from receiving this letter** will result in **court citations** and/or the **issuance of civil penalties.**”

Consider: In the case the Compliance Order is returned, and to determine if there has been a change in the property’s status, all address information should be compared with that of both (Chattanooga) City and (Hamilton) County Tax records by the Water Quality staff, as is the case with other returned letters.

If there has been a change in status of the property, the letter process will start over; the new owners should receive a Notification letter.

However, if there has been no change in status of the property and the mailing address lies *within* Hamilton County limits, a Water Quality team of two (2) shall attempt a hand-delivery the letter. If the mailing address lies *outside* Hamilton County, one (1) certified letter and one (1) non-certified letter of the same content should be sent.

In addition, the staff shall scan the envelope with both the address and ID number visible and save it in the “Letters” folder with all other e-mails and letters that have been scanned and/ or saved.

Repair Inspection:

The repair inspection letter shall only be sent out in the instance that a land owner requests one to be sent to them. At that point the Water Quality staff shall send a Repair Inspection letter stating:

“The City of Chattanooga Water Quality Program (City) staff inspected your sanitary sewer lateral line repair. Your sanitary sewer line deficiencies were discovered by City’s staff during the smoke test of the main sewer line that was conducted in ____ Creek watershed on «Date_Smoke_Test». The City of Chattanooga appreciates the resources you provided to repair your sanitary sewer line. This repair will contribute toward reducing potential sanitary discharges into _____ Creek watershed and eliminate any stormwater infiltration into the City’s sanitary system.”

Replacement of Cleanout Cap(s)

The replacement of cleanout caps shall be sent within 3 weeks when a residential missing/broken **cleanout cap/plug** is discovered and Water Quality staff determines that the repair can be made with current resources.

Please help the City by maintaining the integrity of our sanitary sewer system by taking precaution when mowing and/or parking in your lawn so as not to damage the new/replaced cleanout cap. If, upon future inspections by the City, the newly replaced cap is found to be damaged, enforcement actions such as civil penalty (3 times the City enforcement costs) and/or court citations would be pursued.

E-mails:

All e-mails shall be saved! Any email that pertains to smoke testing shall be saved and placed into either the address folder it pertains to or into the folder marked e-mail under a folder pertaining to the significance of the e-mail. Ex. all e-mails pertaining to smoke testing dates and to the area we will be smoke testing should go into the folder marked smoke testing in the e-mail folder.

