City of Brentwood

5211 Maryland Way Brentwood, TN 37027 Phone: 615-371-0060
Mailing Address: P.O. Box 788 Brentwood, TN 37024-0788

CHRIS MILTON, DIRECTOR
WATER SERVICES DEPARTMENT

1750 GEN. GEORGE PATTON DR.
TELEPHONE: 615-371-0080
FAX: 615-371-2225

February 4, 2011

Ms. Saya Qualls
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street
Nashville, TN 37243-1534

RE: City of Brentwood, TN
EPA Section 308 Request and CAP/ER Compliance Update

Dear Saya:

Last month, we received a request from EPA to update them on the status of our CMOM and sewer operations in general. WPC was also copied on that request, and as such we are copying the Division with our reply.

There is a great deal of overlap between CMOM-specific information and CAP/ER-specific information, so it is our intention for this attachment to serve as one of our interim updates to TDEC as this document contains a multitude of pertinent information about the status of our rehabilitation program.

Please feel free to call me at 615-371-0080 if you have any questions.

Sincerely,

Kevin Colvett, PE
Assistant Director

CC: Chris Milton, Director
Hal Balthrop, MWS
Cyrus Toosi, MWS
George Kurz, PE, DEE

SOP-88068

City of Brentwood

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CHRIS MILTON, DIRECTOR
WATER SERVICES DEPARTMENT

TELEPHONE: 615-371-0080
FAX: 615-371-2225

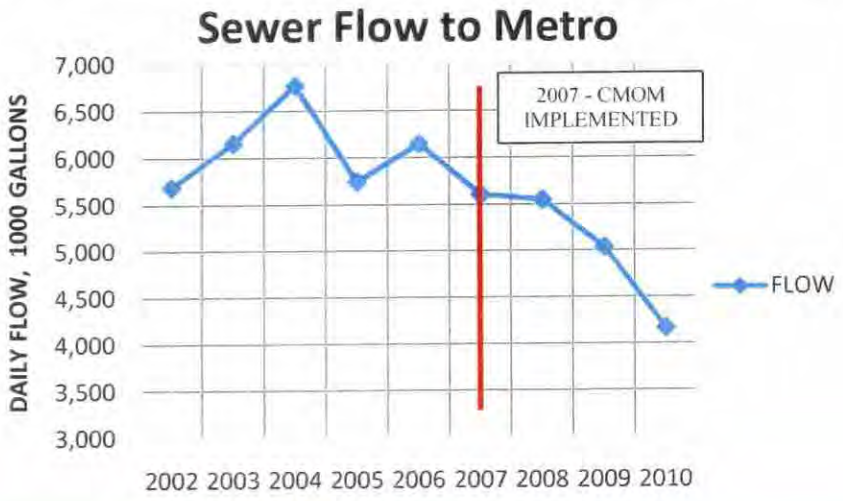
February 2, 2011

Mr. Brad Ammons
US Environmental Protection Agency, Region 4
Clean Water Enforcement Branch
61 Forsyth Street, SW
Atlanta, GA 30303-8960

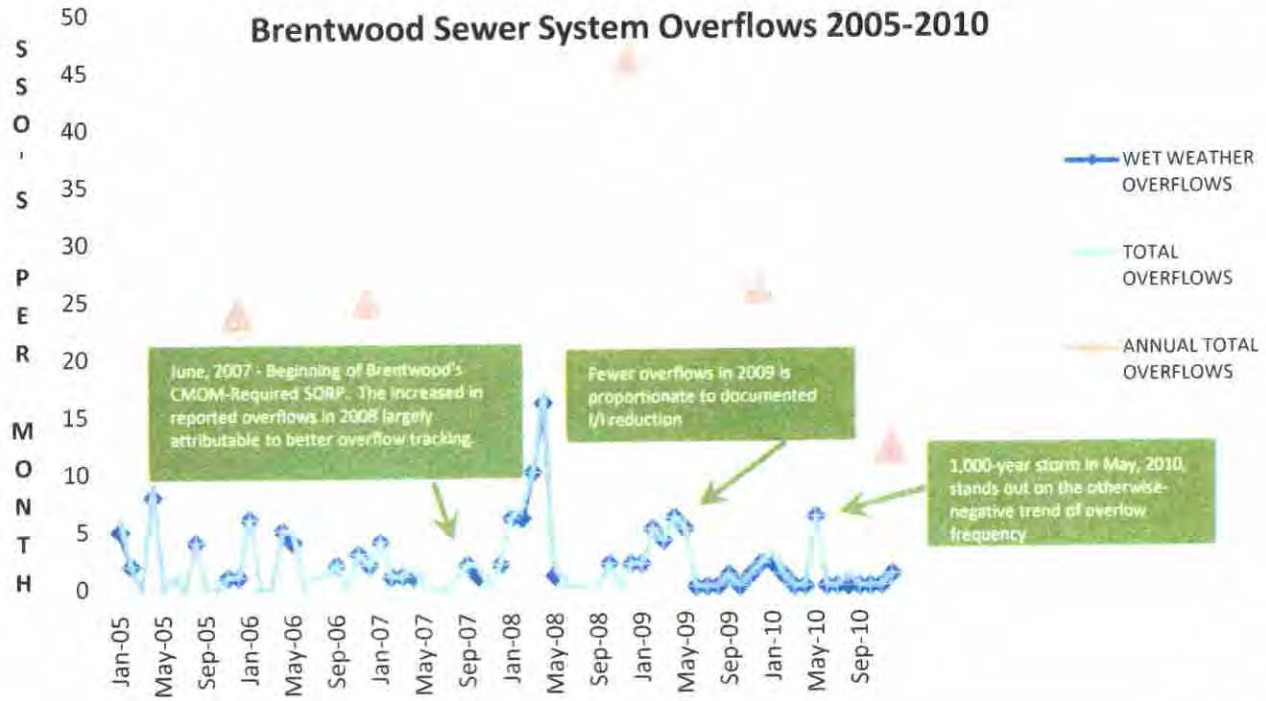
RE: Response to Information Request – Section 308 of the Clean Water Act
City of Brentwood, TN, Water and Sewer Department

Dear Mr. Ammons:

The City of Brentwood is pleased to provide you with an update on our CMOM-related activities since 2007. We believe the process of generating and subsequently implementing the various aspects of a CMOM program has positively impacted our department's operations, and the most tangible indicator of progress has been a *70% reduction in sewer overflow frequency since 2008*. Preventive maintenance actions such as pump station inspections and our continuous sewer assessment program are partially responsible for this decline, but the primary contributory factor has been the City's aggressive sewer rehabilitation program, which has, in just three years, removed almost 1.5 million gallons per day of extraneous flow from the collection system:



Proportionate to sewage flow, the frequency of overflow has similarly been reduced. Once the City's Standard Operating Procedure for Overflow Tracking and Response was developed in mid-2007, the number of reported overflows increased dramatically due to improved reconnaissance during wet weather, but once the rehabilitation program began, overflows began to drop quickly.



The format of this response will address each of the 22 programs listed in Enclosure A of EPA's request. Each of the programs is of varying complexity and applicability for the City of Brentwood, but each section will nonetheless have an overview of the program, ranging from a few sentences to several pages, and then some example supporting information for that program. Some, such as item #8 (the SOP for SSO response) are lengthy, while others, such as item #15 (SOP for corrosion control chemicals) require less discussion.

Enclosure A listed six specific requests for response, with #6 being updates on the 22 MOM programs, and in an attempt to reduce redundancy in presenting this information, most of the responses to the first five requests will be included in the applicable sections of the 22 MOM programs. However, if a different format is requested or any additional information is required, that can be provided. For clarity, the responses to item numbers 1 through 5 are as follows:

1a The City of Brentwood collection system consists of 1,059,159 LF of gravity sewer line and 369,423 LF of pressure sewer line, together totaling approximately 270.5 miles.

1b Street addresses of sewer lift stations are included in item #22: *Develop an emergency O&M procedure for pump stations and implement improvements at the pump stations to allow for bypass pumping setup.*

1c The City of Brentwood serves 9,562 residential sewer service connections as of December, 2010. According to demographic data provided by the City's Planning Department, an average of 3.1 persons occupies each residential unit, so the population

served would be 29,642 individuals. Note that this does not include "population equivalents" for commercial and institutional customers.

2. Information regarding SSO's is included in discussions for Item #8: *Develop SOPs for SSO response.* Please note that the City of Brentwood can provide any of the graphs, spreadsheets, or documents contained in this reply via email to EPA in Microsoft Excel or Word upon request. Maps can be provided in Arcview or PDF format as requested.

3. The City of Brentwood does not have a document entitled "Sewer Overflow Response Plan, but manages sewer overflow response with a document developed in 2007 as part of CMOM entitled "Standard Operating Procedure for Sanitary Sewer Overflow Tracking and Response" which is included as supplemental information for item #8: *Develop SOPs for SSO response.*

4. Identifying root causes of SSO's and related information is included as part of item #8: *Develop SOPs for SSO response.* Identification of wet weather SSO's and reconnaissance is discussed with item #5: *Implement a continuing sewer system assessment program.*

5. For each of the 22 MOM programs, the Director of the Water and Sewer Department, Chris Milton, is responsible for the activities, as is Assistant Director Kevin Colvett. Many other parties within the department, such as all 12 personnel holding a collections system operator's license and others outside the department, such as GIS personnel and finance department personnel, are mentioned in the applicable sections and are integral to the success of the programs.

6. The individual MOM programs are discussed in detail in the remainder of this reply. Additional information can be provided or emailed upon request.

With the original CMOM submission in 2006, section 2 of that document contained some performance measures for the City of Brentwood's sewer collection system, based on the best information available at the time. This information is updated in the table below, along with some applicable explanatory comments.

PROFILE / PERFORMANCE MEASURE	*AS OF 2006*	*AS OF DECEMBER 2010*	*COMMENTS*
Service Area	23,827 Acres	23,828 Acres – per GIS	No annexations since 2006 and no extensions outside city limits
Population Served	30,617	29,716	2010 number is based off of 3.1 persons per residential unit and a total of 9,586 residential accounts, so is probably more accurate than 2006 number
Total Customers	Res. – 8,802 Comm. – 426 Indus. - 0	Res. – 9,586 Comm. – 385 Indus. - 0	As of Dec, 2010. Some commercial got reclassified in utility billing per internal audit.
5-year Capital Improvement Budget	$8.9 Million	$22.8 Million	
5-year Budget for Sewer Rehabilitation	$1.5 Million	$8.53 Million	Plus approximately $10 million spent 2007 through 2010
Annual O&M Budget	$9.98 Million	$14,641,620	
Average Daily Flow	6,133,000 gpd	4,590,000 gpd	
Number of Employees	25	26	
Miles of Pipe	Gravity – 181.5 Pressure – 59.4	Gravity – 200.6 Pressure – 70.0	Can be further broken out through GIS system if requested.
Number of Manholes	3,919	4,998	1,000+ manholes have not been added to the system – many have been found through GIS data gathering
Per Capita Wastewater Flow for Max Month	8,031 gallons per person per month	5,829 gallons per person per month	February 2010 averaged approx 5.8 MGD, January was approx. 5.5 MGD. All other months < 5.0 MGD
Average annual BOD from Brentwood Pump Station	145 ppm	150 ppm	Based off two sampling events. Metro sampled a much higher reading in September: 400 ppm
Avg. Daily Flow / Capita	200 gpd	154 gpd	
Annual Number of Overflows	25	12	Pre-2007 overflow totals were not identified or reported in conformance with current SOP. A better gauge of overflow frequency would be 2008, with the new SOP in place, when 46 overflows were located and reported. Note that 6 of the 12 reported overflows in 2010 were associated with 1000-year flood in May. Without May flood, the 2010 number would have been 2.2. The 2008 number was 17.3
Overflows per 100 Miles of Pipe	10.4	4.4	
Miles of Pipe Lined	0	11.5 mi. in 2008 12.7 mi. in 2009 0.58 mi. in 2010	Some additional lining is scheduled for 2011, but almost all clay concrete pipe is now lined.
Manholes Rehabilitated	0	139 in 2009 307 in 2010	Epoxy-over-concrete system has proven to have measureable benefits in flow reduction. Approximately 350 additional manholes planned for 2011-2012

Each of the 22 sections that follow provides a brief summary of the individual CMOM component program, including its development timeline and its current status. In some cases, the benefits of the programs will be highlighted. In addition, any projected changes and updates to those programs will be briefly discussed.

We trust that this information adequately conveys the progress the City of Brentwood has made since 2006 in our sewer system operations. We will continue to work toward successful completion of our CAP/ER with Metro Nashville and TDEC in 2015, and are proud of the tangible results produced by our CMOM programs to date. Should you need any additional information or need digital copies of any of the information provided herein, please feel free to contact us at 615-371-0080 or via email: colvettk@brentwood-tn.org (Kevin Colvett, P.E., Asst. Director) or miltonc@brentwood-tn.org (Chris Milton, Director).

Sincerely,

Kevin Colvett, P.E.
Asst. Director

cc: Chris Milton, Director

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME / TITLE

02/02/11
DATE

Item #1 – A written, defined training program

Development date: June 30, 2007

Discussion: In 2007, the Water and Sewer Department reviewed its training procedures – not just in regard to sewer operations, as recommended through the CMOM program, but also with water operations and general departmental procedures. This intersects with item #2, the Safety Program Improvements, as well. Specific goals for training were set in 2007, and the goal of conducting activities once per month was adopted.

Sometimes this training is on a specific operational procedure, such as wet-weather manhole inspection (discussed in item #5 – Continuous Sewer System Assessment Program), or on a specific program, such as the City's sewer rehabilitation activities, or on a piece of equipment, such as operating the new bypass pump the city recently purchased for emergency operations. Originally, the person designated to be in charge of all training was Ricky Shell, who was Operations Superintendent, but he has been on military leave since 2007, so training has been overseen by committee. In recognition of the need to have a specific person in charge of these important programs, the Department has determined in 2011 to place one person in charge of scheduling training in accordance with our program and documenting attendance for each employee.

The following information is attached with this item:

1-1 A summary sheet of the Department's training goals
1-2 A sample listing of some of the training activities undertaken by Department personnel

1-1 A summary sheet of the Departments training goals

TRAINING GOALS SUMMARY

SAFETY TRAINING	OPERATIONAL TRAINING	OTHER ACTIVITIES
Workplace Safety / Program Overview	Waterline Break SOP	TAUD Expo
Personal Protective Equipment • Eye protection • Foot/ Hand Protection • Back harnesses	Distribution System Operations • Line Flushing SOP • Valve Operation • Hydrant Operation / Maintenance	TAUD Misc. Training
Fire, Medical & Evacuation • Fire Safety • Fire Extinguishers • First Aid • Bloodborne Pathogens	Tank Inspection SOP and Pump Station Maintenance SOP	Pumper Show
Materials Handling and Storage	Grinder Pump Maintenance	Misc. Webcasts
Hazardous Materials	Customer Complaint Management	Fleming Training
Electrical & Mechanical • Lockout / Tagout • Generators • Downed Electrical Lines	Emergency Operations	TML Videos
Vehicles & Traffic	Sewer Inspection	
Trenching & Excavation Safety	Technology • GIS • Telemetry SCADA • Communications • Modeling • Metering / Monitoring	
Confined Space	Collection System Operations • Pump Station SOP • Overflow Tracking SOP • Televising • Root Control	
Fall Prevention	Water system sampling	
Weather Safety	Sewer Rehabilitation	
Animal Safety	Technology Updates	

1-2 A sample listing of some of the training activities undertaken by Department personnel

TRAINING 2007-present

1/4/2007---**Dog Attacks (Service Center-video):** All W/S employees (45 minutes)

3/27/2007---**Emergency Operations and Mutual Aids for Utilities (Service Center—AWWA webcast):** Kevin Colvett, Travis Lankford, Rickey Shell, Mick White (1-1/2 hours)

3/39/2007---**E. H. Wachs Valve Equipment (Service Center):** Shannon Buttrey, Matt Furline, Richard Rigsby, Greg Roberson, Rickey Shell, Allen Welch (2 hours)

4/4/2007---**Severe Weather-Floods (Service Center-video):** All W/S employees (1 hour)

4/5/2007---**Aries TV truck demonstration (Service Center):** Thomas Burns, Kevin Colvett, Matt Furline, Travis Lankford, Jimmie Martin, Richard Rigsby, Greg Roberson, Rickey Shell

5/9/2007---**Heat Stress/Heat Illness (Service Center-videos):** All W/S employees (2 hours)

5/17/2007---**OPERATOR EXPO (TAUD):** Rickey Shell, Keith Mangrum, Richard Rigsby, Kevin Colvett, Shannon Buttrey, Ken Waddy, Travis Lankford, Richard Anderson

5/22/2007---**Hazard Analysis (Service Center—Paul Lyles):** All W/S employees (2 hours)

6/5/2007---**Municipal Storm Water Pollution Prevention (Service Center):** All W/S employees (1 hour)

6/20/2007---**Water Department Operations (Service Center-Joe Ahler, High Tide Technologies):** All W/S employees (2 hours)

7/9/2007---**Trench Safety (Service Center-video):** All W/S employees (1 hour)

8/3/2007---**Trenching and Excavating/Confined Spaces (Service Center-videos):** All W/S employees (1-1/2 hours)

8/14/2007---**Chlorination (Service Center-video):** All W/S employees (1 hour)

8/21/2007---**Stage 2 Disinfection Byproduct Rule Training Workshop TAUD---Cookeville):** Kenneth Hawkins, Kevin Colvett (8 hours)

8/31/2007---**Heat Stress, Dump Truck Safety (Service Center-video):** All W/S employees (2 hours)

9/28/2007---**Water Main Disinfection (Service Center-AWWA video)/Cherne Sewer Ball Training (Service Center):** All W/S employees (4 hours)

1/8/2008---**Utility Driver Safety: Road Rules (Service Center-video):** All W/S employees (1 hour)

2/19/2008----**Water Line Disinfection (TAUD):** Travis Lankford, Mick White, Shannon Buttrey, Matt Furline (8 hours)

2/20/2008---**Controllling Disinfection Byproduct Generation (TAUD):** Kenneth Hawkins, Kevin Colvett

4/22/2008---**Introduction of Safety Program and Employee Handbook (Service Center-Paul Lyles):** All W/S employees (2 hours)

4/24/2008---**Line Location and Leak Detection (TAUD):** Howard Burns, Keith Mangrum (6 hours)

5/15/2008----**OPERATOR EXPO (TAUD):** Matt Furline, Kevin Colvett, David Epps, Travis Lankford, Richard Rigsby

7/21-23/2008---**Blood Borne Pathogens (Service Center-Mick McCutcheon):** All W/S employees (1 hour/day)

9/4/2008---**Fundamentals of Erosion Prevention and Sediment Control (TDEC):** Matt Furline

1/27/2009---**Muncipal Storm Water Pollution Prevention (Service Center):** All W/S Employees (45 minutes)

3/24/2009---**Work Zone Traffic Control/Flagging (TTAP):** Keith Mangrum, Matt Furline, Lathan Davis, Barry Dickson

4/13/-17/2009----**Applied Math for Distribution Systems (Fleming Training Center):** Greg Roberson, Ryan Hazelwood (8 hours/day)

5/14/2009----**OPERATOR EXPO (TAUD):** Richard Rigsby, Travis Lankford, Ken Waddy, Keith Mangrum, Shannon Buttrey (8 hours)

5/19/2009---**Fundamentals of Erosion Prevention and Sediment Control (TDEC):** Keith Mangrum, Barry Dickson (8 hours)

7/6/2009---**Jackhammer Safety/Poison Plant Safety (Service Center):** All W/S Employees (1 hour)

7/27-31/2009----**Grade I & II Distribution Systems (Fleming Training Center):** Ryan Hazelwood, Greg Roberson (8 hours/day)

8/3-6/2009---**Applied Math for Distribution Systems (Fleming Training Center):** Lathan Davis, Garrett Hall, Richard Anderson

8/18/2009-----**Metro Sewer Agreement (Service Center):** Chris Milton, Kevin Colvett, Richard Rigsby, Travis Lankford, Kenneth Hawkins, Mick White, Keith Mangrum, Ken Waddy (3 hours)

9/15/2009----**AWWA Webcast (Water Storage Tank Operation and Maintenance-Preventative Maintenance---Service Center):** All W/S Employees (2-1/2 hours)

9/25/2009----**MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (6-1/2 hours)

11/3-4,2009----**Cram Session (Collections Systems---TAUD):** Lathan Davis, Garrett Hall, Richard Anderson (8 hours/day)

12/15/2009----**Cross Connection Renewal (TAUD):** Thomas Burns, Keith Mangrum, Howard Burns, Kenneth Hawkins, Greg Roberson, Ken Waddy, David Epps (8 hours)

1/13/2010-----**AWWA Webcast (Water Quality and Distribution Systems----Service Center):** Kevin Colvett, Mick White, Travis Lankford, Kenneth Hawkins, Keith Mangrum, Allen Welch, Matt Furline (2-1/2 hours)

1/21/2010----**Review of Water Main Repair S.O.P. (Service Center):** All W/S Employees (2 hours)

2/1-5, 2010---**Grade I & II Distribution Systems (Fleming Training Center):** Barry Dickson (8 hours/day)

2/16/10---**Storm Water Contamination Prevention (Service Center):** All W/S Employees (45 minutes)

3/2-3/3/10---**MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (4 hours per day)

4/12-16, 2010---**Applied Math for Distribution Systems (Fleming Training Center):** Jacob Cain (8 hours/day)

5/20/2010-----**OPERATOR EXPO (TAUD):** Chris Milton, Kevin Colvett, Travis Lankford, Richard Rigsby, Matt Furline, Keith Mangrum (8 hours)

7/2/2010---**MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

7/14/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

7/15/2010----**Flagger Certification Class (TAUD):** Allen Welch, Billy Starkey (8 hours)

7/26-30/2010----**Grade 1 and 2 Distribution Systems (Fleming Training Center):** Richard Anderson, Garrett Hall, Jacob Cain (8 hours/day)

8/5/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

8/12/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

8/27/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

9/9/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

9/16/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

10/6/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

10/11/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

10/11-15/2010----**Applied Math for Distribution Systems (Fleming Training Center):** Billy Starkey, Allen Welch (8 hours/day)

10/20/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

10/28/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

11/5/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

11/10/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

11/10/2010---**Stage 2 DBP Regulations (Service Center –AWWA webcast):** Kenneth Hawkins, Kevin Colvett, Travis Lankford, Matt Furline (2 hours)

11/18/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

12/2/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

12/9/2010--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

12/14-17/2010---**MSGovern Training (Municpal Bldg):** Kenneth Hawkins (8 hours/day)

12/29/2010---**MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

1/5/2011--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

1/11/2011---**Cross Connection Renewal (Fleming Training Center):** Jacob Cain (8 hours)

1/12/2011--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

1/20/2011--- **MSGovern Webex (Municipal Bldg):** Kenneth Hawkins (2 hours)

Item #2 – Safety Program Improvements

Development date: June 30, 2007

Discussion: The City of Brentwood, as part of its CMOM program, developed a Safety Program in 2007, which was primarily a formalization of training that was already taking place. Since that time, new or updated safety equipment has been purchased, including:

- Gas monitors
- Tripods
- Safety Vests
- Climbing harnesses
- Personal Protective Equipment
- Traffic Control Equipment

An internal goal of having one safety-specific training for the Department has been set, and with the appointment of the Department's safety coordinator later in 2011, this will be more routinely scheduled and documented.

The City's Fire Department oversees the City-wide safety program and periodically makes site visits when work is taking place. Additionally, the Department's policy is to ask contractors who will be working in the City's collection system to provide a copy of their firm's safety program.

The Tennessee Occupational Safety and Health Administration has not cited the Water and Sewer Department for any infractions since the Department's safety program's inception in 2007.

The following information is attached with this item:

2-1 The Safety Program overview developed in 2007
2-2 Selected safety summary pages originally provided in trainings from 2007 and 2008

2-1 The Safety Program overview developed in 2007

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT SAFETY PROGRAM

'WHAT TO DO' BOOKLET

(29 CFR 1910.1200)
Hazard Communication Standard
And
The Hazardous Chemical Right To Know Law

Tennessee Department of Labor & Workforce Development
Division of Occupational Safety and Health

Area Office Telephone Numbers

Chattanooga:	(423) 634-6424
Jackson:	(731) 423-5641
Kingsport:	(423) 224-2042
Knoxville:	(865) 594-6180
Memphis:	(901) 543-7259
Nashville:	(615) 741-2793

JUNE, 2007

I. INTRODUCTION

Mission Statement:

The mission of the City of Brentwood Water Services Department is, on one hand, to provide a safe and dependable supply of drinking water at sufficient volumes and pressures to meet customers' needs for domestic use and fire protection by being fiscally responsible stewards of our natural resources. The corresponding mission for the sewer operations is to provide the highest consistent quality of wastewater collections for its customers in a cost-effective manner.

Purpose of This Safety Program:

An effective safety program for any organization must be clear and concise to the end user. Simply inundating employees with printouts of particular programs developed by other locations in other professions is not effective. A program must be tailored to the specific employees performing their specific job-related tasks.

There is no such thing as a "comprehensive" safety program. No amount of training can cover every possibility for jobsite injury. Instead, the focus of the safety program for the City of Brentwood's Water Services Department is to provide detailed safety training on the most common tasks performed by personnel and, more importantly, to instill a "think safety" mentality in ALL aspects of our work.

Training and Drills

The City conducts monthly training exercises on a variety of topics. At least once annually, the staff will be meeting to review this program as a whole, and then once per month specific programs will be presented on a variety of topics, ranging from bloodborne pathogens to CPR to lockout/tagout. Periodically, safety awards will be presented to individuals or crews who have distinguished themselves in the field of safety.

At each training session, each employee will sign in to document their participation and an overall table, tracking each employee's attendance for the entire year will be kept on file with the Operations Superintendent.

2-2 Selected safety summary pages originally provided in trainings from 2007 and 2008

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Bloodborne Pathogens

Description

- Bloodborne pathogens are transmitted from the exposure of contaminated body fluids (blood, saliva, etc.) from one person to another
- Transmission of bloodborne pathogens may result in hepatitis B, HIV, or bacterial infections

Prevention

- Use latex gloves if contact with blood is possible
- Use a protective shield if applying CPR by mouth
- Wash thoroughly with soap and water after possible exposure
- Seek medical attention if you are concerned

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Accident Scene

1. Approach with care. Is the scene safe? Guard against being injured yourself.

2. Treat life-threatening cases:
   a. Stopped breathing
   b. No heartbeat
   c. Severe bleeding
   d. Internal poisoning

3. Have someone all 911 for emergency medical assistance.

4. Treat every accident victim for shock.

5. Examine every accident victim for other injuries that might require first aid

6. Plan what to do next. Keep the victim comfortable. Watch for changes in his or her condition and treat accordingly.

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Heimlich Maneuver

When to use the Heimlich Maneuver

- Food caught in the throat is like a cork stuck in the neck of a plastic bottle. Nothing can get in, but squeeze the bottle the right way and the cork will pop out. That the principle of the Heimlich maneuver.

What to do

1. Stand behind the victim. Put your arms around his waste and clasp you hands together. The knuckle of one thumb should be just above his navel but below his rib cage.
2. Thrust your clasped hand inward and upward with enough force to pop loose the obstruction.
3. Repeat this Heimlich maneuver until the obstruction clears or medical help arrives.

If a choking person is very large or has lost consciousness:

1. Lay him on his back on the floor and sit straddling his thighs.
2. Place the heel of one hand on the victim's upper abdomen, slightly above his navel but below the rib cage.
3. Plant you other hand on top of the first and press upward with quick thrusts.
4. With your index finger, probe the mouth of the unconscious victim to remove any obstructions. Be ready to start rescue breathing.
5. Repeat this Heimlich maneuver until the obstruction pops loose or medical help arrives.

If you every choke on food and cannot breath, clutch you throat with your hand. That's the universal sign for choking, and it might bring someone to your said.

If there is not one nearby, perform the Heimlich maneuver on yourself by pulling you first into your upper abdomen, or you can bend over the back of a chair and force it against your belly.

Thrusts in the abdomen can cause rib fractures and other injuries. Use only mannequins or other training device in practice to demonstrate Heimlich maneuvers.

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Severe Bleeding

- Direct pressure on a wound will stop most bleeding. Put on latex gloves. With a sterile pad or clean cloth, use the palm of your hand to apply firm pressure directly over the wound. Don't waste time – when clean material is not close by, use a handkerchief, shirt or whatever you can reach.
- While pressing on the wound, raise the injury above the level of the victim's heart.
- Direct pressure is almost always the treatment of choice. Bleeding can sometime be further slowed by pressing hard on an arterial pressure point in the victim's armpit or groin. Try using pressure point if direct pressure over broken bones will cause further injury or if the nature of a wound makes direct pressure ineffective.
- Don't remove a direct pressure pad that has become soaked with blood. Instead place a fresh pad over the first one and continue applying pressure.
- When the bleeding has stopped, hold the pad in place with a bandage. Bind the bandage firmly but not so firm to as to cut off circulation. If the bandage is on an arm or a leg, periodically feel for a pulse.
- In the case of serious bleeding, get medical attention.
- Wash your skin with soap and water or cleaner with antiseptic as soon as possible and change out clothing that might have come in contact with blood.

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Shock

What is Shock?

- After suffering a severe trauma or even a terrible mental strain, the circulatory system may not provide enough blood to all parts of the body. This is shock.

Symptoms

- Feeling of weakness
- Confusion, fear, dizziness
- Moist, cool, clammy, and pale skin
- Quick, weak pulse
- Shallow, rapid, and irregular breathing
- Nausea and vomiting
- Extreme thirst

What to do for shock

- Eliminate cause of shock
  - Restore breathing and heartbeat
  - Control bleeding
  - Relieve severe pain
  - Treat wounds
- Make sure airway stays open for breathing
- Have injured person lie down
  - Raise feet above heart
- Keep patient warm
  - Place blanket or coat over patient
- Call for medical help

Other types of shock

- Diabetic shock (hypoglycemia)
  - Caused by low blood sugar
  - May result in coma, seizure or death
  - Get medical help immediately
- Anaphylactic shock
  - Caused by a sever and life-threatening allergic reaction
  - May occur from unknown exposure to toxin
  - See if patient is aware of cause or trigger
  - Get medical help immediately

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Stopped Breathing - CPR

Open the airway

- The airway is the passage that allows air entering the mouth or nose to reach the lungs. A person cannot breathe if his airway is blocked by the back of the tongue, a chunk of food, or anything else.
- If a victim in unconscious, place him on his back. Clear his tongue from his airway by pressing on his forehead with one hand and lifting his chin with the other to tilt his head back. If you think his neck might be injured, keep the head still and thrust his jaw forward.
- Look in his mouth for bum, food, or other obstruction. Remove them by sweeping them out with your index finger.
- Protect the airway of any accident victim. If he begins to vomit, turn him on his side so that the vomit come out his mouth rather than getting into his lungs.

Someone who is choking on food might grasp his throat to signal that he is unable to breath. Treat by performing the Heimlich maneuver.

If the airway seems to be open and the victim is still not inhaling and exhaling, begin rescue breathing.

1. Place a mouth-barrier device over the victim's mouth. That will protect both of you from orally transmitted diseases.
2. While maintaining the health-tilt or jaw thrust, pinch the nostrils, seal your mouth over the victim's mouth, and blow into it to fill his lungs. For a child, seal you mouth over the mouth and nose, then breathe gently. Watch to see if the chest rises.
3. Remove your mouth and take another breath. Look for the victim's chest to fall as he exhales.
4. Repeat every 5 seconds for any one over 9 years of age, every 3 seconds for anyone 9 or under.

If the victim's chest does not rise and fall, no air is reaching the lungs. Follow these steps.

1. Reposition his head and jaw to that the tongue does not block the airway.
2. Check again for obstructions in his mouth.
3. Perform the Heimlich maneuver to remove anything lodged in the throat.

Resume rescue breathing. Continue until a medic tells you to stop or it becomes physically impossible

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Eye Injuries

- Wear safety glasses when working with anything that could chip, shatter, or splinter.
- Use safety glasses and a face shield, if necessary, when working with chemicals.
- Make sure there is an eyewash station nearby your work area.
- If you get something in your eye, flush with water for 15 minutes.
- Contact medical attention immediately.

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

First Aid Kit

Roller Bandage, 2-inch	1
Roller Bandage, 1-inch	2
Adhesive tape, 1-inch	1 roll
Alcohol swabs	24
Assorted adhesive bandages	1 box
Elastic bandages, 3-inch wide	2
Sterile gauze pads, 3-inch wide	2
Antiseptic	1 tube
Triangular bandages	4
Soap, liquid antiseptic	1 bottle
Scissors	1 pair
Latex gloves	6 pairs
Safety glasses	1 pair
Mouth-barrier for CPR	1
Pencil and paper	1 each

Disclaimer: Information presented is considered first aid subject to Good Samaritan intent and not medical advice by the City of Brentwood

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT - SAFETY PROGRAM

Burns

- Burns may be caused from heat, fire or chemicals
- Remove the person from the source of the burn
- Assess the degree of burn
- First-degree burn
    a. Mild burn, skin tender and may become red
    b. Place burned area under cold water, apply wet cool compress
- Second-degree burn
    a. Skin will blister from burn
    b. Place burned area under cool water until pain goes away
    c. Apply sterile gauze pad
- Third-degree burn
    a. Most severe burn – skin burned away or charred
    b. May feel no pain
    c. Do not remove clothing
    d. Do not apply creams, ointments or sprays
    e. Wrap victim in a clean sheet
    f. Treat for shock
    g. Get medical attention immediately

CITY OF BRENTWOOD

WATER SERVICES DEPARTMENT

CONFINED SPACE PROGRAM

DRAFT

May 2008

City of Brentwood
Confined Space Program

TABLE OF CONTENTS

PROGRAM HIGHLIGHTS AND SUMMARY

- All permit required confined spaces must be identified.
- Employees exposed to these permit spaces must be informed of the existence, location of, and the danger posed by the permit space.
- This written program is developed to specify entry procedures and implementation of the program.
- Employees will enter permit required spaces ONLY when authorized to do so with a properly completed entry permit and ONLY when all acceptable entry conditions have been met; or under alternate entry procedures; or upon proper reclassification of the permit space into a non-permit confined space.
- All permit required confined space entrants, attendants, and entry supervisors (and, if used, in-house rescue team members) must be trained on this program and their duties.
- Rescue will be by non-entry retrieval methods, or by in-house rescue persons, or by associated rescue service, the City of Brentwood Fire Department.

City of Brentwood
Confined Space Program

INTRODUCTION

The routine and non-routine activities of the City of Brentwood Water Services Department involve work in places, such as sewers and lift stations that are confined spaces. These workplaces may contain hazardous substances, such as toxic gases. The purpose of the Confined Space Entry Program is to identify the workplaces, potential hazards, and procedures that will make work as safe as reasonably possible, if the procedures are followed.

DEFINITIONS (29 CFR 1910.146(b))

Confined Space - A space that:

* Is large enough and so configured that an employee can bodily enter and perform assigned work; and

* Has limited or restricted means for entry or exit; and

* Is not designed for continuous employee occupancy.

Permit Required Confined Space - A confined space that:

* Contains or has a potential to contain a hazardous atmosphere; or

* Contains a material that has the potential for engulfing an entrant; or

* Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or

* Contains any other recognized serious safety or health hazard.

Acceptable Entry Conditions - The conditions that must exist in a permit space to allow entry and to ensure employees can safely enter into and safely work within a permit required confined space.

Entry - The action by which a person passes through an opening into a permit required confined space. Entry is considered to occur as soon as any part of the entrant's body breaks the plane of an opening into the space. **NOTE:** For entry to occur there must be an intent to bodily enter the confined space. You may reach into a space, and not bodily enter (say to adjust a valve), and do so without an entry permit being required.

Entry Permit - The written or printed document provided by this company to allow and control entry into a permit space.

Entry Supervisor - The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.
Hazardous Atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following conditions:

* Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

* Airborne combustible dust at a concentration that meets or exceed its LFL. (This may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less);

* Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

* Atmospheric concentration of any substance for which a dose of permissible limit is published (in Subpart G Occupational Health and Environmental Control; or Subpart Z Hazardous and Toxic Substances); or

* Any other atmospheric condition that is immediately dangerous to life or health.

Non-Permit Confined Space - A confined space that does not contain, or with the respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Prohibited Condition - Any condition in a permit space that is not allowed by the permit during the time when entry is authorized.

Testing - The process by which the hazards are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

CONFINED SPACE LOCATIONS

Workplaces, either specific or by general category, have been surveyed to identify any confined spaces that may be present. Such locations are listed below.

Non-Permit: The following locations have been identified as non-permit confined spaces, and may be entered and worked in using normal work procedures:

None - All confined spaces are considered permit required

Permit-Required: The following locations have been identified as permit required confined spaces, and may be entered ONLY by following the entry permit procedures established in this program:

Location	Hazard
Sewer	Toxic gases
Manholes	Toxic gases
Lift stations	Toxic gases

Alternate Entry: The following permit required confined spaces may be entered by following the Alternate Entry Procedures:

None – All permit required

Reclassify: The following permit required confined spaces may be reclassified and entered as a non-permit space ONLY after their hazards have been eliminated following prescribed procedures:

The only permit required confined spaces that may be reclassified are the ones approved, in writing, from the Director of the Water Services Department.

RESPONSIBILITIES

Employers:

a. Evaluate the work place and identify permit required confined spaces.

b. Inform exposed employees of the existence, location of, and the danger posed by the permit space by posting danger signs or by any other equally effective means.

c. Determine if employees will or will not enter permit required space. If not, take effective measures to prevent employees from entering the permit spaces.

d. Provide and document training for entrants, attendants, entry supervisors, in-house rescue personnel, and coordination with the Brentwood Fire Department for associated rescue personnel.

e. Designate the appropriate supervisor(s) as entry supervisor(s).

f. Provide all specified equipment required for entry in a permit required confined space as outlined in this program, maintain that equipment properly, and ensure that employees use that equipment properly.

g. When a contractor performs work in confined space,

1. Inform contractor of the requirement to provide the City of Brentwood Water Services Department with a copy of the contractor's Confined Space Program and documentation of training prior to commencing any work involving confined space;

2. Apprise contractor of his/her responsibility to assess potential hazards of confined spaces.

3. Apprise contractor of his/her responsibility to provide or make arrangements for rescue team.

4. Provide copies of permit(s) with work documentation.

Employees:

a. Will not enter any permit required confined space unless specifically authorized by an entry supervisor.

b. Complete the scheduled training required by this program.

c. When selected as an entrant, attendant, or entry supervisor, perform those duties as outlined in this program.

PERMIT REQUIRED CONFINED SPACE ENTRY PROGRAM AND PROCEDURES

All permit required confined spaces will be identified by the Director or his/her designated person. Exposed employees will be informed of such spaces through posting with warning signs, generic description, or other means, such as facility maps or training.

Only trained and qualified employees will be authorized as permit space entrants, attendant, or entry supervisor.

No employee shall enter a permit required confined space without having a properly completed entry permit signed by an entry supervisor.

Entry permit procedures are as outlined below:

a. Entrants will obtain an entry permit from the entry supervisor prior to entry of the space.

b. The entrant will accomplish all pre-permit actions required for entering the space, such as atmospheric testing, hazard control/elimination actions, have all required equipment on hand, provide for attendant and rescue services, etc.

c. Complete all items on the permit.

d. The entry will be authorized and the permit will be signed only by an authorized entry supervisor. If any item on the permit is checked as "NO" (meaning not yet completed or available), the permit will not be signed.

e. Entry may proceed. A copy of the entry permit will be placed outside the confined space until the permit has been cancelled by appropriate personnel.

Testing and Monitoring.

a. Test the space as necessary to determine if acceptable entry conditions exist before beginning entry operations. Initial testing of the atmosphere must be done from outside the confined space prior to any entry. If isolation of the space is infeasible because the space is large or part of a continuous system (such as a sewer), entry conditions will be continuously monitored where entrants are working.

b. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.

c. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors. Parameters for non-hazardous atmospheres are:

(1). Oxygen between 19.5 and 23.5 percent;

(2). Flammability less than ten percent of the lower flammability limit (LFL).

(3). Toxicity less than the permissible exposure limit (PEL).

An authorized attendant must be present and monitoring the entry at all times. The attendant will not be assigned any other duties that may interfere with his attendant duties. Attendant duties are outlined below.

Equipment required for permit required confined space entry includes that equipment required for testing and monitoring; ventilating; communications between the entrant and attendant, and for summoning rescue; personal protection; lighting; barriers/shields for openings; means of ingress and egress; and any other equipment necessary for safe entry and rescue.

Rescue and Emergency Services:

a. Non-entry rescue is the preferred method for rescue of personnel from a permit required space. Employees will not enter a permit space for rescue unless they have been specifically trained and equipped for such rescue.

b. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enter a permit space, unless the retrieval equipment would increase overall risk of entry or would not be of value to any rescue. Retrieval system requirements are:

1. Each entrant shall use a full body harness, with a retrieval line attached at the center of the back near shoulder level, or other appropriate point.

2. Other end of retrieval line shall be attached to a mechanical device or fixed point outside of permit space enabling immediate use. A mechanical device will be used to retrieve personnel from vertical type permit spaces more than five feet deep.

3. If injured entrant is exposed to any substance with a required MSDS or similar document, that MSDS or document will be made available to the medical facility treating entrant.

c. If rescue should become necessary, the attendant will:

1. Notify and summon the rescue team/service;

2. Attempt **non-entry** rescue procedures to the extent possible by the circumstances.

3. Monitor the situation and be ready to give rescuers information on how many victims and their status, what hazards, chemical types, concentrations, etc. are present.

d. Only City of Brentwood Fire Department, Emergency Medical Technicians (EMTs), or other professional rescue personnel, such as the Metropolitan Nashville Fire Department, will enter permit spaces for rescue purposes. Each designated rescue team member will be trained on:

1. Use of personal protective and rescue equipment necessary for making the rescue from the permit space;

2. Performance of assigned rescue duties and also that training required of authorized entrants;

3. Basic first-aid and cardiopulmonary resuscitation (CPR). At least one member of the rescue team will hold current certification in first aid and CPR.

Each rescue team member will practice making permit space rescues at least once every 12 months, by means of simulated rescue operations and in spaces representative of the types of permit spaces from which rescue is to be performed.

Permits will be cancelled by the entry supervisor upon completion of the work, or when any prohibited condition arises. Permits cannot just be let to expire. Cancelled permits must be kept for the annual review.

Program Review: Cancelled entry permits will be retained on file for at least one year. The Permit Space Program will be reviewed within one year of each entry using these cancelled permits to revise the program as necessary to ensure employees are protected from permit space hazards. A single review covering all entries in the preceding year may be conducted.

DUTIES OF THE ENTRANT, ATTENDANT, AND ENTRY SUPERVISOR

Entrant

a. Know the hazards that may be faced, including the mode, signs or symptoms, and consequences of the exposure;

b. Properly use equipment as required;

c. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to alert entrants of the need to evacuate the space.

d. Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or detects a prohibited condition.

e. Exit from the permit space as quickly as possible whenever:

(1). An order to evacuate is given by the attendant or the entry supervisor, or an evacuation alarm is activated.

(2). The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or detects a prohibited condition.

Attendant

a. Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.

b. Is aware of possible behavioral affects of hazard exposure.

c. Continuously maintain an accurate count and identity of authorized entrants.

d. Remain outside the permit space during entry operations until relieved by another attendant

e. Communicate with entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate.

f. Monitor activities inside and outside space to determine if safe for entrants to remain in space and orders evacuation when necessary.

g. Summon rescue and emergency services when assistance for emergency exit from permit space is necessary.

h. Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:

(1). Warn them to stay away, or exit immediately if they have entered.

(2). Inform the entrants and entry supervisor if unauthorized persons enter the permit space.

i. Perform non-entry rescues as specified by company procedure.

j. Perform no duties that might interfere with their primary duty to monitor and protect authorized entrants.

Entry Supervisor

a. Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.

b. Verify that acceptable conditions for entry exist before endorsing the permit and allowing entry to begin.

c. Terminate the entry and cancel the permit when entry operations are complete or a prohibited condition arises.

d. Verify that rescue services are available and the means for summoning them are operable.

e. Remove unauthorized individuals who enter or who attempt to enter the permit space.

f. Determine, whenever responsible and at appropriate intervals, that acceptable entry conditions are maintained.

TRAINING

Only trained and qualified employees may be authorized as entrant, attendant, entry supervisor, or in-house rescue team members. The training will establish proficiency in the duties required by this program so that the employee acquires the understanding, knowledge, and skill necessary for the safe performance of his/her duties.

Training must be completed before employee is assigned duties under this program, before there is a change in assigned duties and, whenever a supervisor has reason to believe either that there are deviations from permit space entry procedures or inadequacies in the employee's knowledge or use of this program.

Supervisors will certify that this training has been accomplished. The certification will contain the employee's name, signatures or initials of the trainers, and the dates of training. The certification will be kept on file.

ALTERNATE ENTRY PROCEDURES

Alternate entry procedures may only be used when the only hazard is an actual or potential hazardous atmosphere. If alternate entry procedures are used, no permits are needed, no attendant or supervisor is required, and rescue provisions need not be used. Training and a written certification are required.