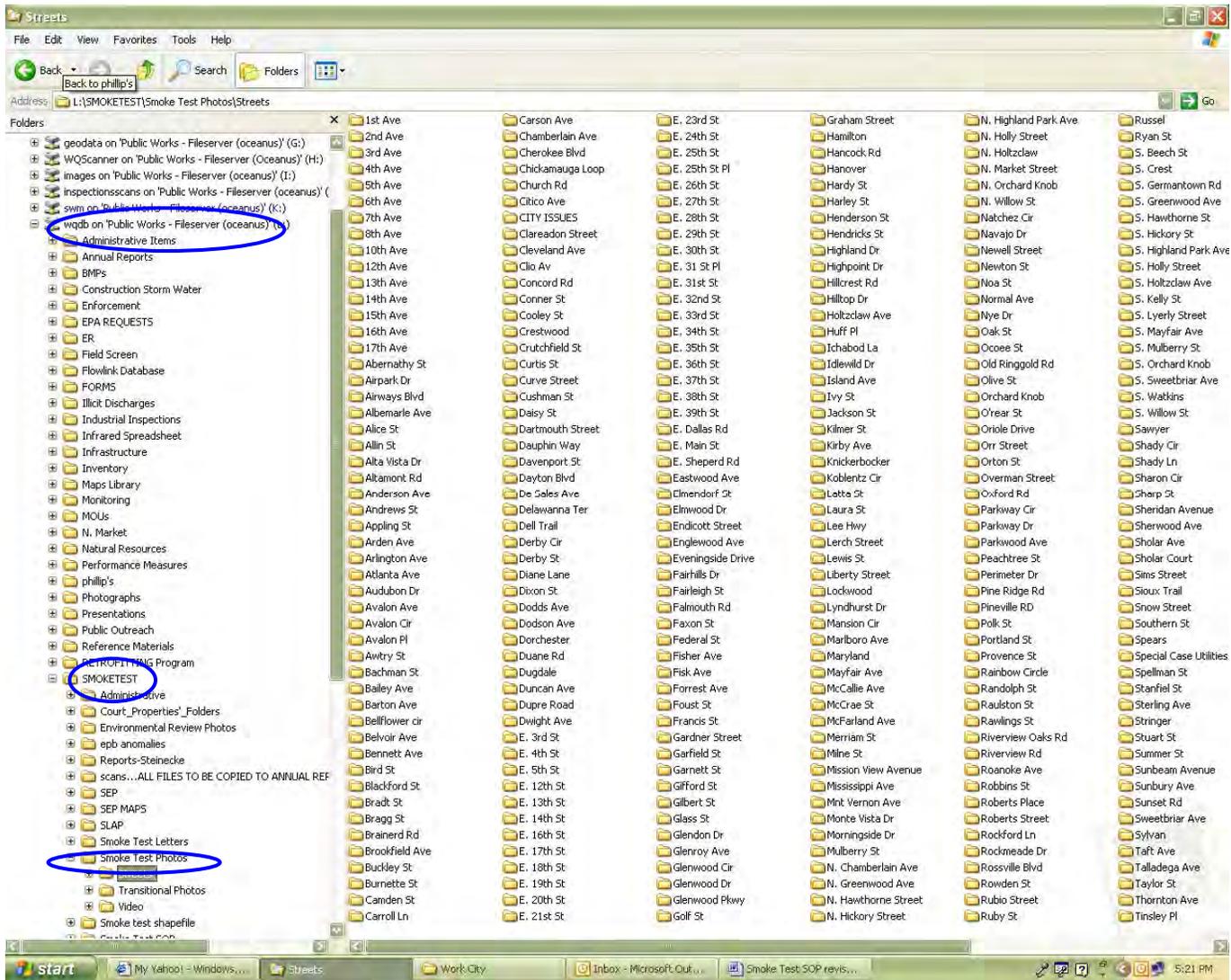


Figure 5: Letter and e-mail placement

All of the letters are as follows in their entirety as they are mailed.



Example Letter
**Notification of Potential Discharge from
Sanitary Sewer Line)**

City of Chattanooga

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100

Chattanooga, Tennessee 37402-2713

July 3, 2008

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners_City», «StateProvince1» «Postal_Code1»

Re: Notification of Potential Discharge from Sanitary Sewer Line

Address: «Owners_Address»
Parcel #: «Tax_Map_NO»
Case File #: «Case_File_No»

Dear «Owner_First_Name» «Owner_Last_Name»

On *July 2, 2008* the City of Chattanooga (City) conducted smoke testing on sanitary sewers in the Tennessee River area. The purpose of this activity was to identify possible breaks/defects in the sanitary sewer system. Smoke placed in the main sanitary sewer trunk line was observed escaping from your property; indicating that your sanitary service line has some defects and is possibly leaking sanitary sewage into the City of Chattanooga storm water system and into Tennessee River area. Additionally, defective sanitary service lines provide a possible source of infiltration of storm water into the City's sanitary system during a heavy rain event, which can potentially cause overflowing of sanitary sewage.

You are **required** to **investigate** the defectiveness of your sanitary sewer service line and have **repairs** made as needed to prevent infiltration **within 30 days** of your receipt of this letter. Any work other than the simple replacement of a cleanout cap must be completed by a licensed plumber and inspected by a City of Chattanooga Plumbing Inspection official. *When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.* Additionally, we are requiring all non-sanitary discharges such as roof drains and basement sump pumps and drains be separated from the sanitary sewer system.

Enclosed are an information brochure about pollution prevention and a fact sheet about Smoke Testing for your review.

Non-compliance with sanitary service lateral repairs may result in future enforcement actions. Therefore, it is necessary that **you comply** with this letter by attending the informational meeting if you are interested in applying for the financial assistance and conduct the appropriate repair to your sanitary sewer line.

Upon completion of sanitary service lateral repairs and if you have any questions or need additional assistance, please contact **Mr. Ray Harrington** (Water Quality Technician) at **(423) 643-5877** / email at harrington_r@chattanooga.gov or **Kim McClurkin** (Public Relations/Education Coordinator) at **(423) 643-6187**.

Failure to notify this office upon completion of the repair will result in further correspondence concerning this matter.

Sincerely,

Mounir Y. Minkara, Ph.D., P.E.
Water Quality Manager
Water Quality Program

cc: Gary Sivley, Plumbing Inspector, City of Chattanooga (Electronically)

Enclosures: Smoke Testing Fact Sheet
Healthy Chattanooga Brochure



City of Chattanooga
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100
Chattanooga, Tennessee 37402-2713

August 28, 2008

Certified Mail:

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners__City», «StateProvince1» «Postal_Code1»

Re: Written Warning
CITY CODE, CHAPTER 31, ARTICLE VIII, DIVISION 6
Sec. 31-345 (c). Unlawful acts, misdemeanor
Parcel: «Tax Map NO»
Property Location: «Property Address»
Case File #: «Case_File_No»

Dear «Owner_First_Name» «Owner_Last_Name»:

On «*Date_Smoke_Test*» my staff, while performing smoke test for broken or leaking sanitary sewer service lines, observed a sanitary sewer pipe at your property that was not capped properly and could potentially discharge sewage into the City of Chattanooga Stormwater System. A notification letter/notice was sent to your attention on «*Date_1st_Letter_Sent*» to correct this problem within 30 days of the receipt of that notification letter. As of this date, **no repairs were made.**

Failure to respond to the previous notice constitutes a violation of Chattanooga City Code Section 31-345(c). In order to come into compliance with City Code, you are required to repair your sanitary sewer line at your property within 10 days of receiving this Written Warning and/or attend, on **September 18, 2008 at **10:00 AM**, a **Compliance Review Meeting with this office at the Development Resources Building, 1250 Market Street, Room 1A.** When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.**

«Property Address»: «Case File No»



Failure to respond to this **Written Warning** and/or failure to correct this violation will result in enforcement actions that may include **court citations** and/or the **issuance of civil penalties**.

Upon **completion of the repair** and if you have any questions regarding this letter, please contact **Ray Harrington** at harrington_r@chattanooga.gov or in the office at **643-5877**.

Failure to notify this office upon completion of the repair will result in further correspondence concerning this matter.

Sincerely,

Mounir Y. Minkara, Ph.D., P.E
Water Quality Manager

Ray Harrington
Water Quality Technician II

Cc: William C. Payne, P.E., City Engineer (electronically)
Gary Sivley, Chief Plumbing Inspector, City of Chattanooga (electronically)
Mike Kelley, Tennessee Department of Environment and Conservation, Division of Water Pollution Control, 540 McCallie Avenue, Suite 550, Chattanooga, TN 37402 (electronically)

Example Letter
Notice of Violation (NOV)



City of Chattanooga
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100
Chattanooga, Tennessee 37402-2713

September 15, 2008

Certified Mail:

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners__City», «StateProvince1» «Postal_Code1»

Re: Notice of Violation (NOV)
CITY CODE, CHAPTER 31, ARTICLE VIII, DIVISION 6
Sec. 31-345 (c). Unlawful acts, misdemeanor
Parcel: «Tax Map NO»
Property Location: «Property Address»
Case File #: «Case File No»

Dear «Owner_First_Name» «Owner_Last_Name»:

On «[Date_Smoke_Test](#)», my staff, while performing smoke tests for broken or leaking sanitary sewer service lines, observed smoke coming from your sanitary sewer pipe at your property that could potentially discharge sewage into the City of Chattanooga Stormwater System. A notification letter/notice was sent to your attention on «[Date_1st_Letter_Sent](#)» to correct this problem within 30 days of the receipt of that notification letter. A Written Warning was sent to you on [5/22/07](#) to have the repair made and/or attend a Compliance Review Meeting. As of this date, **no repairs were made and you failed to attend the Compliance Review Meeting** on [6/12/07](#).

Failure to respond to the previous notices constitutes a **violation** of the City Code Section 31-345(c). In order to come into compliance with City Code, **you are required to repair your sanitary sewer line immediately and to contact this office within 7 days of receiving this letter to have the repair inspected by my staff.** *When hiring a plumber, we strongly suggest that you obtain at least three (3) repair cost estimates from three (3) different plumbers.*

«Property Address»: «Case File No»



Failure to respond to this **NOV** will result in **court citations** and/or the **issuance of civil penalties**.

If you have any questions regarding this letter, please contact **Ray Harrington** in this office at **643-5877** / email at harrington_r@chattanooga.gov. Please refer to Case File # «Case_File_No» in future correspondence.