Conditions To Be Met To Qualify For Alternate Procedures:

a. The only hazard posed by permit space is an actual or potential hazardous atmosphere. (See Note after the Permit Space Reclassification section.)

b. Continuous forced air ventilation alone is sufficient to maintain safe permit space.

c. Monitoring and inspection data that supports above demonstrations have been developed and documented.

d. If initial entry is necessary to obtain above data, it shall be performed in accordance with this program.

e. Documented determinations and supporting data will be made available to entrants.

Entry must be in accordance with the following requirements:

a. Any condition making it unsafe to remove an entrance cover shall be eliminated before removing the cover. When entrance covers are removed, the opening shall be promptly and effectively guarded.

b. Before entry, the internal atmosphere shall be tested with a calibrated direct-reading instrument, for the following conditions in the order given:

(1). Oxygen content: 19.5 - 23.5%

(2). Flammable gases and vapors: <= 10% of LEL

(3). Potential toxic air contaminants: < PEL

c. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

d. Continuous forced air ventilation shall be used as follows:

(1). Entry not permitted until hazardous atmosphere is eliminated.

(2). Ventilation shall be directed to immediate areas where employees are or will be present and will continue until all employees have left the space;

(3). Air supply shall be from a clean source and may not increase hazards in space.

f. Atmosphere within space shall be periodically tested as necessary to ensure that ventilation is adequate. If hazardous atmosphere is detected during entry:

(1). Each employee shall leave space immediately;

(2). Space shall be evaluated to determine how hazardous atmosphere developed; and

(3). Measures must be taken to protect employees from hazardous atmosphere before any subsequent entry.

g. The entry supervisor will verify that the space is safe for entry and that all of the above requirements have been met. Such verification will be in writing to include the date, location of the space, and the signature of the person providing the certification, and shall be made available to each employee before entry.

PERMIT SPACE RECLASSIFICATION

A permit space may be reclassified as a non-permit space:

a. If there are no actual or potential atmospheric hazards and if all hazards within permit space are eliminated without entry, space may be reclassified for as long as the non-atmospheric hazards remain eliminated.

b. Hazards may be eliminated by such actions as purging or inerting tank/vessels of contaminants, emptying material from hoppers/bins, use of company lockout/tag procedures for electrical/ mechanical hazards. The control of atmospheric hazards through forced air ventilation does not constitute elimination of that hazard (it only controls the hazard: the preceding Alternate Entry Procedures must be used in such cases).

c. If entry is required to eliminate hazards, it shall be according to regulations and the space may be reclassified for as long as the hazards remain eliminated.

d. Entry supervisors will certify in writing that all hazards in permit space have been eliminated and make this document available to each entrant.

e. If hazards arise in declassified permit space, employee(s) shall exit and the employer shall determine whether to reclassify space.

NOTE: A combination of reclassification procedures and alternate entry procedures (e.g. using lockout/tagout to eliminate a physical hazard, then continuous forced air to control an atmospheric hazard) may not be used together. Situations as such must be entered under the permit program.

WRITTEN PERMIT

The following information must be included in the written permit. The permit must be a standardized format for each entry.

1. The permit space to be entered.

2. The purpose of the entry.

3. The date and the authorized duration of the entry permit.

4. The authorized entrants within the permit space, by name or by such other means.

5. The personnel, by name, currently serving as attendants.

6. The individual, by name currently serving as entry supervisor, with space for signature or initials.

7. The hazards of the permit space to be entered.

8. The measure used to isolate the permit space and to eliminate or control permit space hazards before entry.

9. The acceptable entry conditions.

10. The results of initial and periodic tests, with the names or initials of the testers and when the tests were done.

11. The rescue and emergency services that can be summoned and the means for summoning them.

12. The communications procedures used by authorized entrants and attendants to maintain contact during the entry.

13. Equipment (such as personal protective equipment, testing, communications, alarm system, and rescue equipment) to be provided for compliance with this section.

14. Any other information whose inclusion is necessary in order to ensure employee safety.

(Attached to permit) Any additional permits, such as for hot work, that have been issued for work in the permit space.

City of Brentwood – Water Services Department
Confined Space
(29 CFR 1910.146)

Safety One-Pager

What is a confined space?

- Large enough to do work
- Restricted means of access
- Not designed for continuous employee occupancy

What is a permit-required confined space?

- A permit-required confined space means that a proper written procedure must be used to enter the confined space

Prior to entering a confined space

- Determine if a contractor or employee is going to enter the confined space
- Test for hazards, especially air
- Evaluate the hazards and remove if possible
- Determine if work can be completed outside the workspace

If entry is required

- Only used trained personnel
- Complete the permit
- Monitor atmosphere
- Have the retrieval system and rescue team ready
- Make entry
- Complete the work

Equipment List

Monitoring
- Multi-Gas Monitor
  - Monitor H2S, CO, O2 and combustibles
  - Calibration gas cylinders
  - Carrying case

Ventilation
- Portable Gasoline Ventilation Blower
- 1 – 8-inch x 15 feet duct
- 1 – 8-inch x 25 feet duct
- 2 – duct storage racks

Retrieval
- Tripod and winch system (two-way and three-way
- Full-body harness with back and shoulder D-rings
- 2' Y line
- Carry bag

Communication
- Two-way radio

Recue Breathing Apparatus
- Escape respirator (5-minute minimum)

Signage
- Danger – Confined Space
- Confined Space Permit document holder

Personal Protective Equipment
- Hard hat
- Safety glasses
- Steel-toe boots
- Gloves
- Knee pads (optional)

Item #3 – Develop and Implement an Information Management System

Development date: January 1, 2007 - ongoing

Discussion: At the time the City of Brentwood developed its CMOM in 2006, information was difficult to obtain because there was no central repository of files and no formal program for obtaining and storing digital records. Since that time, three components of information management have been implemented, and as technology evolves, future improvements are anticipated, which is why the development schedule is listed as "ongoing". Since 2006, the following programs have been put in place:

1. A central filing system for all correspondence has been developed. While this was a simple step, the act of making information such as SOP's and record drawings accessible in a straightforward manner has been very beneficial. Additionally, all digital files are organized on a Department network drive, which is backed up each night.
2. The implementation of a citywide GIS system has probably been the most useful information management tool. The Water and Sewer Department spearheaded the GIS system development in the city, and continues to do so. All manholes, grinder pumps, lift stations, grease traps, etc., have been included in the GIS, along with aerial photos, parcel layers, topography, and related information. All Department office personnel utilize the GIS system, most of whom do so several times daily, and many field personnel are now using it, and some are using it in the field. The latest innovation has been to link CCTV files from sewer inspections directly to the GIS system, so possible defects and lateral locations can be easily identified.
3. The Department's SCADA system in 2006 was underutilized, but with changes and upgrades to the system, it now functions as a monitoring program for all sewer lift stations, including run times and patterns for each lift station, and, for those facilities where it is available, discharge pressure and flow rate are also monitored. As with GIS, this information is utilized by several personnel, and is available remotely at all hours. Although not specifically part of the City's SCADA system, a related component of information management involves the monitoring of our 6 ADS sewer flow meters, which is available real-time and also in monthly summary reporting. All sewer pump stations are included as part of the SCADA system.

For work orders, an Access database is used to enter and track activities of the Department. In the past couple of years, new systems have been evaluated, and it is possible that a new work order system will be implemented in the near future, but the current system still serves the Department well. Because it is Access-

based, we have sometimes taken work orders and linked them to GIS, so that issues such as odor complaints can be tracked. This and similar scenarios are discussed in more detail with Item #11.

The following information is attached with this item:

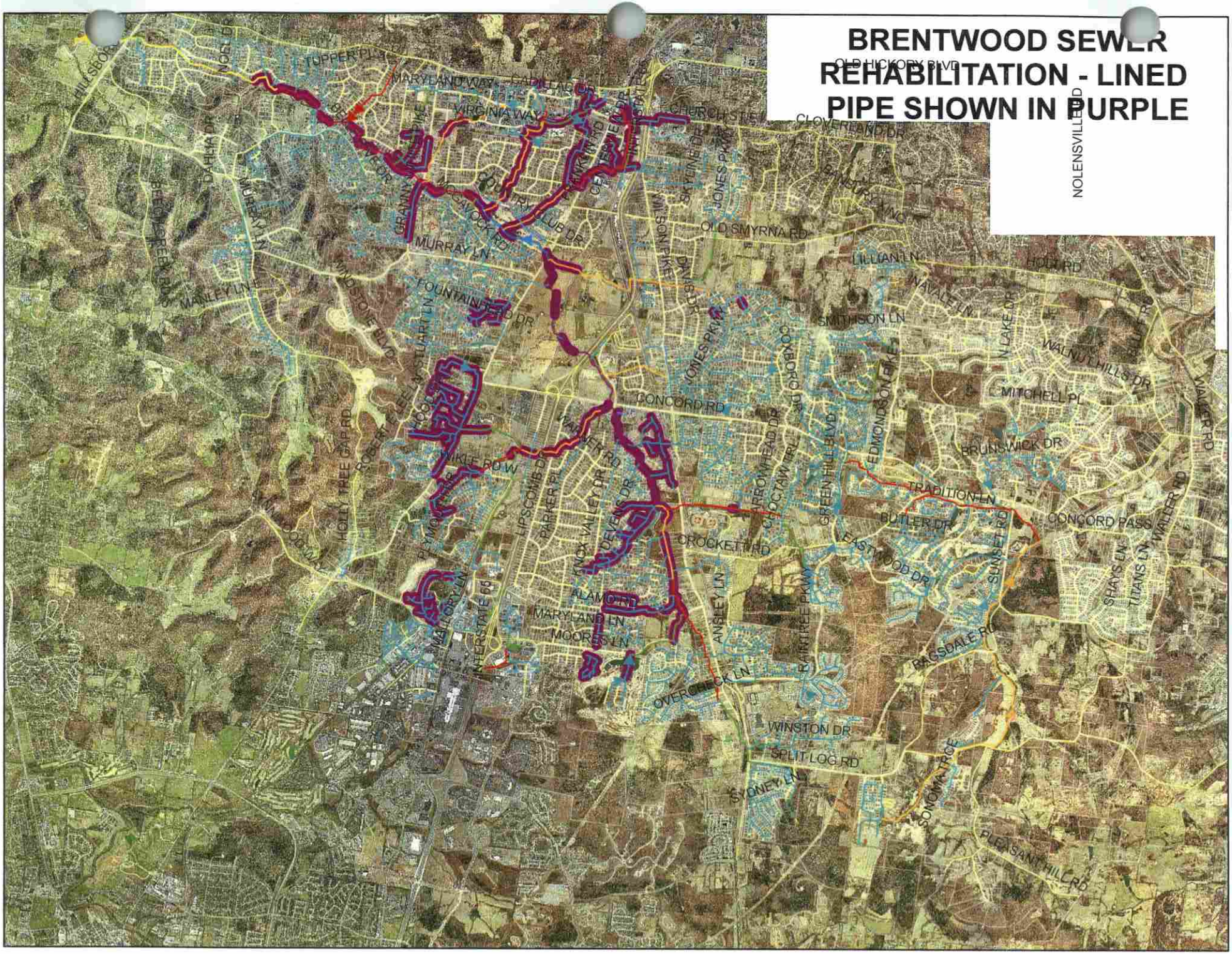
3-1 Two examples of GIS-tracking of the sewer rehabilitation program

3-2 Screen shot of the Lift Station Overview and Pump Run Time screens from the SCADA system

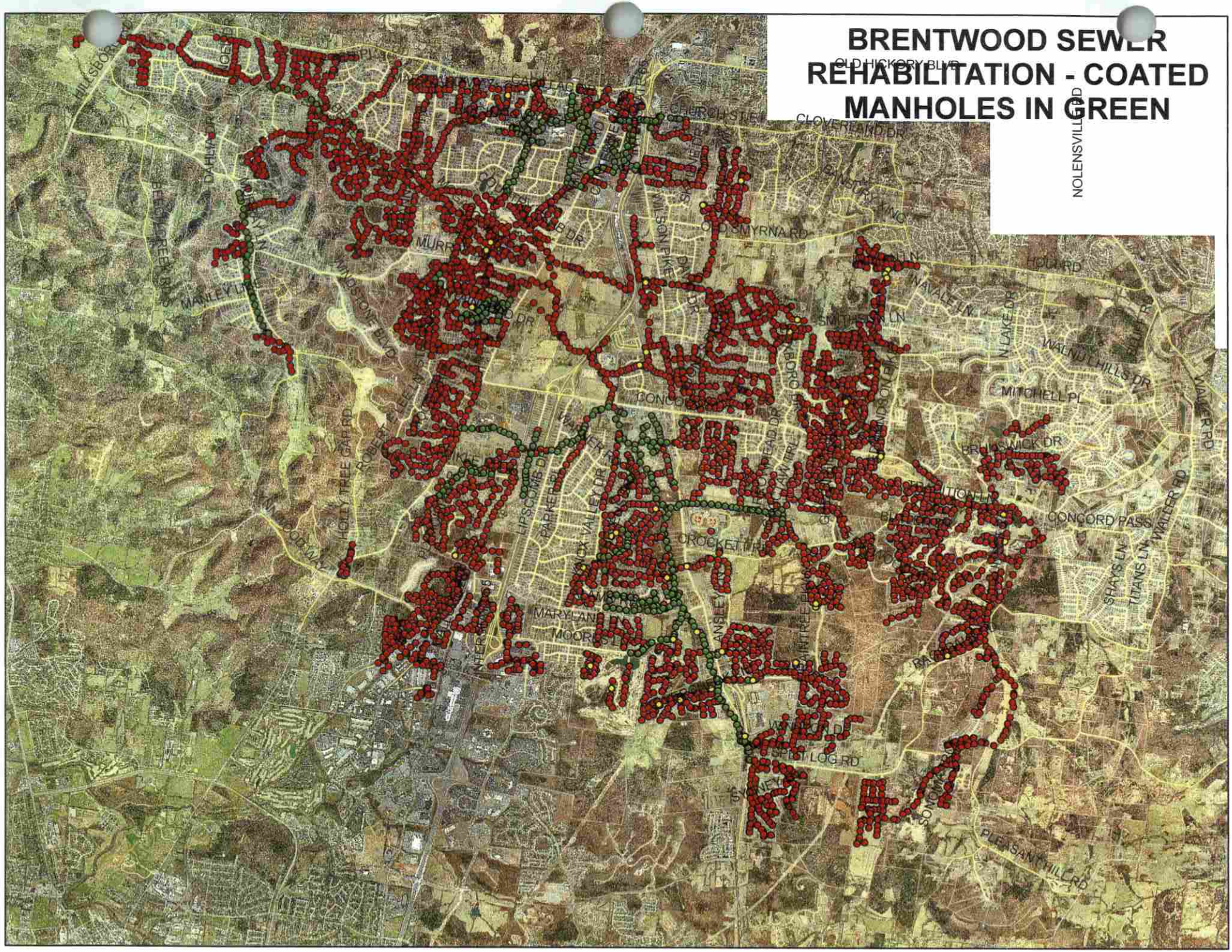
3-3 A printout of an example report from ADS

3-1 Two examples of GIS-tracking of the sewer rehabilitation program

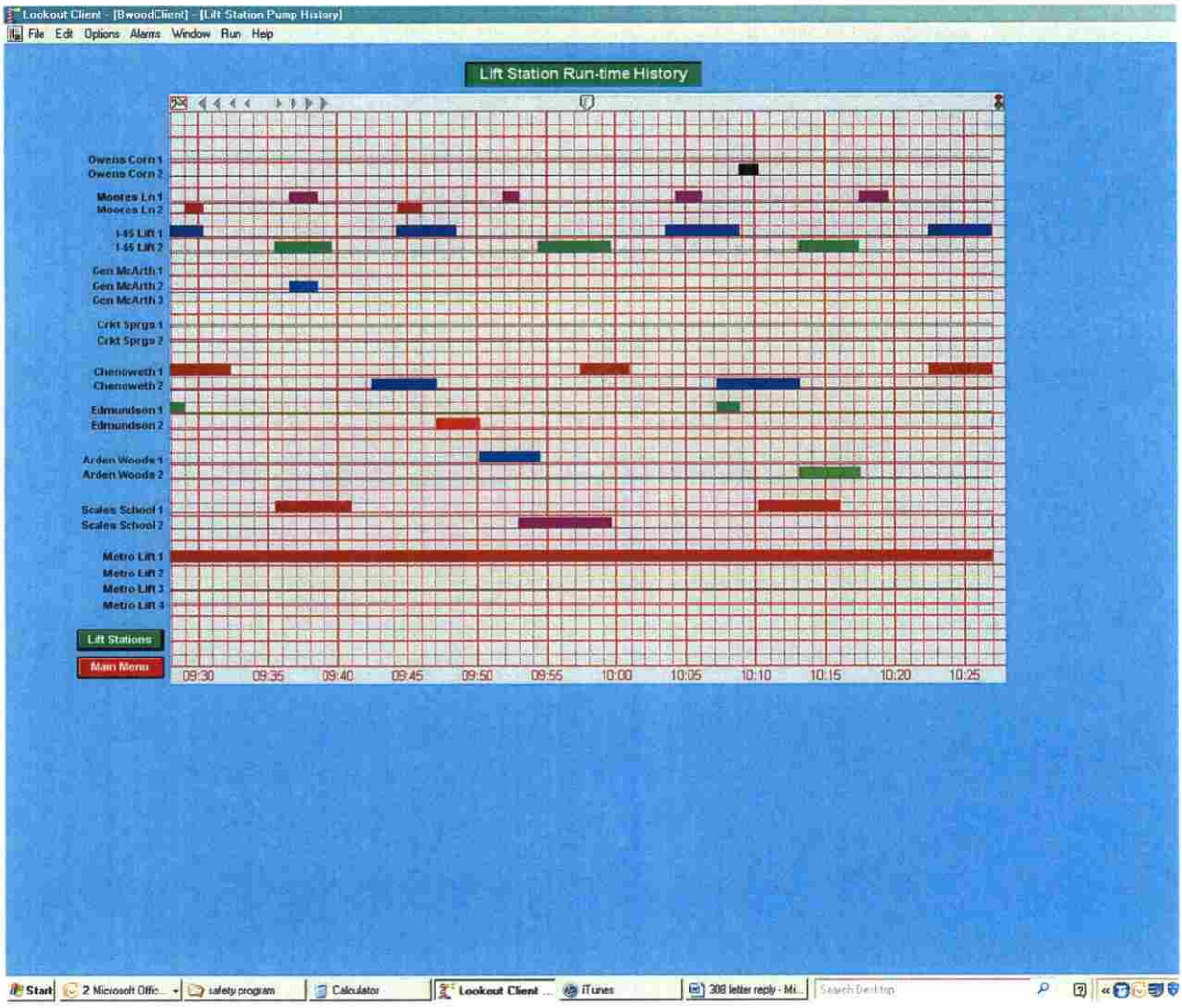
BRENTWOOD SEWER REHABILITATION - LINED PIPE SHOWN IN PURPLE



BRENTWOOD SEWER REHABILITATION - COATED MANHOLES IN GREEN



3-2 Screen shot of the Lift Station overview and Pump Run Time screens from the SCADA system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File Edit Options Alarms Window Run Help
Lift Station Run-time History
Owens Corn 1
Owens Corn 2
Moores Ln 1
Moores Ln 2
I-65 Lift 1
I-65 Lift 2
Gen McArth 1
Gen McArth 2
Gen McArth 3
Crkt Sprgs 1
Crkt Sprgs 2
Chenoweth 1
Chenoweth 2
Edmundsen 1
Edmundsen 2
Arden Woods 1
Arden Woods 2
Scales School 1
Scales School 2
Metro Lift 1
Metro Lift 2
Metro Lift 3
Metro Lift 4
Lift Stations
Main Menu
09:30
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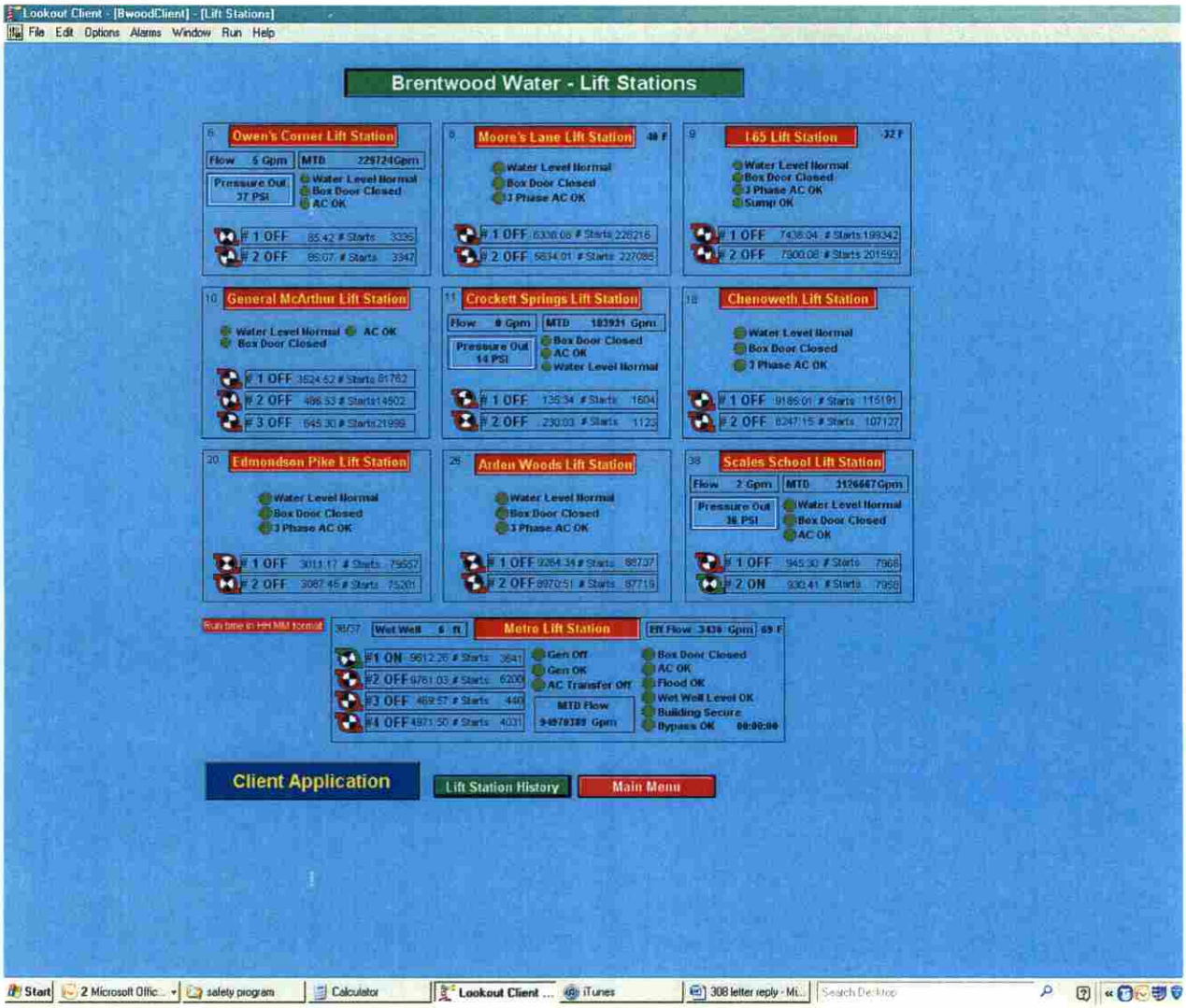
09:40
09:45
09:50
09:55
10:00
10:05
10:10
10:15
10:20
10:25
Start
2 Microsoft Offic...
safety program
Calculator
Lookout Client ...
iTunes
308 letter reply - Mi...
Search Desktop


Lookout Client - [BwoodClient] - [Lift Stations]
File Edit Options Alarms Window Run Help
Brentwood Water - Lift Stations
6 Owen's Corner Lift Station
Flow 5 Gpm
MTD 229724Gpm
Pressure Out 37 PSI
Water Level Normal
Box Door Closed
AC OK
1 OFF 85.42 # Starts 3335
2 OFF 86.07 # Starts 3347
8 Moore's Lane Lift Station
Water Level Normal
Box Door Closed
3 Phase AC OK
1 OFF 6336.08 # Starts 226216
2 OFF 5834.01 # Starts 227086
9 I-65 Lift Station
Water Level Normal
Box Door Closed
3 Phase AC OK
Sump OK
1 OFF 7436.04 # Starts 199342
2 OFF 7900.08 # Starts 201593
10 General McArthur Lift Station
Water Level Normal
AC OK
Box Door Closed
1 OFF 3524.62 # Starts 81762
2 OFF 486.53 # Starts 14502
3 OFF 645.30 # Starts 21999
11 Crockett Springs Lift Station
Flow 0 Gpm
MTD 183931 Gpm
Pressure Out 14 PSI
Box Door Closed
AC OK
Water Level Normal
1 OFF 735.34 # Starts 1604
2 OFF 230.03 # Starts 1123
18 Chenoweth Lift Station
Water Level Normal
Box Door Closed
3 Phase AC OK
1 OFF 9186.01 # Starts 115191
2 OFF 8247.15 # Starts 107127
20 Edmondson Pike Lift Station
Water Level Normal
Box Door Closed
3 Phase AC OK
1 OFF 3013.17 # Starts 79557
2 OFF 3087.45 # Starts 75201
26 Arden Woods Lift Station
Water Level Normal
Box Door Closed
3 Phase AC OK
1 OFF 9264.34 # Starts 88737
2 OFF 8970.51 # Starts 87719
38 Scales School Lift Station
Flow 2 Gpm
MTD 3126647Gpm
Pressure Out 36 PSI
Water Level Normal
Box Door Closed
AC OK
1 OFF 945.30 # Starts 7968
2 ON 930.41 # Starts 7958
Run time in HH:MM format
Wet Well 6 ft
Metro Lift Station
Eff Flow 3436 Gpm
#1 ON 9612.26 # Starts 3641
#2 OFF 9761.03 # Starts 6200
#3 OFF 469.57 # Starts 440
#4 OFF 4971.50 # Starts 4031
Gen Off
Gen OK
AC Transfer Off
MTD Flow
Box Door Closed
AC OK
Flood OK
Wet Well Level OK
Building Secure
Bypass OK
Client Application
Lift Station History
Main Menu
Start
2 Microsoft Offic...
safety program
Calculator
Lookout Client ...
iTunes
308 letter reply - Mi...
Search Desktop

3-3 A printout of an example report from ADS

HYDROGRAPH REPORT

Nashville, TN

Flow Monitor

T-02

Nominal Diameter 30-in

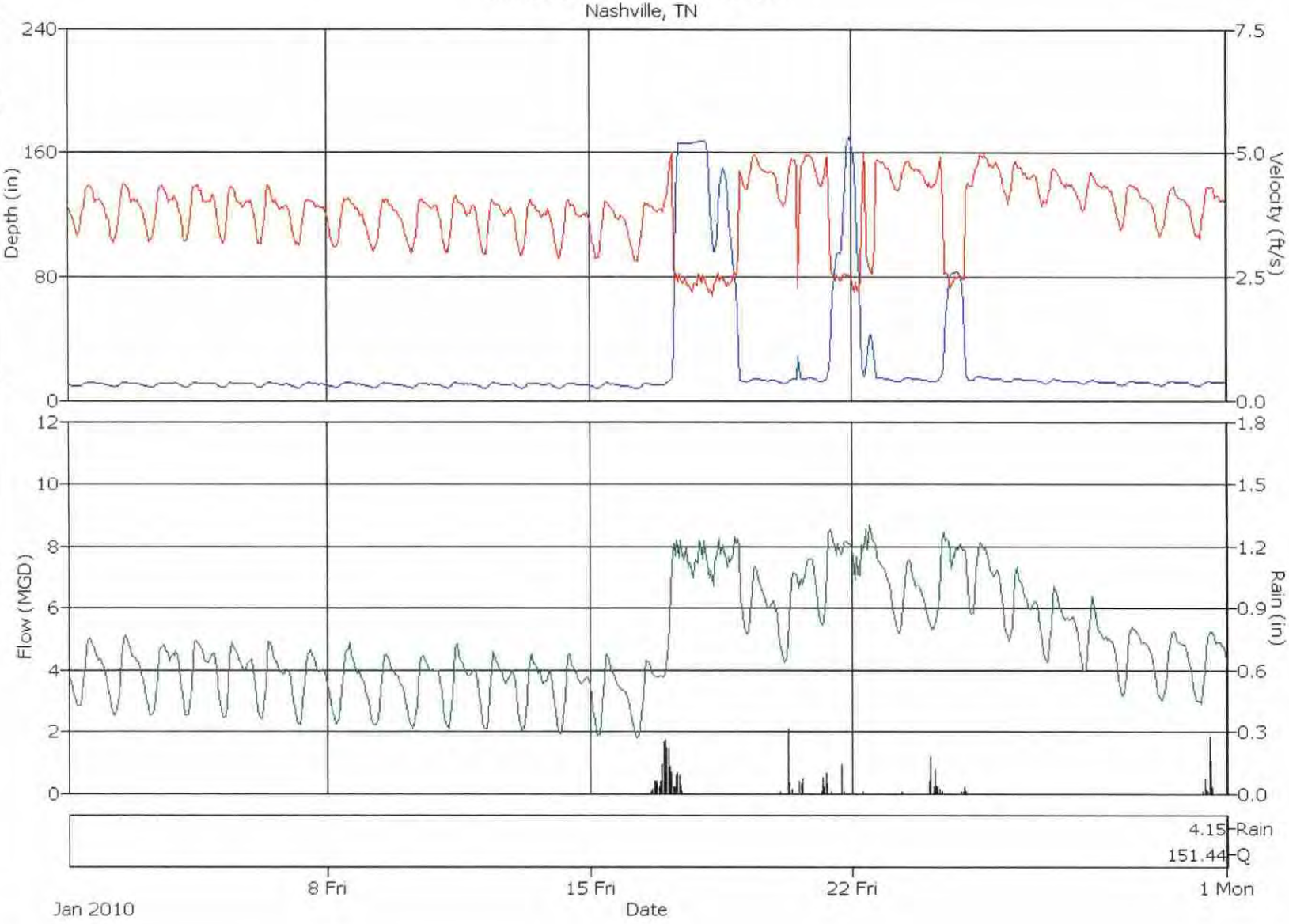
Report Period

1/1/2010 To 12/31/2010

Legend

- Depth
- Silt
- Velocity
- Quantity
- Rain

ADS ENVIRONMENTAL SERVICES



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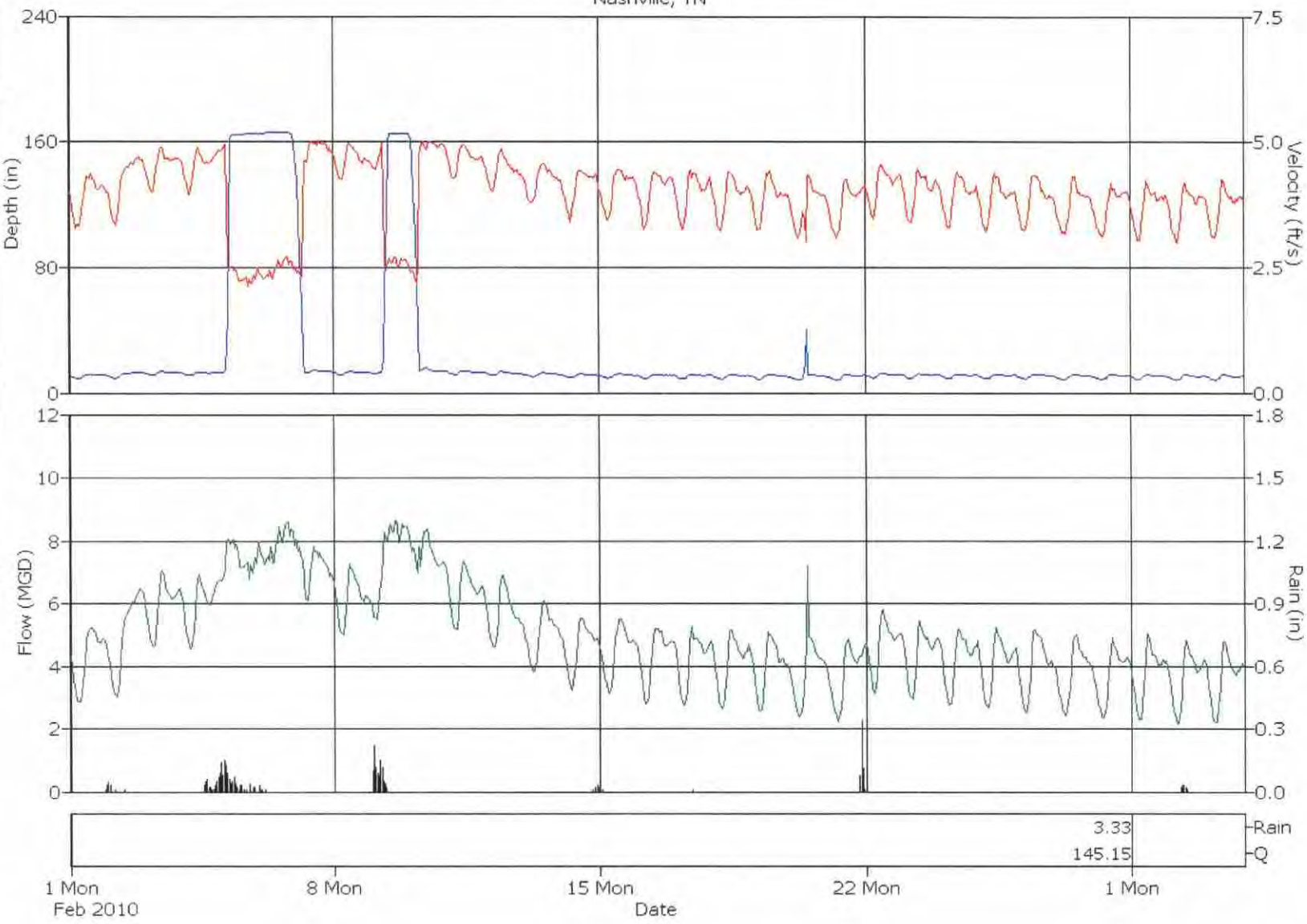

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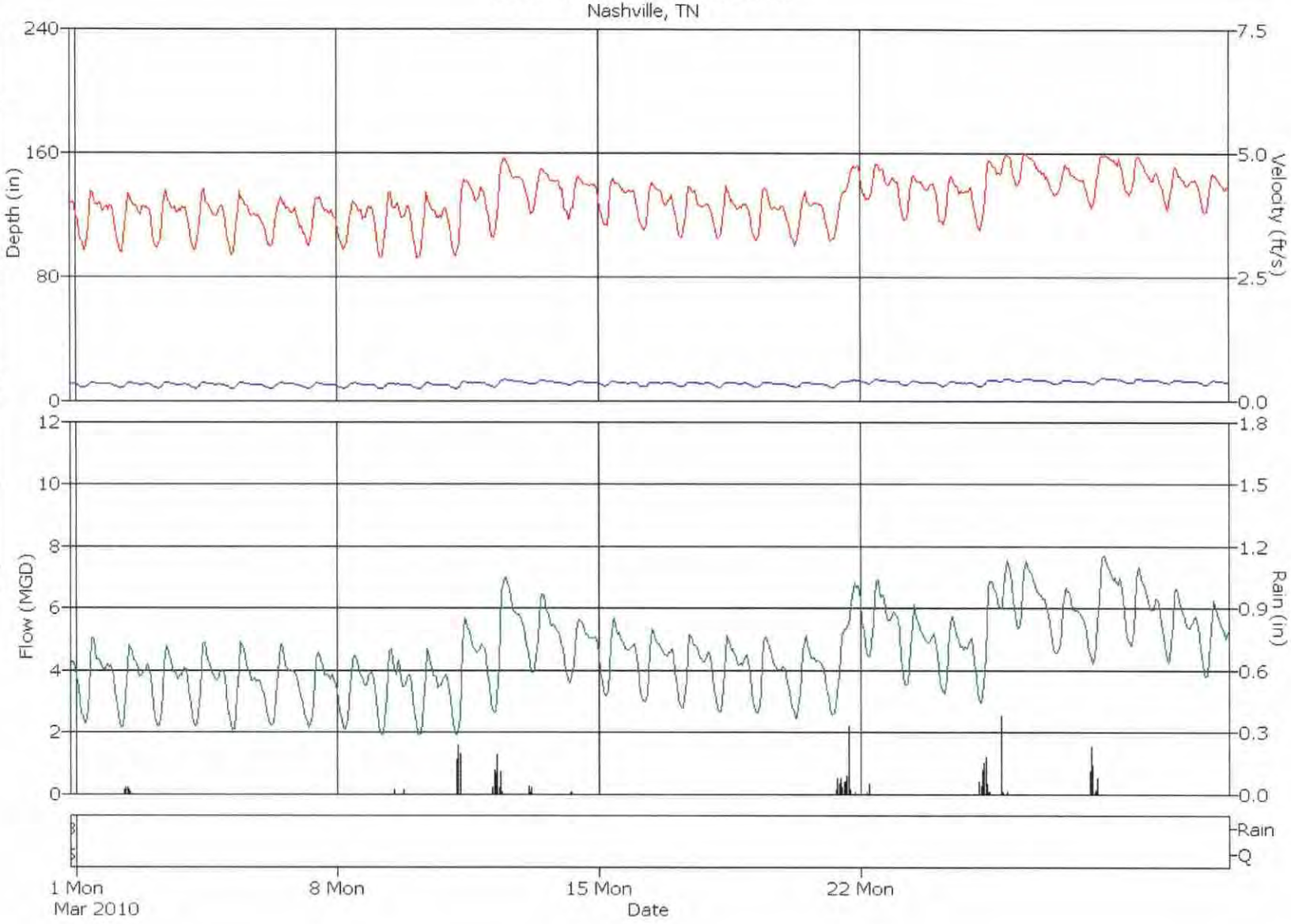

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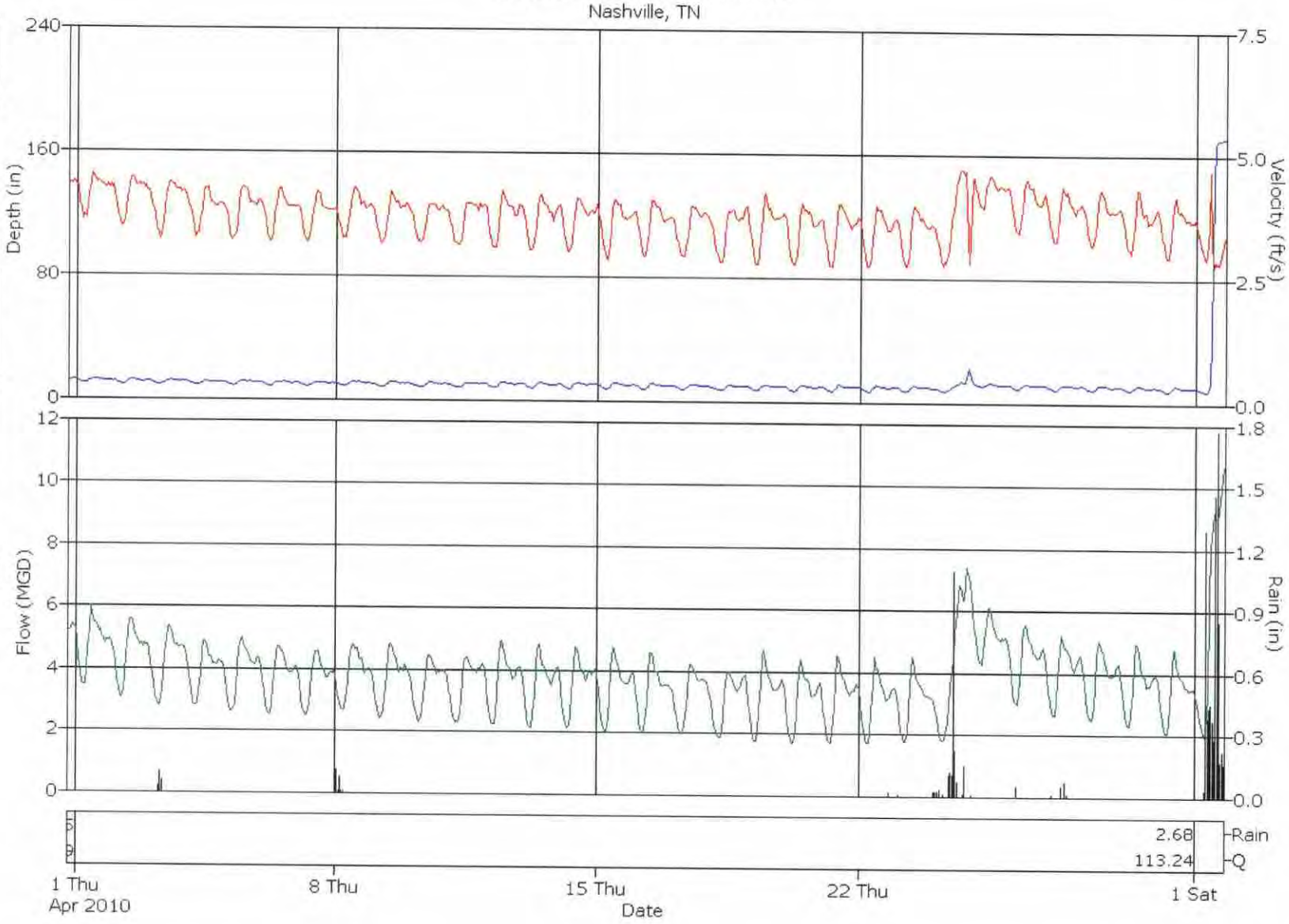

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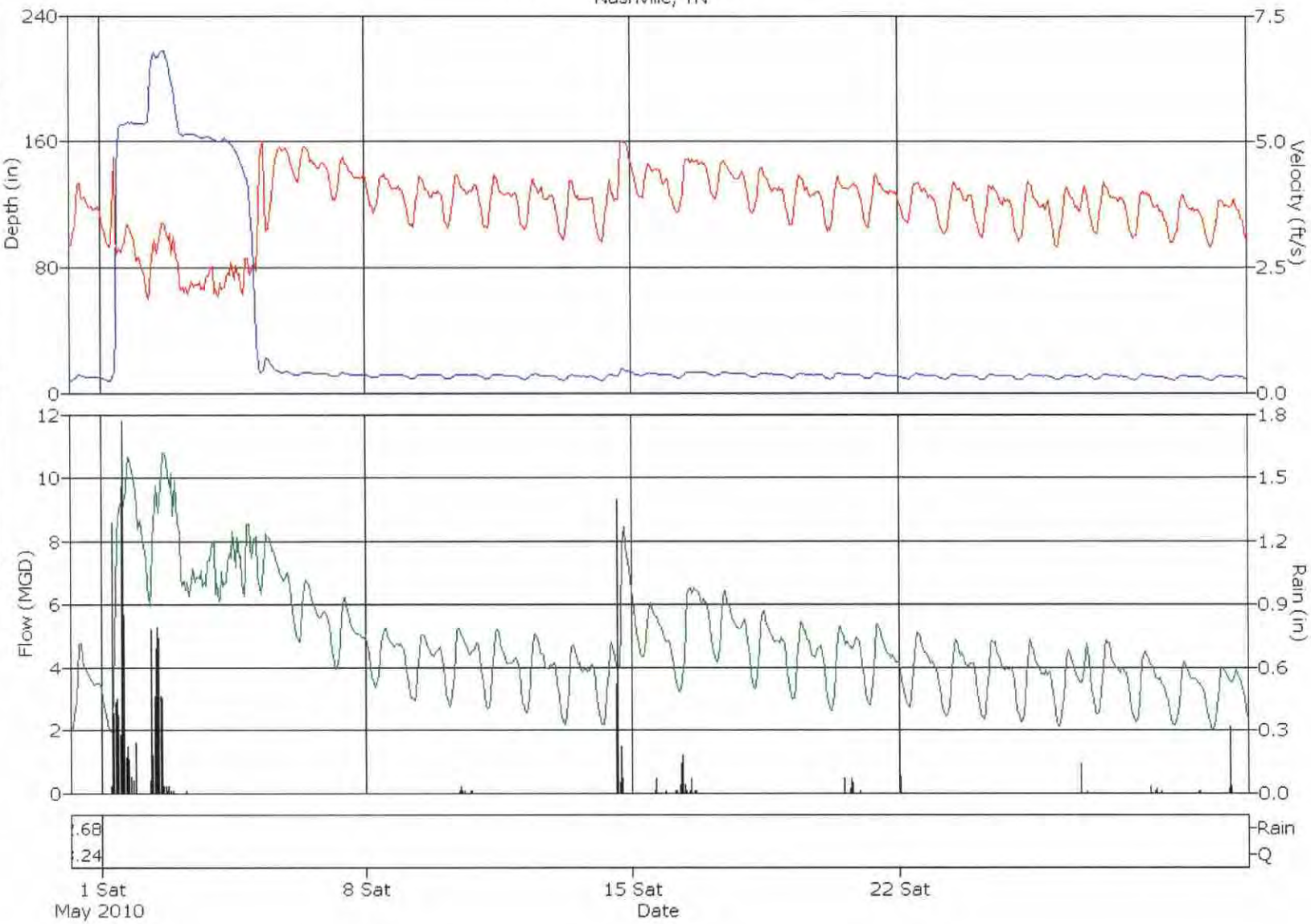

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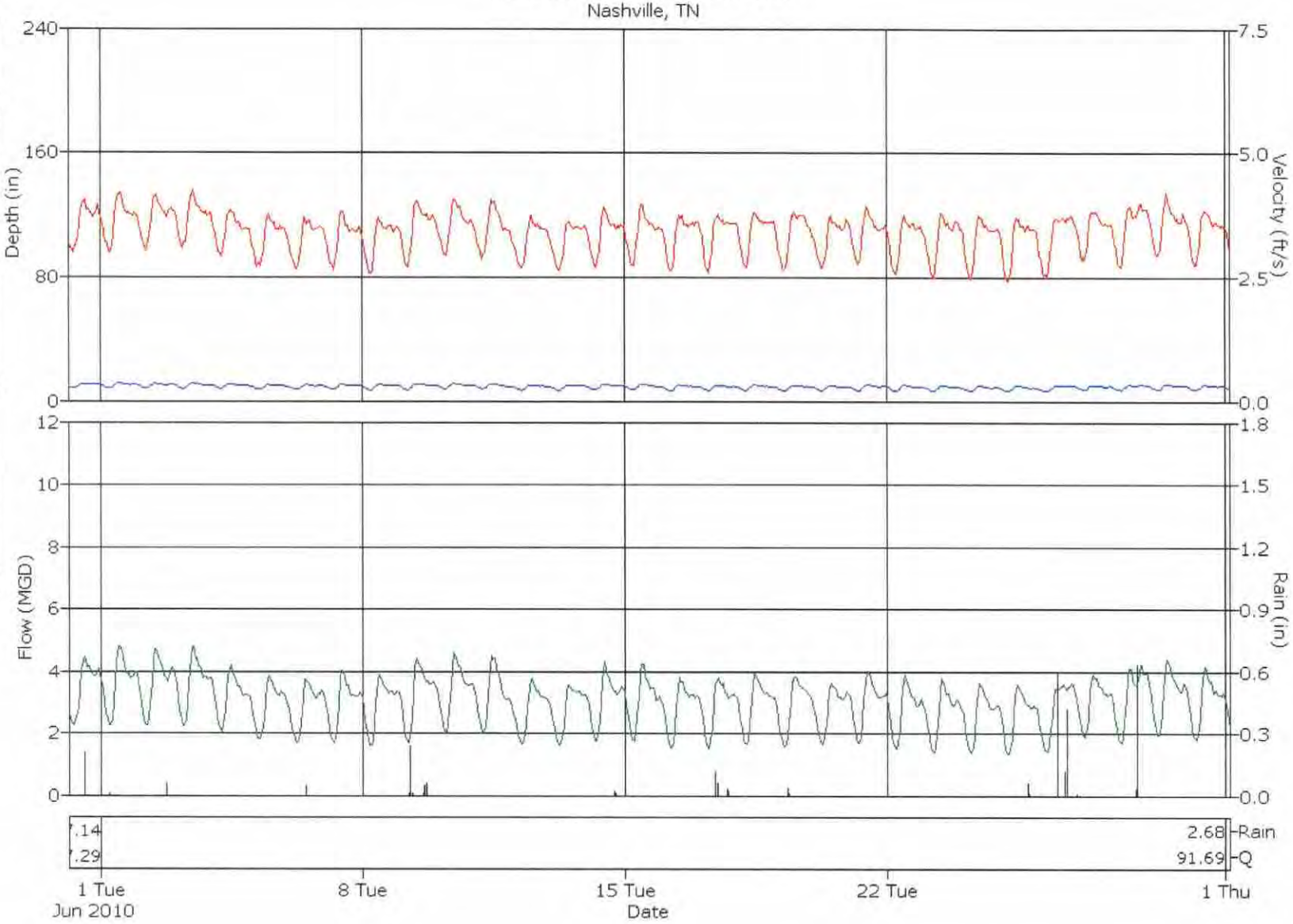

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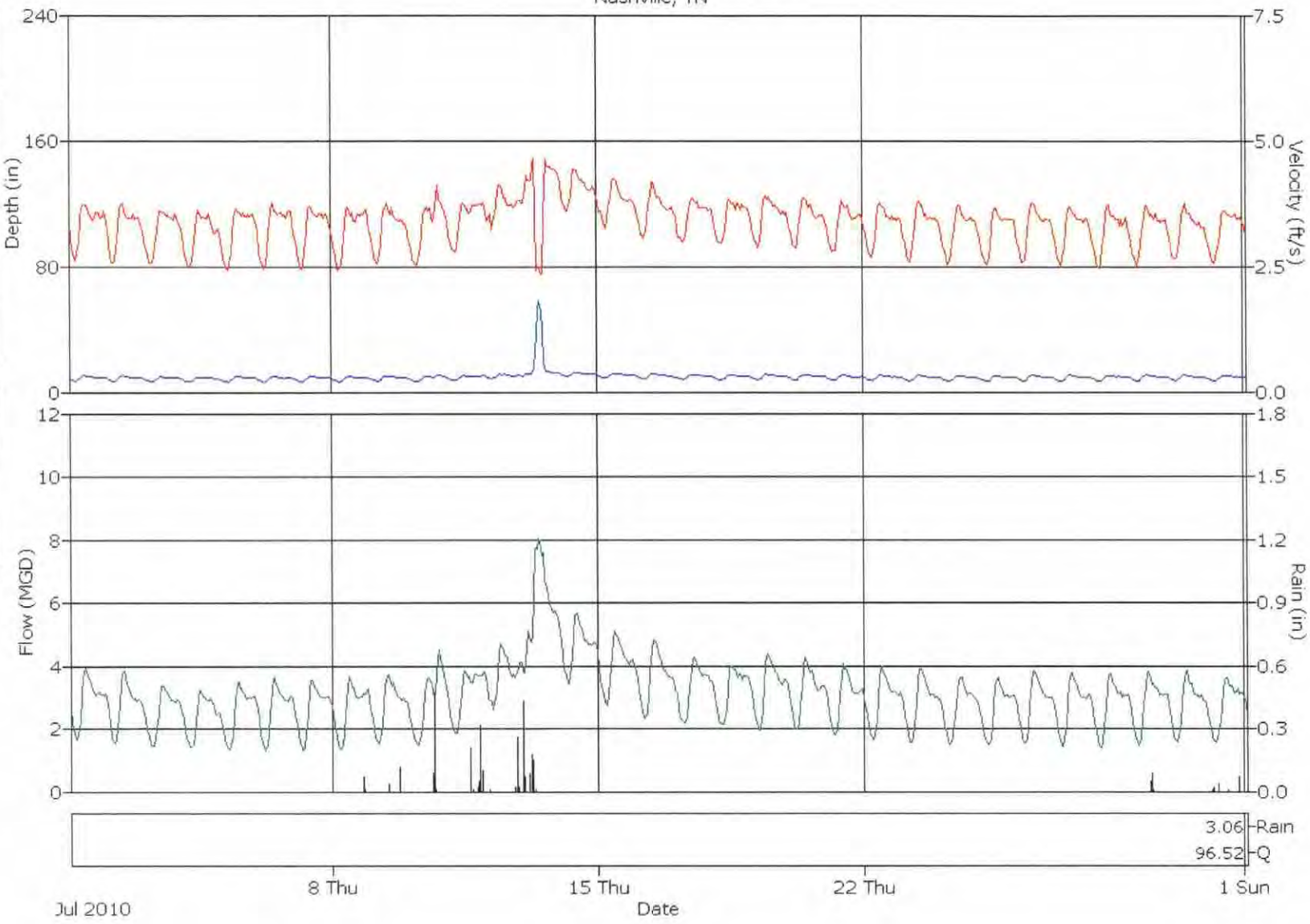

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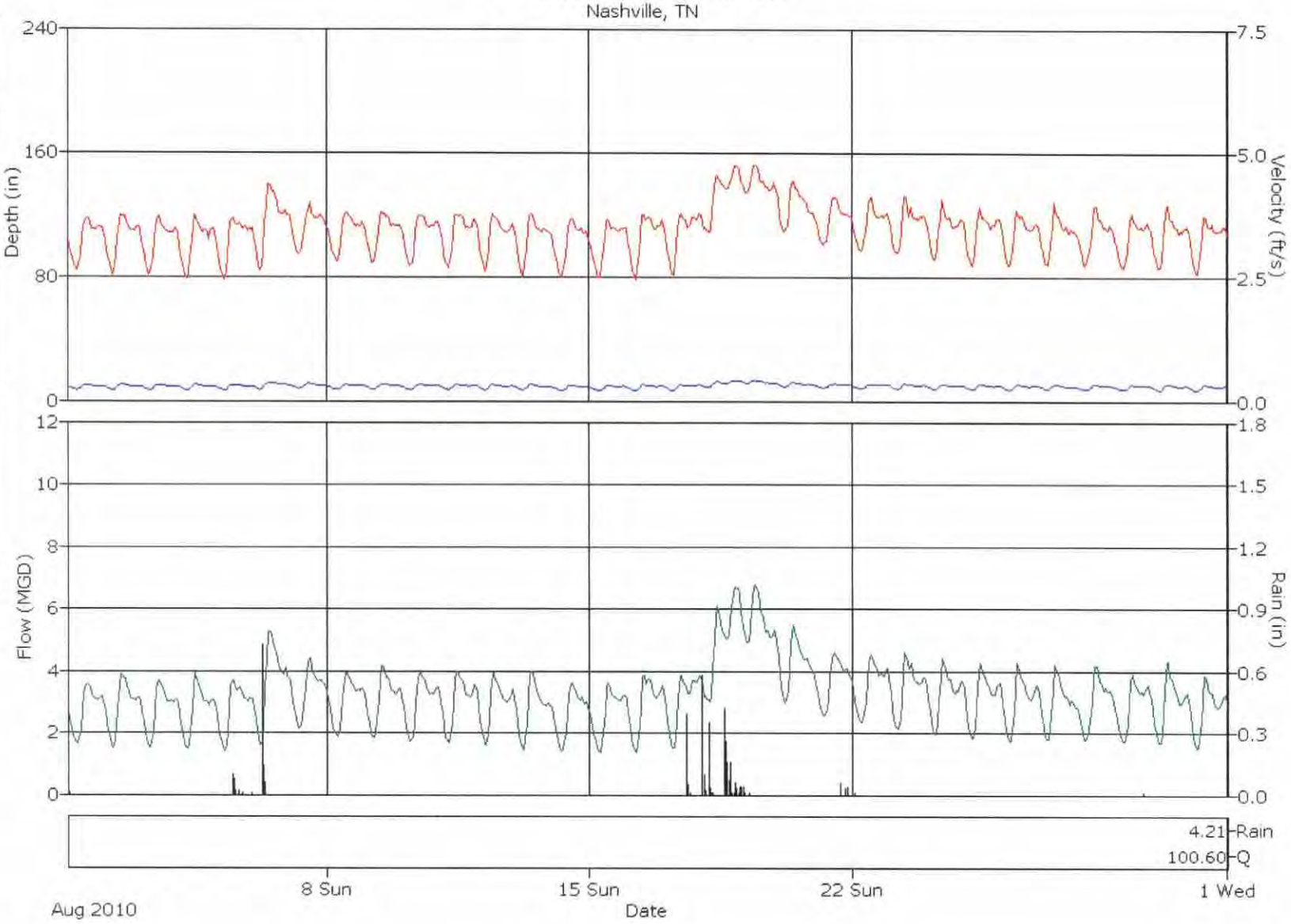

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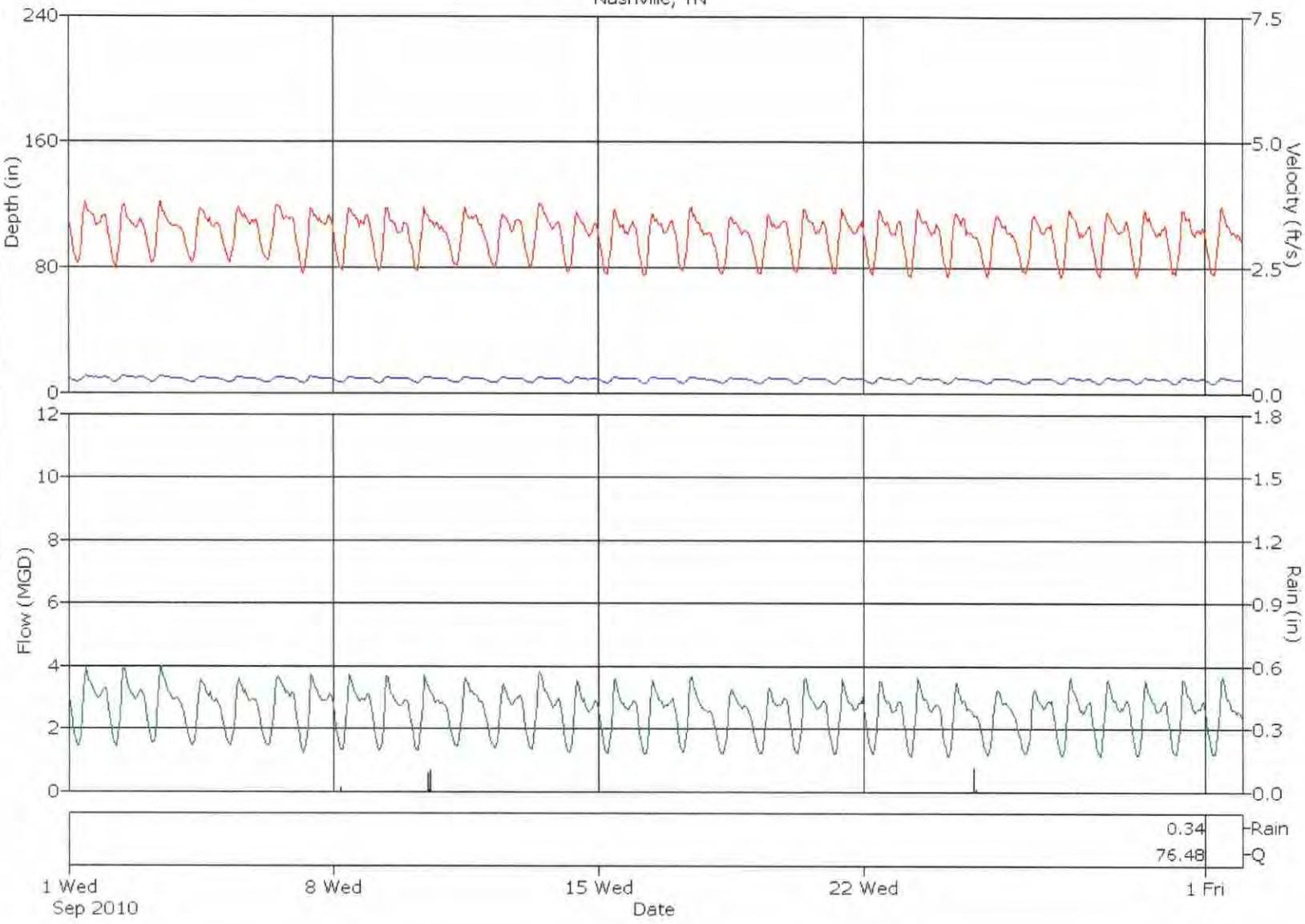

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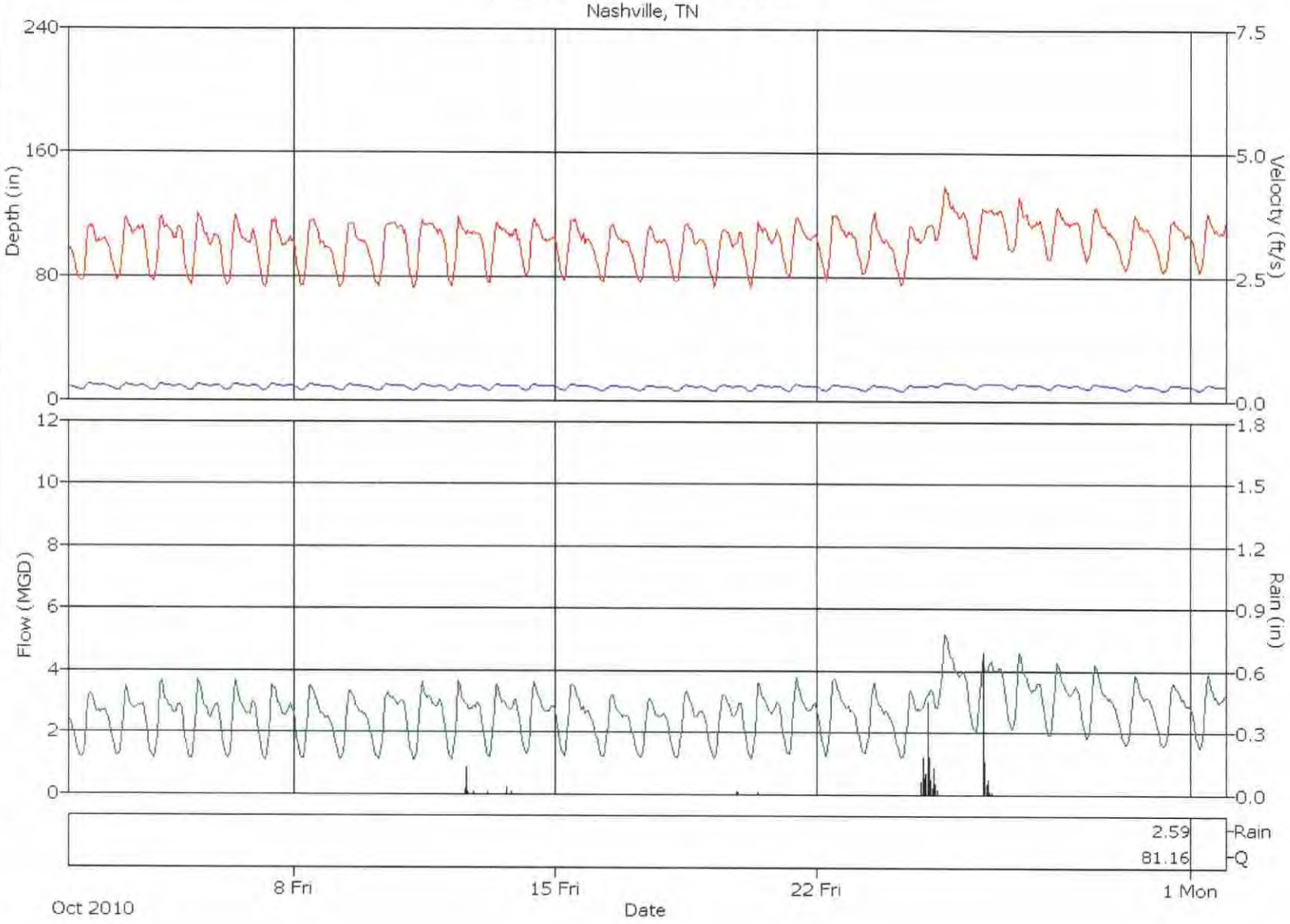

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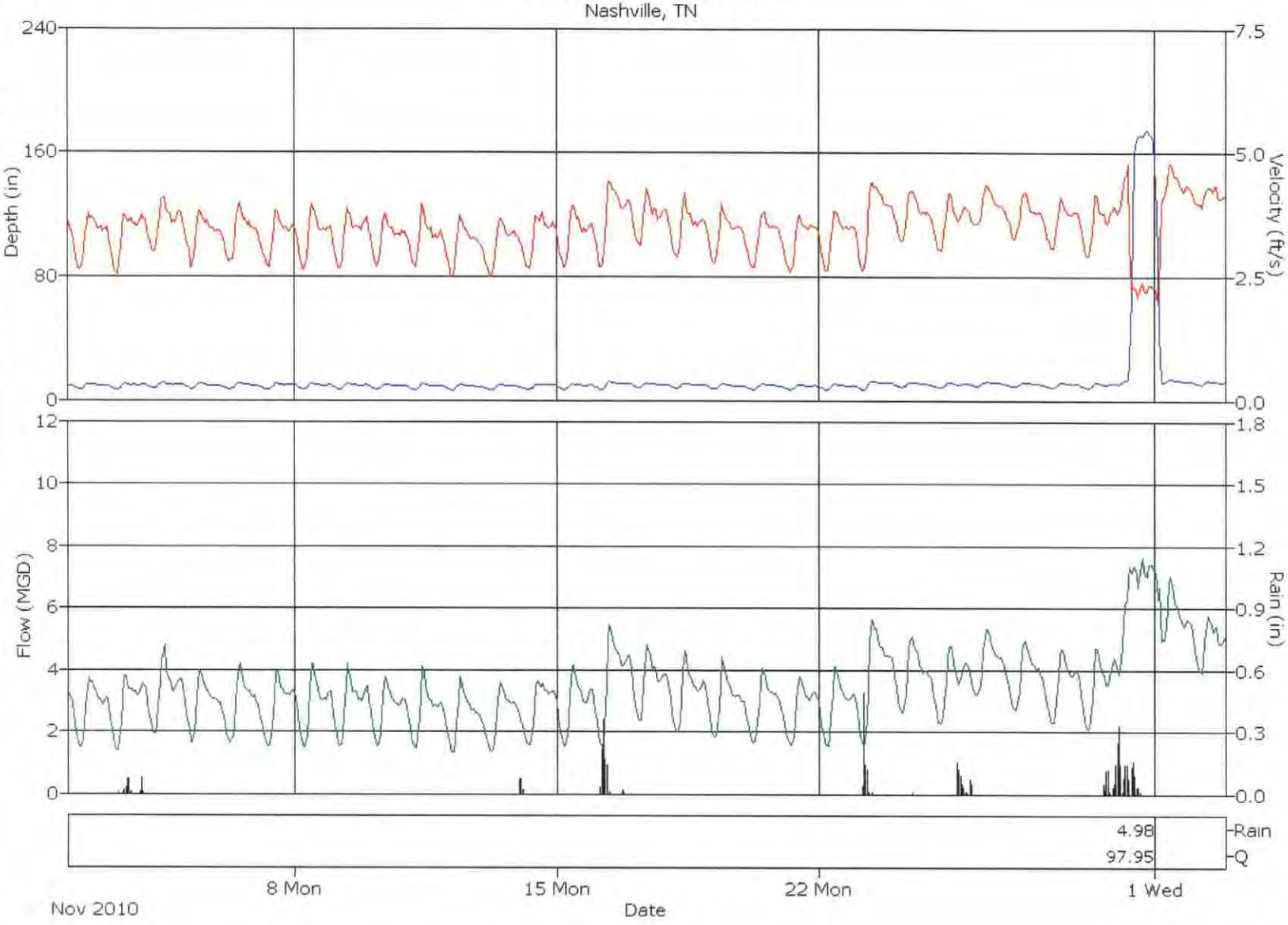

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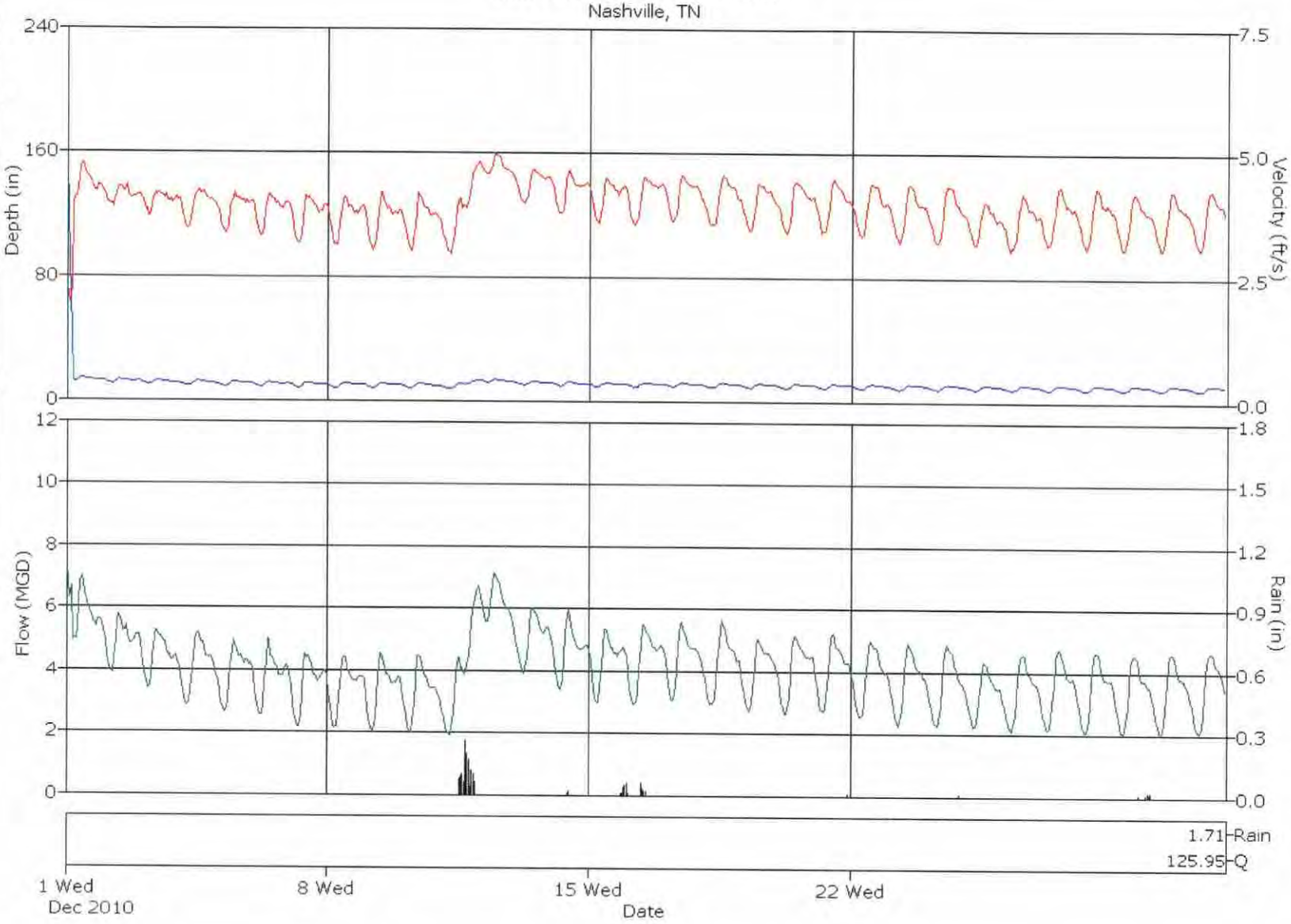


Item #4 – Engineering Program Improvements (including design review, system inventory, implementing GIS, updating City's standard specifications and SOP's for construction inspections)

Development date: January 1, 2007 - ongoing

Discussion: In 2006, most engineering for the Water and Sewer Department was performed by an outside consultant. Today, most of these services are performed in-house and consultants are primarily used in specific situations where specific expertise is required. One major change since 2006 that is not unique to Brentwood is the pace of development has slowed considerably. While Department personnel are specifically tasked with participating in development review from a project's initial stages in conjunction with the Planning and Codes Department, there are not many occasions where input is actually needed. While we do provide some input and enter comments as required in the city-wide review database (a program called "Trak-it", which could also be termed a component of an Information Management System), development review and subsequent inspection has not been a major issue for the City of Brentwood in recent years.

The standard specifications and details have been reviewed and updated for a few important items, primarily for corrosion control as will be discussed with Item #15, and a draft of a complete re-working of the standard specifications is complete. The primary updates to this process involve procedural changes in reviewing the "requests for availability" at the initial stages of a project. This review will assist in managing the remaining capacity in the collection system. Other components of this Item #4 are discussed in other sections of this document.

Many of the items and programs discussed in this reply can also be found at our website: www.brentwood-tn.org/water.

The following information is attached with this item:

4-1 A copy of the front-end of the new construction specifications, which spell out the engineering aspects for development review.

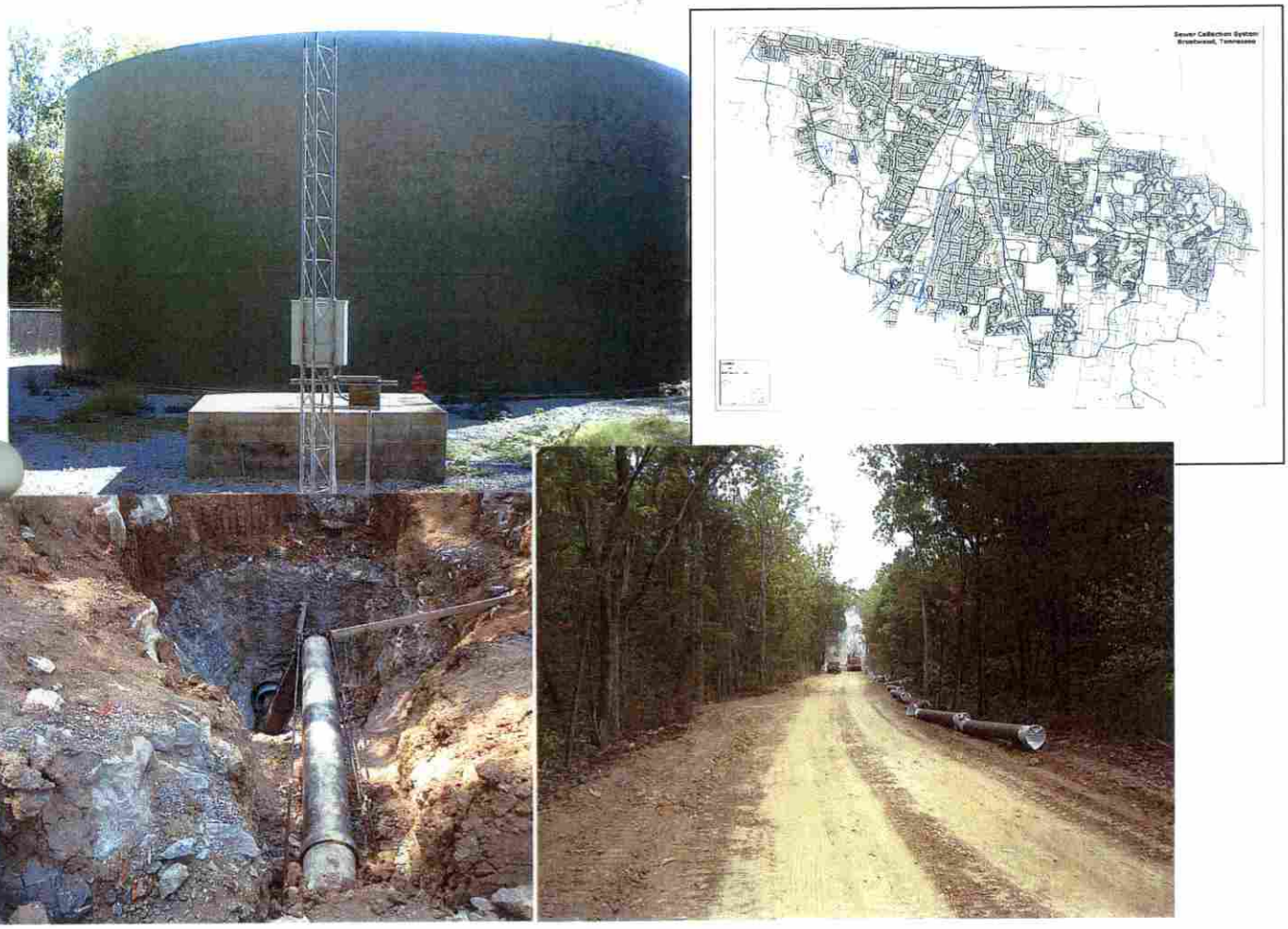
4-2 A copy of the current Request for Availability form.

4-3 A copy of the spreadsheet tracking where availability is requested and granted.

4-1 A copy of the front-end of the new construction specifications, which spell out the engineering aspects for development review

City of Brentwood, Tennessee
Water Services Department

Water and Sewer Planning Guidelines and Standard Specifications



Approved By: _____

WS Department Director **Date**

January, 2011

Prepared by the City of Brentwood, Water Services Department

WATER AND SEWER PLANNING GUIDELINES and STANDARD SPECIFICATIONS

APPROVALS PAGE

Approval, State of Tennessee, Division of Water Supply:

Approval, State of Tennessee, Division of Water Pollution Control:

TABLE OF CONTENTS

Division 3 - Concrete

Section 03001 - Concrete

Division 11 - Equipment

Section 11335 - Simplex Grinder Pumps

BRENTWOOD WATER SERVICES
STANDARD DRAWING INDEX

WATER		SEWER		GENERAL	
W1	Typical Trench Section	S1	Typical Trench Section	G1	Street Replacement
W2	Fire Hydrant Assembly	S2	Standard Precast Manhole	G2	Street Replacement – Full Overlay
W3	Concrete Thrust Blocking – Tee / Plug	S3	Standard Precast Manhole Sections	G3	Tunneling Detail
W4	Concrete Thrust Blocking - Bends	S4	Standard Precast Shallow Manhole	G4	Concrete Cap
W5	Concrete Anchor	S5	Standard Drop Manhole	G5	
W6	¾" Service Assembly	S6	Manhole Covers	G6	
W7	1" Meter Assembly	S7	Service Connection	G7	
W8	2" & 3" Meter Assembly	S8	Manhole Vent	G8	
W9	Combination Fire and Domestic Meter Pit	S9	Force Main Air Release Valve	G9	
W10	Fire Meter Box	S10	Grinder Pump Details	G10	
W11	Reduced Pressure Backflow Preventer	S11	Grinder Pump Layout	G11	
W12	Fire Service Backflow Preventer	S12	Force Main Service Valve Box	G12	
W13	Gate Valve, Box and Cover w/ Concrete Pad	S13	Force Main Connection to Existing Manhole	G13	
W14	Air Valve and Vault	S14		G14	

END OF DOCUMENT 00000 - TABLE OF CONTENTS

INTRODUCTION

Purpose:

The purpose of these specifications is to streamline, standardize and update the materials utilized in the City of Brentwood's water and sewer systems and the procedures followed when planning, installing, inspecting and testing those materials. This is intended to be a "living document", with frequent updates that will be available on-line. These standards are intended to apply, where applicable, to facilities installed in conjunction with private developments as well as the City's capital improvement projects.

The intention is to maintain a current set of specifications and details on the City's Website. ***It is the responsibility of the Developer / Contractor / Supplier to ensure their version of these standards is current.***

BRENTWOOD WATER SERVICES
DEVELOPMENT GUIDELINES & PROCEDURES

The City of Brentwood's Department of Water Services, in an effort to streamline and formalize its procedures for development, is providing this general guideline for the approval process. Potential Developers are encouraged to thoroughly review the following information prior to beginning a project:

- The current water and sewer service providers coverage map for the City of Brentwood, which can be found at http://www.brentwood-tn.org/index.aspx?page=229
- The Department's current Standard Specifications for Water and Sewer Construction, which can be found at http://www.brentwood-tn.org/index.aspx?page=235
- The pertinent sections of the City Code, located at http://www.brentwood-tn.org/index.aspx?page=90
- The State-imposed sewer moratorium area, if applicable, located at http://www.brentwood-tn.org/Modules/ShowDocument.aspx?documentid=262

The general steps, outlined in detail below, are as follows:

STEP	DESCRIPTION	APPROXIMATE CITY REVIEW TIMEFRAME
1	Request for Water / Sewer Availability	5 Business Days
2	Planning Commission Review	As Deemed Necessary by City
3	Construction Plans Review	10 Business Days per Review Cycle
4	Shop Drawing Review	5 Business Days
5	Preconstruction Conference	1 Day
6	Construction	As Deemed Necessary by the Department
7	Testing and Acceptance	As Deemed Necessary by the Department
8	Warranty Inspections / Bonding	As Deemed Necessary by the Department

1. Request for Water / Sewer Availability

Prior to submitting any plan proposing to connect to, or increase usage of, the public water or sewer system, an Owner or his representative must apply for Availability. A request form is available at the following location: http://www.brentwood-tn.org/index.aspx?page=229 . Each request for Availability must be completed in its entirety, signed by the Owner or their representative and include a detailed sewer capacity analysis and domestic water, fire protection and irrigation hydraulic analysis. Upon receipt of the request, the City will review and respond with the following information:

- The locations and sizes of existing water and sewer facilities;
- The modeled pressure and flow at the point of connection (which the developer's engineer will need to verify as part of the design process);
- The offsite improvements or upsizing required to provide improved service to existing or future development;
- The number of approved connections for the proposed development.

2. City Planning Commission Review

It is encouraged that, at the conceptual stage of the design, a meeting be held with the Department staff to provide an overview of the project. The initial step in the City of Brentwood for new development is to obtain Planning Commission approval for the project. The Water Services Department takes part in the review process as new developments or re-developments are considered. At a minimum, the following information should be included at the Planning Commission review stage:

A. General layout of all water and sewer facilities, with appurtenances;
B. Identification of size and point(s) of connection to the existing water and sewer system;
C. Determination of Availability.

3. Design Guidelines

Water Facilities

A. The State of Tennessee, "Community Public Water Systems Design Criteria" latest revision, shall be followed when designing public water systems within the City of Brentwood, unless otherwise stated.
B. Extensions to the public water system shall be sufficiently designed to generally provide 40 psi during peak demand at all service connections.
C. A hydraulic analysis shall be submitted that includes average and peak design flow calculations for the overall project as well as flow analysis of a typical unit(s) within the development. The analysis shall include recommended meter and service line size information for each structure/use within the development.

D. Generally, water lines shall be located outside the roadway, adjacent and parallel to public right-of-ways, generally behind the curb or at the top of bank where open ditches exist. Water lines should be located on opposite sides of the road from electric and gas lines; or maintain 5 feet horizontal separation when installed in the same general location. Water lines must maintain 10 feet horizontal separation from sanitary sewer lines. A public utility and drainage easement shall be provided where water facilities must be located outside public right-of-ways.

E. Each deeded parcel shall have a single service line and meter for domestic water service. Irrigation and fire protection service shall be provided by separate service line and meter. Service lines shall generally be located at the center of a lot. Meters shall be located at the customer's property line.

F. Water distribution lines shall be a minimum 6 inches in diameter unless otherwise approved by the Water Services Department. All dead end lines shall have a fire hydrant assembly; where permissible by the Water Services Department, an approved flushing hydrant assembly may be installed on water distribution lines less than 6 inches in diameter.

G. Valves shall be generally placed at no more than 1,000 foot intervals and on each line where water lines intersect.

H. Fire hydrant locations shall be approved by the Brentwood Fire Department and Water Services Department.

I. Water booster stations shall generally be below grade, top entrance, pumping stations designed for unattended operation and include SCADA for remote pump operations and telemetry for monitoring station operating conditions. Station configuration shall include site preparation with asphalt driveway, landscaping and approved security fence.

Sewer Facilities

A. The State of Tennessee, "Design Criteria for Sewage Works" latest revision, shall be followed when designing public water systems within the City of Brentwood, unless otherwise stated.

B. Extensions to the public sewer system shall be approved only if sufficient capacity exists in the downstream facilities to adequately convey the added loading or where downstream improvements to provide adequate conveyance are planned as part of the extension project.

C. A capacity analysis shall be submitted that includes average and peak flow calculations.

D. Generally, gravity sewer lines shall be located inside the roadway where possible, centered in a travel lane. Only when necessary shall gravity sewer lines by located at the rear of properties, between structures or outside public right-of-ways. A public utility and drainage easement shall be provided where sewer facilities must be located outside public right-of-ways.

E. Gravity sewer lines shall generally not be installed with less than 4 feet of cover, nor at depths greater than 12 feet. Consideration shall be given for

installing a pressure sewer system when gravity sewer depths exceed 12 feet in depth.

F. A pressure sewer system may be approved for providing service when, in the opinion of the Water Services Department, gravity sewer service is not practical.

G. Gravity sewer service lines shall generally be located 10 feet from the water service line (when centered on lot) and on the sewer's downstream side of the meter, out of the way of driveways, landscaping, headwalls, etc.

H. Individual pressure system pumping units shall be located next to the structure, in an easily accessible location, clear of driveways, landscaping features, headwalls, etc. Service line check valves installed on sewer pressure systems shall be located at customer's property line.

I. Sewer lift stations shall generally include submersible pumps installed below grade in a wet well configuration with check valves located in a separate and adjacent vault. Station shall include SCADA system for remote pump operations and telemetry for monitoring station operations. Station configuration shall include site preparation with asphalt driveway, landscaping and approved security fence.

4. Construction Plan Review

Once the project has moved beyond the Planning Commission stage, utility and grading construction plans shall be submitted. Although utilities are reviewed and approved by the Water Services Department and grading plans are reviewed and approved by the Engineering Department, concurrent reviews can generally be performed by both departments. For the Water Services Department, at a minimum, the following guidelines for preparing/submitting construction plans shall be followed:

A. Two sets of completed construction plans, stamped by a Professional Engineer licensed by the State of Tennessee;

B. Size and location of existing and proposed water and sewer lines and associated appurtenances;

C. Specifications for any items not in the City's Standard Specifications;

D. Detailed plans and engineering report for any special construction, such as water booster stations, sewer lift stations, creek crossings, etc.;

E. A cover sheet that includes a project location map, project identification, Owner contact information, appropriate approval signatories (Brentwood Water Services Department and State of Tennessee);

F. General layout of all existing and proposed non-City owned utilities (i.e. gas electric, communication, etc.);

G. All topographical features such as driveways, streets, rights-of-way, property lines and all drainage features;

H. Profile all sewer lines; also any utilities that conflict with water and sewer lines and water lines over 12 inches in diameter;

I. Show location of existing and proposed easements;

J. Copies of approvals from all applicable agencies (plans will not be approved for construction until other jurisdictions provide their approval), including:

a. Tennessee Department of Environment and Conservation – Aquatic Resource Alteration Permit
b. Tennessee Department of Transportation Utility Permit
c. US Army Corps of Engineers
d. Railroads
e. TVA
f. Columbia Gulf Gas
g. Other Utilities as Required

NOTE: At this time, the plans are considered to be acceptable for construction by the Water Services Department. Submit six sets of water and six sets of sewer plans to be stamped by the Water Services Department as approved. Plans are now ready to be approved by the State of Tennessee. ***A set of approved plans shall be kept at the jobsite at all times.***

5. Shop Drawing Review

At least 5 days prior to scheduling a preconstruction conference, submit for review:

- Four complete sets of material submittals
- Cut sheets for sewer manholes
- Cost estimate of the water and sewer improvements including quantities and unit costs (to be used in calculating bond amounts for this project)

6. Preconstruction Conference

A preconstruction conference will be held for all projects involving the installation of public utilities. The Developer shall schedule this meeting, at least 5 days in advance, once steps (1) through (3) above have been completed. Attendees include, at a minimum:

- The Developer or his representative
- The Engineer of Record for the project
- The Developer's Contractor
- Water Services Department Director or Assistant Director
- Water Services Department designated field representative
- Other affected parties as required

To this conference, the Developer will need to bring:

- Approved plans

- Approved shop drawings
- Documentation that TDEC has received a construction start notification
- Contact listing for Developer, Engineer, and Contractor key personnel
- Proof of State contracting license
- Documentation that the required public utility easements have been obtained and recorded (Note: easement acquisition shall be coordinated through the City Attorney's office)
- An executed agreement with the City for any cost participation (if applicable) by the City, in accordance with City Code;

7. Construction Phase

Workmanship

A. All water and sewer construction work shall be in accordance with the latest specifications of the Water Services Department.

B. The Owner shall ensure the project contractor provides properly licensed, competent, qualified personnel to survey, layout and construct the work. Contractor shall maintain an orderly and safe site at all times.

C. Except when otherwise authorized, water and sewer facilities work at the site or adjacent thereto shall be completed during working hours of 7 a.m. to 5 p.m., Monday through Saturday. No work on water and sewer facilities shall be completed on Sunday's or Holidays without permission of the Water Services Department.

D. All grading work shall be completed, all roads constructed to subgrade and lot corners shall be marked prior to the installation of water and sewer lines.

E. Backfill for water and sewer lines within roadways shall conform to the requirements of the agency having jurisdiction (i.e. TDOT, City, County).

Inspection

Throughout construction, the City of Brentwood will be performing on-site inspections of the progress of construction. If *any* deviations from previously-approved plans are necessary, the Developer shall immediately notify the City in writing of the issue and the proposed resolution. City personnel will perform inspections in a frequency as deemed necessary by the Department and will bill the Developer for actual costs of those services, including, at a minimum equipment, material and laboratory fee costs.

8. Testing and Acceptance

Once the construction is complete, the Developer shall notify the City in writing that the facilities are ready for testing. The testing of the facilities shall be in conformance with

the procedures outlined in the City's Standard Specifications. *NO CONNECTIONS TO EXISTING CITY FACILITIES SHALL BE MADE UNTIL PASSING TESTING RESULTS HAVE BEEN RECEIVED.*

At this time the City will perform a punchlist inspection of the facilities and provide the Developer with a listing of items that need to be addressed prior to the City accepting the improvements. The Water Services Department will not sign off on a plat until this punchlist has been addressed, all fees (i.e tap fees, inspection services) have been paid in full and appropriate easements obtained and recorded. Upon completion of all punchlist items to the satisfaction of the Water Services Department, and confirmation of fee payment, the project (or section thereof) shall be considered "Accepted" and ready for service.