Sincerely,

Mounir Y. Minkara, Ph.D., P.E.
Water Quality Manager

Ray Harrington
Water Quality Technician II

Cc: William C. Payne, P.E., City Engineer (electronically)
Gary Sivley, Plumbing Inspector, City of Chattanooga (electronically)
Mike Kelley, Tennessee Department of Environment and Conservation, Division of Water Pollution Control, 540 McCallie Avenue, Suite 550, Chattanooga, TN 37402 (electronically)



City of Chattanooga

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100
Chattanooga, Tennessee 37402-2713

January 17, 2007

Certified Mail:

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners_City», «StateProvince1» «Postal_Code1»

**Re: Compliance Order
CITY CODE, CHAPTER 31, ARTICLE VIII, DIVISION 6
Sec. 31-342 (c) (6). Prohibition of pollutant discharge
Sec. 31-345 (c). Unlawful acts, misdemeanor
Address: «Property_Address»
Parcel #: «Tax_Map_NO»
Case File #: «Case_File_No»**

Dear «Owner_First_Name» «Owner_Last_Name»:

On «Date_Smoke_Test», my staff, while performing smoke tests for broken or leaking sanitary sewer service lines, observed smoke coming from your sanitary sewer pipe at the above referenced property that could potentially discharge sewage into the City of Chattanooga Stormwater System. A Notification Letter was sent to your attention on «Date_1st_Letter_Sent» to correct this problem within 30 days of the receipt of that notification letter. A Written Warning was sent to you on August 18, 2006 to have the repair made and/or attend a Compliance Review Meeting. Also, a Notice of Violation (NOV) was mailed to you on September 28, 2006 to have your sanitary lateral repaired as needed. As of this date, **no repairs were made and you failed to respond to the various lawful notices issued to you.**

Failure to respond to the previous notices constitutes a **violation** of the City Code Section 31-345(c) which states "*It shall be unlawful for any person to: ... (c) fail or refuse to comply with any lawful notice to abate issued by the Manager, which has not been timely appealed to Storm Water Regulation Board, within the time specified by such notice;*"

In addition, you have failed to comply with City Code Section 31-342 (c) (6) that states "*it shall be unlawful for any person to ... discharge ... sewage, industrial wastes or other wastes into waters, or a location from which it is likely that the discharged substance will move into waters;*"

In order to come into compliance with City Code, you are required to repair your sanitary sewer line immediately and to contact this office within 7 days of receiving this letter to have the repair inspected by my staff.

«Property_Address»: «Case_File_No»



Failure to respond to this **Compliance Order** or **appeal it in writing** within **fourteen (14) days from receiving this letter** will result in **court citations** and/or the **issuance of civil penalties**.

If you have any questions regarding this letter, please contact **Ray Harrington** at harrington_r@chattanooga.gov or in the office at **643-5877**. Please refer to Case File # «Case_File_No» in future correspondence.

Sincerely,

Mounir Y. Minkara, Ph.D., P.E.
Water Quality Manager
Water Quality Program

Cc: William C. Payne, P.E., City Engineer (electronically)
Gary Sivley, Plumbing Inspector, City of Chattanooga (electronically)
Mike Kelley, Tennessee Department of Environment and Conservation,
Division of Water Pollution Control, 540 McCallie Avenue, Suite 550,
Chattanooga, TN 37402



City of Chattanooga
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100
Chattanooga, Tennessee 37402-2713

Date

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners_City», «StateProvince1» «Postal_Code1»

Re: Sanitary Sewer Line Repair – **Repair Inspection**

Property: «Property Address»
Parcel #: «Tax Map NO»
Case File #: «Case File No»

Dear «Owner_First_Name» «Owner_Last_Name»:

The City of Chattanooga Water Quality Program (City) staff inspected your sanitary sewer lateral line repair. Your sanitary sewer line deficiencies were discovered by City's staff during the smoke test of the main sewer line that was conducted in **Citico Creek** watershed on **«Date_Smoke_Test»**. The City of Chattanooga appreciates the resources you provided to repair your sanitary sewer line. This repair will contribute toward reducing potential sanitary discharges into **Citico Creek** watershed and eliminate any stormwater infiltration into the City's sanitary system.

Feel free to contact **Mr. Ray Harrington** (Water Quality Technician) by phone at **(423) 643-5877** or by e-mail at harrington_r@chattanooga.gov for any further information or assistance.