9. Warranty Inspections / Bonding

As part of the overall development process, prior to signing a plat, the City will require bonding of the public improvements, of which the water and sewer facilities are a part. The Water Services Department typically requires bonding in an amount no less than 30% of the total cost to design and construct the public water and sewer facilities. As construction progresses that bond amount may be reduced in accordance with the City's Subdivision regulations.

During the time that the project is bonded, the Developer is responsible for addressing and correcting warranty items regarding the public water and sewer facilities. Prior to release of the bond, the Water Services Department will perform a final warranty inspection of the improvements.

10. Record Drawings

As part of the acceptance of the public facilities, the Developer shall provide the City with record information noting any changes or deviations from the approved construction drawings. A digital file shall be submitted containing GPS information of all installed infrastructure in accordance with the following table:

GIS REQUIREMENTS FOR PROJECT ACCEPTANCE

(All information to be collected with GPS equipment in accordance with the City's overall GIS system)

		Sewer As-Builts
		Pipe
1		Line ID
2		Length (feet)
3		Size (inches)
4		Material
5		Slope
6		Encasement Type
7		IN Elevation
8		OUT Elevation
9		IN Manhole ID/Station #
10		OUT Manhole ID/Station #
11		Azimuth
12		Rehab
13		Rehab Material
14		Rehab Wall Thickness
15		Pressure (Force Main Only)
16		Install Date
		Manholes
1		Manholes ID/Station #
2		Cover Type
3		Unit Type (ex. Drop, Stand.)
4		Dead End (Yes, No)
5		Line ID (Pipe)
6		Rim/Top Elev.
7		MH Depth
8		Inv. IN(s) Elev.
9		Inv. OUT Elev.
10		Ground Type
11		Install Date
		Service Points
1		Dist. From MH (feet)
2		Dist. From Pipe (feet)

		Water As-Builts
		Pipe
1		Line ID
2		Length (in feet)
3		Size (in inches)
4		Material
5		Slope
6		Install Date
		Hydrants
1		Hydrant ID
2		Manufacturer
3		Barrel Size (inches)
4		Outlet 1 Size (Front)
5		Outlet 2 Size (Side)
6		Outlet 3 Size (Side)
7		Nozzle Elevation
8		Install Date
		Valves
1		Valve ID
2		Type
3		Size (inches)
4		Casing Shape
5		Ground Type
6		Motorized (Yes, No)
7		Hydrant Valve (Yes, No)
8		Dist. From Fixed Position #1
9		Dist. From Fixed Position #2
10		Center-Line Elevation
11		Install Date
		Meters/Service Points
1		Meter ID
2		Type (ex. Radio Read)

3		Depth Under Ground (feet)
4		End of Service Elevation
5		Notes If Pipe Has Any Change in Direction
		Service Laterals
1		Pipe ID
2		Material
3		Size (inches)
4		Length (feet)
5		Install Date

		Pressurized Sewer
		Pump Stations
1		Pump ID
2		Pump Size (inches)
3		# of Pumps
4		Install Date
5		Valve Box Location

		Air Release Valve
1		Valve ID
2		Size (inches)
3		Type
4		Install Date

3		Ground Type
4		Service Type (ex. Irr, Com, …, Res)
5		Depth Under Ground (feet)
6		Install Date
		Service Laterals
1		Pipe ID
2		Material
3		Size (inches)
4		Length (feet)
5		End of Service Dist. From Fixed Position #1
6		End of Service Dist. From Fixed Position #2
7		Install Date
1		**Backflows**
2		Backflow ID
3		Size (inches)
4		Install Date
1		**Booster Station**
2		Booster ID
3		Pump Size (inches)
4		# of Pumps
5		Install Date

4-2 A copy of the current Request for Availabilty form

REQUEST FOR WATER AND/OR SEWER AVAILABILITY APPLICATION FORM

Parties desiring to connect to the City of Brentwood's water and/or sewer system are required to apply for availability. Requesting water and/or sewer availability is the first step in the development/building process and should be requested as early as possible to assure capacity is available for the planned project.

Date of Request:			
Owner Information			
Owner's Name:		Company Name:	
Address:			
Phone:		Email:	
Owner's Representative If Applicable (i.e. consultant)			
Name:		Company Name:	
Address:			
Phone:		Email:	
Project Information			
Project Name or Description:		Project Acreage:	
Project Address or Map & Parcel No.:			
Lot No.:		Current/Proposed Zoning:	
Project Water Demand and Sewer Flow Calculations			
Project Classification: (residential, commercial, etc.)		Design Units & Quantity (120 seats, 10,000 SF, etc):	
Est. Water Usage: (Per Table I, plus irrigation)		Est. Sewer Usage: (Per Table I)	
Size of Dom. Meter (inches):		Single-Family Equiv. Units (calculated usage / 310 gallons per day):	
Required Fire Flow (per Brentwood Fire Dept):			
Size of Fire Line Meter: (if applicable)			

Please attach project site plan including utility plan with your application. Applications should be submitted to the Water and Sewer Department at:

City of Brentwood, TN
Water and Sewer Department
P.O. Box 788
Brentwood, TN 37024-0788

4-3 A copy of the spreadsheet tracking where availablilty is requested and granted

Post M[illegible]n, Sewer Availability Requests
Little Ha[illegible] Drainage Basin
1/24/2011 11:34

Notes:
(1) Single Family Unit Equivalent or SFUE is equil to 350 gpd usage
(2) Date shown represents either date of reqeust or date of approval. Check project file to confirm.
(3) Expiration may be based on PC approval, w/s construction plan submittal, or other.
(4) Project Status notes:
"R" - This owner/project has been released & notified they may connect to sewer. An availability expiration date may apply;
"H" - This owner/project is on hold and can not connect to sewer.

Owner/Developer	Project Description	Project Location	Date of Request or Approval (see note 2)	Availability Expiration Date (see note 3)	Sewer Capacity Requested, Avg. Day (gallons)	SFUE's	Project Status (see note 4)
Spodeck, David A.	11 acres land; build home	3002 Hillsboro Rd. (at Beech Creek Rd.)	July 5, 2006	NA	350	1	R
Oakleigh Estates	9 Residential Lots	Fisher Drive near Arden Woods	August 21, 2006	Sept. 2, 2009	3,150	9	R
Murray Lane Property	22 Residential Lots	5609 Murray Lane; south & adjacent to Wynnstone Subd.	October 31, 2006	Sept. 9, 2009	7,700	22	R
Grapevine Partners (John Lee & John Fields	Grapevine Wine & Spirits Addition	8109 Moore's Lane	March 30, 2007	Sept. 23, 2009	2,890	8	R
Reynolds, Tim	Single Residence	416 Wilson Pike	October 19, 2007	Sept. 24, 2009	350	1	R
Holy Family Catholic Church	Addition to Church	9100 Crockett Road	October 29, 2007	Sept. 23, 2009	2,300	7	R
Overlook Park, Map 11F, Parcel 12 (part of), Lot 9C	Office Bldg., 9,900 s.f.	Map 11F, Parcel 12, Lot C (part of 9A)	March 15, 2008		1,000	3	R
Dr. Tony Ross	Single Residence	6029 Murray Lane	February 25, 2008	Sept. 8, 2009	350	1	R
Stubblefield	Subdivide of Residential Lot	Old Smyrna Rd.	March 1, 2008	Sept. 10, 2009	350	1	R
Owen Property	61 Lot PUD	Old Smyrna Rd.	March 4, 2008	Sept. 24, 2009	21,350	61	R
BE&K Building Group Expansion	Shower/lavatory add. To office	Cadillac Drive	April 14, 2008		120	0	R
Aaron & Theresa Barker property	Residential subdivide for sale	1507 Old Brooks Road	January 8, 2009	NA	350	1	R
Traditions Development	126 Residential Lots	Split Log Road	June 16, 2008		44,100	126	H
Azalea Park Development	173 Residential Lots	Split Log Road	June 16, 2008		60,550	173	H
Peach Court Office Building	office building 1,800 sf	Peach Court	August 27, 2008	June 25, 2010	200	1	R
American Service Group Tenant Finish	addition of 2 showers	105 Westpark Drive	April 24, 2009	June 25, 2010	240	1	R
Map 29, Parcel 29	Asst. Living Center	Concord Rd. at Wilson Pike	May 19, 2009	May 19, 2010	26,000	74	R
						0	
Murray/Ohio, Baptist Cntr. Project	Proposed development of Murray Ohio Offices & Southern Baptist Center	Franklin Rd. at Maryland Way	May 8, 2006	NA	122,650	350	H
David Thompson	2 Lots	934 Holly Tree Gap Rd	November 7, 2006		700	2	H
Penicore, Inc., Steve Penix, Owner		7104 Peach Ct.	June 15, 2009		200		H
Fit Rx	Renovation of exist. space from salon to exercise facility; addition of 8 shower stalls	204 Ward Circle, Suite 204	June 29, 2009		1,560		R
Jefferson's Restaurant	Conversion of existing tenant space to restaurant use - 18 seats	214 Ward Circle, Suite 1200	August 11, 2009		1,800	5	
Primrose School	conversion of state farm office to a day care	5320 Maryland Way	September 15, 2009	september 15, 2010	1,990	6	
Mallory Park Phase II	49 residential lots - not commercial as of March 2010	Parcels just north of Mallory Park Phase I	March 15, 2010	March 15, 2011	17,150	49	
HG Hill Center (Chipotle)	Conversion of the former Blockbuster to two counter-service restaurants	235 Franklin Road	April 23, 2010	April 23, 2011	940	3	

Item #5 – Implement a Continuing Sewer Assessment Program

Development date: June 30, 2009

Discussion: Beginning in 2007, the Water and Sewer Department set a goal to clean and televise 100,000 LF of gravity sewer each year, which would have televised the entire gravity system in approximately 10 years. However, as the program began and as the comprehensive sewer rehabilitation program began, it quickly became obvious that many parts of the sewer collection system were in need of rehabilitation, and finding those lines and basins was going to be key to keeping the aggressive rehabilitation schedule the Department had set.

From July of 2007 to December 2010, over 900,000 LF of pipe was televised and cleaned, surpassing our goal by a factor of 3. Although there are miscellaneous segments of pipe which have not been televised, no area of the gravity portion of the system has been untouched. Much of this was in association with the rehabilitation program and pre- and post-construction activities, but the Department also employs an independent contractor who programmatically televises and cleans the system, and Department personnel routinely utilize the new TV van and associated equipment purchased in 2008. These videos are linked to the City's GIS system after they are reviewed. Currently, the videos are utilized to categorize immediate issues, such as impending blockages, or rehabilitation issues, such as pipe lining or manhole coating projects. As the rehabilitation work completes, we anticipate that the focus will be more on preventive maintenance and asset management.

Because the majority of lining work is complete, the CSAP program will be geared more toward preventive maintenance than rehabilitative measures. The current televising program will focus on each basin served that is measured by an ADS meter and will be televised each year. We have found that more defects are noticeable during wet times of the year, so the plan is to perform this work from late fall until mid-spring. For example, beginning this past November, the east half of Basin T07 (consisting of approximately 25 miles of gravity pipe) commenced cleaning and televising activities, even though much of this area was televised in 2008 during an investigative phase of the rehabilitation program. This work should be complete by April. Following T07 (east) will be:

- E17 in fiscal year 2012 (22 miles)
- T07 (west) / E11 in 2013 (36 miles)
- E16 in 2014 (32.5 miles)
- BR01 in 2015 (24 miles)
- T02 in 2016 (17 miles) – also is the focus of current rehabilitation

- Owl Creek Basin / Bonbrook Basin in 2017 (41 miles)

This places the entire system on an approximate 7-year cycle for televising and cleaning. It is anticipated that the televising from one year will lead to point repairs, main lining, service line rehabilitation, and manhole rehabilitation for the following year.

A related component to the gravity line televising and cleaning is manhole inspections. A goal to inspect 400 manholes per year was set in conjunction with the development of the CMOM in 2006. Although the actual amount of manholes inspected far exceeds this goal (over 300 manholes were rehabilitated in 2010), simple dry-weather inspections have not proven to be very beneficial to the Department. For example, in 2007 and 2008, as most of the nearly 5,000 manholes in the collection system were being opened and measured as part of the GIS data gathering activities, notes were made regarding debris or roots or obvious structural defects to the manhole. Further, televising contractors were instructed to provide a clear "down shot" of each manhole as they were entering them with the camera and a clear "up shot" panned around at the terminal manhole.

However, what has been the most effective for the Department has been wet weather investigations, or "manhole popping" activities. When heavy rain is forecast, personnel are provided GIS maps and instructed to open manholes, inspect them, and note whether the manhole is leaking and whether the flow has markedly changed from the manhole immediately downstream. This has been especially helpful in areas where a liner has been installed. Although this is a simple process, the locations are selected based upon pump run times or ADS metering data that shows a wet weather response in flow.

Root intrusion has not been a major issue with the collection system. During the sewer rehabilitation program, roots have been viewed as a defect in the pipe and fixed as part of mainline / lateral rehabilitation. In areas where roots appear to be more prevalent, Duke's Root Control will treat that portion of the system. Approximately 3,000-4,000 feet per year are treated.

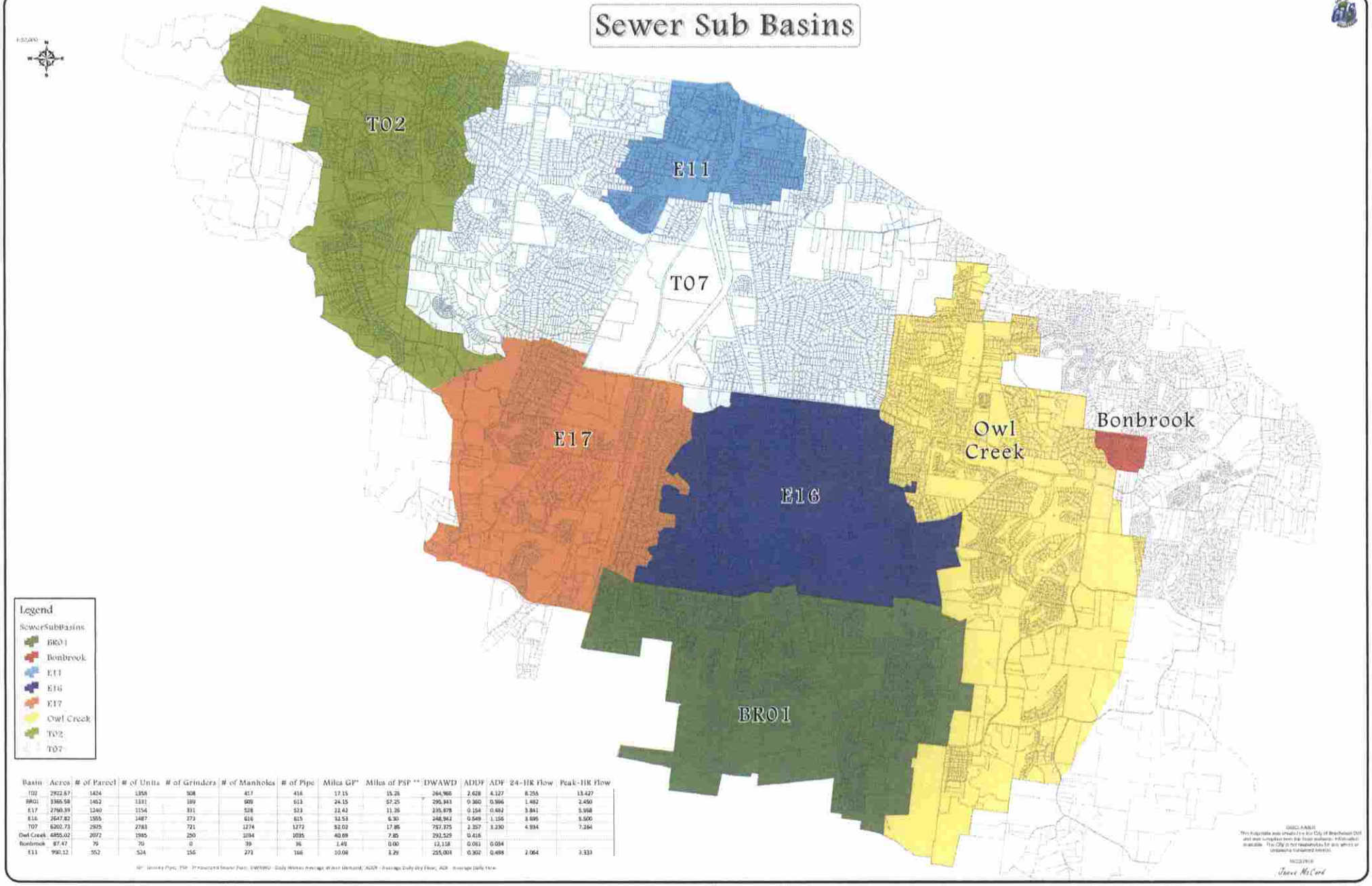
Pump stations are visited Monday through Friday and monitored continuously, which will be discussed more in item #6 and #18.

The following information is attached with this item:

5-1 A "Sewer Sub-Basin" map, showing the basins and pertinent tabulated information.
5-2 A spreadsheet of televising and cleaning totals from 2007 to current.
5-3 An example map from a "manhole popping" session
5-4 An example inspection form from the session above

5-1 A "Sewer Sub-Bsin" map, showing the basins and pertinent tabulated information

Sewer Sub Basins



Legend

SewerSubBasins

- BR01
- Bonbrook
- E11
- E16
- E17
- Owl Creek
- T02
- T07

Basin	Acres	# of Parcel	# of Units	# of Grinders	# of Manholes	# of Pipe	Miles GP*	Miles of PSP **	DWAWD	ADDF	ADF	24-HR Flow	Peak-HR Flow
T02	2922.67	1424	1358	508	417	416	17.15	15.26	264,966	2.628	4.127	8.255	13.427
BR01	3365.58	1452	1331	189	609	613	24.15	57.25	295,343	0.360	0.986	1.482	2.450
E17	2760.39	1240	1154	331	528	533	22.42	11.26	235,878	0.154	0.493	3.841	5.968
E16	2647.82	1355	1487	373	616	615	32.53	6.30	248,942	0.649	1.156	3.695	5.505
T07	6202.73	2925	2783	721	1274	1272	52.02	17.85	757,375	2.257	3.230	4.934	7.264
Owl Creek	4855.02	2072	1985	250	1034	1035	40.69	7.85	292,529	0.416			
Bonbrook	87.47	79	70	0	39	36	1.49	0.00	12,118	0.031	0.034		
E11	990.12	552	524	156	273	166	10.08	3.29	255,004	0.302	0.498	2.064	3.333

GP - Gravity Pipe, PSP - Pressurized Sewer Pipe, DWAWD - Daily Winter Average Water Demand, ADDF - Average Daily Dry Flow, ADF - Average Daily Flow

DISCLAIMER

This map/data was created by the City of Brentwood GIS and was compiled from the best sources information available. The City is not responsible for any errors or omissions contained herein.

10/22/2018

Steve McCord

5-2 A spreadsheet of televising and cleaning totals from 2007 to current

TV / CLEANING TOTAL FOOTAGE PER FY

Sani-Tech		Moore		Insituform		Premier		COB	
TASK ORDER	LF	INVOICE	LF	INVOICE	LF	INVOICE	LF	MONTH	LF
2007-1	12,036	1	10,387	1	3,142	6632	33,109	JUL	6,423
2007-2	5,605	2	6,453			14	14,890	AUG	16,420
2008-1	18,828	3	13,693					SEP	13,495
2008-1	22,829	4	842					OCT	4,932
2008-2	3,313	5	9,314					NOV	2,555
2008-2	10,573	6	4,577					DEC	3,343
2008-3	13,908							JAN	6,892
2008-3	7,990							FEB	6,825
								MAR	16,487
								APR	2,745
								MAY	1,640
								JUN	2,335
TOTALS	95,082		45,266		3,142		47,999		84,092

FY 2008 TOTAL	CMOM Min. Req.
275,581	100,000

Sani-Tech		Moore		Insituform		Premier		COB	
TASK ORDER	LF	INVOICE	LF	INVOICE	LF	INVOICE	LF	MONTH	LF
2008-4	7,006	7	8,130			19	40,327	JUL	4,660
2008-4	16,327	8	2,326	2	0	20	42,439	AUG	4,621
2008-4	4,815	9	7,415	3	0	22	14,054	SEP	6,327
2008-5	11,140	10	13,383	4	4,771	28	3,627	OCT	1,688
2008-5	12,038	11	6,408	5	0	33	24,538	NOV	560
2008-5	9,979	12	28,501	6	16,815	35	17,763	DEC	1,387
2008-5	9,397	13	8,055	7	1,905			JAN	352
2008-6	8,756	14	0	8	6,671			FEB	1,335
2008-6	7,253	15	0	9	1,991			MAR	675
2009-1	31,685	16	0	10	7,039			APR	1,125
2009-2	5,204	17	0	11	2,910			MAY	2,555
		18	0					JUN	1,250
TOTALS	123,600		74,218		42,102		142,748		26,535

FY 2009 TOTAL	CMOM Min. Req.
409,203	100,000

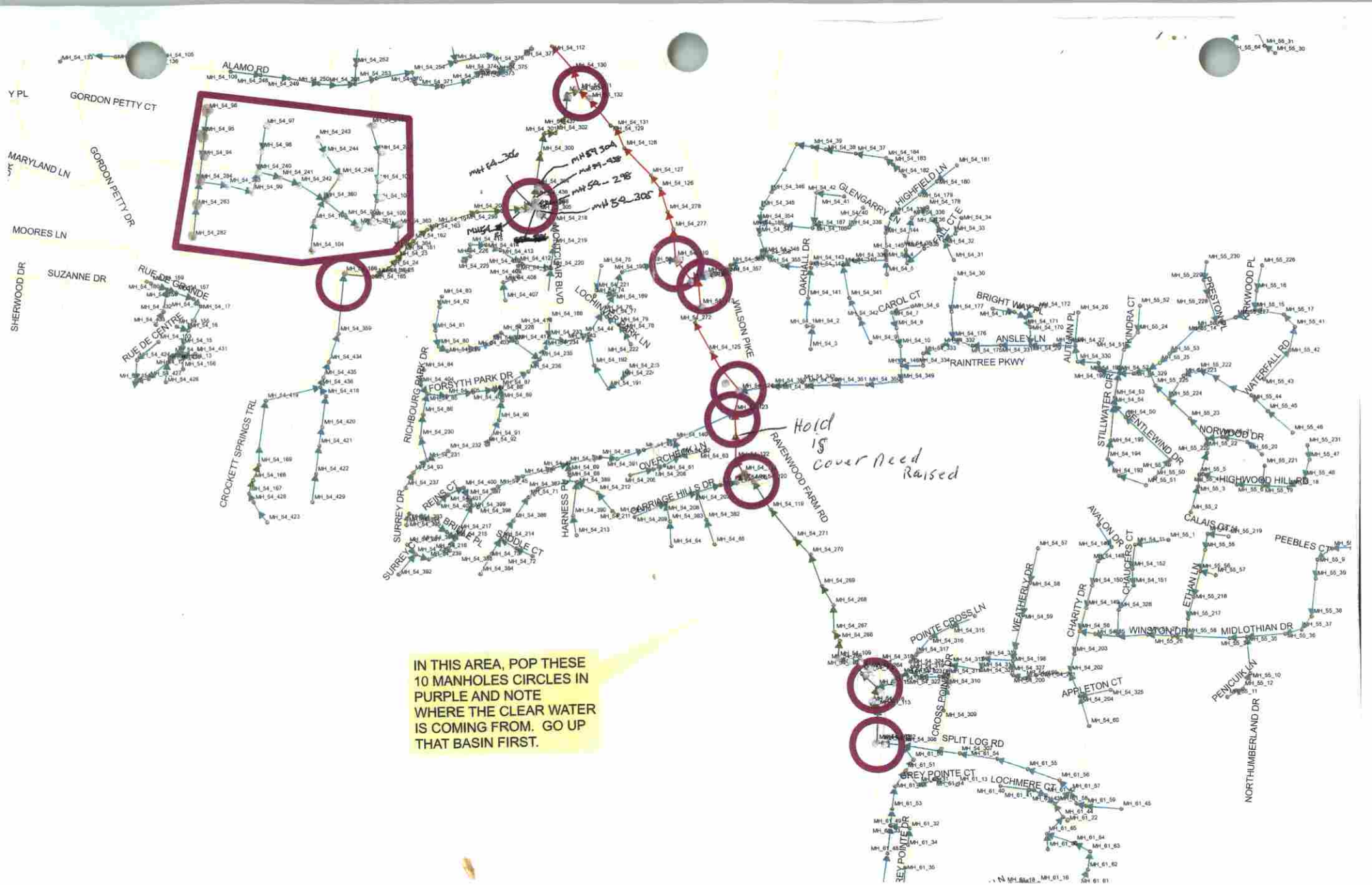
Sani-Tech		Moore		Insituform		Premier		COB	
TASK ORDER	LF	INVOICE	LF	INVOICE	LF	INVOICE	LF	MONTH	LF
misc	1,474	19	0	13	3,722	38	3,056	JUL	1,680
2009-1	2,832			14	2,952	43	9,516	AUG	1,250
2009-2	13,508							SEP	1,350
2009-3	5,147							OCT	1,600
2009-4	14,208							NOV	2,300
2009-4	11,608							DEC	450
2009-4	6,016							JAN	3,600
2010-1	7,935							FEB	1,600
2010-1	19,839							MAR	1,345
2010-2	17,158							APR	2,250
2010-2	7,590							MAY	1,640
2010-2	7,315							JUN	8,145
TOTALS	114,630		0		6,674		12,572		27,210

FY 2010 TOTAL	CMOM Min. Req.
161,086	100,000

Sani-Tech		Moore		Insituform		Premier		COB	
TASK ORDER	LF	INVOICE	LF	INVOICE	LF	INVOICE	LF	MONTH	LF
2011-1	22,013							JUL	1,264
2009-4	5,745							AUG	3,600
2011-1	15,538							SEP	4,100
								OCT	1,550
								NOV	4,680
								DEC	3,545
								JAN	
								FEB	
								MAR	
								APR	
								MAY	
								JUN	
TOTALS	43,296		0		0		0		18,739

FY 2011 TOTAL	CMOM Min. Req.
62,035	100,000

5-3 An example map from a "manhole popping" session


ALAMO RD
GORDON PETTY CT
GORDON PETTY DR
MARYLAND LN
MOORES LN
SUZANNE DR
SHERWOOD DR
RUE DE GRANDE
RUE DE CENTRE
CROCKETT SPRINGS TRL
MONTCLAIR BLVD
LOCHINVAR PARK LN
RICHBOURG PARK DR
FORSYTH PARK DR
SURREY DR
REINS CT
BRIDLE PL
SADDLE CT
HARNESS PL
OVERCHECK LN
CARRIAGE HILLS DR
WILSON PIKE
RAVENWOOD FARM RD
OAKHALL DR
GLENGARRY LN
HIGHFIELD LN
CAROL CT
BRIGHT WATER PL
ANSLEY LN
RAINTREE PKWY
AUTUMN PL
KINDRA CT
STILLWATER CIR
GENTLEWIND DR
WATERFALL RD
PRESTON CT
NORWOOD PL
NORWOOD DR
HIGHWOOD HILL RD
CALAIS CT
PEEBLES CT
AVALON DR
CHAUCER CT
WEATHERLY DR
CHARITY DR
ETHAN LN
WINSTON DR
MIDLOTHIAN DR
PENICUIK LN
NORTHUMBERLAND DR
POINTE CROSS LN
CROSS POINTE DR
APPLETON CT
SPLIT LOG RD
GREY POINTE CT
LOCHMERE CT
GREY POINTE DR
MH 54-306
MH 54-304
MH 54-308
MH 54-305
Hold
is
cover need
Raised
IN THIS AREA, POP THESE 10 MANHOLES CIRCLES IN PURPLE AND NOTE WHERE THE CLEAR WATER IS COMING FROM. GO UP THAT BASIN FIRST.

5-4 An example inspection form from the session above

CITY OF BRENTWOOD
WATER SERVICES
MANHOLE INSPECTION SUMMARY

PROJECT NAME: Brentwood Sewer Rehabilitation DATE: 1-6-09

WEATHER: Rain TIME: 2:20

MANHOLE NUMBER: 54-245 PERSON: T-B JM

FLOW CHARACTERISTICS

Note if the flow is clear, is the MH surcharged, has excessive odor, etc.:

NO

What is the depth of flow in the invert?

1/4

MANHOLE INSPECTION

Manhole Depth: 7 F

Condition (Good, Fair, Poor):

Manhole Material (Brick, Precast, etc):

Frame/Casting Broken: no

Is the MH leaking? Coming in under Casting and Step

→ Is it an active leak? yes

→ Is it a "seep" or a "stream"?

→ Look closely at the liner pipes (if applicable) – is there a leak between the liner and the manhole?

Does the Frame / Casting Need to be Raised? Lowered? NO

Is There Obvious Corrosion of the MH? Yes

GENERAL REPAIRS NEEDED

No Repair Needed?

Clean (GREASE? DEBRIS?):

Repair Invert:

REMARKS

Item #6 – Develop SOP's and inspection procedures for Pump Stations and Force Mains

Development date: November 2007 – April 2008

Discussion: As the CMOM process was developing, two points became clear:

1. Lift stations are not a major contributor to overflows in the Brentwood collection system (zero since 2008), and
2. There was a need to better organize and record maintenance activities at the sewer pumping stations.

Because the Department did not have the expertise to develop such a program, the City hired CDM to develop an overall Lift Station Operations and Maintenance Guidance Manual, which is more straightforward when viewed in its entirety, but for the purposes of this response will be separated into applicable portions of this item as well as Item #14 (Develop and implement a contingency plan), Item #18 (Review and update the City's Pump Station standard maintenance procedures), and Item #22 (Develop an emergency O&M procedure for pump stations and implement improvements at the pump stations to allow for bypass pumping setup).

Specifically to Pump Station inspections, as stated before, each of the pumping stations are visited Monday through Friday, and minor repairs and maintenance activities are performed by Department personnel. Should major work be required, the City has a maintenance contractor available to quickly perform this work, as was the case in responding to emergencies during and after the May 2010 flood.

Pump run times are noted daily and if one pump is running longer than the other or repeatedly misses its "call", then further actions are taken, including pulling the pump and replacing it. Alarms are provide by SCADA for run-time, high wetwell level, pump failure, and power failure. In no case in the past three years has a station failure led to an overflow because either the station is re-established into operation or bypass pumping / pump-and-haul activities are enacted prior to overflow.

Each month, each lift station is thoroughly cleaned and visually inspected. A contractor performs a "full pump" of the wetwell, to remove any collected debris and sludge. Floats are cleaned and the wetwell is power-washed. Not only has this proven to be an effective preventive maintenance measure for the mechanical equipment, but it also helps in reducing odors at the facilities.

All sewer pumping stations have "n+1" redundant capacity for peak flows. Except in rare occurrences, such as the May, 2010 flood, only one pump will run at each station. Observing two pumps running at a station is an indication that maintenance needs to be performed at that facility.

The following information is attached with this item:

6-1 Sections 1, 2 and 3 of the Lift Station O&M Guidance Manual. Please note that Section 2 needs to be updated because three lift stations (Crockett Springs, Scales School and Owens Corner) have been completely re-done with new pumps and controls and two others (Chenoweth and I-65) are completing design in February of 2011.

6-2 Example of lift station monthly pumping report, typical of all stations, each month.

CDM

April 26, 2008

Mr. Kevin Colvett, Assistant Director
City of Brentwood
Water Services Department
1750 General George Patton Drive
Brentwood, TN 37024-0788

Subject: Lift Stations Operations & Maintenance Guidance Manual

Dear Kevin:

We are pleased to provide herewith, two bound final copies of the City of Brentwood Lift Station Operations & Maintenance Guidance Manual. Additionally, we have included all electronic files on a CD-ROM disk attached to the inside front cover.

It has been a pleasure working with your staff in the development of the standard operating procedures and believe that their continued input into future procedure development and revisions to these will lead to a successful CMOM program.

If you should have questions or comments on these documents or on any other matter, please do not hesitate to contact this office.

Very truly yours,

CAMP DRESSER & McKEE INC.

Mark Wessel
Associate

Attachments

cc: J udy Alford, CDM

City of Brentwood, Tennessee
Water Services Department

Lift Stations
Operations & Maintenance
Guidance Manual

May 2008

CDM

Contents

Section 1
Introduction

1.1 Purpose of the Lift Stations Operations & Maintenance Guidance Manual

The Water Services Division (WSD) operates and maintains eleven pump stations within its sanitary sewer collection system and services 2,700 grinder pump stations located on private property. As the proper function of the sanitary sewer system is vital to protect public health, property, and waterways in the service area; WSD is proactively implementing a Capacity, Management Operations & Maintenance (CMOM) program, a program of self improvements of the overall sanitary sewer collection system that complies with Regulatory requirements This Lift Station O&M Guidance Manual is an important element of the program and was developed with the assistance of Camp Dresser & McKee Inc. (CDM) for the use of Water Service Division personnel in the day-to-day inspections and service of the Lift Stations, as a guide in the response of emergency situations and to provide suggested guidance in the long-term maintenance and care of the Lift Stations.

Accordingly, the Lift Station O&M Guidance Manual is divided into sections covering the following topics.

Performance and Equipment Data:	Provides general dimensions and capacity information on the collection system and lift stations to include pump equipment manufacturer's data.
Pump station inspections:	Provides Standard Operating Procedures (SOP) for the inspection of the two principal types of stations encountered; submersible and wet well / dry well types.
Contingency Plan Program:	Provides Standard Operating Procedures (SOP) for abnormal operating conditions such as loss of power, use of standby pumping, and response to alarms.
Pump Station Preventive Maintenance:	Provides suggested guidance in the development and tracking of preventive maintenance tasks for the lift stations.

Pump Station Reactive Maintenance:	Outlines the reactive or corrective maintenance program of the lift stations.

The backbone of this guidance manual and the success of a CMOM program depend on the documentation and communication of procedures and practices that help to operate and maintain the City's assets. These procedures have been drafted and contained in this guidance manual as first version Standard Operating Procedures.

Standard Operating Procedures (SOP) are task specific, tailor made, step-by-step written directions in the execution of a task or activity. They should be considered 'living' documents as routinely they need to be reviewed, tested, adapted and revised to meet ever changing practices. Overtime, new equipment, new City procedures, new staff, and other environmental and physical changes require that SOPs be re-examined as to their applicability. Therefore, staff should be vigilant to the need to revise SOPs and a systematic process of self-assessment put into place to review and revise them as required.

Additionally, as these SOPs are implemented and used, the need for additional SOPs will be realized. The creation process for developing new SOPs is simple starting with the realization of a need to document a practice and culminating with its role out to the WSD as an SOP. For the SOP to be effective and used, it should be kept in mind that SOPs are task driven, require simple straightforward language, need to be structured in an outline format and need to be short and to the point to be effective.

The following Table of Standard Operating Procedures is only suggested for the WSD's consideration in developing additional SOPs. The list should be modified, expanded and kept up to date on a routine basis.

Brentwood TN
Collection System Lift Stations
Suggested SOPs

Suggested Standard Operating Procedures	Suggested Priority for Development			Comment
Lift Station Standard Operating Procedures				
Submersible Lift Station				
Submersible PS - Routine Station Inspection Checklist	1			Version 1/18/08
Submersible PS - Float Switch Adjustment Procedure			3	
Submersible PS - Alarm System Functional Testing	1			
Submersible PS - Pump Lifting Procedure		2		
Submersible PS - Wetwell Cleaning Procedure		2		
Submersible PS - Troubleshooting Pumping Problems		2		
Drywell Type Lift Station				
Drywell PS - Station entry procedure		2		
Drywell PS - Routine Station Inspection Checklist	1			Version 1/18/08
Drywell PS - Float Switch Adjustment Procedure			3	
Drywell PS - Alarm System Functional Testing	1			
Drywell PS - Pump Lifting Procedure		2		
Drywell PS - Wetwell Cleaning Procedure		2		
Drywell PS - Troubleshooting Pumping Problems		2		
General Lift Stations				
Pump Alternation Procedure			3	
Removing a pump from service		2		
Wet Well Cleaning (Grease Removal) Procedure		2		
Power Failure Response Procedure Checklist	1			Version 3/21/08
Using Standby Pumping (I-65 LS)	1			Version 3/21/08
LSTruck Pre-trip Inspection – parts, tools, safety equipment		2		
Interfacing with the Public			3	
Force Main air release valve inspection and cleaning			3	
Lift Station Odor Control				
Odor Control System Inspection			3	
Odor Control Assessment and Adjustment			3	
Emergency Response Procedures				
Wet Weather Operations				
Wet Weather Operations Checklist	1			
Wastewater Pump Station Failures				
Wastewater Pump Station Alarms—General Response Actions	1			Version 4/1/08
Force-Main Break Inside the Drywell (Wetwell/Drywell Type Station)		2		
Force-Main Break Inside the wet well			3	
Force-Main Break Inside Valve Pit (Submersible Type Application)			3	

Priority-1: Critical
Priority-2: Important
Priority-3: Desirable

Brentwood TN
Collection System Lift Stations
Suggested SOPs

Suggested Standard Operating Procedures	Suggested Priority for Development			Comment
Lift Station Standard Operating Procedures				
Air Release and Vacuum Relief Valve Failure				
Air Release and Vacuum Relief Valve Failure		2		
Handling Dispatched Calls				
Responding to a Dispatch Call for Customer Complaint		2		
Responding to Customer Complaint during Non-business Hours			3	
Call back of investigations status		2		
Miscellaneous Procedures				
Miscellaneous Procedures				
Hoisting and Rigging Pumps for Removal		2		
Using Portable Flow Monitoring			3	
Inspection of Grease Removal by Contractor			3	
Safety Procedures				
Work Zone Traffic Control				
Work Zone Traffic Control Procedures	1			Completed
Confined Space Work Procedures				
Confined Space - Manhole Entry	1			Completed
Confined Space - LS Drywell Entry	1			Completed
Confined Space - LS Wetwell Entry	1			Completed

Priority-1: Critical
Priority-2: Important
Priority-3: Desirable

Section 2
Performance and Equipment Data

The following is a summary of the lift station and collection system components, their performance and equipment data.

2.1 Collection System Capacity (as of June 2006)

Components	Units
Service Area	23,827 acres
Population Served	30,617
Average Daily Flow (June 2005 - June 2006)	6,133,000 gpd
Total Customers	9,228
Residential	8,802
Commercial	426
Industrial	0
Approximate miles of piping	241
Gravity Lines	
8" diameter or less	856,680 LF
10" – 18" diameter…	55,757 LF
20" – 36" diameter	45,936 LF
Force Mains	
8" diameter or less	314,107 LF
Age of the system	
Gravity Lines	
26 – 50 years old	115,315 LF
0 – 25 years old	843,058 LF
Force Mains	
0 – 25 years old	314,107 LF
Number of Manholes	3,919
Per capita wastewater flow for the maximum month	8,031 g/c/m
Per capita wastewater flow for the maximum day	379 g/c/d
Avg annual BOD from Brentwood Pump Station	145 mg/l
Ratio of peak wet weather flow to avg dry weather flow	4.53

2.2 Lift Station Capacity (as of June 2006)

Lift Station	Design Capacity
I – 65 pump station	300 gpm
Moores Lane pump station	300 gpm
Crockett Springs pump station	120 gpm
Arden Woods pump station	180 gpm
Edmonson Pike pump station	180 gpm
Chenoweth pump station	200 gpm
Scales School pump station	180 gpm
Owens Corner pump station	180 gpm
Willowick pump station	100 gpm
Brentwood pump station	8,300 gpm

2.3 Lift Station Equipment Data (as of June 2006)

Refer to attached Table for Sewage Lift Station Pump and Motor data.

SEWAGE LIFT STATION INFORMATION
11 Active Sewer Lift Stations as of May 3, 2006

PUMP STATION ID **LOCATION**

1 Moores Ln. Lift Station

PUMP DATA

Year of Installation: 1985
Pump Manufacturer/Supplier: Davis Emu
No. of Pumps: 2
Pump Type: Submersible in dry pit
Pump Capacity: 400gpm

Job Number:
Pump Model No.: FA102-258
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 230V
Pump Hp: 20

2 I-65 Sewer Station Located By Home Depot

PUMP DATA

Year of Installation: 1984
Pump Manufacturer/Supplier: Fairbanks Morse
No. of Pumps: 2
Pump Type: Flooded Suction 4"
Pump Capacity: 300 gpm@ 135'

Job Number: 8158FS
Pump Model No.: 5443
Impeller Size: N/A
Mech. Seals

MOTOR DATA

Power Supplied: 3/60/460
Pump Hp: 25

Engineer HFR
Contractor L&C

3 Crockett Springs

PUMP DATA

Year of Installation: 1973
Pump Manufacturer/Supplier: Crane Deming Pumps
No. of Pumps: 2
Pump Type: Flooded Suction
Pump Capacity: N/A

Job Number:
Pump Model No.:
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 230
Pump Hp: 3

Motor Info: Part # 7-35754-01-OJ

4 Chenoweth 1/2 mile from Concord Rd.

PUMP DATA

Year of Installation: 1987
Pump Manufacturer/Supplier: Flygt
No. of Pumps: 2
Pump Type: Submersible
Pump Capacity: 400gpm@ 105' at maximum point

Job Number: 8272
Pump Model No.: C3152
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 240
Pump Hp: 23

5 Edmonson Pk. Edmonson Pk. Below Elementary School

PUMP DATA

Year of Installation: 1995
Pump Manufacturer/Supplier: Flygt
No. of Pumps: 2
Pump Type: Submersible
Pump Capacity: 180gpm@110' Design Condition

Job Number: 1128
Pump Model No.: C-3170
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 480 volt 3 phase
Pump Hp: 30

6 Owens Corner Corner of Franklin Rd. and Moores Ln.

PUMP DATA

Year of Installation: 1988
Pump Manufacturer/Supplier: Fairbanks Morse/ Dakota Pump Inc. (605) 996-6
No. of Pumps: 2
Pump Type: Vertival Dry Pit
Pump Capacity: 180gpm @ 140'

Job Number:
Pump Model No.: 5430
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 460
Pump Hp: 20

7 Scales School Lift Station Murray Ln.

PUMP DATA

Year of Installation: 1992

Pump Manufacturer/Supplier: Meyers/John Bouchard & Sons
No. of Pumps: 2
Pump Type: Submersible
Pump Capacity: 1150 gpm @ 100'

Job Number:
Pump Model No.: 4VC400M4-43
Impeller Size: 11.5" Impeller
Mech. Seals

MOTOR DATA

Power Supplied: 3/60/460
Pump Hp: 40

8 Arden Woods Lift Station Arden Woods Subdivision

PUMP DATA

Year of Installation: 1996
Pump Manufacturer/Supplier: Hydromatic/ Water & Waste Equipment, Inc
No. of Pumps: 2
Pump Type: Submersible
Pump Capacity:

Job Number:
Pump Model No.: 5PGH750M32
Impeller Size:
Mech. Seals

MOTOR DATA

Power Supplied: 3/208
Pump Hp: 7.5

9 Brentwood/ Metro Pumping Station

PUMP DATA

Year of Installation: 1982-83
Pump Manufacturer/Supplier: Fairbanks Morse
No. of Pumps: 4
Pump Type: Flooded Suction
Pump Capacity: Pump 2 & 3 2,000 gpm @ 135', Pump 1 & 4 4700 gpm @ 165'

Job Number:
Pump Model No.:
Impeller Size:

MOTOR DATA

Power Supplied: 480
Pump Hp: 2-300,150,100

10 Willowick Willowick Subdivision

PUMP DATA

Year of Installation: 1988
Pump Manufacturer/Supplier: Hydromatics
No. of Pumps: 2
Pump Type: Submersible
Pump Capacity:

Job Number:
Pump Model No.:
Impeller Size:

MOTOR DATA

Power Supplied: 240
Pump Hp: 5

11 Gen. Macarthur End of Gen. Macarthur Dr.

PUMP DATA

Year of Installation: 1990 , E- One's installed in 2004
Pump Manufacturer/Supplier: E-One
No. of Pumps: 4
Pump Type: Submersible
Pump Capacity: 9gpm @ 138'

Job Number:
Pump Model No. GP2010
Impeller Size:

MOTOR DATA

Power Supplied: 240
Pump Hp: 1

Section 3
Pump Station Inspections

3.1 Inspections Procedures and Checklist

The WSD operates eleven pump stations within its sanitary sewer collection system. There are also 2,700 grinder pump stations located on private property that the WSD maintains and repairs.

Currently, all pump stations are unmanned and require daily checks by station attendants. During these daily checks, attendants observe for abnormalities, take readings, police the grounds, perform routine housekeeping, and conduct some preventive maintenance duties. To better coordinate and standardize these activities, the WSD has undertaken the development of Standard Operations Procedures (SOP) and has recently completed the development of written SOPs defining the routine inspection and checks to be made by attendants on a daily basis. Daily inspections of all pump stations (except grinder pump stations) are conducted to ensure that pump stations are operating correctly and as a means to note changes in the performance of the pumps. These inspections consist primarily of visual inspections and notations in a log sheet of the pump run times and any obvious problems at each station.

The following Standard Operations Procedures and checklist have been implemented:

- SOP – Submersible Pump Station Inspections
- SOP – Wet Well / Dry Well Pump Station Inspections
- Checklist – Lift Station Daily Checklist

1.0 OBJECTIVE

To describe the procedures for performing attendant inspections of the submersible type pumping stations:

- **Chenoweth Lift Station**
- **Edmonson Park Lift Station**
- **Scales School Lift Station**
- **Arden Woods Lift Station**
- **Willowtok Lift Station**
- **General Macarthur Lift Station**

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Noxious and Toxic Atmospheres**
- **Confined Space Entry**
- **Mechanical and Electrical Hazards**
- **Infection and Disease Hazards**

3.0 PROCEDURES

The following describes the operational checks for the submersible type pumping stations.

1. Upon arrival at the pump station,
    a. Radio/telephone Water Services of your arrival to station.
    b. Confirm that site was secure and there was no vandalism.
        i. Radio/telephone Water Services of any damage.
2. Unlock the gate and open all cabinets and pit covers
    a. Observe for unusual sites, sounds or smells.
        i. *WARNING: If the smell of fuel or other petroleum products are noted, notify Water Services and Supervisor immediately.*

3. Check station Zetron Remote Monitoring & Control Telemetry system for operations.
    a. An audible transmit tone should be heard.
4. Check the Control Cabinet
    a. Test any "push to test" lights.
    b. Check for a seal failure light if provided.
    c. Ensure that all breakers are on.
        i. *If a breaker is not on, investigate panel to try to determine why the breaker tripped.*
        ii. *If there is no obvious reason to explain why the breaker tripped, reset the breaker.*
        iii. *If the reset breaker trips again, contact the supervisor and begin your mechanical investigation.*
        iv. *If there is no obvious mechanical reason to explain why the breaker tripped, contact supervisor for an electrician.*
        v. *If repairs cannot be made, contact the supervisor.*
    d. Visually inspect control panel wiring for obvious signs of electrical problems such as burnt odors, burned wiring, wire off terminal, burn spots glazing of metal terminals and contacts, or unusual appearance to wire insulation.
        i. *If abnormal conditions are observed, call the supervisor for an electrician.*
5. Operate each pump in manual mode.
    a. Check wet well for turbulence, unusual noise and inspect the check valve to see if it has moved.
    b. After the pump has been tested, turn off pump and place back in AUTO mode.
        i. *If the pump does not appear to pump, turn pump control to OFF, pull pump partially, then lower to reseat pump. Energize the pump and retest.*
        ii. *If the pump still does not pump, turn pump control to OFF, open the pump's breaker, pull the pump out of the wet well and inspect the suction opening and impeller. Remove debris, energize the pump and 'bump' it while outside the wet well. If okay, turn off power, reinstall and energize pump. Test run pump to confirm operations.*
        iii. *If pump fails to run or pump. Call Supervisor for pump maintenance.*

6. Check Wet Well
    a. Check wet well for grease and debris buildup.
        i. *If buildup is noted, note in inspection sheet and log to have wet well pumped down.*
        ii. *Clear grease buildup from around and off of control and alarm floats or from around air bubbler tubing if provided.*
    b. If pumps are controlled by floats, proceed to:
        i. *Remove the LEAD float from the wet well. Tilt and hold the LEAD float to turn on the lead pump.*
        ii. *Remove the LAG float from the wet well. Tilt and hold the LAG float to turn on the lag pump.*
        iii. *Hang floats back in the wet well.*
    c. Tilt and hold the HIGH level float upside down for 30 seconds. Then lower the float to normal position.
        i. *Radio/telephone Water Services prior to testing alarm.*
        ii. *Radio/telephone Water Services to confirm High Water Alarm*
            1. *Notify Supervisor if Alarm did not come through. Troubleshoot and replace float with comparable float.*
    d. If an air bubbler level control system is provided, purge air line to clear down well tubing. (Consult vendor manual for instructions)
        i. *If air bubbler line or component of the air bubbler system has failed, replace and advise Supervisor*
        ii. *Adjust air flow rate after purging.*
7. Close the wet well cover and secure.
8. Housekeeping
    a. Clean up any spills found at the site.
    b. Wipe down station control panels as needed.
    c. Pick up any litter found at the site
9. Leaving pump station
    a. Ensure that all switches, controls and valves are in the correct position.
    b. Ensure all breakers are energized and in the ON position.
    c. Ensure the pumps are in AUTO mode.
    d. Record results of inspection in the logbook and inspection sheet.
        i. *Note any problems found. If no problems were found, note that no problems were found.*
    e. Record equipment running times in the logbook and inspection sheet.
    f. Ensure all cabinets and pits are closed.
    g. Ensure all locks are in place.

h. Ensure the gate is locked.

10. Radio/telephone Water Services that you are leaving station.
11. Inform Supervisor of any problems found at the pump station.
12. Continue to your next station or assignment.

Brentwood Water Services Standard Operating Procedure	Revision No: Revision Date:
SOP NAME: Wet Well / Dry Well Pump Station Inspections	

1.0 OBJECTIVE

To describe the procedures for performing attendant inspections of the wet well / dry well type pumping stations:

- **Moore's Lane Lift Station**
- **I-65 Sewer Station**
- **Crockett Springs Lift Station**
- **Owens Corner Lift Station**

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Noxious and Toxic Atmospheres**
- **Confined Space Entry**
- **Mechanical and Electrical Hazards**
- **Infection and Disease Hazards**

3.0 PROCEDURES

The following describes the operational checks for the wet well / dry well type pumping stations.

1. Upon arrival at the pump station,
    a. Radio/telephone Water Services of your arrival to station.
    b. Confirm that site was secure and there was no vandalism.
        i. *Radio/telephone Water Services of any damage.*
2. Check station Zetron Remote Monitoring & Control Telemetry system for operations.
    a. An audible transmit tone should be heard.
3. Unlock the gate and open all cabinets and pit covers
    a. Observe for unusual sites, sounds or smells.
        i. *WARNING: If the smell of fuel or other petroleum products are noted, notify Water Services and Supervisor immediately.*
4. Unlock and open the dry well station hatch. Prior to entry:

a. Follow Confined Space Entry Procedures
    i. *CAUTION: Review and execute the City confined space entry procedures prior to entry.*
b. Check for exhaust fan flow from top of station.
c. Check for proper station lighting.
d. Visually check for station flooding from top of station.
    i. *If station is flooded, contact Supervisor prior to entry.*
e. Set up fall protection/confined space equipment.

5. Dry well station entry and checks:
    a. Climb down access ladder to the station floor.
    b. Check the ventilation fan for proper air movement and operation.
    c. Observe the surroundings for leaks and unusual noise.
    d. Check the dry well station sump.
        i. *Clean debris from the sump*
        ii. *Tilt the sump pump float and check for proper operation.*
    e. Check dehumidifier and reservoir for proper operation.
    f. Check the station heater for proper operation and setting.
    g. Exercise all four gate valves, inlet and discharge.
        i. *Exercise a gate valve by closing the valve 90% and then reopening.*
6. Check the Control Cabinet
    a. Test any "push to test" lights.
    b. Ensure that all breakers are on.
        i. *If a breaker is not on, investigate panel to try to determine why the breaker tripped.*
        ii. *If there is no obvious reason to explain why the breaker tripped, reset the breaker.*
        iii. *If the reset breaker trips again, contact the supervisor and begin your mechanical investigation.*
        iv. *If there is no obvious mechanical reason to explain why the breaker tripped, contact supervisor for an electrician.*
        v. *If repairs cannot be made, contact the supervisor.*
    c. Visually inspect control panel wiring for obvious signs of electrical problems such as burnt odors, burned wiring, wire off terminal, burn spots glazing of metal terminals and contacts, or unusual appearance to wire insulation.
        i. *If abnormal conditions are observed, call the supervisor for an electrician.*

e. Change station light bulbs and control panel bulbs as required or at least yearly.

11. Before leaving pump station Dry Well
    a. Ensure that all switches, controls and valves are in the correct position.
    b. Ensure the pumps are in AUTO mode.
    c. Ensure all breakers are energized and all switches are in the ON position.
    d. Record results of inspection in the logbook and inspection sheet.
        i. *Note any problems found. If no problems were found, note that no problems were found.*
    e. Record equipment running times in the logbook and inspection sheet.
    f. Ensure all cabinets are closed and secured from splash.
12. Check pump station Wet Well
    a. Check wet well for grease and debris buildup.
        i. *If buildup is observed, note in inspection sheet and log to have wet well pumped down.*
        ii. *Clear grease buildup from around and off of control and alarm floats or from around air bubbler tubing if provided.*
    b. If pumps are controlled by floats, proceed to:
        i. *Remove the LEAD float from the wet well. Tilt and hold the LEAD float to turn on the lead pump.*
        ii. *Remove the LAG float from the wet well. Tilt and hold the LAG float to turn on the lag pump.*
        iii. *Hang floats back in the wet well.*
    c. Tilt and hold the HIGH level float upside down for 30 seconds. Then lower the float to normal position.
        i. *Radio/telephone Water Services prior to testing alarm.*
        ii. *Radio/telephone Water Services to confirm High Water Alarm*
            1. *Notify Supervisor if Alarm did not come through. Troubleshoot and replace float with comparable float.*
        iii. If an air bubbler level control system is provided, confirm proper bubble rate.
13. Close the wet well cover and secure.
14. Housekeeping
    a. Clean up any spills found at the site.
    b. Pick up any litter found at the site
15. Leaving pump station
    a. Record results of inspection in the logbook and inspection sheet.

   i. *Note any problems found. If no problems were found, note that no problems were found.*
b. Ensure all cabinets and pits are closed.
c. Ensure all locks are in place.
d. Ensure the gate is locked.

16. Radio/telephone Water Services that you are leaving station.
17. Inform Supervisor of any problems found at the pump station.
18. Continue to your next station or assignment.

6-2 Example of lift station monthly pumping report, typical of all stations, each month

CITY OF BRENTWOOD

SEWER LIFT STATION - MONTHLY MAINTENANCE RECORD SUMMARY

Station : Scales School **Operator:** Jeff T.m

Capacity: _____ gallons / min **Date:** 12-16-10

# of Pumps: 2

Pump Type: _____

Wetwell Vol.: _____ gallons

Briefly Summarize Actions Taken

			COMMENTS
Is there a hydrogen sulfide odor present?	yes	(no)	
Are the floats operational and intact?	(yes)	no	
Is there visible corrosion or structural issue?	yes	(no)	
Are security measures intact (fencing, etc.)?	(yes)	no	
Are there floatables present?	(yes)	no	(specify #)
Are the lids in good condition?	(yes)	no	
Are the slide rails in good condition?	(yes)	no	
What is the thickness of the grease cap?			0 inches
How much sludge was removed?			0 inches
Was the sludge evenly distributed?	(yes)	no	
Have the floats been cleaned?	(yes)	no	
Is this typical domestic sewage?	(yes)	no	
If not typical, list any items present, such as: paint, motor oil, debris			

LIST ANY SPECIFIC ITEMS OR ISSUES THAT NEED TO BE BROUGHT TO THE CITY'S ATTENTION:

Lots of Paper Towels

Item #7 – Implement a sewer model for the City's entire collection and transmission system

Development date: 2007 and 2009

Discussion: Prior to 2007, the City's collection system had never been modeled. In 2007, as a fundamental part of developing the CAP/ER with Nashville Metro Water Services, a SWMM model was developed for the entire West Park Basin system in Nashville, to which approximately 90% of Brentwood's flow goes. The model, at that time, was ample in developing scenarios for Brentwood in determining what should be the focus of the rehabilitation program and what might be the most beneficial means to allocate funds for the project.

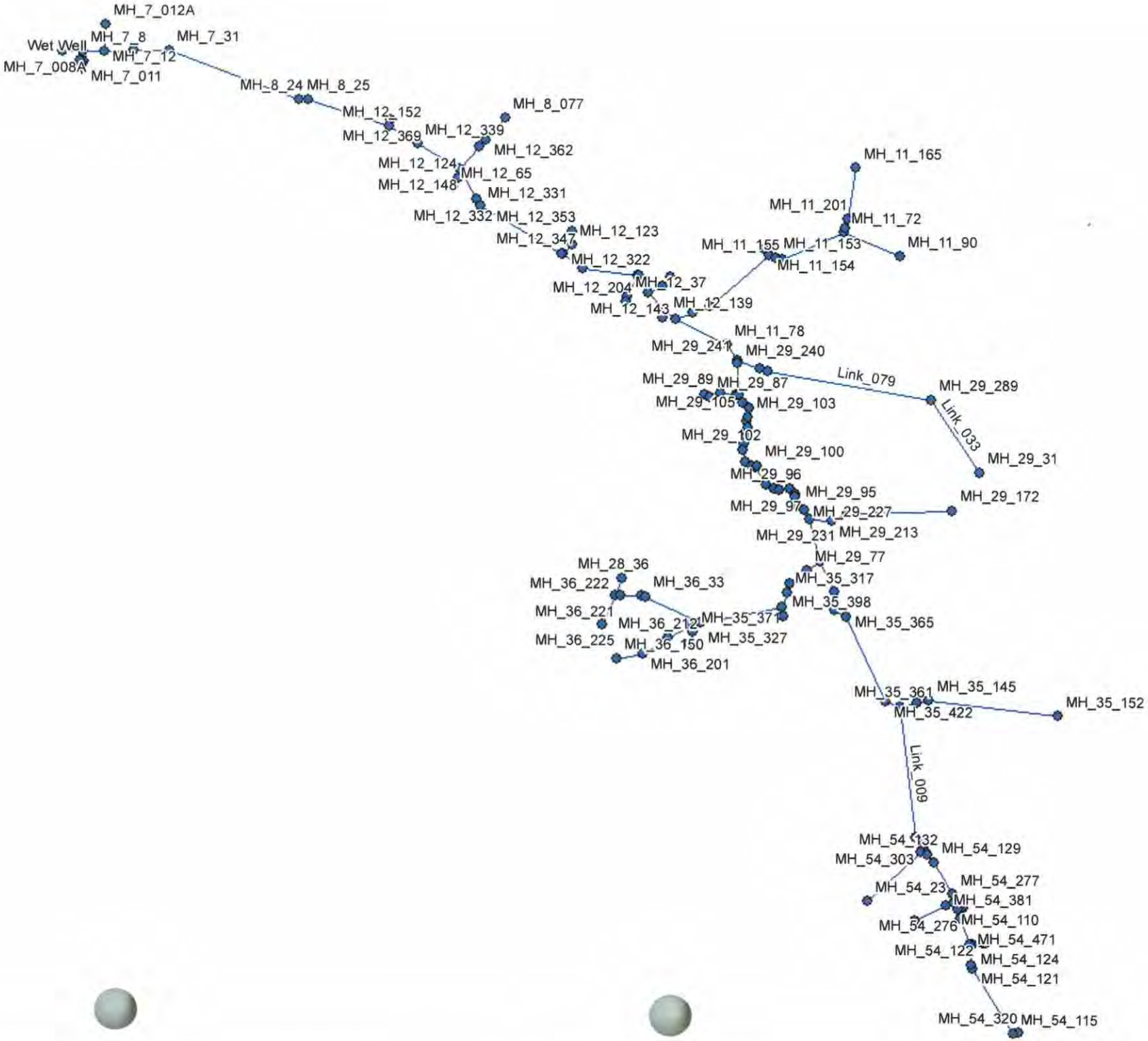
In every scenario, modeling indicated that solely constructing equalization basins or upsizing mains would not be a cost-effective means for meeting the goals of the CAP/ER, and so the focus was placed on rehabilitation, and then an eventual re-modeling of the system in 2013 to gauge the effectiveness of the rehabilitation and evaluate the need for and size of equalization. However, as the rehabilitation program began, it became obvious that additional modeling work was needed to help identify areas that have an abnormally high base flow and have a large response to rain events, so the model developed as part of the CAP/ER was expanded in 2009 and is currently used in conjunction with actual flow data from ADS meters to determine its calibration.

The model is not utilized on a daily basis but has been helpful in areas such as capacity assurance and, on a more practical level, in assuring the City that rehabilitation is the proper course of action, essentially answering the question "if this 24" trunk line is rehabilitated, will we eventually need to come back and upsize it to a 36" line?" and in each case, the clear answer has been that the facilities are amply sized.

The following information is attached with this item:

- **7-1** A printout of the modeled portion of the system.
- **7-2** An example of the calibration of the model.
- **7-3** A sample profile from the model.

7-1 A printout of the modeled portion of the system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Wet Well
MH_7_12
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MH_7_011
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MH_12_152
MH_8_077
MH_12_339
MH_12_369
MH_12_362
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MH_12_148
MH_12_331
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MH_12_353
MH_12_347
MH_12_123
MH_12_322
MH_12_37
MH_12_204
MH_12_143
MH_12_139
MH_11_165
MH_11_201
MH_11_72
MH_11_155
MH_11_153
MH_11_90
MH_11_154
MH_11_78
MH_29_241
MH_29_240
MH_29_89
MH_29_87
Link_079
MH_29_289
MH_29_105
MH_29_103
Link_033
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MH_29_97
MH_29_227
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MH_28_36
MH_35_317
MH_36_222
MH_36_33
MH_35_398
MH_36_221
MH_36_212
MH_35_371
MH_35_365
MH_35_327
MH_36_225
MH_36_150
MH_36_201
MH_35_361
MH_35_145
MH_35_152
MH_35_422
Link_009
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MH_54_23
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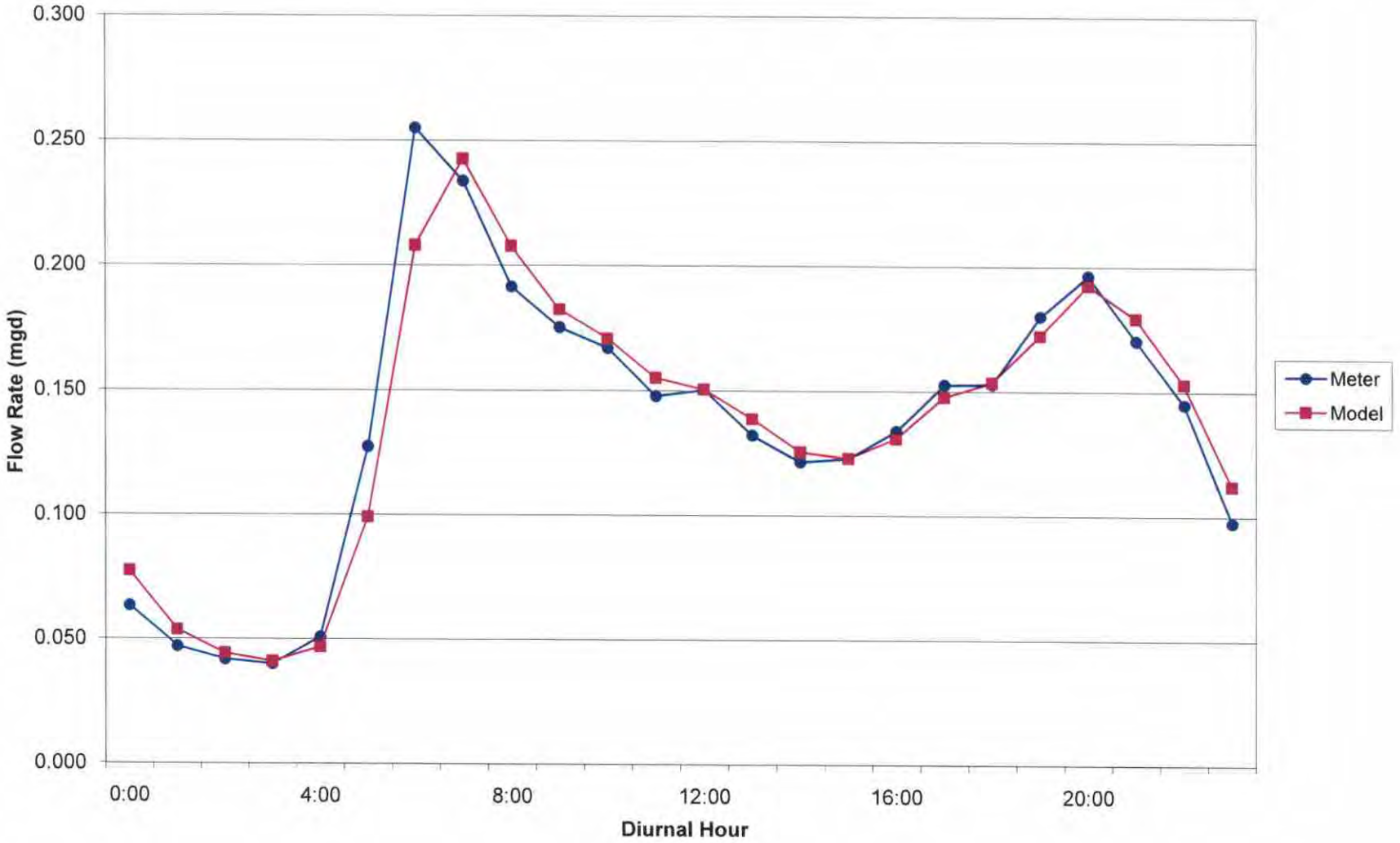
MH_54_381
MH_54_276
MH_54_110
MH_54_471
MH_54_122
MH_54_124
MH_54_121
MH_54_320
MH_54_115

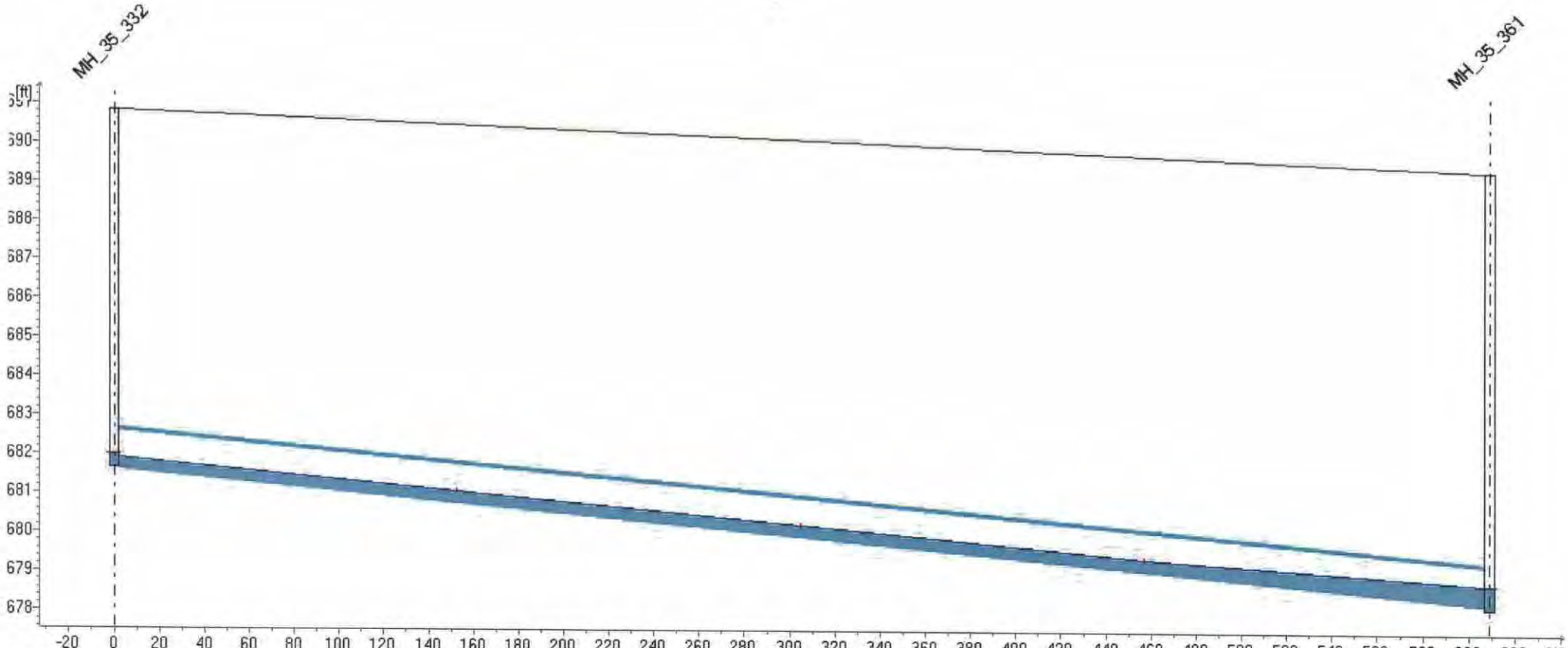
7-2 An example of the calibration of the model

E-19 Flow: Model & Meter



7-3 A sample profile from the model

MOUSE Longitudinal Profile



Link ID	Link_012	
Link Diameter	1.0000	
Shaft ID	MH_35_332	MH_35_361
Shaft Diameter	4.0000	
Ground Level	690.84	689.39
Invert Level	681.64	678.19
Link Slope	0.55	

11/23/2010 7:11:27 AM

Item #8 – Develop written SOP's for SSO response

Development date: June, 2007

Discussion: Prior to 2007, the City of Brentwood did not uniformly define, seek out, track, report or respond to overflows. It needs to be noted that these activities were taking place, but not in a consistent manner. An SOP for SSO response was developed in 2007, and is attached. The SOP is self-explanatory and has benefitted the City by providing a clear template and straightforward procedure in the event an overflow might occur or in the event it has occurred.

One of the main advantages to the SOP is that it allows the Department to review the causes and locations of each overflow. In almost every recent instance, the cause has been rain-related I/I, and the overflow has been a wet-weather event, and the response has been to clean the area with water and then apply lime to any affected ground.

The following information is attached with this item:

8-1 A copy of the Standard Operating Procedure for Sanitary Sewer Overflow Tracking and Response.

8-2 A summary spreadsheet of all overflows from 2005 to present. This spreadsheet tallies overflows at certain locations, causes of overflows, and calculates the annual sum. It is the "raw" data for the graph at the introduction to this response letter.

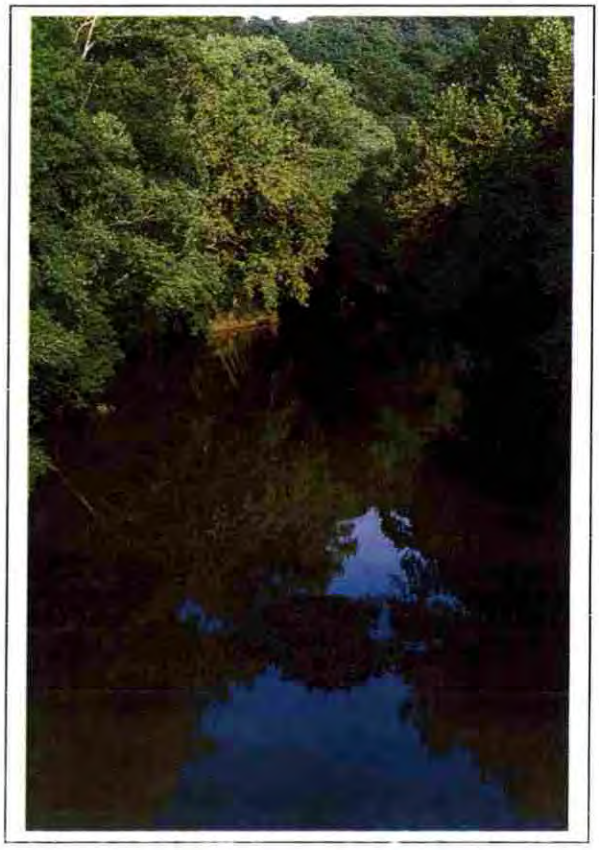
8-3 A copy of the City's current State Operating Permit issued by the State of Tennessee.

8-4 A spreadsheet of all overflows from 2007 to 2010, including location, cause, duration, and response actions.

8-1 A copy of the Standard Operation Procedure for Sanitary Sewer Overflow Tracking and Response

CITY OF BRENTWOOD

STANDARD OPERATING PROCEDURE FOR SANITARY SEWER OVERFLOW TRACKING AND RESPONSE



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* Cover photo is a scene on the Harpeth River, provided courtesy of the Harpeth River Watershed Association

I. INTRODUCTION

Mission Statement:

The mission of the City of Brentwood Water Services Department is, on one hand, to provide a safe and dependable supply of drinking water at sufficient volumes and pressures to meet customers' needs for domestic use and fire protection by being fiscally responsible stewards of our natural resources. The corresponding mission for the sewer operations is to provide the highest consistent quality of wastewater collections for its customers in a cost-effective manner.

Purpose of This Standard Operating Procedure:

As a part of fulfilling the Department's mission, a proactive approach of tracking and responding to sanitary sewer overflows (SSO's) has been developed. The City, as recently as 2004, developed a Sanitary Sewer Overflow Response Plan. Because of improvements in technology, such as GIS implementation, and regulatory requirements, such as CMOM, this document is intended to supersede previous efforts for tracking and responding to SSO's.

The approach utilized by the City of Brentwood is intended to simplify the important tasks of tracking and responding to SSO's. More importantly, it is intended to focus on preventative measures that can reduce the incidences and the severities of SSO events. Although this document is focused on overflow tracking and response, it needs to be clear that the main thrust of the Department is on preventing overflows from occurring at all. Because tracking the historical causes of, locations of, and volumes of overflows is essential for predicting, and therefore preventing, future overflows, it is extremely important to have in place a tracking procedure to document the overflows.

Training and Drills

The City conducts monthly training exercises on a variety of topics. At least once annually, the staff will be meeting to review this SOP and update it as needed. New employees, as part of their training, will participate in actual response activities at their earliest opportunity.

A copy of this Standard Operating Procedure is to be kept in each vehicle, along with all needed documentation for reporting and documenting the SSO. Additional copies can be obtained from the Operations Superintendent as needed.

II. PREVENTATIVE ACTIVITIES

In the City of Brentwood, there are six general causes of sewer overflows:

1. Excessive rainfall causing an I/I event that exceeds the capacity of the collection system.
2. Force main break.
3. Equipment failure at a pumping station.
4. Line blockage due to accumulated debris.
5. Line blockage due to grease buildup.
6. Line blockage due to root intrusion.

While a separate Standard Operating Procedure for preventative maintenance is being developed, it is important from a tracking standpoint to understand and document the specific causes of sanitary sewer overflows, not just noting where an overflow occurred. In the City of Brentwood, by far the most common cause of SSO's is excessive rainfall, which indicates that I/I reduction needs to be the primary focus of preventative maintenance.

Of the 26 documented overflow events in 2006, 21 were due to excessive rainfall, 4 were due to mechanical problems at a pumping station and one was due to root intrusion. As such, the majority of overflows can often be anticipated to increase the likelihood that the overflows will be: 1) identified, and 2) responded to quickly. The keys to improving the timely tracking and response times involve monitoring weather events and responding to customer complaints. Customer complaints can, in some instances such as odor issues, indicate areas where a blockage has occurred and in instances where overflows have occurred, especially in a non-weather-related event, can be the most common method for locating those overflows.

The City of Brentwood monitors its posted overflow points after each significant (>1.0 inches or smaller events on saturated ground) and has instituted a Customer Complaint Management Program for its sewer operations.

III. PROCEDURES

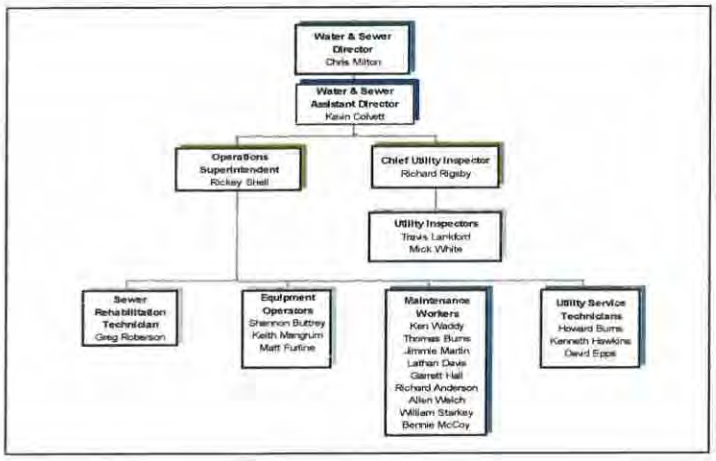
No two overflow incidents are identical, but in general the following steps will be followed:

1. NOTIFICATION
2. CONTAINMENT
3. REMEDIATION
4. REPORTING

1. Notification

The first step in responding to an overflow event is to be able to quickly receive information regarding the incident and transfer that information to the appropriate personnel. SSO's, whether they are noticed first by the public or by Department personnel, must be reported immediately to the Operations Superintendent. During work hours, calls to the Water Department (615-371-0080) are typically handled by the receptionists at the City's Service Center. After hours, the on-call number (615-202-9532) will be called by Police Dispatch, which is available 24 hours a day.

Note the organization chart to the right. Generally response procedures will be coordinated by the Operations Superintendent, although the Water Department's organization is such that several different persons are capable of directing the repair operations.



The Water Department utilizes a Microsoft Access database program to initiate and track its activities. In the case of an overflow, a work order similar to the one shown at the right will be generated and kept on file at Kenneth Hawkins's desk.

Because the Department exclusively utilizes the Work Order Program, it is crucial that a Work Order be generated to track both preventative and reactive activities.

Service Center Work Order 2007

Today's Date Thursday, June 21, 2007 **Work Order Number** 101

Received Date 2/14/2007 **Received Time** 7:30 AM **Received By** Rickey

Dispatcher Rickey **Department** 500 (Sewer)

Assigned To GR/JM **Task** 16 Check For Overflows

Requestor Rickey

Street Address Overflow Sites

Exact Location Brentwood/Metro SS, 3080 Hillsboro Rd, 5416 McGavock Rd, 5403 Williams

Request Check for overflows

Date Completed 2/14/2007

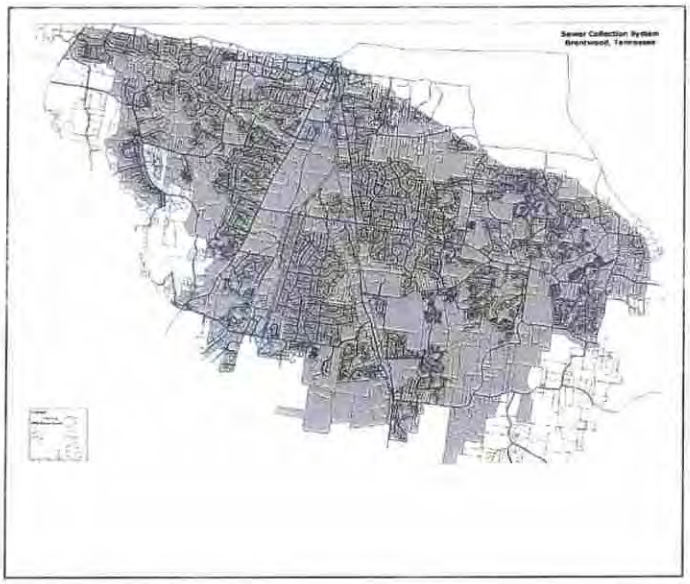
Action Taken All overflow sites ok.

More Action Required?

Follow Up Action Required

Sample Work Order

Sewer collection system maps should be available in each vehicle and should be referred to immediately to locate overflow. Line sizing, manhole locations and general geometrics should also be found on these maps. The locations of the nearest upstream and downstream manholes should be determined since this information might be needed depending on the extent of the overflow and the response.



Sewer Collection System Map

When assessing the situation, consider all parties who might need to be notified of the overflow. In addition to the nearby residents and businesses, these notifications might include:

- Other Utilities
  - Harpeth Valley Utilities District
  - Mallory Valley Utility District
  - City of Franklin
  - Metro Water Services
  - Nolensville / College Grove Utility District
- Other Utilities
  - Nashville Electric Service
  - Middle Tennessee Electric Membership Cooperative
  - Comcast Cable
  - Bellsouth
  - Columbia Gulf Gas Line
  - Atmos Energy (gas)
- Transportation Agencies
  - Tennessee Department of Transportation
  - CSX Railroad

In all cases, existing utilities should be located prior to excavation activities. The contact number for Tennessee One-Call is:

BRENTWOOD WATER SERVICES
EMERGENCY CALL LIST

In case of emergency, call in the following order until someone is reached:

	LOCATION OR PERSON	PHONE NUMBER
1.	Operations Office	615-371-0080
2.	Brentwood City Hall	615-371-0060
3.	Brentwood Police Department	615-371-0160*
4.	Chris Milton, Director of Brentwood Water and Sewerage Services	615-790-9998 615-785-2071 (Cell)
5.	Kevin Colvett, Assistant Director of Brentwood Water and Sewer Services	615-791-4536 615-218-5891 (Cell)
6.	Rickey Shell	615-778-0941 615-478-7926 (Cell)
7.	Richard Rigsby	615-377-8026 615-218-0546 (Cell)
8.	Mick White	615-790-9225 615-478-8447 (Cell)
9.	Travis Lankford	615-799-0540 615-533-2310 (Cell)
10.	Shannon Buttrey	615-799-8406 615-495-9096 (Cell)
11.	Ken Waddy	615-791-9304 615-830-1868 (Cell)
12.	Keith Mangrum	615-799-9728 615-218-2051 (Cell)

To activate State Emergency Response personnel, contact the Tennessee Emergency Management Agency (TEMA) by telephone at – ***615-741-0001***.

*All calls to this number are recorded.

2. Containment

Many overflow events, especially minor line blockages that are responded to in a timely manner, can be contained. In any event, the first priority in responding to an SSO is to undertake measures to stop the discharge of sewage. Examining the four most common causes of overflows individually, some examples of possible measures to contain the overflow are tabulated below:

CAUSE OF OVERFLOW	POSSIBLE CONTAINMENT MEASURES
Excessive Rainfall	1. Divert flow from private property and receiving waters if possible
Pump Equipment Failure	1. Begin pump-and-haul operations at the pumping station 2. Run the pump(s), if operable, in manual mode, manning the station until the equipment is repaired
Force Main Break	1. Shut off pumps to the force main 2. Begin pump-and-haul operations at the pumping station
Line Blockage	1. Physically remove obstruction, if possible 2. Jet clean the line 3. Install temporary bypass pumping

In any case, the most important action is to protect the public. Immediately barricade, flag, or hazard tape the affected area to minimize potential contact with the public. If the overflow is in an area susceptible to public access, such as a park or school area, extra precautions should be taken.

3. Remediation

Once an SSO has ended, by either repairing a main, fixing a pump, or the conclusion of an excessive rainfall event, the area impacted by the overflow needs to be cleaned up. If the event was minor, or the SSO was contained into a small area, remediation could be a fairly simple task, but others might require extensive time and effort. While not all of the actions would take place for every event, below is a list of possible activities that would need to take place as part of a remediation:

- Take extensive "before" and "after" photographs of the affected area.
- Notify any affected property owners as soon as possible of the event and of the remediation activities taking place.
- Limit public access to the area.
- If the overflow was directly into a creek or drainage bed, remove all sewage debris and trash from the water body. Do not wash down an area, especially using a jet, that is adjacent to a creek or river.
- If there has been a major overflow into a river, dissolved oxygen levels should be monitored for a period of several days. This would specifically be necessary is the SSO was, for example, into the Little Harpeth River in the late summer when there was little flow in the river.
- If there is evidence of a "fish kill" incident, then TDEC, Division of Water Pollution Control must be notified.
- Lime or disinfectant can be used around discharge points in isolated grassy areas or on private property, with consent of the property owner. *Do not use lime or disinfectant in creeks or drainage areas.*

In all cases, actions need to be documented and reported as called for in the following section.

4. Reporting and Tracking

As soon as an overflow event is identified, contact the Operations Superintendent and provide the following information:

- The exact location and condition of the site;
- Whether the overflow is from the public system or a private system;
- Any construction activities in the area;
- Any obvious threats to public health

Once the event has been identified, then contained as much as possible, and then concluded, the events must be thoroughly reported. While no "standard form" can cover all aspects of every potential overflow event, the Brentwood Water Services Department has developed a summary form that is to be included in monthly reports to TDEC. This form is included in Appendix I.

This form serves two purposes:

1. It serves as notification to TDEC that an overflow has occurred, and
2. It serves as an internal tracking mechanism for the Department to track where overflows are occurring and, equally importantly, WHY those overflows have occurred.

To date, there has been an adequate amount of documentation that an overflow occurred, but this information has been kept in a file and not "tracked". The Department has developed a simple, graphical method for tracking overflows which will be updated annually as part of the CMOM annual reporting. An example for the year 2006 is included in Appendix II. Viewing this information graphically, it is evident where pump stations need more routing preventative maintenance, where hydraulic restrictions are in the collection system, and it is equally evident that, at least for 2006, there is not a major root intrusion problem widespread throughout the system. This information will be compiled and reviewed on an annual basis.

APPENDIX I –

SEWAGE OVERFLOW REPORT FORM

CITY OF BRENTWOOD WATER SERVICES
SEWAGE OVERFLOW REPORTING FORM

TO: TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
ATTN: JOEY HOLLAND
FAX: 615-687-7078

COMPLETE THIS FORM IN ITS ENTIRETY FOR EVERY OVERFLOW POINT. IF A SINGLE RAINFALL EVENT CAUSES FOUR MANHOLES TO OVERFLOW, THAT IS TO BE TRACKED AS FOUR EVENTS, NOT ONE.

DATE:

NAME OF REPORTING OPERATOR:

LOCATION OF OVERFLOW:

MH# _____

(attach sketch if necessary)

ADDRESS _____

PUMP STATION _____

NOTE ANY STREAM AFFECTED:

DATE OF OVERFLOW:

START TIME:

START DATE:

END TIME:

END DATE:

CAUSE OF OVERFLOW (Circle one):

EXCESSIVE RAINFALL
→ Note amount and duration _____
PUMP STATION MECHANICAL
→ Note type of mech. problem _____
LINE BLOCKAGE
→ Note cause of blockage _____
FORCE MAIN BREAK

CORRECTIVE ACTION TAKEN (BRIEFLY SUMMARIZE):

ATTACH THIS FORM TO THE ORIGINAL WORK ORDER. LEAVE A COPY FOR MICK WHITE FOR MONTHLY REPORTING GENERATION AND A COPY FOR KEVIN COLVETT FOR CMOM TRACKING.

8-2 **A summary spreadsheet of all overflows from 2005 to present. This spreadsheet tallies overflows at certain locations, causes of overflows, and calculates the annual sum. It is the "raw" data for the graph at the introduction to this response letter.**

(locations and occurences)

DATE	WET WEATHER OVERFLOWS	GREASE OVERFLOWS	ROOT OVERFLOWS	DEBRIS OVERFLOWS	PUMP FAILURE	CSAP or CONSTR. OVERFLOWS	TAL OVERFLOW	ANNUAL TOTAL OVERFLOWS
Jan-05	5					1	6	
Feb-05	2						2	
Mar-05							0	
Apr-05	8					1	9	
May-05							0	
Jun-05					1		1	
Jul-05							0	
Aug-05	4						4	
Sep-05							0	
Oct-05							0	
Nov-05	1						1	
Dec-05	1						1	24
Jan-06	6						6	
Feb-06							0	
Mar-06							0	
Apr-06	5						5	
May-06	4		1				5	
Jun-06							0	
Jul-06					1		1	
Aug-06					1		1	
Sep-06	2						2	
Oct-06							0	
Nov-06	3						3	
Dec-06	2						2	25
Jan-07	4						4	
Feb-07	1						1	
Mar-07	1						1	
Apr-07	1		1				2	
May-07							0	
Jun-07							0	
Jul-07							0	
Aug-07					1		1	
Sep-07	2						2	
Oct-07	1				1		2	
Nov-07							0	
Dec-07	2						2	15
Jan-08	6						6	
Feb-08	6					1	7	
Mar-08	10						10	
Apr-08	16					1	17	
May-08	1					1	2	
Jun-08							0	
Jul-08							0	
Aug-08							0	
Sep-08							0	
Oct-08	2						2	
Nov-08							0	
Dec-08	2						2	46
							ANNUAL SUM	
Jan-09	2						2	
Feb-09	5						5	
Mar-09	4						4	
Apr-09	6						6	
May-09	5						5	
Jun-09	0						0	
Jul-09	0						0	
Aug-09	0						0	
Sep-09	1						1	
Oct-09	0						0	
Nov-09	1						1	
Dec-09	2						2	26
							ANNUAL SUM	
Jan-10	2			1			3	
Feb-10	1						1	
Mar-10	0						0	
Apr-10	0						0	
May-10	6						6	
Jun-10	0						0	
Jul-10	0						0	
Aug-10	0			1			1	
Sep-10	0						0	
Oct-10	0						0	
Nov-10	0						0	
Dec-10	1						1	12
							ANNUAL SUM	

8-3 A copy of the City's current State Operating Permit issued by the State of Tennessee.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243-1534
December 1, 2009

Mr. Chris Milton,
Director, Water and Sewerage Services
City of Brentwood Water and Sewer Department
P.O. Box 788
Brentwood, TN 37024

Re: State Operating Permit No. SOP-88068
City of Brentwood
Brentwood, Williamson County, Tennessee

Dear Mr. Milton:

In accordance with the provisions of the "Tennessee Water Quality Control Act" (Tennessee Code Annotated Sections 69-3-101 through 69-3-120) the enclosed State Operating Permit is hereby issued by the Division of Water Pollution Control. The continuance and/or reissuance of this Permit is contingent upon your meeting the conditions and requirements as stated therein.