Sincerely,

Mounir (Mo) Y. Minkara, Ph.D., P.E.
Water Quality Manager
Water Quality Program



City of Chattanooga

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT RESOURCE CENTER
ENGINEERING DIVISION
1250 MARKET STREET, SUITE 2100
Chattanooga, Tennessee 37402-2713

July 31, 2009

«Owner_First_Name» «Owner_Last_Name»
«Owners_Address»
«Owners_City», «StateProvince» «Postal_Code»

Re: Replacement of Cleanout Cap(s)
Address: «Property_Address»
Parcel #: «Tax_Map_NO»
Case File #: «Case_File_No»

Dear «Owner_First_Name» «Owner_Last_Name»:

On «Date_Smoke_Test» the City of Chattanooga (City) conducted smoke testing on sanitary sewers to identify possible breaks/defects in the sanitary sewer system. Smoke placed in the main sanitary sewer line was observed escaping from the **cleanout(s)** on your property, providing a possible source of infiltration of storm water into the City's sanitary system.

The missing/broken **cleanout cap(s)/plug(s)** was (were) replaced by the City Public Works Department staff on «Date_of_Reinspection» as depicted by the following photos. The **photo** to the **left** shows the **missing/broken** cleanout upon discovery; the **photo** to the **right** shows the **new** cleanout cap(s)/plug(s) that was (were) **replaced** by the City.

Please help the City by maintaining the integrity of our sanitary sewer system by taking precaution when mowing and/or parking in your lawn so as not to damage the new/replaced cleanout cap. If, upon future inspections by the City, the newly replaced cap is found to be damaged, enforcement actions such as civil penalty (3 times the City enforcement costs) and/or court citations would be pursued.



«Property Address»: «Case File No»

Enclosed are an information brochure about pollution prevention and a fact sheet about Smoke Testing for your review.

If you have questions about the City Smoke Testing program, feel free to contact **Mr. Ray Harrington** (Water Quality Technician II) at our office at **(423) 643-5877** or by email at harrington_r@chattanooga.gov.

Sincerely,

Mounir Y. Minkara, Ph.D., P.E.
Water Quality Manager
Water Quality Program

cc: Gary Sivley, Plumbing Inspector, City of Chattanooga
(Electronically)

Enclosures: Smoke Testing Fact Sheet
Healthy Chattanooga Brochure

Edited 5-6-10

MATERIAL SAFETY DATA SHEET for HURCOR TECHNOLOGIES, INC. LiquiSmoke™ (RAW liquid NOT the smoke)

SECTION I

Product Identification

TRADE NAME:

Hurco LiquiSmoke™

GENERAL OR GENERIC ID: Hydrotreated Middle Distillate

DOT HAZARD CLASSIFICATION: N/A

CHEMICAL FORMULA: Proprietary

This material is in compliance with the
Toxic Substances Control Act (15 USC 2601—2629).

SECTION II

Composition, Information on Ingredients

INGREDIENT: Hydrotreated Middle Distillate

CAS #: 64742-46-7

PERCENT: 100

EXPOSURE INFORMATION

Ingredients ACGIH TLV STEL OSHA PeI STEL

Hydrotreated Middle Distillate 100 mg/m³ NA NA

Exposure limits expressed as 8-hour TWA concentrations in either parts
per million (ppm), or milligrams per cubic meter (mg/m³).

SECTION III

Hazards Identification

ROUTES OF ENTRY

Inhalation: Yes

Skin: Yes

Ingestion: Yes

EXPOSURE EFFECTS

Symptoms of Exposure: Headache, drowsiness, eye, respiratory
or skin irritation, nausea, numbness.

Acute Exposure Effects: Ingestion may cause nausea, vomiting and

diarrhea.

Chronic Exposure Effects: Dermatitis, pneumonitis & pulmonary
edema.

MEDICAL CONDITION

Aggravated by Exposure: NA

Carcinogen Status: No

NTP: No

OSHA No

IARC: No

CARCINOGENICITY STMT: According to IARC Monographs, severely Hydrotreated oils, such as this product, are not considered carcinogenic. Nevertheless, good industrial hygienic practices are recommended.

SECTION IV

First Aid Measures

Emergency and First Aid Procedures Remove from contaminated atmosphere. Give artificial respiration if not breathing. Remove contaminated clothing. Thoroughly wash affected areas with soap and water. In case of eye contact, flush eyes with water for 10-15 minutes. SEEK IMMEDIATE MEDICAL CARE.