Please be advised that you have the right to appeal any of the provisions established in this State Permit, in accordance with Tennessee Code Annotated, Section 69-3-110, and the General Regulations of the Tennessee Water Quality Control Board. If you elect to appeal, you should file a petition within thirty (30) days of the receipt of this permit.

If you have questions, please contact the Division of Water Pollution Control at your local Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Hari Akunuri at (615) 532-0650 or by E-mail at *Hari.Akunuri@tn.gov*.

Sincerely,

Mr. Vojin Janjić
Manager, Permit Section
Division of Water Pollution Control

SOP-88068
P/WAT/5S

Enclosure

cc: Division of Water Pollution Control, Permit Section
Division of Water Pollution Control, Nashville Environmental Field Office
Mr. Scott A. Potter, Department of Water Sewerage Services, 1600 Second Avenue North, Nashville, TN 37208

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
6th Floor, L & C Annex
401 Church Street
Nashville, TN 37243-1534

Permit No. SOP-88068

PERMIT

For the operation of Wastewater Treatment Facilities

In accordance with the provision of Tennessee Code Annotated section 69-3-108 and Regulations promulgated pursuant thereto:

PERMISSION IS HEREBY GRANTED TO

City of Brentwood
Brentwood, Williamson County, Tennessee

FOR THE OPERATION OF

A municipal wastewater collection system.

This permit is issued as a result of the application filed on June 9, 2009, in the office of the Tennessee Division of Water Pollution Control and in conformity with approved plans, specifications and other data submitted to the Department in support of the above application, all of which are filed with and considered as a part of this permit, together with the following named conditions and requirements.

This permit shall become effective on: December 1, 2010

This permit shall expire on: November 29, 2014

Issuance date: November 30, 2009

BF Jacobs FOR

Paul E. Davis
Director
Division of Water Pollution Control

C-0759

RDAs 2352 & 2366

The City of Brentwood is authorized to collect and transport untreated municipal wastewater to the Metro Nashville Sewerage System. The operation of this collection system will be governed by the following requirements:

The wastewater collection system shall be operated under the supervision of a Grade II collection system operator in accordance with the public Water Environmental Health Act of 1984 and the rules promulgated thereunder.

we do this

All pump/lift stations shall be inspected on a daily basis. The inspector shall note the date, time, and inspector's initials in a bound log book. Alternately, the permittee may provide telemetering devices for any pump station in order to reduce the frequency of actual inspections. — this + DO

OK

Daily flow data collected at the tie-in/discharge point shall be reported quarterly to the Division of Water Pollution Control, Nashville Environmental Field Office, 711 R.S. Gass Boulevard, Nashville, TN 37243. Submittals shall be postmarked no later than 15 days after the completion of the reporting period.

DEBRIS OVERFLOW IN JAN + AUG 2016. REST ARE WET WEATHER

A "dry weather overflow" (other than for wet weather) is defined as one day or any portion of a day in which discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs. Discharge from more than one point within any 24-hour period shall be counted as separate events.

2 IN JAN, 1 IN FEB, 1 IN DEC (ALL MAIN PS), PLUS FLOOD

A "rainfall event" is defined as any occurrence of rain, preceded by 10 hours without precipitation, that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A "sanitary sewer overflow event" is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall that is directly related to a specific rainfall event. Multiple discharge occurrences within a single rainfall event are considered a single sanitary sewer overflow event.

A "collection system" for the purposes of this permit' includes septic tanks, pump tanks, and sewer lines.

This permit does not relieve the permittee from any requirements of the municipality or utility where the sewage is ultimately disposed. The permittee must obtain approval for the connection from that municipality or utility and must comply with all their requirements including pretreatment regulations, the exclusion of storm and other extraneous water, etc.

For the purpose of this permit, a "quarter" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to operate after the expiration date of this permit. In order to receive authorization to operate beyond the expiration date, the permittee shall submit such information and forms as are required to the Director no later than 180 days prior to the expiration date.

2. Right of Entry

The permittee shall allow Director of the Division of Water Pollution Control, or authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, transport, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

All reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Pollution Control. All reports and data shall be kept for minimum of three years.

4. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

5. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

6. Severability

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

7. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

B. CHANGES AFFECTING THE PERMIT

1. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in Tennessee Code Annotated 69-3-108(f).

b. The permittee shall furnish to the Director or his representative, within a reasonable time, any information which may be requested to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

2. Change of Ownership

This permit may be transferred to another person by the permittee if:

a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and the new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

3. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which would cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of noncompliance shall be provided to the appropriate Division Environmental Assistance Center within 24 hours from the time the permittee becomes aware of the circumstances. (The Environmental Assistance Center should be contacted for names and phone numbers of emergency response personnel.)

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

OK i. A description of the discharge and cause of noncompliance;

ok ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

ok iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

This written notice shall not be considered as excusing or justifying the failure to comply with this permit.

This noncompliance shall also be reported on the Quarterly Report. The details may be incorporated by referenced to the written five-day notification.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2. a. above, the permittee shall report the noncompliance on the Quarterly Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Overflow

a. "*Overflow*" means the discharge of wastes from any portion of the collection or treatment system other than through permitted outfalls. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow. Severe property damage does not mean economic loss caused by delays in production.

b. Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the flow measurement industry and reported in an attachment to a quarterly operational report submitted to the local TDEC Environmental Assistance Center. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. LIABILITIES

1. Civil and Criminal Liability

The permittee is subject to civil and Criminal liability for violation of this permit. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

E. PROHIBITIVE DISCHARGE STANDARDS

FOLLOW MWS REQUIREMENTS

1. Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

a. Pollutants which create a fire or explosion hazard in the POTW.

b. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 unless the works is specifically designed to accommodate such discharges.

c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference.

d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

e. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40° C (104° F) unless the Division, upon request of the POTW, approves alternate temperature limits.

f. Any priority pollutant in amounts that will contaminate the treatment works sludge.

g. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

h. Pollutants which results in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

i. Any trucked or hauled pollutants except at discharge points designated by the POTW.

2. The permittee shall notify the Tennessee Division of Water Pollution Control of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:

a. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.

b. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Pollution Control Act as Amended" if it were discharging such pollutants.

c. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works.

F. PLACEMENT OF SIGNS

The permittee shall place and maintain a sign at each bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five(5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.

NO LOCATIONS QUALIFY

Unpermitted bypass/overflow point:

TREATED MUNICIPAL/SANITARY WASTEWATER
City of Brentwood
(615) 371-0080
SOP Permit NO. SOP-88068
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Nashville

8-4 A spreadsheet of all overflows from 2007 to 2010, including location, cause, duration and response actions

TIME			LOCATION OF OVERFLOW		CAUSE								
START DATE	END DATE	DURATION	MH#	ADDRESS	RAIN	MAT'L/ MECH.	DEBRIS	ROOTS	FOG	OTHER (specify)	CORRECTIVE ACTIONS TAKEN	COMMENTS	
1/1/2007	1/2/2007	32 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	1.05" of rain	
1/5/2007	1/9/2007	96 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	1.86" of rain	
1/5/2007	1/7/2007	50 hours	12-134	5403 Williamsburg Road	X						Clean area and add enzymes	1.86" of rain	
1/21/2007	1/22/2007	16 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	0.83" of rain	
2/25/2007	2/26/2007	14 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.93" of rain	
3/1/2007	3/2/2007	22 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	1.15" of rain	
4/14/2007	4/15/2007	24 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	2.03" of rain	
4/20/2007	4/21/2007	24 hours	54-361	1621 Knox Drive				X			Clean area and add lime / enzymes		
8/1/2007	8/1/2007	20 minutes	N/A	I-65 lift station		X					Clean area and add lime / enzymes	broken valve - was replaced	SOP implemented
9/11/2007	9/11/2007	12 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	1.71" of rain	
9/27/2007	9/27/2007	18 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	1.47" of rain	
10/23/2007	10/26/2007	50 hours	7-11	Brentwood Pump Station	X						Clean area and add enzymes	3.59" of rain	
10/31/2007	10/31/2007	4 hours	N/A	I-65 lift station		X					Clean area and add enzymes		
12/21/2007	12/22/2007	16 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.92" of rain	
12/28/2007	12/29/2007	28 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.14" of rain	
1/8/2008	1/8/2008	10 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.84" of rain	
1/10/2008	1/12/2008	31 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.61" of rain	
1/10/2008	1/12/2008	26 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	1.61" of rain	
1/10/2008	1/12/2008	26 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	1.61" of rain	
1/10/2008	1/12/2008	26 hours	29-231	Tower Park Bikeway Underpass	X						Clean area and add lime / enzymes	1.61" of rain	
1/10/2008	1/12/2008	26 hours	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	1.61" of rain	
1/31/2008	2/2/2008	27 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.7" of rain	
2/1/2008	2/2/2008	20 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	1.7" of rain	
2/1/2008	2/2/2008	20 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	1.7" of rain	
2/4/2008	2/5/2008	10 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.98" of rain	
2/6/2008	2/7/2008	14 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.98" of rain	
2/6/2008	2/7/2008	12 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	0.98" of rain	
2/8/2008	2/8/2008	1.5 hours	N/A	Moore's Lane @ Carothers		X					Clean area and add lime / enzymes	Boring contractor broke pipe	
3/7/2008	3/8/2008	16 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2" of rain	
3/7/2008	3/8/2008	14 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	2" of rain	
3/7/2008	3/8/2008	12 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	2" of rain	
3/8/2008	3/9/2008	17.5 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2" of rain	
3/9/2008	3/10/2008	14 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2" of rain	
3/15/2008	3/16/2008	11 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1" of rain	
3/19/2008	3/23/2008	102 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.78" of rain	
3/19/2008	3/23/2008	98 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	0.78" of rain	
3/19/2008	3/22/2008	92 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	0.78" of rain	
3/20/2008	3/22/2008	55 hours	12-142	B'wood country club hole #15	X						Clean area and add lime / enzymes	0.78" of rain	
4/3/2008	4/8/2008	115 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	3.19" of rain	
4/3/2008	4/7/2008	101 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	3.19" of rain	
4/3/2008	4/7/2008	97 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	3.19" of rain	
4/3/2008	4/7/2008	81 hours	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	3.19" of rain	
4/3/2008	4/7/2008	97 hours	12-136	5317 Williamsburg Road	X						Clean area and add lime / enzymes	3.19" of rain	
4/3/2008	4/7/2008	97 hours	12-141	B'wood country club hole #17	X						Clean area and add lime / enzymes	3.19" of rain	
4/4/2008	4/7/2008	72 hours	29-229	Tower Park Tunnel	X						Clean area and add lime / enzymes	3.19" of rain	
4/4/2008	4/5/2008	20 hours	54-132	Boiling Springs Academy	X						Clean area and add lime / enzymes	3.19" of rain	
4/4/2008	4/6/2008	45 hours	35-163	Falmouth Court on Trunk	X						Clean area and add lime / enzymes	3.19" of rain	

4/4/2008	4/7/2008	51 hours	12-318	B'wood country club hole #8	X						Clean area and add lime / enzymes	3.19" of rain
4/11/2008	4/14/2008	68 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.74" of rain
4/11/2008	4/14/2008	64 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	1.74" of rain
4/11/2008	4/14/2008	59 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	1.74" of rain
4/11/2008	4/13/2008	39 hours	29-229	Tower Park Tunnel	X						Clean area and add lime / enzymes	1.74" of rain
4/11/2008	4/13/2008	28 hours	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	1.74" of rain
4/11/2008	4/13/2008	39 hours	29-231	Tower Park Bikeway Underpass	X						Clean area and add lime / enzymes	1.74" of rain
4/15/2008	4/15/2008	1 hour	N/A	6328 Murray Lane		X					Clean area and add lime / enzymes	Split in 2" PVC force main
5/20/2008	5/20/2008	20 minutes	11-58	Centerview Drive						X	Clean area and add lime	bypass pump improperly set-up
10/8/2008	10/9/2008	32 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	2.79" of rain
10/24/2008	10/25/2008	24 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	1.89" of rain
12/10/2008	12/12/2008	62 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	2.79" of rain
12/25/2008	12/25/2008	10 hours	7-11	Brentwood Pump Station	X						Clean area and add lime	0.89" of rain
1/7/2009	1/7/2009	13 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.5" of rain
1/28/2009	1/29/2009	30 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.02" of rain
2/27/2009	2/28/2009	43 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.18" of rain
2/27/2009	2/28/2009	30 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	2.18" of rain
2/27/2009	2/28/2009	20 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	2.18" of rain
2/27/2009	2/28/2009	19 hours	22-297	Turner Farm	X					X	Clean area and add lime / enzymes	2.18" of rain - rehab contractor
2/27/2009	2/28/2009	12 Hours	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	2.18" of rain
3/1/2009	3/2/2009	32 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.18" of rain - continued from
3/1/2009	3/2/2009	25 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	2.18" of rain - continued from
3/14/2009	3/15/2009	20 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.52" of rain
3/14/2009	3/15/2009	14 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	1.52" of rain
4/2/2009	4/3/2009	43 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.18" of rain
4/2/2009	4/3/2009	30 hours	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	2.18" of rain
4/2/2009	4/3/2009	20 hours	12-315	5319 Williamsburg Road	X						Clean area and add lime / enzymes	2.18" of rain
4/2/2009	4/3/2009	22 hours	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	2.18" of rain
4/2/2009	4/3/2009	22 hours	12-323	6000 Belle Rive Drive	X					X	Clean area and add lime / enzymes	2.18" of rain - rehab contractor
4/2/2009	4/2/2009	18 hours	12-142	B'wood country club hole #15	X					X	Clean area and add lime / enzymes	2.18" of rain - rehab contractor
5/1/2009	5/11/2009	11 days	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	6.39" of rain
5/1/2009	5/9/2009	9 days	7-15	3080 Hillsboro Road	X						Clean area and add lime / enzymes	6.39" of rain
5/1/2009	5/9/2009	9 days	12-315	5319 Williamsburg Road	X						Clean area and add lime / enzymes	6.39" of rain
5/1/2009	5/9/2009	9 days	12-134	5403 Williamsburg Road	X						Clean area and add lime / enzymes	6.39" of rain
5/1/2009	5/9/2009	9 days	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	6.39" of rain
9/26/2009	9/27/2009	16 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.35" of rain
9/26/2009	9/27/2009	<16 hours	12-142	B'wood country club hole #15	X							Reported overflow at BPS only
11/1/2009	11/1/2009	21 hours	12-321	5416 McGavock Dr.	X					X	Clean area and add lime / enzymes	1.85" of Rain - rehab contractor
11/30/2009	12/1/2009	20 hours	7-11	Brentwood Pump Station								Probably a mis-report???
12/9/2009	12/10/2009	22 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.79" of rain
1/6/2010	1/6/2010	0.5 hours	11-170	9010 Overlook Blvd			X				Jetted line, washed area back into MH	Did not reach water body
1/17/2010	1/17/2010	19 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.94" of rain
1/21/2010	1/21/2010	12 Hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	0.89" of rain
2/5/2010	2/6/2010	<40 hours	12-142	B'wood country club hole #15	X						Rinsed off area - 2 different dates	Reported overflow at BPS only
2/5/2010	2/6/2010	40 hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	1.27" of rain
5/1/2010	5/4/2010	72 Hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
5/1/2010	5/3/2010	60 Hours	12-528	400 Belle Glen Ct.	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
5/1/2010	5/3/2010	60 hours	12-321	5416 McGavock Dr.	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
5/1/2010	5/3/2010	60 hours	12-142	B'wood country club hole #15	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
5/1/2010	5/3/2010	52 hours	29-229	Tower Park Tunnel	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
5/1/2010	5/3/2010	52 hours	29-76	8109 Concord Road - bike path	X						Clean area and add lime / enzymes	13.95" of rain: 1000-year flood
11/30/2010	11/30/2010	12 Hours	7-11	Brentwood Pump Station	X						Clean area and add lime / enzymes	2.24" of rain

Item #9 – Conduct a Financial Analysis / Rate Study to meet TDEC's Order

Development date: May, 2008

Discussion: The City of Brentwood and Nashville Metro Water Services worked together to develop a CAP/ER approved by TDEC in December of 2007. At that time, a financial analysis was performed by the City of Brentwood that showed that rates needed to be adjusted upward by 25%, and this was accomplished in early 2008. Also, because the wholesale treatment rate from Metro Water Services was going to be increased by some undetermined amount, a means to increase Brentwood's rates proportionate to Metro's wholesale rate increase was included in the revised Ordinance.

A wholesale contract with Metro was executed in November of 2009, and the City of Brentwood is currently able to meet the operational needs of the Water and Sewer Department as well as financing up to $30,000,000 in bonds for capital improvements, over $10,000,000 of which has already been spent on sewer rehabilitation.

The following information is attached with this item:

9-1 A copy of a summary memo prepared by the City's Finance Department that provides background on the rate adjustments.

9-1 A copy of a summary memo prepard by the City's Finance Department that provides background on the rate adjustments

CITY OF BRENTWOOD

PROPOSED SEWER RATE INCREASE

EXECUTIVE SUMMARY

If approved by the Board of Commissioners, Ordinance 2008-03 will increase sewer rates by 25% for all customers effective with the bills that are delivered to customers in mid April to early May with payments due on May 7 or May 22. This applies to 9,300 residential dwellings and 300 commercial/institutional users in Brentwood that receive sewer service from the City. For the **average residential customer** with a winter month water usage of **5,800** gallons, the **monthly sewer bill** will increase from **$27.09** to **$33.86** or **$6.77** per month.

What will these increases cover?

1. **Debt service associated with issuance of $30 million in bonds over the next 7 years to undertake State mandated improvements to eliminate storm water infiltration into the lines and sewer overflow discharges from manholes into the river during heavy rainfall/high stream flows.** While the use of substandard clay and concrete lines and placement within creek and river channels was an acceptable design standard in the 1970's, the result was a system that is structurally sound, but not watertight. Until recently, a limited number of discharges annually during high water flows/flooding were tolerated by the regulatory agencies because the water flows would dissipate potential pollution concerns. Now, however, most if not all cities across Tennessee and the nation including Metro Nashville are or will be facing similar requirements to upgrade their sewer systems as the accepted standard for "clean" evolves.

2. **Cost of wastewater treatment services from our sewer provider - Metro Nashville.** The City has joined together with nine (9) other wholesale customers that surround Nashville to negotiate a fair and equitable cost with Metro that is as low as possible and pays for only the true cost of wholesale treatment services. Rate negotiations with Metro may not be completed until the end of 2008. The above rate increase will cover future Metro wastewater treatment cost increases to $.83 per 1,000 gallons treated, up from the current cost of $.63.

What is the amount of the increase?

(New residential rates effective with bills due after May 1, 2008) **

Inside City	Current Rates	New Rates
2,000 gallons or less (minimum bill)	$11.62	$14.53
Next 8,000 gallons, per 1,000 gallons	$4.07	$5.09
Over 10,000 gallons, per 1,000 gallons	$4.65	$5.81

****Winter Water Average** - The monthly sewer rate charged by the city is based on each customer's average winter water consumption as billed in the months of December through March using the above rate schedule. For sewer customers who are not water customers of the city, the computation of average winter water consumption is based upon the four-month period that most closely corresponds to that used for City water customers. The established rate per 1,000 gallons above the minimum bill is prorated for each 100 gallons consumed.

Metro Wastewater Treatment Surcharge - If at some point **in the future** the cost of Metro wastewater treatment services to the City increase above $.83 per 1,000 gallons treated, the additional increase would appear as a surcharge on the customer's monthly sewer bill. For example, if the negotiated wastewater treatment rate is $1.08 per 1,000 gallons or $.25 higher than the base $.83 rate, the average residential customer with a winter water use average of 5,800 gallons per month would have $1.45 added to their monthly sewer bill ($.25 x 5.8) to be reflected as a separate line item listed on the monthly bill.

Summary - The City of Brentwood regrets the need for this sewer rate increase. Water and Sewer Operations by law are funded by users and not by tax dollars. We have no choice but to undertake the mandated improvements that will lead to a cleaner environment and enhanced sewer infrastructure for the years ahead. We must be as proactive in this endeavor as we were in securing an ample water supply for Brentwood customers. Ironically, while federal grants were available to fund most of the original sewer system in the 1970's, no such funding is available to Brentwood today. Finally, our geographic location away from a major river limits our wastewater treatment options.

Additional information on the rate and fee adjustments is available in CITY MANAGER MEMORANDUM 2008-02 which is also attached as backup information to Ordinance 2003-03 and at the City of Brentwood web page – www.brentwood-tn.org

City of Brentwood

CITY MANAGER MEMORANDUM

2008-02

TO: Honorable Mayor and Members of the City Commission

FROM: Michael W. Walker, City Manager

DATE: February 18, 2008

SUBJECT: **February 2008 Utility Rate Study**

Below and attached, you will find information in support of staff recommendations for revisions to the utility rates and tap fees for your consideration and approval. An ordinance to implement the recommendations in this report is tentatively scheduled for formal consideration and approval on first reading at the March 10, 2008 City Commission meeting.

Proposed increases in customer sewer rates and water/sewer tap fees are essential for the City to repair and improve our core utility infrastructure; to provide sufficient income to cover the cost for the issuance of up to $35 million in revenue bonds over the next seven (7) years to pay for the improvements; to provide financial certainty for addressing the unknown expenses and obligations facing the City with Metro Nashville's wastewater treatment rates; and to protect the City's overall financial position as reflected by our Aaa bond rating with Moody's Investors Services.

Background

The Water and Sewer Fund is an integrated enterprise fund that serves the combined financial and operational needs of the City's water and sewer services. While this budgetary arrangement allows for the most efficient use and allocation of resources and personnel between each service depending on the need, it does not provide for the easy separation and tracking of the financial and operating aspects of each service as a separate entity. Accordingly, for purposes of identifying the current financial position of each service including projected obligations for the next seven (7) years, the Finance and Water and Sewer

February 2008 Utility Rate Study

Departments have used reasonable assumptions to identify and separate income and expenses for the Water and Sewer Divisions without resorting to establishment of an expensive, formal cost accounting system.

The primary reason for analyzing the water and sewer divisions separately is that the City's water and sewer service areas are not uniform boundaries and do not correspond to the corporate city limits of Brentwood. In fact, the size of the City's sewer service area and number of sewer customers is greater than the City's water service area and customers. It is not unusual to have Brentwood sewer customers who receive their water service from a separate, legally authorized utility district. Specifically, for the estimated 11,600 residential dwellings in Brentwood, about 9,300 or 80% have Brentwood sewer service; the remaining 2,300 households are served directly by Metro Nashville and the City of Franklin. For water service, the number is even less. About 7,700 or 64% of households are served by the City of Brentwood; the remaining 3,900 homes are served by Mallory Valley Utility District, Harpeth Valley Utilities District, Nolensville/College Grove Utility District or Metro Nashville.

For equity and fairness to everyone, it is essential that the sewer rates be sufficient to cover the cost of sewer operations, wastewater treatment services and capital/debt obligations. City of Brentwood water customers should not be expected or required to subsidize the cost of sewer service for those customers with non-Brentwood water service because the City lacks a mechanism to secure water income from those customers.

The focus of this study has been to analyze and project operating and capital expenditure obligations and current income/fee collections for both the water and sewer divisions and formulate proposed rates and tap fees that will be sufficient to maintain a sound financial position with the lowest possible rate increase. The goal is to recommend a fair and equitable rate/fee structure for the next seven (7) years that: 1) permits the construction of State mandated capital improvements to the sewer collection system that will lead to a cleaner environment; 2) maintains an adequate water supply to meet the demands of our customers; and 3) meets accepted service delivery and reliability standards expected by our customers and mandated under state and federal laws.

Sufficient new income will be needed to pay for new capital obligations, to adequately operate and maintain the current systems, and to cover fixed obligations including depreciation, the purchase of water from Harpeth Valley Utilities District and Metro Nashville and wastewater treatment services from Metro Nashville. To establish rate recommendations, the Finance Department has analyzed the needs of the Water and Sewer divisions, separately and combined

combined within the Water and Sewer Fund, for the next seven (7) years using both a net income and cash flow approach.

Current Issues

There are three (3) significant challenges facing the City of Brentwood Water and Sewer Fund that will adversely affect the current financial position of the fund without sewer rate and water/sewer tap fee increases. They are summarized below:

Sewer Line Rehabilitation/Infrastructure Upgrades - A major capital improvements program in the amount of $30 million (funded by Sewer Revenue Bonds) is projected between now and the year 2015 to rehabilitate substandard sewer trunk and collector lines and the Brentwood Pumping Station that were installed during the 1970's. Improvements are being mandated by the EPA (U.S. Environmental Protection Agency) and TDEC (Tennessee Department of Environment and Conservation) to eliminate sewer overflow discharges into local rivers and streams. The problem is the result of the less reliable pipe materials (clay and concrete) used with the original sewer line construction and its placement within stream beds. During periods of heavy rainfall and higher stream flows/flooding, both aspects have contributed to storm water inflow into the sewer lines and, when eventually surcharged, discharge (by-passes) from manholes into rivers and streams. Such substandard pipe materials have not been permitted in the City since the mid 1980's and the placement of sewer pipe within streams is normally prohibited by TDEC today.

Ironically, the EPA approved and funded about 90% of the construction of the City's original trunk sewer and treatment system in the 1970's with the goal of providing as much improvement possible for the investment to reduce and eliminate the use of private septic systems which were prevalent in Brentwood for most homes built prior to 1985. This goal was achieved by the City with the extension of public sewer to about 2,700 homes on septic systems in the 1990's and early 2000's through the "neighborhood sewer extension program."

The use of clay and concrete lines and placement within the creek and river channels was an acceptable design standard in the 1970's with the result being a system that is structurally sound overall, but not watertight. With the passage of time, the accepted "standard" for what is "clean" continues to evolve. While any untreated sewer discharge into a river is a technical violation of Clean Water Act, a limited number of discharges annually during high flows/flooding were accepted or tolerated by the regulatory agencies until recently because the higher river flows would dissipate any potential pollution concern. Brentwood is not the only

jurisdiction facing a requirement to eliminate sewer by-passes into local streams and rivers. The EPA and TDEC are now pressuring most communities across the State of Tennessee to address the overflow problems with capital investments tailored to the needs of the community while, at the same time, not providing any federal grant dollars to help with the mandated repair cost. Also note that depending on the regulatory climate in the United States in the year 2015, mandated requirements for additional capital improvements and system rehabilitation are possible.

Metro Nashville Wastewater Treatment Charges – The City of Brentwood has joined together with nine (9) other wholesale customers to form a Metro Sewer Users Association (MSUA) to negotiate with Metro Nashville a new uniform trunk and treatment sewer rate. In addition, Brentwood along with LaVergne and Millersville have been sued for alleged back payments due for capital improvements and sewer treatment services for rate adjustments made prior to July 1, 2007. Metro alleges in the lawsuit that Brentwood owes $3.7 million - charges which the City believes strongly are not supported by any legal authority to assess. In an attempt to negotiate a new contract and rate agreement with Metro which is expected to take 6-9 months to finalize, MSUA (and Brentwood) have offered to pay (retroactive to July 1, 2007) an increased trunk and treatment sewer rate to Metro above the current $.63 rate per 1,000 gallons treated. The proposed amount of this increase would be equivalent to the percentage sewer rate increase that the Metro Council approves for its residential customers in the next few months. This interim treatment rate would stay in effect until a new wholesale rate is negotiated and finalized with Metro in the fall, at which time, the rate would again be adjusted, up or down. For purposes of this analysis, the staff has assumed that Metro will increase its residential sewer rates in the range of 30%; accordingly, the interim cost is projected at $.83 per 1,000 gallons (up $.20), with payments retroactive to July 1, 2007.

Note that Metro Council (based on the recommendation of the former administration) unilaterally adopted a new trunk and treatment rate effective July 1, 2007 that is $1.53 per 1,000 gallons or a 143% increase. Brentwood and MSUA members believe strongly that the $1.53 rate for wholesale customers is not supported by actual costs for trunk and treatment services to wholesale customers and intend to negotiate this amount downward. However, if the final negotiated wholesale treatment rate exceeds $.83 per 1,000 gallons treated, the City will need to pass on this extra cost to customers.

Water System Improvements – The City invested about $10 million in water system improvements in 2000 and 2001 to better meet the peak summer water demand from our customers, associated with outdoor watering and irrigation. The City expanded and upgraded

existing water pump stations and water tanks and built new, larger water lines to deliver more water faster throughout the City. The investment was a success. In 2007, the City and region experienced a significant drought with record setting demand for water which for the Brentwood water system peaked in the summer at an average residential demand per household in excess of 25,000 gallons per month or 4.3 times the normal winter water demand average of 5,800 gallons per month. Obviously, not all of our water customers used this amount of water. The average consumption indicates a significantly higher demand from some of our 7,700 residential customers associated with outdoor watering & irrigation systems.

While the City was able to meet water requirements through a cooperative effort from our water providers, it is felt that additional water capacity should be considered in the next few years to better meet the peak water needs as the City approaches build-out. With the current effort by Nolensville/College Grove Utility District to purchase additional water from Mallory Valley Utility District in the Wilson Pike/Moores Lane area, there may be an opportunity for the City to participate in capital improvements that would allow us to obtain an additional 3 million gallons of water daily from a new connection point at the south end of the City. The improvements (and/or tap fee) is tentatively estimated to cost $6 million and would be targeted for calendar year 2010 (FY 2010 and FY 2011). The issuance of a $5 million Water Revenue Bond would be needed to fund the improvement.

Current Rate/Tap Fee Structure

The current water and sewer rates and associated tap fees for City of Brentwood customers are shown as attachments to this memo (Attachment A). All rates and fees are included in the Brentwood Municipal Code in sections 70-132 through 70-158.

For most Brentwood customers, the monthly sewer rate (Section 70-134) is set each April (and is fixed for the next 12 months beginning with the May due date) based on the customer's average four (4) month winter water consumption (December – March). This billing approach is more equitable because most water used in the winter months goes into the sewer system. The current residential sewer rate for a customer living in the City limits is $11.62 for the first 2,000 gallons; $4.07 per 1,000 gallons for next 8,000 gallons; and $4.65 per 1,000 gallons for all gallons over 10,000 gallons. The current average residential sewer customer bill is **$27.09** based on a monthly winter water average of **5,800** gallons per month.

February 2008 Utility Rate Study

Brentwood water rates (Section 70-157) are calculated on the same rate/gallon cost formula noted above for sewer except it is based on actual metered water consumption each month. The average residential water consumption is **12,600** gallons per month with a bill of **$56.27** (plus sales tax).

For sewer tap fees (Section 70-132), the current sewer tap fee for a new residential dwelling is **$3,500**. For other land uses, there are a variety of methods used for calculating sewer tap fees based on square footage, rooms, students, seats, etc.

For water tap fees (Section 78-158), fees are established primarily by meter/line size with the residential fee for a new dwelling being **$2,500** (except for the water service area recently taken over from Nolensville/College Grove Utility District which is $5,000 and payable for the entire planned subdivision when the first phase of the new subdivision is platted). Water taps for commercial are higher and are figured on the meter/line size at $3,500 per inch. For example, a standard six (6) inch commercial water tap is currently $21,000.

Proposed Rate/Tap Fee Increases

Attachment B lists the assumptions used in this report for calculating net income and cash flow analysis for the Water and Sewer Fund for the next seven (7) years (FY 2009 – FY 2015).

Attachment C provides a projected net income (balance sheet) statement for the water and sewer divisions and the combined fund. The statement is also designed to show projected changes in net income positions with and without proposed rate and tap fee increases. Legally, the City's Water and Sewer Fund must operate in a positive net income position, otherwise the City will be mandated by the State of Tennessee to adjust rates as happened in 1991.

Attachment D provides for the same analysis noted above from a cash flow perspective. This approach is also essential for determining the City's ability to pay for a significant amount of capitalized investment during the period and for principal payments associated with the $35 million in new revenue bonds to be issued from FY 2009 – FY 2015.

Both statements clearly show that the City cannot: 1) issue $30 million in Sewer Revenue Bonds for mandated sewer rehabilitation improvements; 2) issue $5 million in Water Revenue Bonds toward the purchase of an additional three (3) million gallons per day of water capacity; and 3) pay for a projected 30% interim rate increase for wholesale wastewater treatment from

treatment from Metro Nashville without additional income and fees.

Accordingly, the following changes/increases in water and sewer rates/tap fees are proposed with an effective date with billings due and tap fees purchased after May 1, 2008.

1. **Water Tap Fees** - Based on current information and understandings, no increase in the current water rates for customers is being recommended as sufficient income should be generated during the period to cover projected operational expenses. However, the staff is recommending that a provision be added to the Code to permit the City to pass on future rate increases from our water providers to customers automatically via a surcharge added to the monthly bill (see discussion on surcharges under item 5 below).

   The continued demand for more water to meet peak summer demand during severe drought conditions will require additional capital investment. Accordingly, to help pay for new water system improvements, an increase in the current water tap fees are proposed. This would include an increase in the standard residential water tap (3/4 inch) from **$2,500 to $5,000** and an increase in commercial, service institution and larger residential lines from **$3,500 to $7,000 per inch**. For a six (6) inch commercial meter typical for larger commercial uses, the tap fee would increase from $21,000 to $42,000.

2. **Sewer Tap Fees** – Given the significant capital investment proposed for our sewer collection system over the next seven (7) years which will allow the lifting of the current moratorium on new authorized connections to the public sewer system, it is recommended that the taps fees be increased. A new residential sewer tap would increase from **$3,500 to $5,000** and the tap fees for non-residential uses identified in Section 70-132 would increase across the board by an equivalent **42%**. For example, the tap fee for a new 100,000 s.f. office building (without showers) would increase from $126,000 to $179,000 or from $1.26 to $1.79 per square foot.

3. **Sewer Rates** – While the new bonds are proposed for issuance every other year from FY 2009 – FY 2015, the cumulative new debt service will add $2.2 million annually in new expenses by the year 2015. To pay for new debt service (principal and interest) associated with mandated capital improvements and the projected interim rate increase from Metro Nashville for wastewater treatment, a **25%** increase in sewer rates is proposed for all residential and commercial/service institutional customers. For the

average residential sewer customer with an average winter month water consumption of **5,800** gallons, the monthly sewer bill would increase from **$27.09 to $33.86 or $6.77 per month.** A summary of the proposed rate structure and rate increases for user classes at various winter water use levels is shown in Attachment E.

4. **Metro Nashville Wastewater Treatment** – With a projected interim trunk and treatment rate increase of 30%, the Sewer division will incur an increase in treatment cost to Metro Nashville during the next seven years averaging $450,000 annually. Unfortunately at this point, there is significant uncertainty on the trunk and treatment rate that will be finalized by the ten (10) wholesale customers (MSUA) through upcoming negotiations with Metro Nashville. While the goal of MSUA will be to negotiate an equitable and fair rate that is as low as possible and pays for only the true cost of wholesale treatment services, there is no certainty or guarantee that the final rate will not be higher. The proposed 25% customer sewer rate increase noted above anticipates and covers an interim Metro treatment rate of $.83 per 1,000 gallons treated, up from the current $.63 rate. For comparison purposes, the wholesale customer rate unilaterally adopted by the Metro Council effective July 2007 (and under dispute today) established a $1.53 per 1,000 gallon wholesale treatment rate. To put the impact of a $1.53 rate in perspective, it would generate an additional $1,650,000 in cost to the Water and Sewer Fund annually over and above the $450,000 in new cost already factored into the proposed rate increase.

5. **Wastewater Treatment/Water Purchase Surcharge Billing** - With the significant level of uncertainty in future wastewater treatment cost, the staff is not recommending the establishment of a higher customer rate at this time by trying to "guess" what the final Metro wholesale treatment service cost will be after negotiations. More importantly, in our position of providing sewer collection services only (and water distribution too), the City is essentially relegated to a "middle-man" role of passing through wastewater treatment and purchased water cost increases to our customers. Accordingly, the staff is recommending that the utility rate section of the municipal code be revised to allow the City to automatically pass through to customers future wholesale rate increases from the providers of wastewater treatment services (and purchased water) through a surcharge line item added to the customer's monthly bill.

   The proposed sewer surcharge would only occur if and when the cost of wastewater treatment from Metro Nashville increases above $.83 per 1,000 gallons, or the amount programmed in the current rate study. For example, if the final treatment rate agreed to

by MSUA is $1.08 or $.25 more per 1,000 gallons, the average residential customer with a winter water use average of 5,800 gallons per month would see $1.45 added to their monthly sewer bill ($.25 x 5.8) via a separate line item listed on the bill as "Metro Wastewater Treatment Surcharge."

For purchased water, the surcharge on the water bill would only occur if and when the cost of water from the City's primary water provider, Harpeth Valley Utilities District (HVUD), increases wholesale rates above the base amount programmed in the rate study of $1.71 per 1,000 gallons. For example, if HVUD increases the cost by $.15 per 1,000 gallons to $1.86, a customer with an average water usage of 12,600 per month would see their water bill increase through the surcharge by $1.89 per month plus tax (12.6 x $.15). The format for identifying the water surcharge on the bill would be similar to the sewer bill.

The surcharge approach is used routinely by other utilities that are faced with cost increases from suppliers that are outside their direct control. To do otherwise may force the City Commission to raise customer rates again in the next 9 months for services and costs over which we have limited ability to control or manage. Unfortunately, the possibility of securing alternative wastewater treatment services is not expected to generate any significant savings because of the additional capital costs associated with connections, plant expansions, treatment rates, etc. At best, it should be viewed as an option to provide a more reliable wastewater treatment service. It will clearly not be a feasible alternative if the final negotiated wastewater treatment cost with Metro Nashville is close to the interim cost.

Also note that the proposed sewer rate increase does not factor in or include any additional dollars to pay $3.7 million to Metro Nashville for alleged back payments due for capital improvements undertaken 15 years ago and for rate adjustments made administratively by the prior administration (without Metro Council approval) for wastewater treatment services between November 1, 2006 and July 1, 2007. The City believes strongly that such claims in the lawsuit are without merit and will continue to oppose any additional payments to Metro outside the framework of MSUA negotiations and agreements. However, if the City and other MSUA members are legally required to pay for prior capital and treatment cost, it is expected that the additional cost would be incorporated into an overall rate structure for future wastewater treatment services.

6. **Improvements to Customer Billing System**- To facilitate the rate increases and surcharge system outlined above, the replacement of the current "post card" type billing system with a billing format similar to the electric and natural gas services is also proposed. This change will allow us to greatly expand the type of line-item information provided on the customer's bill and include return envelopes for reducing misdirected return mailings to the City and insert other types of timely communication to our customers.

Proposed Implementation Schedule

Because of the complexity of the issue, staff is providing this report early for your review, questions, comments and concerns and to allow time for possible adjustment prior to formal consideration on first reading at the March 10, 2008. The staff is prepared to meet and discuss the recommendations both individually or collectively at your convenience in the next few weeks.

If the ordinance is approved on final reading by March 24, 2008, the City would be able to implement the new sewer rate increase concurrent with annual recalculation/adjustment of annual sewer bills which are delivered to customers in mid April or early May and with payments due on May 7 or May 22. To delay implementation until after the normal annual sewer rate readjustment would result in customers having two sewer rate changes in consecutive months or close together which could lead to additional confusion and questions from customers.

Finally, I want to recognize Carson Swinford for his significant efforts and contributions in analyzing the financial position of the Water and Sewer Fund which support the recommendations in this report. This was no minor undertaking on his part to do complex financial modeling over a seven year period as reflected in the attached spreadsheets.

Michael W. Walker

Michael W. Walker

CC: Carson Swinford
Kirk Bednar
Chris Milton

ARTICLE II. SEWERS AND SEWAGE DISPOSAL

DIVISION 6. RATES AND CHARGES

Sec. 70-132. Tap fees.

(a) Tap fees charged for connection to the public sewer system shall be as follows:

Classification	Sewer tap fee in city	Sewer tap fee out of city	Remarks
Dwelling unit	$5,000.00	$10,000.00	
~~Homes completed after 12/31/96~~	~~$3,500.00~~	~~$7,000.00~~	
~~Homes completed by 12/31/96~~	~~$2,500.00~~	~~$5,000.00~~	
Colleges	$1,~~000~~420.00 per student, employee, and faculty member	$2,840~~000~~.00 per student, employee, and faculty member	Number of students, employees and faculty, based upon maximum capacity of college
Hospitals	$2,840~~000~~.00 per bed	$5,680~~4,000~~.00 per bed	
Nursing homes; assisted living facilities	$1,420~~000~~.00 per bed and employee	$2,~~000~~840.00 per bed and employee	Number of patients and employees based upon maximum capacity of nursing homes
Schools, high and middle	$213~~150~~.00 per student, employee, and faculty member	$~~300~~426.00 per student, employee, and faculty member	Number of students, employees, and faculty, based upon maximum capacity of school
Schools, elementary and day care	$142~~00~~.00 per student, employee, and faculty member	$~~200~~284.00 per student, employee, and faculty member	Number of students, employees, and faculty based upon maximum capacity of school
Factory or office building	$1.79~~26~~ per sq. ft. of floor space, plus $2,500.000 per shower head	$3.58~~2.52~~ per sq. ft. of floor space, plus $5,000.00 per shower head	
Hotel/motel (not extended stay)	$1,420~~000~~.00 per bedroom	$2,840~~000~~.00 per bedroom	
Extended stay hotel			
One room	$2,840~~000~~.00 per unit	$5,680~~4,000~~.00 per unit	
Two rooms	$4,260~~3,000~~.00 per unit	$8,520~~6,000~~.00 per unit	
Three rooms	$5,000~~3,500~~.00 per unit	$10~~7~~,000.00 per unit	
Restaurants, (not 24-hour service and not on interstate)	$500~~350~~.00 per seat plus $250.00~~178.75~~ per curb-service car space	$~~7~~1,000.00 per seat, plus $~~25~~500.00 per curb-service car space	
Restaurants, (24-hour service and not on interstate)	$~~500~~710.00 per seat and curb-service car space	$1,~~000~~420.00 per seat and curb-service car space	
Restaurants, (24-hour service, and on interstate)	$~~700~~1,000.00 per seat, plus $~~178.75~~250.00 per curb-service car space	$~~1,4~~2,000.00 per seat, plus $~~25~~500.00 per curb-service car space	
Country clubs	$~~500~~710.00 per member (family)	$1,~~000~~420.00 per member (family)	
Shopping centers	$1.~~00~~ 42 per sq. ft. of floor space	$2.~~84~~00 per sq. ft. of floor space	
Service station with convenience store and car wash	$7,100~~5,000~~.00 per 2-car pump island	$14,200~~0,000~~.00 per 2-car pump island	For each pump island that can serve 2 cars at the same time

Service station with convenience store only	$~~3,500~~5,000.00 per 2-car pump island	~~7~~10,000.00 per 2-car pump island	For each pump island that can serve 2 cars at the same time
Full-service automatic car wash	$~~100~~142,000.00 per business	$~~200~~284,000.00 per business	No additional fee for gas pump islands
Car wash by hand	$~~3,500~~5,000.00 per bay	$~~7~~10,000.00 per bay	
Churches	$~~15.00~~21.30 per seat in main sanctuary	$~~30.00~~42.60 per seat in main sanctuary	Tap fee not to be less than one residential (dwelling) tap
Commercial establishments not listed above	$1,~~000~~420.00 per employee	$2,~~000~~840.00 per employee	Number of employees based upon normal operation; minimum tap fee shall be the residential (dwelling) tap fee

~~(b) Notwithstanding the tap fees established under subsection (a) above, the tap fee charged for any existing home within the city limits and to which city sewerage service is made available by a capital improvement project of the city shall be $1,500.00 under the following circumstances:~~

~~(1) If a petition for sewerage service has been submitted for the subdivision in which the home is located pursuant to section 70-10 no later than December 31, 1996, and the fee is paid at the time the project is initiated by the city; or~~

~~(2) If a request from a homeowner whose property is not within a subdivision has been submitted pursuant to section 70-10 no later than December 31, 1996, and the fee is paid at the time the project is initiated by the city.~~

(~~c~~b) In the event city sewerage service has been made available to an existing home through the city's neighborhood sewer extension program, but the property owner chose not to participate and the tap fee was not paid at that time, the following provisions shall apply:

(1) The home may be connected to the city sewer system if the owner agrees to pay the currently applicable tap fee plus the full cost of installation by the city or its contractor.

(2) The tap fee and cost of installation may be paid in one lump sum or in interest-free monthly installments over a period not to exceed three years from the date of installation.

(3) If the tap fee and cost of installation are to be paid in monthly installments, such installments shall be added to the monthly sewer bill for the home. Additionally, the homeowners shall be required to sign a legal document, approved by the city attorney, establishing a lien on the property for the amount of the unpaid tap fee and cost of installation. Said document shall be duly recorded with the county register of deeds, and the lien shall not be released until full payment of all

amounts due the city pursuant to this section. The homeowners shall also reimburse the city for all recording fees and reasonable legal and administrative costs prior to connection to the sewer system.

(cd) When the use of existing property for which a sewer tap fee has been paid changes to a use for which a higher tap fee would be due, the incremental difference in the sewer tap fee shall be charged.

Sec. 70-133. Customer account classes.

Sewer customer accounts of the city shall be categorized in classes as follows, based on the predominant use of the property served:

(1) *Class A accounts:* Detached or attached residential units billed on the basis of an individual water meter reading for each dwelling unit. The monthly bill shall be based on the rates set forth in this divisionfollowing rate schedule, with a minimum bill of 2,000 gallons per unit.

(2) *Class B accounts:* Attached residential units and retirement/assisted care developments billed on the basis of reading one water meter serving multiple dwelling units. The monthly bill shall be based on the rates set forth in this divisionfollowing rate schedule, with the minimum bill determined by number of dwelling units served by a single meter multiplied by 2,000 gallons per unit.

(3) *Class C accounts:* General retail, service, medical, hotel and warehouse use customers customarily allowed in the C-1, C-2, and C-3 or C-4 zoning districts. The monthly bill shall be based on the rates set forth in this divisionfollowing rate schedule and water usage level, with the minimum bill determined by the total number of units or tenant spaces served by a single meter multiplied by 2,000 gallons per unit or tenant space.

(4) *Class D accounts:* General office use customers customarily allowed in the C-1, C-2, and C-3 or C-4 zoning districts. The monthly bill shall be based on the rates set forth in this divisionfollowing rate schedule and usage level, with the minimum bill determined by the gross square footage of the building multiplied by one gallon per square foot.

(5) *Class E accounts:* Customers such as schools; churches; social, philanthropic, cultural, recreational and governmental uses; and residential child care facilities customarily allowed in the SI-1, SI-2, and SI-3 zoning districts. The monthly bill shall be based on the following rates set forth in this divisionrate schedule and water usage level, with a minimum bill of 2,000 gallons per meter.

Sec. 70-134. Sewer ~~R~~rate~~s schedule~~.

(a) The monthly sewer rate charged by the city shall consist of a base rate and, if applicable, a wastewater treatment cost surcharge. The combined base rate and surcharge shall be ~~based on~~ applied to each customer's average winter water consumption as billed in the months of December through March using the following rate schedule. For sewer customers who are not water customers of the city, the computation of average winter water consumption shall be based upon the four-month period that most closely corresponds to that used for other customers. The established combined rate per 1,000 gallons above the minimum bill shall be prorated for each 100 gallons consumed.

(b) The base sewer rate shall be determined according to the following schedule:

BASE SEWER RATE SCHEDULE

	Inside City Limits	Outside City Limits
Class A and E accounts:		
2,000 gallons or less (minimum bill)	$~~11.62~~14.53	$~~12.23~~15.29
Next 8,000 gallons, per 1,000 gallons	~~4.07~~5.09	~~4.28~~5.35
Over 10,000 gallons, per 1,000 gallons	~~4.65~~5.81	~~4.89~~6.11
Class B and C accounts:		
Minimum bill, per unit or tenant space	$~~14.53~~18.16	$~~15.26~~19.08
Usage exceeding 2,000 gallons per unit:		
Up to 10,000 gallons total usage, per 1,000 gallons	~~5.09~~6.36	~~5.35~~6.69
Over 10,000 gallons, per 1,000 gallons	~~5.81~~7.26	~~6.10~~7.63
Class D accounts:		
Minimum bill, per square foot of building	$0.~~007267~~009084	$0.~~007630~~009538
Usage exceeding one gallon per square foot:		
Up to 10,000 gallons total usage, per 1,000	~~5.09~~6.36	~~5.35~~6.69
Over 10,000 gallons, per 1,000 gallons	~~5.81~~7.26	~~6.10~~7.63

(c) A wastewater treatment cost surcharge shall be added to the base rate if the cost of sewage treatment billed to and paid by the city exceeds $.83 per 1,000 gallons. The wastewater treatment cost surcharge shall equal the amount per 1,000 gallons by which the city's cost exceeds $.83.

(~~b~~d) The following exceptions may be applied to the computation of monthly sewer bills based on average winter water consumption:

(1) Allowances may be made for any months affected by water leaks or other abnormalities where water consumed has not been disposed through the sanitary sewer system. Consumption for any months so affected may be deleted or adjusted in determining the average winter water consumption, subject to the approval of the water and sewer director.

(2) Following the four-month period on which a customers' average winter water consumption is based, if the customer's water consumption for three consecutive months is less than the four-month winter average, the customer may request that the sewer billings be based on actual water consumption for each month. The use of actual water consumption rather than the four-month average shall be subject to the approval of the water and sewer director and, if approved, shall be retroactive to the first of the three consecutive months in which water consumption was less than the four-month average. Thereafter, except as provided below, the customer's sewer billing will be based on actual water consumption for each month until the end of the next four-month winter period used to compute average water consumption. In the event of a leak causing excessive water consumption, and only in that event, the customer may request that the four-month average consumption be used again for computing the sewer bill for the affected months. No other changes in the method for computation shall be allowed otherwise.

(~~e~~e) For new accounts for which an average winter water consumption has not yet been established and billed in the months of December through March, the monthly sewer bill shall be based on the above rate schedule as applied to ~~either~~the lower of:

(1) The actual water consumption for the current billing month; or

(2) The average winter water consumption for the route in which the account is located as billed in the months of December through March~~, whichever is lower~~.

(~~d~~f) For new accounts that represent homes or other facilities that are under construction, such customers may request a credit for the period in which no sewer service was actually provided. Such credit may be granted toward normal sewer billings for a maximum of four months.

Sec. 70-135. Billing schedule, policies, etc.

(a) A new sewer customer who is not a water customer shall be charged a nonrefundable connection/account setup fee of $25.00 for class A and B accounts and $50.00 for all other accounts. Landlords or property managers of rental property for whom accounts are maintained prior to the leasing of such property shall pay the connection and setup fee upon the initial establishment of the account; if an account for such property is subsequently established in a tenant's name, the charge to reestablish the account in the same landlord's or property manager's name shall be $10.00.

(b) Sewer bills or combined water/sewer bills shall be mailed to customers monthly in one or more cycles of approximately 30 days each. The city manager shall establish a schedule of billing dates and due dates, provided that payment will be due no earlier than two weeks from the billing date. Payments that are received or postmarked on the due date will be considered paid on such date. When the due date occurs on a Saturday, Sunday or federal holiday, payments received on the following business day shall be considered as paid on time. There will be a ten-percent penalty added for all late payments and a $25~~0~~.00 charge for the first ~~any~~ check returned for insufficient funds and a $50.00 charge for each subsequent check returned for insufficient funds.

(c) A notice of cut-off will be sent to a customer if the account is not paid in full by the due date. If the account, including penalties, is not paid within one month of the due date, the customer's water service will be discontinued for nonpayment until payment in full of the past due sewer bill or combined water/sewer bill plus penalties is received. For customers who are provided water service from a utility other than the city, the water and sewer department may request the utility to discontinue water service for nonpayment of sewer charges in accordance with state statute and this section and/or may disconnect the customer's sewer service if provided by a pressurized grinder pump system. When service is reestablished, a service call charge will be added to the next bill for restoring sewer service as established in subsection (e) below.

(d) The city may require a deposit of up to two months of normal payments for sewer customers who are not water customers of the city and have a record of late payment or nonpayment of utility services in the city or in other locations.

(e) The cost for restoring sewer service to customers who are not water customers of the city shall be $~~35~~50.00 for service calls during regular working hours and $10~~6~~0.00 for service calls after working hours and on weekends or holidays.

Secs. 70-136--70-155. Reserved.

ARTICLE III.

WATER

DIVISION 1. GENERALLY

Sec. 70-156. Customer account classes.

Water customer accounts of the city shall be categorized as follows, based upon the predominant use of the property served.

(1) *Class A accounts:* Detached or attached residential units billed on the basis of an individual water meter reading for each dwelling unit. The monthly bill shall be based on the ~~following rate schedule~~ rates set forth in this division, with a minimum bill of 2,000 gallons per unit. Notwithstanding the foregoing, where a second water line is installed to accommodate an automatic sprinkler system for

fire suppression, and such sprinkler system is not required by the adopted codes and ordinances of the city, no monthly minimum water bill will be charged, but water billings will be based on actual usage of water when the sprinkler system is activated.

(2) *Class B accounts:* Attached residential units and retirement/assisted care developments billed on the basis of reading one water meter serving multiple dwelling units. The monthly bill shall be based on the rates set forth in this division~~following rate schedule~~, with the minimum bill determined by number of dwelling units served by a single meter multiplied by 2,000 gallons per unit.

(3) *Class C accounts:* General retail, service, medical, hotel and warehouse use customers customarily allowed in the C-1, C-2, ~~and~~ C-3 or C-4 zoning districts. The monthly bill shall be based on the rates set forth in this division ~~following rate schedule and usage level~~, with the minimum bill determined by the total number of units or tenant spaces served by a single meter multiplied by 2,000 gallons per unit or tenant space.

(4) *Class D accounts:* General office use customers customarily allowed in the C-1, C-2, ~~and~~ C-3 or C-4 zoning districts. The monthly bill shall be based on the rates set forth in this division~~following rate schedule and usage level~~, with the minimum bill determined by the gross square footage of the building multiplied by one gallon per square foot.

(5) *Class E accounts:* Customers such as schools; churches; social, philanthropic, cultural, recreational and governmental uses; and residential child care facilities customarily allowed in the SI-1, SI-2, and SI-3 zoning districts. The monthly bill shall be based on the rates set forth in this division~~following rate schedule and usage level~~, with a minimum bill of 2,000 gallons per meter.

(6) *Class F accounts:* Irrigation customers that are billed on the basis of a separate water meter. The monthly bill shall be based on the rates set forth in this division~~following rate schedule and usage level~~, with the minimum bill of 2,000 gallons per meter.

Sec. 70-157. Water ~~R~~rates ~~schedule~~.

(a) The monthly water rates charged by the city shall consist of a base rate and, if applicable, a purchased water cost surcharge from wholesale providers. The combined base rate and surcharge shall be ~~based on~~ applied to the actual amount of water used ~~from~~ since the customer's previous water meter reading and billing. The established combined rate per 1,000 gallons above the minimum bill shall be prorated for each 100 gallons consumed.

(b) The base water rate shall be determined according to the following schedule:

BASE WATER RATE SCHEDULE

	Inside City Limits	Outside City Limits
Class A, E, F accounts:		
2,000 gallons or less (minimum bill)	$11.62	$12.23
Next 8,000 gallons, per 1,000 gallons	4.07	4.28
Over 10,000 gallons, per 1,000 gallons	4.65	4.89
Class B and C accounts:		
Minimum bill, per unit or tenant space	$11.62	$12.23
Usage exceeding 2,000 gallons per unit:		
Up to 10,000 gallons total usage, per 1,000 gallons	4.07	4.28
Over 10,000 gallons, per 1,000 gallons	4.65	4.89
Class D accounts:		
Minimum bill, per square foot of building	$0.005814	$0.00612
Usage exceeding one gallon per square foot:		
Up to 10,000 gallons total usage, per 1,000	4.07	4.28
Over 10,000 gallons, per 1,000	4.65	4.89

(c) A purchased water cost surcharge shall be added to the base rate if the cost of water purchased by the city from its primary wholesale water provider exceeds $1.71 per 1,000 gallons. The purchased water cost surcharge shall equal the amount per 1,000 gallons by which the city's cost exceeds $1.71.

Sec. 70-158. Tap fees.

(a) Tap fees charged for connection to the water system shall be established by zone, as follows:

(1) *Zone A* shall consist of all areas within the city, except for those areas within the city transferred to the city's water service area from the Nolensville/College Grove Utility District.

(2) *Zone B* shall consist of all areas within the city transferred to the city's water service area from the Nolensville/College Grove Utility District.

(3) *Zone C* shall consist of all areas served by the city's water system, but located outside the city.

(b) Tap fees for connection to the water system shall be charged as follows:

Classification	Zone A	Zones B and C
Dwelling unit - 3/4" (same side as main)	~~$2,500~~5,000.00	$~~5~~10,000.00
Dwelling unit - 3/4" (other than same side as main)	~~$2,500~~5,000.00 plus cost of installation	$~~5~~10,000.00 plus cost of installation
Dwelling unit - 1" (same side as main)	~~$3,500~~7,000.00	$~~7~~14,000.00
Dwelling unit - 1" (other than same side as main)	~~$3,500~~7,000.00 plus cost of installation	$~~7~~14,000.00 plus cost of installation
Commercial or service-institution unit - 3/4" to 1"	~~$3,500~~7,000.00 plus cost of installation	$~~7~~14,000.00 plus cost of installation
Commercial or service-institution unit larger than 1"	~~$3,500~~7,000.00 per inch plus cost of installation	$~~7~~14,000.00 per inch plus cost of installation
Fire lines	~~$3,500~~7,000.00 per inch plus cost of installation	$~~7~~14,000.00 per inch plus cost of installation

(c) For Zones A and C, water tap fees shall be paid upon issuance of a building permit, or if no building permit is issued, prior to installation of the water meter. For Zone B, water tap fees shall be paid prior to the recording of the first plat for development of a subdivision, based on the total number of proposed lots as approved in the preliminary plan for the entire subdivision. For new connections on lots within Zone B that are not part of a subdivision, water tap fees shall be paid upon issuance of a building permit, or if no building permit is issued, prior to installation of the water meter.

(d) Notwithstanding the foregoing, for a dwelling unit requiring a larger sized water line to accommodate an automatic sprinkler system for fire suppression, the tap fee will be based on the size of the water line that would be needed without the sprinkler system, unless the sprinkler system is required by the adopted codes and ordinances of the city. Furthermore, when a separate water line is installed to accommodate an automatic sprinkler system for fire suppression at a dwelling unit, no tap fee will be charged, unless such sprinkler system is required by the adopted codes and ordinances of the city; however, the cost of materials and labor for installation will be charged.

Sec. 70-159. Billing schedule, policies, etc.

(a) A new water or combined water/sewer customer shall be charged a nonrefundable connection/account setup fee of $25.00 for class A and B accounts and $50.00 for all other accounts. Landlords or property managers of rental property for whom accounts are maintained prior to the leasing of such property shall pay the connection and setup fee upon the initial establishment of the account; if an account for such property is subsequently established in a tenant's name, the charge to reestablish the account in the same landlord's or property manager's name shall be $10.00.

(b) Water bills or combined water/sewer bills shall be mailed to customers monthly in one or more cycles of approximately 30 days each. The city manager shall establish a schedule of billing dates and due dates, provided that payment shall be due no earlier than two weeks from the billing date. Payments that are received or postmarked on the due date will be considered paid on such date. When the due date occurs on a Saturday, Sunday or federal holiday, payments

received on the following business day shall be considered as paid on time. There will be a ten-percent penalty added for all late payments and a $25~~0~~.00 charge for ~~any check~~ the first check returned for insufficient funds and $50.00 for each subsequent check returned for insufficient funds.

(c) A notice of cut-off shall be sent to a customer if the account is not paid in full by the due date. If the account, including penalties, is not paid within one month of the due date, the customer's water service will be discontinued for nonpayment until payment in full of the past due water bill or combined water/sewer bill plus penalties is received. When service is reestablished, a service call charge will be added to the next bill for restoring water service as established in subsection (e) below.

(d) The city may require a deposit up to two months of normal payments for water or combined water/sewer services for customers who have a record of late payment or nonpayment of utility services in the city or in other locations.

(e) The cost for restoring water service shall be $~~35~~50.00 for service calls during regular working hours and $10~~6~~0.00 for service calls after working hours and on weekends or holidays.

(f) Adjustments for metered water sales shall be allowed only under the following circumstances:

(1) Where it can be proven that excessive water usage was the result of a malfunction of city lines or equipment, an adjustment will be allowed based on a three-month average of normal water usage.

(2) Where excessive water usage is caused by a leak in the customer's water lines, an adjustment will be allowed if the bill exceeds a three-month average billing for normal water usage by 50 percent or more. The excessive usage, to be determined by comparison to the three-month average of normal water usage, will be billed at 50 percent of the normal retail rates. Requests for the adjustment shall be supported by a notarized plumber's affidavit. No adjustment will be allowed until the leak has been repaired. Adjustments for customer water line leaks will be limited to one month's bill per incident and one time per calendar year. No water billing adjustments will be allowed for faucets, hoses, or other outlets left running, for filling swimming pools, or for other incidents of excessive usage intentionally or negligently caused or permitted by a customer.

[Sec. 70-160 - 70-175 – No changes.]

Brentwood Water and Sewer Fund
Cash and Net Income Projections
Assumptions Used in Report

Proposed Sewer Rate Increase - All Customers		25%
New Homes - for Water Tap Fees		100 Annually
New Homes - for Sewer Tap Fees		200 Annually
New Lots - for Water Tap Fees (Split Log Rd) - FY 2012-2015)		125 Annually
Water Tap Fees (Through March 2008)	$	2,500
Water Tap Fees (Beginning April 2008 - Proposed)	$	5,000
Water Tap Fees - Special (Split Log/Ragsdale)	$	5,000
Sewer Tap Fees - New Homes (Through March 2008)	$	3,500
Sewer Tap Fees - New Homes (Beginning April 2008 - Proposed)	$	5,000
Water Revenue Growth % Per Year		3%
Sewer Revenue Growth % Per Year		3%
Water Purchased Cost - Increase per Year		3%
Wastewater Treatment Charges - Increase Per Year		2%
Salary & Benefits - Increase per Year		6%
Other Expenditures - Increase per Year		5%

ATTACHMENT B

Water and Sewer Fund - Net Income Projections
FY 2008 - 2015

	FY 2008 - Projected			FY 2009			FY 2010			FY 2011		
	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER
Water Sales	5,550,000	-	5,550,000	5,716,500	-	5,716,500	5,887,995	-	5,887,995	6,064,635	-	6,064,635
Sewer Sewer Charges		4,149,100	4,149,100		4,273,573	4,273,573		4,401,780	4,401,780		4,533,834	4,533,834
Water Tap Fees	425,000	-	425,000	1,120,000	-	1,120,000	425,000	-	425,000	425,000	-	425,000
Sewer Tap Fees		900,000	900,000		900,000	900,000		900,000	900,000		900,000	900,000
Other	357,125	389,330	746,455	222,033	255,204	477,236	226,443	260,610	487,053	230,987	266,178	497,165
Total Revenues	**6,332,125**	**5,438,430**	**11,770,555**	**7,058,533**	**5,428,777**	**12,487,309**	**6,539,438**	**5,562,390**	**12,101,828**	**6,720,622**	**5,700,012**	**12,420,633**
Water Purchased	3,550,000	-	3,550,000	3,656,500		3,656,500	3,766,195		3,766,195	3,879,181		3,879,181
Wastewater Treatment Charges (Current)	-	1,450,000	1,450,000		1,479,000	1,479,000		1,508,580	1,508,580		1,538,752	1,538,752
Wastewater Treatment With Rate Increase (From .63 to .83)	-	435,000	435,000		443,700	443,700		452,574	452,574		461,625	461,625
Salaries and Benefits	768,786	913,140	1,681,925	814,912	967,928	1,782,841	863,807	1,026,004	1,889,811	915,636	1,087,564	2,003,200
Maintenance	164,000	601,000	765,000	172,200	626,050	798,250	180,810	657,353	838,163	189,851	690,220	880,071
Interest - Current and Proposed Bond Issues	126,145	165,040	291,185	104,635	338,072	442,707	90,659	508,937	599,596	186,562	599,056	785,619
Depreciation/Amortization - Current and Proposed Projects	806,815	1,383,431	2,190,245	822,320	1,495,507	2,317,826	920,220	1,625,282	2,545,503	1,008,788	1,765,975	2,774,763
Other	583,350	619,050	1,202,400	612,518	650,003	1,262,520	643,143	682,503	1,325,646	675,301	716,628	1,391,928
Total Expenditures	**5,999,095**	**5,566,660**	**11,565,755**	**6,183,085**	**6,000,258**	**12,183,343**	**6,464,835**	**6,461,232**	**12,926,067**	**6,855,318**	**6,859,820**	**13,715,138**
Net Income With No Rate/Fee Increase	**333,030**	**(128,230)**	**204,800**	**875,448**	**(571,482)**	**303,966**	**74,603**	**(898,842)**	**(824,239)**	**(134,696)**	**(1,159,808)**	**(1,294,505)**
Proposed Rate/Fee Increases												
Proposed Sewer Rate Increase - 25%	-	259,319	259,319	-	1,068,393	1,068,393	-	1,100,445	1,100,445	-	1,133,458	1,133,458
Proposed Sewer Tab Fees - Residential (From $3,500 to $5,000)	-	75,000	75,000	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000
Proposed Sewer Tab Fees - Non Residential (From $3,500 to $5,000)	-	21,000	21,000	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000
Proposed Water Tap Fees - Residential (From $2,500 to $5,000)	62,500	-	62,500	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Proposed Water Tap Fees - Non Residential (From $2,500 to $5,000)	43,750	-	43,750	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000
Net Income (With Rate and Fee Increases)	**439,280**	**227,089**	**666,369**	**1,300,448**	**880,912**	**2,181,359**	**499,603**	**585,603**	**1,085,207**	**290,304**	**357,650**	**647,954**

Water and Sewer Fund - Net Income Projections
FY 2008 - 2015

	FY 2012			FY 2013			FY 2014			FY 2015		
	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER
Water Sales	6,246,574	-	6,246,574	6,433,971	-	6,433,971	6,626,990	-	6,626,990	6,825,800	-	6,825,800
Sewer Sewer Charges		4,669,849	4,669,849		4,809,944	4,809,944		4,954,242	4,954,242		5,102,870	5,102,870
Water Tap Fees	1,050,000	-	1,050,000	1,050,000	-	1,050,000	1,050,000	-	1,050,000	1,050,000	-	1,050,000
Sewer Tap Fees		900,000	900,000		900,000	900,000		900,000	900,000		900,000	900,000
Other	235,666	271,913	507,580	240,486	277,821	518,307	245,451	283,905	529,356	250,564	290,173	540,737
Total Revenues	**7,532,240**	**5,841,762**	**13,374,002**	**7,724,457**	**5,987,765**	**13,712,222**	**7,922,441**	**6,138,148**	**14,060,589**	**8,126,364**	**6,293,042**	**14,419,407**
Water Purchased	3,995,556		3,995,556	4,115,423		4,115,423	4,238,886		4,238,886	4,366,052		4,366,052
Wastewater Treatment Charges (Current)		1,569,527	1,569,527		1,600,917	1,600,917		1,632,936	1,632,936		1,665,594	1,665,594
Wastewater Treatment With Rate Increase (From .63 to .83)		470,858	470,858		480,275	480,275		489,881	489,881		499,678	499,678
Salaries and Benefits	970,574	1,152,818	2,123,392	1,028,808	1,221,987	2,250,795	1,090,537	1,295,306	2,385,843	1,155,969	1,373,024	2,528,993
Maintenance	199,343	724,731	924,074	209,310	760,968	970,278	219,776	799,016	1,018,792	230,764	838,967	1,069,731
Interest - Current and Proposed Bond Issues	288,032	687,533	975,565	271,675	904,716	1,176,410	257,954	1,124,871	1,382,824	193,104	1,170,246	1,363,349
Depreciation/Amortization - Current and Proposed Projects	1,014,301	1,902,238	2,916,539	1,029,317	2,041,254	3,070,571	1,047,988	2,177,350	3,225,337	1,014,228	2,239,514	3,253,742
Other	709,066	752,459	1,461,525	744,519	790,082	1,534,601	781,745	829,586	1,611,331	820,832	871,066	1,691,898
Total Expenditures	**7,176,871**	**7,260,163**	**14,437,034**	**7,399,052**	**7,800,218**	**15,199,270**	**7,636,884**	**8,348,945**	**15,985,829**	**7,780,949**	**8,658,088**	**16,439,038**
Net Income With No Rate/Fee Increase	**355,369**	**(1,418,401)**	**(1,063,032)**	**325,406**	**(1,812,454)**	**(1,487,048)**	**285,557**	**(2,210,797)**	**(1,925,240)**	**345,415**	**(2,365,046)**	**(2,019,631)**
Proposed Rate/Fee Increases												
Proposed Sewer Rate Increase - 25%	-	1,167,462	1,167,462	-	1,202,486	1,202,486	-	1,238,561	1,238,561	-	1,275,717	1,275,717
Proposed Sewer Tab Fees - Residential (From $3,500 to $5,000)	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000
Proposed Sewer Tab Fees - Non Residential (From $3,500 to $5,000)	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000
Proposed Water Tap Fees - Residential (From $2,500 to $5,000)	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Proposed Water Tap Fees - Non Residential (From $2,500 to $5,000)	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000
Net Income (With Rate and Fee Increases)	**780,369**	**133,061**	**913,430**	**750,406**	**(225,968)**	**524,438**	**710,557**	**(588,236)**	**122,321**	**770,415**	**(705,329)**	**65,086**

Water and Sewer Fund - Cash Flow Projections
FY 2008 - 2015

	FY 2008 - Projected			FY 2009			FY 2010			FY 2011		
	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER
Water Sales	5,550,000	-	5,550,000	5,716,500	-	5,716,500	5,887,995	-	5,887,995	6,064,635	-	6,064,635
Sewer Sewer Charges		4,149,100	4,149,100		4,273,573	4,273,573		4,401,780	4,401,780		4,533,834	4,533,834
Water Tap Fees	425,000	-	425,000	1,120,000	-	1,120,000	425,000	-	425,000	425,000	-	425,000
Sewer Tap Fees		900,000	900,000		900,000	900,000		900,000	900,000		900,000	900,000
Other	357,125	389,330	746,455	222,033	255,204	477,236	226,443	260,610	487,053	230,987	266,178	497,165
Total Revenues	**6,332,125**	**5,438,430**	**11,770,555**	**7,058,533**	**5,428,777**	**12,487,309**	**6,539,438**	**5,562,390**	**12,101,828**	**6,720,622**	**5,700,012**	**12,420,633**
Water Purchased	3,550,000		3,550,000	3,656,500		3,656,500	3,766,195		3,766,195	3,879,181		3,879,181
Wastewater Treatment Charges (Current)		1,450,000	1,450,000		1,479,000	1,479,000		1,508,580	1,508,580		1,538,752	1,538,752
Wastewater Treatment With Rate Increase (From .63 to .83)		435,000	435,000		443,700	443,700		452,574	452,574		461,625	461,625
Salaries and Benefits	768,786	913,140	1,681,925	814,913	967,928	1,782,841	863,807	1,026,004	1,889,811	915,636	1,087,564	2,003,200
Maintenance	164,000	601,000	765,000	172,200	626,050	798,250	180,810	657,353	838,163	189,851	690,220	880,071
Interest - Current and Proposed Bond Issues	126,145	165,040	291,185	104,635	338,072	442,707	90,659	508,937	599,596	186,562	599,056	785,619
Other	583,350	619,050	1,202,400	612,518	650,003	1,262,520	643,143	682,503	1,325,646	675,301	716,628	1,391,928
Total Expenditures	**5,192,281**	**4,183,230**	**9,375,510**	**5,360,765**	**4,504,752**	**9,865,517**	**5,544,615**	**4,835,950**	**10,380,564**	**5,846,530**	**5,093,845**	**10,940,375**
Net Income	**1,139,845**	**1,255,201**	**2,395,045**	**1,697,767**	**924,025**	**2,621,792**	**994,824**	**726,440**	**1,721,264**	**874,092**	**606,167**	**1,480,258**
Other Cash Related Items:												
CIP and Other Capital	(2,632,500)	(817,500)	(3,450,000)	(592,500)	(1,272,500)	(1,865,000)	(3,565,000)	(810,000)	(4,375,000)	(3,217,500)	(497,500)	(3,715,000)
CAPER - Phase I and II	-	(3,000,000)	(3,000,000)	-	(3,100,000)	(3,100,000)	-	(4,030,000)	(4,030,000)	-	(4,805,000)	(4,805,000)
Principal paid on long-term debt (Current Issues)	(357,426)	(810,000)	(1,167,426)	(373,449)	(845,000)	(1,218,449)	(415,759)	(500,000)	(915,759)	(352,846)	(520,000)	(872,846)
Principal - Proposed FY 2009,11,13 & 15 Issues	-	-	-	-	-	-	-	(365,000)	(365,000)	-	(380,000)	(380,000)
Proceeds - Proposed FY 2009,11,13 & 15 Issues	-	-	-	-	10,000,000	10,000,000	-	-	-	5,000,000	5,000,000	10,000,000
Total Inflows (Outflows) - Cash Related Items	**(2,989,926)**	**(4,627,500)**	**(7,617,426)**	**(965,949)**	**4,782,500**	**3,816,551**	**(3,980,759)**	**(5,705,000)**	**(9,685,759)**	**1,429,654**	**(1,202,500)**	**227,154**
Net Income Less Other Cash Related Items	**(1,850,082)**	**(3,372,300)**	**(5,222,381)**	**731,818**	**5,706,525**	**6,438,343**	**(2,985,935)**	**(4,978,560)**	**(7,964,495)**	**2,303,746**	**(596,333)**	**1,707,412**
Projected Cash Balance With No Rate/Fee Increases:												
Cash - Beginning of Year	4,104,382	4,104,382	8,208,764	2,254,301	732,083	2,986,383	2,986,119	6,438,607	9,424,726	184	1,460,048	1,460,231
Total Net Cash Related Items (See Above)	(1,850,082)	(3,372,300)	(5,222,381)	731,818	5,706,525	6,438,343	(2,985,935)	(4,978,560)	(7,964,495)	2,303,746	(596,333)	1,707,412
Projected Cash - End of Year	**2,254,301**	**732,083**	**2,986,383**	**2,986,119**	**6,438,607**	**9,424,726**	**184**	**1,460,048**	**1,460,231**	**2,303,929**	**863,714**	**3,167,643**
Projected Cash Balance With Rate/Fee Increases												
Cash - Beginning of Year	4,104,382	4,104,382	8,208,764	2,360,551	1,087,401	3,447,952	3,517,369	8,246,319	11,763,688	956,434	4,752,205	5,708,638
Total Net Cash Related Items (See Above)	(1,850,082)	(3,372,300)	(5,222,381)	731,818	5,706,525	6,438,343	(2,985,935)	(4,978,560)	(7,964,495)	2,303,746	(596,333)	1,707,412
Proposed Sewer Rate Increase - 25%	-	259,319	259,319	-	1,068,393	1,068,393	-	1,100,445	1,100,445	-	1,133,458	1,133,458
Proposed Sewer Tab Fees - Residential (From $3,500 to $5,000)	-	75,000	75,000	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000
Proposed Sewer Tab Fees - Non Residential (From $3,500 to $5,000)	-	21,000	21,000	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000
Proposed Water Tap Fees - Residential (From $2,500 to $5,000)	62,500	-	62,500	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Proposed Water Tap Fees - Non Residential (From $2,500 to $5,000)	43,750	-	43,750	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000
Projected Cash - End of Year (After Increases)	**2,360,551**	**1,087,401**	**3,447,952**	**3,517,369**	**8,246,319**	**11,763,688**	**956,434**	**4,752,205**	**5,708,638**	**3,685,179**	**5,673,330**	**9,358,509**

3/4/2008

Water and Sewer Fund - Cash Flow Projections
FY 2008 - 2015

	FY 2012			FY 2013			FY 2014			FY 2015		
	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER	TOTAL WATER	TOTAL SEWER	TOTAL WATER SEWER
Water Sales	6,246,574	-	6,246,574	6,433,971	-	6,433,971	6,626,990	-	6,626,990	6,825,800	-	6,825,800
Sewer Sewer Charges		4,669,849	4,669,849		4,809,944	4,809,944		4,954,242	4,954,242		5,102,870	5,102,870
Water Tap Fees	1,050,000	-	1,050,000	1,050,000	-	1,050,000	1,050,000	-	1,050,000	1,050,000	-	1,050,000
Sewer Tap Fees		900,000	900,000		900,000	900,000		900,000	900,000		900,000	900,000
Other	235,666	271,913	507,580	240,486	277,821	518,307	245,451	283,905	529,356	250,564	290,173	540,737
Total Revenues	**7,532,240**	**5,841,762**	**13,374,002**	**7,724,457**	**5,987,765**	**13,712,222**	**7,922,441**	**6,138,148**	**14,060,589**	**8,126,364**	**6,293,042**	**14,419,407**
Water Purchased	3,995,556		3,995,556	4,115,423		4,115,423	4,238,886		4,238,886	4,366,052		4,366,052
Wastewater Treatment Charges (Current)		1,569,527	1,569,527		1,600,917	1,600,917		1,632,936	1,632,936		1,665,594	1,665,594
Wastewater Treatment With Rate Increase (From .63 to .83)		470,858	470,858		480,275	480,275		489,881	489,881		499,678	499,678
Salaries and Benefits	970,574	1,152,818	2,123,392	1,028,808	1,221,987	2,250,795	1,090,537	1,295,306	2,385,843	1,155,969	1,373,024	2,528,993
Maintenance	199,343	724,731	924,074	209,310	760,968	970,278	219,776	799,016	1,018,792	230,764	838,967	1,069,731
Interest - Current and Proposed Bond Issues	288,032	687,533	975,565	271,675	904,736	1,176,410	257,954	1,124,871	1,382,824	193,104	1,170,246	1,363,349
Other	709,066	752,459	1,461,525	744,519	790,082	1,534,601	781,745	829,586	1,611,331	820,832	871,066	1,691,898
Total Expenditures	**6,162,571**	**5,357,925**	**11,520,496**	**6,369,735**	**5,758,964**	**12,128,699**	**6,588,897**	**6,171,595**	**12,760,492**	**6,766,722**	**6,418,575**	**13,185,296**
Net Income	**1,369,670**	**483,837**	**1,853,506**	**1,354,723**	**228,800**	**1,583,523**	**1,333,545**	**(33,447)**	**1,300,097**	**1,359,643**	**(125,532)**	**1,234,110**
Other Cash Related Items:												
CIP and Other Capital	(217,500)	(797,500)	(1,015,000)	(197,500)	(507,500)	(705,000)	(225,000)	(675,000)	(900,000)	(225,000)	(675,000)	(900,000)
CAPER - Phase I and II	-	(4,650,000)	(4,650,000)	-	(4,650,000)	(4,650,000)	-	(4,247,000)	(4,247,000)	-	(1,426,000)	(1,426,000)
Principal paid on long-term debt (Current Issues)	(150,000)	(535,000)	(685,000)	(170,000)	(320,000)	(490,000)	(175,000)	(330,000)	(505,000)	(185,000)	(195,000)	(380,000)
Principal - Proposed FY 2009,11,13 & 15 Issues	(177,500)	(572,500)	(750,000)	(185,000)	(590,000)	(775,000)	(192,500)	(952,500)	(1,145,000)	(207,500)	(1,002,500)	(1,210,000)
Proceeds - Proposed FY 2009,11,13 & 15 Issues	-	-	-	-	10,000,000	10,000,000	-	-	-	-	5,000,000	5,000,000
Total Inflows (Outflows) - Cash Related Items	**(545,000)**	**(6,555,000)**	**(7,100,000)**	**(552,500)**	**3,932,500**	**3,380,000**	**(592,500)**	**(6,204,500)**	**(6,797,000)**	**(617,500)**	**1,701,500**	**1,084,000**
Net Income Less Other Cash Related Items	**824,670**	**(6,071,163)**	**(5,246,494)**	**802,223**	**4,161,300**	**4,963,523**	**741,045**	**(6,237,947)**	**(5,496,903)**	**742,143**	**1,575,968**	**2,318,110**
Projected Cash Balance With No Rate/Fee Increases:												
Cash - Beginning of Year	2,303,929	863,714	3,167,643	3,128,599	(5,207,449)	(2,078,850)	3,930,821	(1,046,149)	2,884,673	4,671,866	(7,284,096)	(2,612,230)
Total Net Cash Related Items (See Above)	824,670	(6,071,163)	(5,246,494)	802,223	4,161,300	4,963,523	741,045	(6,237,947)	(5,496,903)	742,143	1,575,968	2,318,110
Projected Cash - End of Year	**3,128,599**	**(5,207,449)**	**(2,078,850)**	**3,930,821**	**(1,046,149)**	**2,884,673**	**4,671,866**	**(7,284,096)**	**(2,612,230)**	**5,414,009**	**(5,708,128)**	**(294,120)**
Projected Cash Balance With Rate/Fee Increases												
Cash - Beginning of Year	3,685,179	5,673,330	9,358,509	4,934,849	1,153,628	6,088,477	6,162,071	6,901,415	13,063,486	7,328,116	2,286,028	9,614,144
Total Net Cash Related Items (See Above)	824,670	(6,071,163)	(5,246,494)	802,223	4,161,300	4,963,523	741,045	(6,237,947)	(5,496,903)	742,143	1,575,968	2,318,110
Proposed Sewer Rate Increase - 25%	-	1,167,462	1,167,462	-	1,202,486	1,202,486	-	1,238,561	1,238,561	-	1,275,717	1,275,717
Proposed Sewer Tab Fees - Residential (From $3,500 to $5,000)	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000	-	300,000	300,000
Proposed Sewer Tab Fees - Non Residential (From $3,500 to $5,000)	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000	-	84,000	84,000
Proposed Water Tap Fees - Residential (From $2,500 to $5,000)	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Proposed Water Tap Fees - Non Residential (From $2,500 to $5,000)	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000	175,000	-	175,000
Projected Cash - End of Year (After Increases)	**4,934,849**	**1,153,628**	**6,088,477**	**6,162,071**	**6,901,415**	**13,063,486**	**7,328,116**	**2,286,028**	**9,614,144**	**8,495,259**	**5,521,713**	**14,016,972**

PROPOSED SEWER RATE ADJUSTMENT - MONTHLY FINANCIAL IMPACT
(Based on 4 months winter water consumption average)

Description		Gallons Consumed	Current Rates	Proposed Rates	Monthly Increase (Decrease)
Residential - Water Usage		2,000	$ 11.62	$ 14.53	$ 2.91
		4,000	19.76	24.70	4.94
	(Average)	**5,800**	**27.09**	**33.86**	**6.77**
		6,000	27.90	34.88	6.98
		8,000	36.04	45.05	9.01
		10,000	44.18	55.23	11.05
		12,000	53.48	66.85	13.37
		14,000	62.78	78.48	15.70
		16,000	72.08	90.10	18.02
		18,000	81.38	101.73	20.35
		20,000	90.68	113.35	22.67
Commercial (Retail) - Water Usage		10,000	55.23	69.04	13.81
		20,000	113.36	141.71	28.34
		30,000	171.49	214.37	42.87
	(Average)	**40,900**	**234.86**	**293.57**	**58.71**
		60,000	345.88	432.36	86.47
		80,000	462.14	577.68	115.54
		100,000	578.40	723.01	144.60
		200,000	1,159.70	1,449.63	289.93
		400,000	2,322.30	2,902.88	580.58
Service/Institutional - Water Usage		10,000	44.18	55.23	11.05
		20,000	90.68	113.35	22.67
		30,000	137.18	171.48	34.30
		40,000	183.68	229.60	45.92
		60,000	276.68	345.85	69.17
	(Average)	**85,400**	394.79	493.49	98.70
		100,000	462.68	578.35	115.67
		200,000	927.68	1,159.60	231.92
		500,000	2,322.68	2,903.35	580.67

Item #10 – Develop an equipment / supplies inventory and log-in / log-out for grinder pump spare parts

Development date: Began total program cost tracking October, 2008

Discussion: The City of Brentwood collection system includes approximately 2,900 privately owned grinder pumps, and the City maintains all pumps constructed to meet maintenance program minimum standards. Since the maintenance program began approximately 20 years ago, the City has responded to customers' calls and questions about their grinder pumps in a timely manner, but there was no method in place to effectively track costs of the program or to document any recurring issues with the individual units.

Currently a 2-man crew is dedicated to the Grinder Pump Program, and they effectively respond to approximately 10 grinder pump calls per week, with the responses ranging from adjusting a float switch to replacing the pump altogether. When not in the field, the grinder pump crew is responsible for repairing pumps and maintaining an inventory of spare parts:

Costs for the entire program are now closely tracked so that the true cost of the program can be monitored.

The following information is attached with this item:

10-1 A copy of a spreadsheet tracking the costs of replacement pumps
10-2 A copy of a spreadsheet showing the total grinder pump program cost
10-3 A copy of the spreadsheet showing the grinder pump inventory
10-4 A sample ordering sheet from a recent order placed to the grinder pump parts supplier.
10-5 A copy of the most recent supply inventory for all department materials.

10-1 A copy of a spreadsheet tracking the costs of replacement pumps

Grinder Program - Pump Replacement Cost
Pump Replacment - Tracking Costs and the number of pumps replaced/purchased
(Does not include Wascon invoices for other grinder materials which get charged to the -82685)

Invoice #	Invoice Date	Vender	No. Pps. Received	Pump Unit Cost	Totals Pp Cost This Invoice	Pp. Related Accessories	Ship./Freight	Total Cost
start tracking on October 27, 2008								
23845	10/23/2008	Wascon	4	$1,450.00	$5,800.00	$0.00	$300.00	$6,100.00
23934	11/13/2008	Wascon	4	$1,450.00	$5,800.00	$0.00	$300.00	$6,100.00
23973	11/18/2008	Wascon	4	$1,450.00	$5,800.00	$0.00	$300.00	$6,100.00
24060	12/2/2008	Wascon	4	$1,450.00	$5,800.00	$75.00	$300.00	$6,175.00
24381	1/7/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
24451	1/20/2009	Wascon	4	$1,450.00	$5,800.00	$750.00	$300.00	$6,850.00
24648	2/26/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
24823	3/23/2009	Wascon	8	$1,450.00	$11,600.00		$3,600.00	$15,200.00
25054	5/5/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
25128	5/19/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
25251	6/10/2009	Wascon	4	$1,450.00	$5,800.00	$395.00	$75.00	$6,270.00
		Fiscal Year Totals	**48**		**$69,600.00**			**$77,195.00**
			Est. 12 more for July - Oct. (60 Total)					
25410	7/1/2009	Wascon	4	$1,450.00	$5,800.00	$590.50	$300.00	$6,690.50
25487	7/10/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
25678	8/11/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26039	9/22/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26173	10/2/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26311	10/29/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26412	11/17/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26663	12/17/2009	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26740	1/4/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
26841	1/18/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27032	2/3/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27157	3/2/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27233	3/12/2010	Wascon	4	$1,450.00	$5,800.00		$0.00	$5,800.00
27373	4/6/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27449	4/16/2010	Wascon	4	$1,350.00	$5,400.00		$300.00	$5,700.00
27466	4/20/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27469	4/20/2010	Wascon	4	$1,450.00	$5,800.00		$0.00	$5,800.00
27471	4/20/2010	Wascon	4	$1,450.00	$5,800.00		$0.00	$5,800.00
27805	6/3/2010	Wascon	4	$1,450.00	$5,800.00		$300.00	$6,100.00
27882	6/14/2010	Wascon	8	$1,450.00	$11,600.00		$300.00	$11,900.00
		Fiscal Year Totals	**84**		**$121,400.00**			**$127,090.50**

Invoice #	Invoice Date	Vender	No. Pps. Received	Pump Unit Cost	Totals Pp Cost This Invoice	Pp. Related Accessories	Ship./Freight	Total Cost

10-2 A copy of a spreadsheet showing the total grinder pump program cost

City of Brentwood, TN - Water & Wastewater Department

Grinder Program Cost Analysis

1/13/2011 8:25

		Fiscal Year							
Account Code	Item Description	Actual 04-05	Actual 05-06	Actual 06-07	Actual 07-08	Actual 08-09	Actual 09-10	*Projected* 10-11	
412-52310-82685	Grinder System Repair Cost	$108,365	$138,671	$128,036	$138,307	$157,309	$191,741		
	Number of Units Maintained	2,405	2,455	2,690	2,720	2,740	2,750		
	Repair Cost (w/o Labor) Per Grinder Unit	$45	$56	$48	$51	$57	$70		
	Annual Labor Cost (Estimated)	$15,045	$17,922	$15,549	$16,684	$17,600	$18,286		
	Total Program Cost Per Grinder Unit	**$51**	**$64**	**$53**	**$57**	**$64**	**$76**		
	No. of Work Orders Issued (by FY)	425	491	413	430	440	446		
412-00000-37212	Collected Service Fees ($35 or $65 chg)	$0	$0	$0	$0	$14,200	$12,030		
	Pp. Replacement Fees Collected ($1,900/Lot fr Devprs)	$90,900	$213,185	$269,500	$159,600	$43,700	$34,200		
	Net Program Cost	**-$32,510**	**$56,593**	**$125,915**	**$4,609**	**-$117,009**	**-$163,797**		
	No. of New Units Purchased					60	84		
	No. of Rebuilt Units								
	Avg. Number of New or Rebuilt Units in Stock/avg. mo.					6	10		
	Number of Annual Inspections								

Notes:

Electric cost not included (to homeowner). However, costs typically run about $1.50/month for homeowner (assuming $0.10/Kw, 20 min. avg./day run time).
Since we act as a maintenance contractor there may be residents contracting with local plumbers for repairs
Number of Units maintained is still being investigated (KH/RR "list" indicates @ 2765, GIS data to date indicates 2505 units as of 08-13-10); note, must reduce number for commercial grinders, maybe 10-15 units (we don't service comm. units).
Grinder System Repair Cost includes force main repairs. This cost less pump/accessories cost (on next sheet) equates to grinder only cost (or about $29/unit for '09))
Collected Serv. Fees (the $35 or $65 charge for repairs) are from Sandra who now keeps separate spreadsheet. UB only began breaking this chg out in Dec. '08 so it could be tracked. These fees are charged to the Rev. acct. "Sewer Chgs-Res In City." Yrs. 05 - 08 are NA.