If swallowed, DO NOT INDUCE VOMITING.

SECTION V

Fire and Explosion Data

Flashpoint: 265°F. (129.43°C) COC

Autoignition Temperature: NA

LEL: NA

UEL: NA

Fire Fighting Procedures: SCBA may be required.

Extinguishing Media: CO₂, Dry Chemical, Foam

Unusual Fire & Explosion Hazards: Water may cause frothing.

SECTION VI

Accidental Release Measures

SPILL/RELEASE INSTRUCTIONS

Eliminate all sources of ignition. Contain with earthen like or petroleum absorbent material. Remove with grounded suction pump to salvage container. Remove all contaminated materials.

SECTION VII

Handling & Storage Information

Keep away from all ignition sources (e.g. heat, flame, sparks, strong oxidizers). Bond and ground container.

SECTION VIII

Exposure Controls/Personal Protection

Engineering Controls: No

Local Exhaust: To control vapors.

Mechanical Ventilation: For Confined Spaces.

Respiratory Protection: NIOSH approved organic vapor

respirator.

Eye Protection: Chemical goggles or face shield.

Glove Protection: PVC/equivalent resistant glove.

Work/Hygienic Practices: Always minimize body contact.

Wash areas of body contact promptly. Use a PVC/equivalent

resistant apron where splash
potential exists.

SECTION IX

Physical & Chemical Properties

Physical Appearance: Water white liquid

Product Odor: Negligible

Specific Gravity <1

Solubility in Water Insoluble

Boiling Point 470°F 243.31°C

Freezing Point (F): NA

Melting Point (F): 30°F -1.11°C

Vapor Pressure: <0.1

Reference: mmHg@70°F

SECTION X

Stability & Reactivity Information

SECTION X

Stability & Reactivity Information

SECTION XIII

Regulatory Information

Stability: Stable

Hazardous Polymerization: Oxidizers

Materials to Avoid: Heat & Flame

Hazardous Decomposition: Carbon Monoxide and

other petroleum
decomposition products.

SECTION XI

Disposal Consideration

Waste Management: Per Federal, State and local laws.

SECTION IX

Transportation Information

Proper Shipping Name:

NOT A DOT REGULATED

MATERIAL

(Packaging in excess of 3500 gal
require an OIL SPILL prevention and
response plan per 49 CFR 1).

Hazard Class: NA

UN/NA Number: NA

Packaging Group: NA

All hazard precautions given in this data
brochure must be observed.

This brochure is for the unburnt LiquiSmoke
Only. Test Data is available for LiquiSmoke
"smoke" by contacting Hurco Technologies.

LAST ISSUE DATE:
01/10/04

Questions Concerning LiquiSmoke
(8:00-5:00 Central Time) M-F
Please Call: 1-800-888-1436

Hazardous under SARA Section a311: Yes
Fire Hazard: No
Sudden Release: No
Immediate: No
Reactive Hazard: No
Delayed: Yes
SARA Section 313 Listed Components: None

SECTION IX
Other Information
NFPA 704M Rating

NFPA Fire Code: 1
NFPA Health Code: 1
NFPA Reactivity Code: 0
NFPA Other: Blank

The information contained in this MSDS is believed to be accurate, but is not warranted to be, whether originated with Hurco Technologies or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to the circumstances.

NFPA Key

0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme

SECTION IX
Definitions
DOT = Department of Transportation
CAS = Chemical Abstract Service
ACGIH = American Conf. Of Governmental Industrial Hygienists
OSHA = Occupational Safety and Health Administration
TLV = Threshold Limit Value
STEL = Short Term Exposure Limit
PEL = Permissible Exposure Limit
TWA = Time Weighted Average
NTP = National Toxicology Program

IARC = International Agency for Research on Cancer
LEL = Lower Explosion Limit
UEL = Upper Explosion Limit
SCBA = Self Contained Breathing Apparatus
CFR = Code of Federal Regulations
NFPA = National Fire Protection Agency
EPA = Environmental Protection Agency

FOR ADDITIONAL
NON-EMERGENCY MSDS INFORMATION CONTACT:

P.O. BOX 70, HARRISBURG, SD 57032
1-800-888-1436
Fax #: (605) 743-2465
E-mail: info@gethurco.com