Projected 08-09 Work Orders issued based on 10 mo of information.

Labor Costs:

(2 man Crew) (1 hr/WO issued) (Use $18.50/Employee/hr which includes 45% benefits)		$37.00
(1 Serv. Trk) (7 miles rd. trip/WO) ($0.55/mi) ($0.15/est. tools, misc.)		$4.00
	Total	$41.00

10-3 A copy of a spreadsheet showing the grinder pump inventory

GRINDER PUMP INVENTORY

Part #	Description	PLACE ORDER WHEN INVENTORY GETS DOWN TO:	AND ORDER THIS MANY MORE:
1001	Sensing Bell	10	10
1008	Seal ASM	15	15
1060	Pump Breather Cable	10	10
1065	Pump Control Bracket	15	30
1086	Pump Breather Cable w/ Bladder	10	10
1090	Bladder	10	10
1098	Tank Slide Face	15	25
2068	AMGP Top Housing Hood	5	10
2069	Pump Stand	2	3
7294	Supply Cable EQD Insert	10	20
7295	Pump Cable EQD Insert	10	20
3123	Breather Cable Connector (Hummel	20	20
8203	Stator / Liner ASM	10	20
7090	On / Off Switch	15	25
7091	Alarm Switch	15	25
8006	Cutter Ring	10	20
1003	Cutter Wheel	10	20
1093	48" Flex Hose	12	8
Local	1.5" Pressure Coupling	6	14
Local	1.5" Check Valve	6	14
Local	1.5" Cutoff	6	14
Local	1.5" Nipple	6	14
Local	1.25" Nipple	6	14
Local	1.5" to 1.25" Reducer	6	14

10-4 A sample ordering sheet froma recent order placed to the grinder pump parts supplier

City of Brentwood
5211 Maryland Way • Brentwood, TN 37027 • Phone (615) 371-0080
Mailing Address: P.O. Box 788 • Brentwood, TN 37024-0788

Qty.	Part Description	Service Number
10	Alarm Switches	7091
10	On/Off Switches	7090
15	Stators	8203
25	Floats	10 Ft.
15	Equalizers	1090
5	Cutter Rings	8006
8	Cutter Wheels	1003

10-5 A copy of the most recent supply inventory for all department materials

Brentwood Water Dept Inventory
2009-2010

DESCRIPTION		QUANTITY	COST PER UNIT		TOTAL COST
ADJUSTABLE VALVE COVERS					
Covers		4	$ 19.00		$ 76.00
Lids		6	11.00		66.00
BELL CLAMPS					
6"		2	137.15		274.30
8"		3	189.50		568.50
10"		2	238.12		476.24
12"		1	257.56		257.56
14"		1	880.76		880.76
16"		-	402.18		-
COCKS					
3/4" CC Thread		16	22.75		364.00
1" CC Thread		12	34.41		412.92
3/4" Pipe Thread		8	22.75		182.00
1" Pipe Thread		3	34.41		103.23
COMPRESSION COUPLINGS					
3/4" Brass		60	10.40		624.00
3/4" PVC		-	2.50		-
1" Brass		23	14.18		326.14
1" PVC		-	3.25		-
1-1/4" PVC		6	5.01		30.06
1-1/2" PVC		30	5.35		160.50
1-1/2" Brass		3	43.41		130.23
2" Brass		25	58.60		1,465.00
2" PVC		14	6.95		97.30
2-1/2" PVC		9	13.00		117.00
3" PVC		7	17.00		119.00
YOKE CONNECTORS					
3/4"		12	87.00		1,044.00
1"		4	94.00		376.00
COPPER PIPE					
3/4"	60 FT ROLL	7	3.00	FT	1,260.00
1"	60 FT ROLL	3	4.12	FT	741.60
3/4"	100 FT ROLL	8	3.00	FT	2,400.00
CURB STOPS					

3/4"		16	28.15		450.40
1"		12	56.36		676.32
DUCTILE IRON					
Bends					
22 1/2 (8")		5	74.10		370.50
22 (12")		4	137.86		551.44
22-1/2 (12")		-	139.86		-
45 (12")		-	160.65		-
90 (12")		-	194.29		-
22-1/2 (14")		-	270.65		-
45 (14")		-	267.25		-
90 (14")		-	343.90		-
11-1/4 (24")		1	668.68		668.68
22 1/2 (24")		1	726.50		726.50
45 (24")		-	754.11		-
90 (24")		-	1,139.29		-
14 x 6 Tee		1	309.58		309.58
14 x 12 Tee		-	416.93		-
Couplings					
4" Trans		2	65.00		130.00
4" CI to Steel		1	65.00		65.00
6" PVC to CI		2	88.45		176.90
6" PVC		4	88.45		353.80
6" DI		4	88.45		353.80
6" AC to CI		2	88.45		176.90
8" Steel to CI		2	112.10		224.20
8" PVC to CI		1	112.10		112.10
8" PVC to Steel		1	112.10		112.10
8" AC to PVC		2	112.10		224.20
10" AC to PVC		-			-
Maxi Couplings					
4" x 4"		3	147.26		441.78
6" x 6"		6	194.43		1,166.58
8" x 9"		3	220.18		660.54
10" x 10"		1	283.24		283.24
12" x 12"		2	360.05		720.10
DUCTILE IRON PIPE					
4"	18 FT JOINT	4	13.22	FT	951.84
6"	18 FT JOINT	3	13.59	FT	733.86
8"	18 FT JOINT	6	18.65	FT	2,014.20
10"	18 FT JOINT	2	24.66	FT	887.76
12"	18 FT JOINT	5	31.44	FT	2,829.60
14"	18 FT JOINT	8	39.30	FT	5,659.20

24"	18 FT JOINT	3	75.41	FT	4,072.14	
Sleeves						
3"		1	35.51		35.51	
4"		3	37.42		112.26	
6"		2	56.32		112.26	
8"		1	74.09		74.09	
10"		-	110.75		-	
12"		-	147.86		-	
14"		-	236.63		-	
FEMALE ADAPTERS						
3/4"		16	10.71		171.36	
2"		2	44.25		88.50	
FERNCO COUPLINGS						
4" x 4" PVC to PVC		2	4.77		3.54	
4" x 4" Clay to PVC		1	4.77		4.77	
6" x 4" PVC to PVC		3	11.98		35.94	
6" x 4" Clay to PVC		2	11.98		23.96	
6" x 4" Conc to PVC		2	11.98		23.96	
6" x 6" Clay to PVC		1	10.20		10.20	
6" x 6" Conc to PVC		2	11.98		23.96	
6" x 6" PVC to PVC		4	10.20		40.80	
8" x 6" Conc to PVC		2	61.76		123.52	
8" x 6" PVC to PVC		2	18.94		37.88	
8" x 6" Clay to PVC		1	18.94		18.94	
8" x 8" Conc to PVC		3	16.95		50.85	
8" x 8" Clay to PVC		2	15.69		31.38	
8" x 8" PVC to PVC		4	15.69		62.76	
10" x 10" PVC to PVC		2	23.55		47.10	
10" x 10" Clay to PVC		3	23.55		70.65	
12" x 12" Clay to PVC		1	27.51		27.51	
15" x 15" Clay to PVC		2	47.14		34.28	
FIRE HYDRANTS *						
M&H (4-1/2")		1	1,101.50		1,101.50	
Blowoff (2")		-	504.00			
Meters		4	927.45		3,709.80	3,925.00
American Darling 4 1/2 FH		2	1,340.00		2,680.00	
Mueller Underground 5 1/2 FH		5	1,790.00		8,950.00	
Mueller 4 1/2 FH		2	1,680.00		3,360.00	
FRAMES/COVERS						
Value Box		22	111.25		2,447.50	
Manhole		15	217.20		3,258.00	

FULL CIRCLE CLAMPS			
3/4" PVC	25	22.00	550.00
1" PVC	5	23.28	116.10
1-1/4" PVC	5	23.85	119.25
1-1/2" PVC	1	24.50	24.50
2" PVC	4	48.81	195.24
2" CI	1	48.81	48.81
2-1/4" CI	-		
2-1/2" PVC	2	53.00	106.00
3" AC	3	61.54	184.62
3" CI	2	57.41	114.82
3" PVC	2	58.00	116.00
4" PVC	7	63.70	445.90
4" CI	1	65.95	65.95
6" PVC	15	76.15	1,142.25
6" CI	2	77.81	155.62
6" AC	9	78.98	710.82
8" PVC	19	90.21	1,713.99
8" CI	5	93.10	465.50
8" AC	7	95.15	666.05
10" PVC	3	172.40	517.20
10" CI	7	175.99	1,231.93
12" PVC	3	202.85	608.55
12" CI	2	205.66	411.32
14" CI	5	482.31	2,411.55
16" CI	-	232.71	
24" CI	-	503.15	
GALVINIZED			
Bends			
45 (1")	-	1.50	
45 (2")	-	5.10	
90 (2-1/2")	-	7.65	
Couplings			
3/4"	60	2.58	154.80
1"	14	4.23	59.22
1-1/4"	2	5.97	11.94
1-1/2"	11	6.79	74.69
2"	6	9.83	58.98
Tees			
3" x 3"	-	12.00	
GATE VALVES			
4"	1	342.55	

6"	2	444.53	889.06
8"	3	691.50	2,074.50
10"	-	1,075.10	
12"	1	1,334.56	1,334.56
14"	1	3,907.75	3,907.75
24"	1	13,374.50	13,374.50
GLUE-ON COUPLINGS			
3/4" PVC	2	0.34	0.68
1" PVC	6	0.59	3.54
1-1/4" PVC	-	0.81	
1-1/2" PVC	3	0.87	2.61
4" PVC	12	6.69	80.28
GRINDER PUMPS			
Pumps			
Hydromatic	1	1,476.50	1,476.50
E-One	9	1,350.00	12,150.00
Tanks	3	600.00	1,800.00
Tanks-Self Maintenance	2	1,300.00	2,600.00
GRINDER PUMP REPAIR			
Misc. Parts Inventory			5,000.00
HAND TOOLS			
Air Plug (6")	1	28.80	28.80
Bush Blades	1	32.00	32.00
Clay Pipe Cutter	1	495.00	495.00
Copper Tubing Puller	2	335.00	670.00
Gasoline Cans			
2-1/2 gal	2	4.53	9.06
1 gal	3	3.35	10.05
Hand Pump	8	28.50	228.00
Hard Hats	12	6.95	83.40
Hip Boots (Pair)	6	100.00	600.00
Hoses			
1-1/2" Fire	-		
2" Fire	-		
2-1/2" Fire	2	152.00	304.00
3" Fire	1	210.00	210.00
2" Suction	1	45.00	45.00
3" Suction	2	96.00	192.00
Joint Sealant	2	8.85	17.70
Lawn Mower	2	200.00	400.00
Mandle (8")	2	90.00	180.00
Marker Flags	1,750	0.10	175.00
Meter Spreader	1	110.00	110.00

Picks	2	21.97		43.94
Pitch Forks	-	19.95		
Post Hole Diggers	2	39.97		79.94
Rain Gear (Sets)	6	15.95		95.70
Rakes	5	25.97		129.85
Rock Bars	5	53.15		265.75
Shoring Jack & Hook	-			
Shovels	25			
Flat-end	5	27.00		135.00
Round-end	15	26.47		397.05
Tunnelling	5	14.97		74.85
Sledge Hammers	3	43.97		131.91
Sprayers (3-1/2 gal)	2	39.98		79.96
Backpack Sprayers	2	89.97		179.94
Tamping Bars	5	29.97		149.85
Tee Wrenches	10			
Wheel Valve	12	52.00		624.00
Valve	10	46.00		460.00
Weed Eaters	3	110.00		330.00
Wheeler Hex Shut-off Toole	1	173.25		173.25
Fire Hydrant Pressure Gauges	10	93.75		937.50
HYDRANT RISERS				
1'	7	257.75		1,804.25
KNOCK-ON COUPLINGS				
2" Sleeve (Water)	2	9.10		18.20
3" Sleeve (Water)	2	12.52		25.04
4" Sleeve (Water)	1	22.53		22.53
6" Sleeve (Water)	3	39.60		118.80
6" Sewer	5	13.75		68.75
8" Sewer	12	23.29		279.48
8" Sleeve (Water)	4	78.30		313.20
10" Sleeve (Water)	2	82.63		165.26
10" Sewer	1	51.70		51.70
12" Sleeve (Water)	1	118.45		118.45
MALE ADAPTERS				
3/4"	15	10.19		152.85
1"	5	12.06		60.30
MANHOLE SUPPLIES				
Risers				
2"	2	25.00		50.00
4"	3	30.00		90.00
6"	8	35.00		280.00
ConSeal	3	44.25	BX	132.75

Lid Pullers	11	24.00		264.00
Octoplug	1.00	38.00	BKT	38.00
Rain Sentries	16	47.70		763.20
MECHANICAL TOOLS				
Air Compressor (Port)	2	333.69		667.38
Air Tank (Port)	1	53.99		59.99
Generator	2	549.00		1,098.00
Hammer Drill	1	467.00		467.00
Leak Detector	2	1,300.00		2,600.00
Line Locators (Galtek)	-	579.00		
Line Locators (Surloc)	1	3,500.00		3,500.00
Pipe Saws Small	1	890.00		890.00
Large	4	1,440.00		5,760.00
Pneumatic Valve Box				
Cleaner	1	1,200.00		1,200.00
Pneumatic Chipping				
Hammer	1	250.00		250.00
Portable Lights	3	115.00		345.00
Propane Gas Tanks	1	35.00		35.00
Valve Actuator	1	4,500.00		4,500.00
Valve Box Locators (Fisher)	5	425.00		2,125.00
Ventilators	-	625.00		
Water System Analyzer	-	695.00		
METERS *				
3/4" (New)	14	147.00		2,058.00
3/4" (Rebuilt)	31	121.00		3,751.00
5/8" (New)	-	97.00		
5/8" (Rebuilt)	20	69.00		1,380.00
1"	6	175.00		1,050.00
1-1/2"	7	405.00		2,835.00
1-1/2" Compound	-	560.00		
2"	8	470.00		3,760.00
2" Compound	-	1,400.00		
6"	-	6,799.43		
8"	-	8,130.66		
I Pearl Meters	174	110.00		19,140.00
Bottoms				
5/8" (Sensus)	27	4.25		114.75
3/4" (Sensus)	36	5.80		208.80
1"	21	8.00		168.00
Boxes (Concrete)				
3/4"	-	22.00		
1"	4	42.00		168.00
2"	-	48.21		

Boxes (Metal)					
3/4"		-	155.00		
Boxes (Plastic)					
3/4"		15	29.12		436.80
2"		3	138.00		414.00
Box lids					
3/4"		34	13.13		446.42
1"		49	12.88		631.12
2"		20	11.17		223.40
Heads (Sensus)		152	85.00		12,920.00
METER CONNECTORS					
3/4"		20	4.52		90.40
1"		5	7.17		35.85
MULTI-PURPOSE					
(UNIVERSAL) NUTS					
3/4"		16	7.57		121.12
1"		15	9.43		141.45
PVC					
Male/Female Adapters					
3/4"		2	0.89		1.78
1"		4	1.07		4.28
1-1/4"		6	1.64		9.48
1-1/2"		7	1.79		12.53
Pipe (Joints)					
2" SDR	20 FT	8	0.49	FT	78.40
3" SDR	20 FT	2	0.92	FT	36.80
4" SDR	20 FT	-		FT	
4" SDR	13 FT	4	0.89	FT	46.28
6" SDR	20 FT	20	2.68	FT	1,072.00
6" SDR	13 FT	5	1.81	FT	117.65
8" SDR	20 FT	2	4.67	FT	186.80
8" SDR	13 FT	25	2.90	FT	942.50
10" SDR	20 FT	1	6.90	FT	138.00
10" SDR	13 FT	2	4.40	FT	114.40
12" SDR	20 FT	3	11.06	FT	663.60
12" SDR	13 FT	4	6.41	FT	333.32

15" SDR	13 FT	2	9.77	FT	254.02
REHAB CHEMICALS					
AC 400	1 LB	-	1.97	LBS	
Ammoniu	1 LB	3	1.09	LBS	3.27
Granular	50 LB	-	25.60	LBS	
Sewer Enzymes					
Liquid	5 LB	25	18.50	LBS	2,312.50
Powder	50 LB	-	4.00	LBS	
T.E.A.	1 LB	20	0.94	LBS	18.80
TAPPING MACHINES					
3/4"		4	367.20		1,468.80
6"		1	1,124.00		1,124.00
TAPPING SADDLES					
2" x 3/4"		5	20.54		102.70
3" x 3/4"		3	26.94		80.82
4" x 3/4"		13	31.71		412.23
4" x 1"		3	31.71		95.13
6" x 3/4"		13	47.31		615.03
6" x 1"		4	47.31		189.24
6" x 2"		1	89.28		89.28
8" x 3/4"		10	65.02		650.20
8" x 1"		2	65.02		130.04
8" x 2"		3	92.05		276.15
10" x 3/4"		9	125.46		1,129.14
10" x 1"		2	125.46		250.92
12" x 3/4"		5	166.96		834.80
TAPPING SLEEVES					
6" x 6"		-	353.00		
8" x 6"		-	433.00		
8" x 8" DI		-	469.00		
12" x 4"		1	594.62		594.62
12" x 6"		-	858.00		
14" x 6"		-	1,085.00		
TAPPING VALVES					
6"		2	562.00		1,124.00
TEES					
6" x 8" PVC		2	140.50		281.00
6" x 6" DI		1	136.45		136.45
6" x 8" DI		2	157.70		315.40
8" x 8" DI		1	333.00		333.00
10" x 6"		1	344.00		344.00

12" x 6"	1	173.82	173.82
15" x 4"	1		
15" x 6"	1		
TRANSITION GASKETS			
6"	12	3.89	46.68
8"	5	4.41	22.05
14"	3	37.07	111.21
VALVE BOXES			
Risers (Conc)			
2"	2	16.00	36.00
4"	1	19.12	19.12
6"	-	23.47	
12"	2	37.37	74.74
18"	1	42.04	42.04
Footer Blocks	5	7.10	35.50
WATER PUMPS			
Centrifigal (3")	2	595.00	1,190.00
Pumps (12 Volt)	3	845.00	2,535.00
Pumps (2" Water)	-	225.00	
Water Bugs	1	204.00	204.00
WATER-TIGHT MANHOLES			
Inside Lids	13	118.00	1,534.00
Gasket Material (Roll)	20	100.00	2,000.00
WHEEL VALVES			
1-1/2"	6	17.00	102.00
2"	6	23.53	141.18
2-1/2"	2	49.08	98.16
3"	4	69.86	279.44
4"	4	128.76	515.04
YOKES			
3/4"	40	107.90	4,316.00
1"	7	172.13	1,204.91
1-1/2"	1	508.00	508.00
2"	2	539.00	1,078.00
Risers			
3/4" x 7"	3	100.21	300.63
3/4" x 12"	2	104.46	208.92
3/4" x 18"	2	115.70	231.40
3/4" x 24"	3	120.75	362.25
1" x 12"	1	171.67	171.67
Sidewinders			

3/4"		35	94.00		3,290.00
1"		25	181.30		4,532.50
Class 900 PVC Pipe					
4" C90(	20 FT	4	3.80	FT	304.00
6" C90(	20 FT	4	4.66	FT	372.80
8" C90(	20 FT	6	7.80	FT	936.00
10" C90	20 FT	4	11.61	FT	928.80
12" C90	20 FT	2	16.36	FT	654.40

Item #11 – Begin Reviewing Customer Complaints to see if Repeat Locations are Found

Development date: June 30, 2007

Discussion: Beginning in 2007, the Water and Sewer Department began tracking customer calls and complaints in a much more organized manner than previously. This was also noted by TDEC's Division of Water Supply as an area in need of improvement. The action taken was to have a central location for all complaints to be logged, and a simple Excel spreadsheet on the Department's network drive has served that purpose well. In most cases, complaints are dealt with quickly and no further action is taken, but in some instances, actions such as line cleaning or sealing manholes follows as a work order from the initial contact from the customer.

Aside from grinder pump calls, there are very few sewer complaints. In two cases in particular, a pattern of odor calls in a certain area of the collection system led to some additional investigation, and an inordinate amount of grease was found in the gravity lines, so line cleaning activities were increased in that area. This problem has also been somewhat attenuated by the new FOG program, as will be discussed in Item #16.

A second example also dealt with recurring odor complaints at one of the sewer lift stations. The response in that case was to seal some of the manholes at and near the facility, and the monthly pump-out of the wetwell has also appeared to help this situation. At this time, the Water and Sewer Department is not aware of any recurring situations where customer complaints are an issue.

The following information is attached with this item:

11-1 A copy of the Customer Complaint Management document developed in 2007 (a portion of the spreadsheet referenced above is shown on the cover, and the complaint spreadsheets from 2007, 2008, 2009, and 2010 can be emailed if requested).

11-2 An example work order from an odor complaint and subsequent response. All work orders can be provided if requested.

11-1 A copy of the Customer Complaint Management document developed in 2007 (a portion of the spreadsheet referenced above is shown on the cover, and the complaint spreadsheet from 2007, 2008, 2009 and 2010 can be emailed if requested)

CITY OF BRENTWOOD

CUSTOMER COMPLAINT MANAGEMENT

Date	Time of Call	Name	Address	Phone	Nature of Problem	How was problem Resolved	Repaired By
5/17/07	8:27 a.m.	Ann Harris	407 Dartie Drive	377-1192	Red Light Flashing on grinder	Repaired	
5/17/07	8:29 a.m.	Lawrence Kroesel	302 Long Valley Road	330-2119	Grinder Pump Overflowing	Repaired	
5/17/07	9:25 a.m.	Helen Gore	507 Davis Drive	309-1794	large hole developing around grinder	Repaired	
5/17/07	10:42 a.m.	Sabrina Parnell	512 Shenandoah Drive	370-1211	grinder runs all the time	Repaired	
5/21/07	7:30 a.m.	Reese Williams	1226 Haber Drive	661-5166	Water in ditch-wants City to tell him if it's his problem or City's	Gave to Rickey	
5/21/07	12:44 p.m.	Robert Lasswell	6433 Tee Ridge Terrace	373-4749	Red Light Flashing on grinder	Gave to Rickey	
5/23/07		Tom Pettit	1210 Haber Drive	579-7794	Water bubbling up in front of house and filling drainage ditch	Gave to Rickey	
5/23/07		Robert S. Reynolds	9536 Midlothian Drive		No water due to MTEC cutting power to station	Travis spoke to him	
5/23/07	2:38	Mrs. Pridgen	1765 Northumberland Dr.	771-8217	Low water pressure due to MTEC problem	Explained situation, told them it would be restored shortly	
5/23/07	3:10	Dennis Beyer	9510 Split Log Road	771-2810	NO Water	Told him that we were working on line	
5/23/07	3:30	Mrs. Fields	9502 Split Log Road	771-2812	NO Water	Advised them we were working on line should be on very soon	
5/23/07	4:09	Mr. Reynolds	9536 Midlothian Drive	771-2810	Just air coming thru lines	Called Richard	
5/23/07	4:12	Carla Vitucci	9514 Midlothian Drive	509-9966	Low Pressure	Called Richard	
5/23/07	4:22	Theresa Allen	9516 Split Log Road	771-2005	Air in lines, mud running thru pipe	Called Richard he had someone go out	
5/23/07	4:42	Robert Reynolds	9536 Midlothian Drive	771-2810	Dirty Water	Advised him to run water for a few minutes	
5/29/07	1:43	Mrs. Luther	901 Steeplechase Drive	375-9422	Grinder Pump not working correctly	Repaired	
6/1/07	3:25	James Hayes	801 Georgetown Court	306-2269	Liquid coming out top of grinder pump	Gave to Matt over radio	
6/4/07	8:43a	Rita Bregger	9500 Concord Road	373-4749	Grinder was replaced on 5/31, still not working	Gave to 451	
6/7/07	11:11A	Victor Byrd	9023 Fallswood Lane	812-4819	Has foul smelly tarry looking water standing in backyard. He thinks it's sewer.	Gave to Rickey Shell	
6/11/07	7:11 AM	Mrs. Bradberry	9112 Johnson Chapel Road	661-5754	Upon returning from being out of town for the weekend, red light was flashing on grinder pump. Called dispatch at 9:30 Sunday evening and was told they would have someone get back with her. No one called her back. She called in this morning and stated that she wanted someone out there "NOW"! I told her someone would be there this morning.	Gave to Ken Waddy	
6/11/07	8:03 A.M.	Mrs. Bradberry	9112 Johnson Chapel Road	661-5754	Grinder Pump Problem, said noone has called her back, wanted someone to come out immediately. Sent 451	Gave to 451	
6/11/07	4:00 PM	Mrs. Hessinger	23 Ironwood Lane (Gov. Club)	776-2425	Sewer Back-up ~ Called Travis		
6/12/07	10:10 AM	Lori	1855 Trapor Dr. Indigo... (Lot 142)	370-4510	Leaking Water Meter		
6/12/07	3:46 PM	Brandon w/ Turnberry	23 Ironwood Lane (Gov. Club)	368-4990	Sewer is leaking out on ground between check box and street. Homeowners - The Henningers #376-2425		
6/15/07	9:25 AM	Tom Vaspuwall	9025 Southerland Place	537-9014 /309-9716	Called last night, was told that someone would be there this morning to repair his grinder pump, he wanted to know when.	Gave to 451	
6/15/07	9:43 AM	Ron Bresto	1508 Robby Court	376-2522	Grinder Overflowing	Gave to 451	
6/15/07	10:00 AM	Rose O'Brien	5021 Country Club Drive	373-3333	Water Pressure is not consistent today. She goes from having a drip to nothing to a short 2 minute run of water then back to nothing	Gave to Rickey Shell	
6/21/07	7:10 AM	Eric Kinney	Bikeway Connector between YMCA & Crockett Park	604-8293			
6/21/07	9:20 AM	Margie Sparks (City Hall)	1106 General MacArthur Drive		Homeowner came to City Hall to complain about high water bill. Would like someone to come to home and check for leak or other problem / issue.	Gave to Travis. He & Rickey went to investigate. Found drainage culvert blocked. Informed Public Works	
6/22/07	7:08	Steve Debell	5304 Millbrook Road	369-6420	Water Meter Box full of water		
6/22/07	12:00	Carolyn Ogmbene	802 Shenandoah Drive	373-5904 (H) 594-0472 (W)	Red Light Flashing on grinder pump	Gave to Lathan	

JUNE, 2007

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I. INTRODUCTION

Mission Statement:

The mission of the City of Brentwood Water Services Department is, on one hand, to provide a safe and dependable supply of drinking water at sufficient volumes and pressures to meet customers' needs for domestic use and fire protection by being fiscally responsible stewards of our natural resources. The corresponding mission for the sewer operations is to provide the highest consistent quality of wastewater collections for its customers in a cost-effective manner.

Purpose of This Management Program:

As a part of fulfilling the Department's mission, a proactive approach of tracking and responding to customer complaints has been developed. Part of this is because of the City's stated desire to provide superior customer service, but from an operational standpoint, it is recognized that handling, receiving, responding to, *and even encouraging* customer complaints can be an invaluable tool for identifying problems with the system.

The approach utilized by the City of Brentwood is intended to simplify the important tasks of tracking and responding to the variety of customer complaints. The primary driver for instituting a centralized format for receiving and tracking customer complaints is not because of lack of communication. Conversely, the issue in recent years has been TOO MUCH communication, or perhaps TOO MANY METHODS of communication. In a department of 25 responsible, motivated and competent individuals, assuming that each has a mobile phone, a "land line" phone and email access, there are at least 75 different ways for a customer complaint to be received at any given time, not counting in-person communication. As such, many complaints have not been "tracked" simply because they have been "managed" by the individual, often without the impetus of a "work order" or even specific direction by a supervisor.

Training and Drills

The City conducts monthly training exercises on a variety of topics. At least once annually, the staff will be meeting to review this management program and refine it. The primary training activity will involve simply communicating to all personnel, including receptionists, that customer complaints need to not only be responded to, but tracked in a central location.

II. CUSTOMER COMPLAINT OVERVIEW

STEP	EVENT	ACTIONS
1	Complaint is Received	Whomever receives complaint, the following information is logged: 1. Date and Time 2. Customer Name 3. Address 4. Phone 5. Nature of Problem
2	Complaint is Logged	A database on the City's network is maintained for anyone receiving a customer complaint. Generally those updating the complaint database would be: • Receptionists at the Service Center • Department Director • Department Asst. Director • Operations Superintendent
3	Complaint is Investigated	As soon as the complaint is received, it is to be forwarded on to the appropriate individual. In general, those complaints that would require a site visit are forwarded to the Operations Superintendent. Complaints of a technical nature are forwarded to the Assistant Director, and complaints of billing or shut-off are forwarded to the Finance Department.
4	Complaint is Addressed	If the complaint involves some additional work, such as pressure testing or smoke testing, a work order is generated.
5	Complaint is Resolved and Tracked	Once the complaint has been resolved, that resolution is tracked at a minimum on the original database where the complaint originally was logged. If a work order was generated, that work order is also attached with the complaint file.
6	Complaints are Summarized	Using GIS, complaints are to be annually compiled onto a map, graphically showing their frequency and distribution.

III. PROCEDURES FOR SEWER COMPLAINTS

Almost all sewer complaints in the City of Brentwood fall into one of four categories:

1. ODOR
2. OVERFLOWS / BACKUPS
3. GRINDER PUMP ALARM
4. DAMAGE TO A FACILITY

1. Odor

Sewer odor complaints are relatively infrequent in the City of Brentwood, with 11 documented cases in 2006. However, those complaints tend to be vociferous when they do occur. It is Departmental practice to investigate each of these complaints, even though most of them are determined to be interior plumbing issues, such as dry P-traps or, in some cases, a dead animal. There are occasional instances where the complaint uncovers an issue with the public collection system, such as a line blockage or a malfunctioning pump station.

In at least two cases in 2006, overflows were averted because an odor complaint was investigated in a timely manner.

In general, the following actions take place in response to an odor complaint:

- Department personnel travel to the location of the odor complaint and determine if the source can be found.
- Major odor producers, such as regional pumping stations or the outlets of force mains, are located on the sewer system collection maps and compared to the location of the complaint.
- The nearby collection system is investigated by opening manholes and checking to verify whether there is a backup in progress.
- Smoke testing is occasionally performed as a courtesy to the homeowner to determine if the issue involves plumbing.
- If the odor is present but the cause cannot be determined, the Department's Sewer Rehabilitation Crew is dispatched to perform televising of the sewer lines.
- If the cause cannot be isolated in a timely manner, chemical or biological additives can be added to the collection system in the area to temporarily alleviate the odor problem.

2. Overflows and Backups

In 2006, there were a total of 26 overflows in the public sewer system. The majority of these were at posted overflow locations or at a regional pumping station. Because of this, overflows cannot be identified or tracked solely by customer complaints, so the City has instituted an Overflow Tracking Procedure. There are, however, instances where backups or overflows are reported by customers, and it is critical that each of these be investigated.

In 2006, there were 6 cases where sewage backups (not overflows) were addressed by the Department. It is not clear, based on the 2006 record-keeping, the number of these responses resulted from customer complaints, although it is a reasonable assumption that all of them did. This illustrates the need for BOTH the proactive Overflow Tracking Procedure as well as the reactive Customer Complaint Management Program. In the event that an overflow occurs, the procedures set forth in the Overflow Tracking Procedure are to be followed.

From the standpoint of Customer Complaint Management, any complaint regarding overflowing sewage is given a high priority.

3. Grinder Pump Complaints

The City of Brentwood has approximately 3,000 residential grinder pumps in its collection system and provides maintenance to each customer for those pumps. Because of this, the most common customer complaint by far received by the Department is in regard to the grinder pumps. There were 461 service calls on grinder pumps in 2006, ranging from resetting alarm lights to total pump replacement.

The Department has dedicated personnel, on call 24/7, to address grinder pump issues and regularly conducts training with the pump manufacturers to facilitate maintenance activities and prolong the lives of the pumping systems. In situations where the extent of the grinder pump complaints exceeds the manpower capacity of the Department, on-call service is provided by Wascon, Inc.

4. Facility Damage Complaints

In the past, this has not been tracked separately as a "customer complaint" but will be in future years. As diligent as Department personnel attempt to be in routinely surveying the collection system, that majority of reports to items such as manhole castings or cleanouts comes from customers. In 2006, the documented repair activities can be broken down as follows:

- Repair / Replace Service – 3 instances
- Repair / Replace Main – 5 instances
- Repair / Replace Manhole – 79 instances

Because these were not tracked as "customer complaints" in 2006, it is difficult to determine which of these repairs were a direct result of feedback from customers, but it is a reasonable assumption that a large percentage would have originated in that manner. Regardless, the ability to receive, respond to, and ultimately track damage to facilities will enhance the Department's operations, especially in reducing inflow events to the system.

11-2 An example work order from an odor complaint and subsequent response. All work orders can be provided if requested.

Service Center Work Order 2010

Today's Date Friday, December 10, 2010 **Work Order Number** 761

Received Date 12/9/2010 **Received Time** 12:30 PM **Received By** Travis

Dispatcher Travis **Department** 500 (Sewer)

Assigned To GR/JM **Task** 13 Complaints

Requestor Doug Rudder

Street Address 8013 Warner Rd

Exact Location 327-0404

Request Sewer odor

==========

Date Completed 12/9/2010

Action Taken Sealed lid of manhole with ConSeal.

More Action Required?

Follow Up Action Required

Completed By GR/JM

Service Center Work Order

Today's Date 12-9-2010

Received Date _____ Received Time _____ Received By _____

Dispatcher Travis Department WWS

Assigned To Greg r Jimmie Task man hole

Requester Doug Rudder 327-0404 12:30 pm

Street Address Warner RD

Exact Location 8013 Warner Rd

Request _____

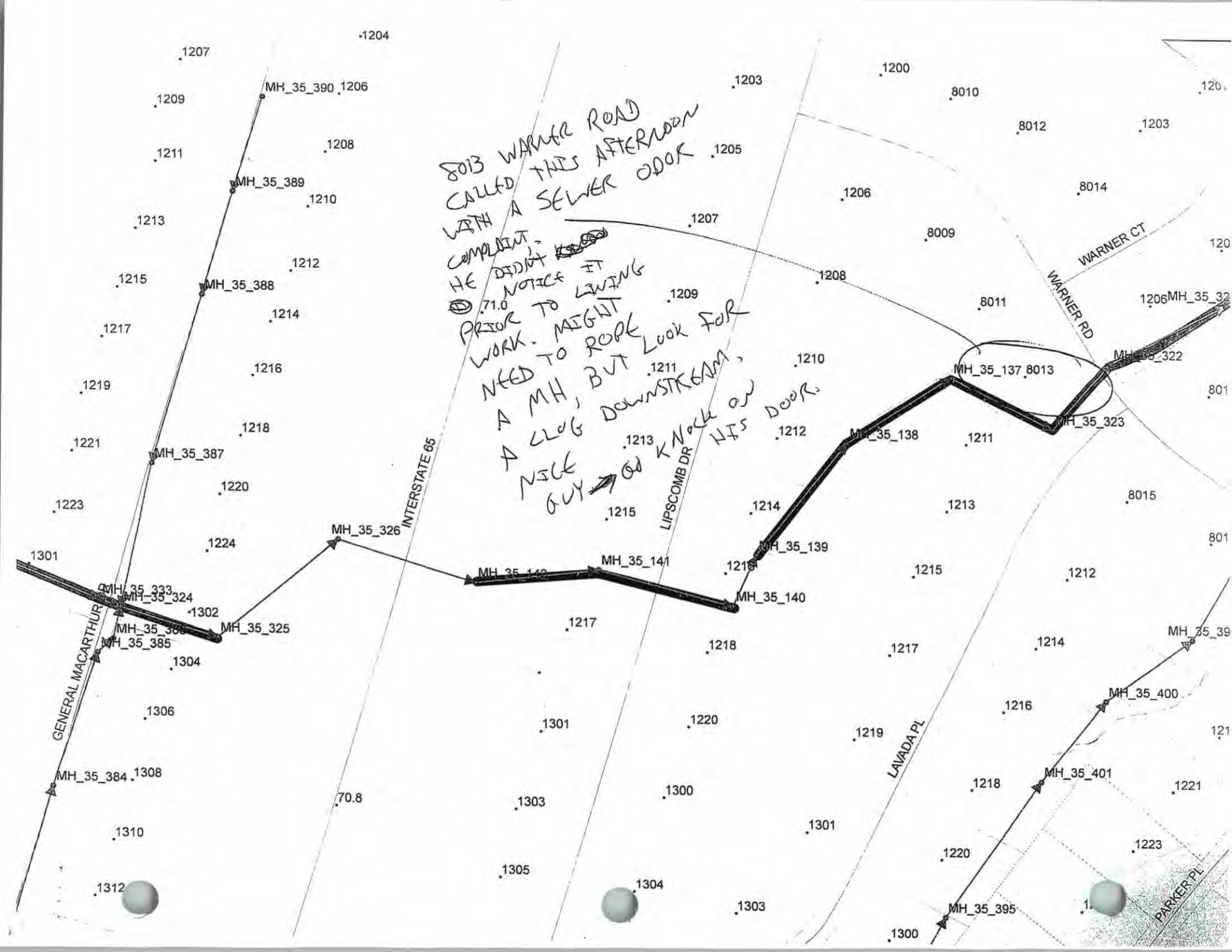
Date Completed 12-9-2010

Action Taken Seal lid of Manhole with Conseal where home owner had a sewer oder

More Action Required? _____

Follow-Up Action Required _____

Completed By: G-R-Jim-


8013 WARNER ROAD CALLED THIS AFTERNOON WITH A SEWER ODOR COMPLAINT. HE DIDN'T NOTICE IT PRIOR TO LIVING WORK. MIGHT NEED TO ROPE A MH, BUT LOOK FOR A CLOG DOWNSTREAM. NICE GUY → OK KNOCK ON HIS DOOR.
MH_35_390
MH_35_389
MH_35_388
MH_35_387
MH_35_326
MH_35_325
MH_35_324
MH_35_333
MH_35_385
MH_35_384
MH_35_141
MH_35_140
MH_35_139
MH_35_138
MH_35_137
MH_35_323
MH_35_322
MH_35_400
MH_35_401
MH_35_395
INTERSTATE 65
LIPSCOMB DR
WARNER RD
WARNER CT
GENERAL MACARTHUR
LAVADA PL
PARKER PL
71.0
70.8

Item #12 – Hire a Public Relations Officer to Handle the Rate Increase, Grease, and Private Lateral Issues are Given Attention

Development date: 2006

Discussion: Public relations is handled internally. The responsibility of communicating with the public lies with Director Chris Milton and Assistant Director Kevin Colvett. Issues or projects such as rate increases, FOG program implementation, etc., have been addressed with a great deal of clear and concise communication, and this has allowed these important programs to continue with little or no opposition from the public.

Since 2006, technology has changed. The Water and Sewer Department utilizes a reverse 911 system in cases of emergency to rapidly communicate to customers, and this was most prominently done during the May 2010 flood where emergency conservation measures were required. Smaller, more localized emergencies such as water main breaks have also benefitted from the reverse 911 system. The City's website: www.brentwood-tn.org/water contains pertinent information for customers and developers, and most recently the City began utilizing social media such as Nixle, Facebook, and Twitter to increase the level of communication with the public.

One of the most beneficial actions, as well as one of the most needed, the Department has undertaken in the area of public relations has been in association with the sewer rehabilitation program. When televising 150 miles of pipe and lining over 25 miles, there are many occasions where workers and equipment must access private property, so the Department has distributed hundreds if not thousands of Notices explaining to affected residents what is going to be taking place. The result of this communication has been an increased level of interest by the public in the daily operations of the sewer system.

The following information is attached with this item:

12-1 A copy of one of the notices provided to the public prior to one of the sewer rehabilitation projects.

12-1 A copy of one of the notices provided to the public prior to one of the sewer rehabilition project

City of Brentwood

5211 Maryland Way Brentwood, TN 37027 Phone: 615-371-0060
Mailing Address: P.O. Box 788 Brentwood, TN 37024-0788

CHRIS MILTON, DIRECTOR
WATER SERVICES DEPARTMENT

1750 GEN. GEORGE PATTON DR.
TELEPHONE: 615-371-0080
FAX: 615-371-2225

June 22, 2009

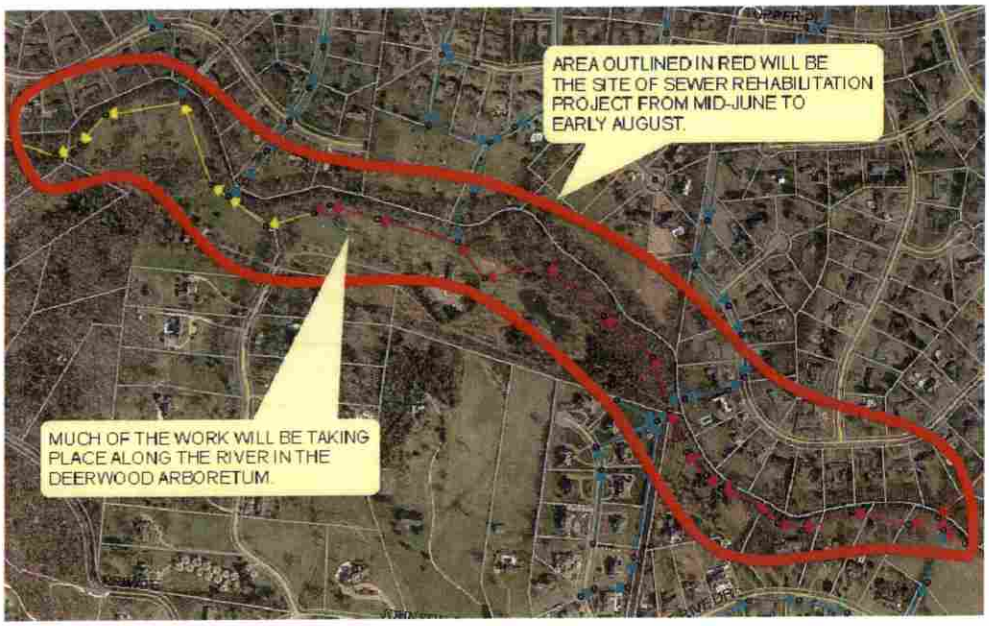
IMPORTANT NOTICE REGARDING SEWER REHABILITATION WORK

Beginning later this week, the City of Brentwood Water Services Department will be performing some sewer rehabilitation work along a main sewer line that runs parallel to the Little Harpeth River. This particular project is part of a $30,000,000 citywide sewer rehabilitation program aimed at reducing sewer overflows. The chosen method for this work will be what is called "trenchless technology". This means that new pipes will be inserted into the existing ones without the need to dig large trenches through residents' private property. A couple of phases of this project have been completed recently just east ("upstream") of your location. A brief animation showing this process can be found at:

http://www.insituform.com/content/190/how_insituform_cipp_is_installed.aspx

There will be a few locations where personnel and equipment will require access to the public utility easement that exists on most private lots. In addition, along the river, as out-of-sight as possible, there will be some above-ground piping installed as a bypass line as the work on the existing sewer line progresses. *This is temporary* and will be removed when construction is complete. We will make every effort to make this process as minimally intrusive as possible, and we will personally notify any property owners when they will be affected. It is expected that the majority of the work will be complete by early August.

If you have any questions or concerns regarding this work, please do not hesitate to contact Assistant Director Kevin Colvett at 371-0080.



Item #13 – Review and Update the City's Sewer Use Ordinance

Development date: Reviewed in 2007. Updated Ordinance in March 2008 (for rate increase and for illicit connections) and May 2008 (for FOG program)

Discussion: The appropriate amount of rate increase was not known until the end of 2007, when the CAP/ER was approved by TDEC, so the actual ordinance was not updated until March of 2008, after some discussion and some interaction with the public. The City Code was once again updated in May of 2008 to replace some outdated language regarding FOG with a reference to the FOG program developed that year.

Upcoming updates will be a possible sewer connection fee adjustment, where a simplified formula of tracking single-family-equivalent usage will be employed in lieu of the current tap fee scenario (pending City Commission approval). Also, a brief update to include a reference to the City's adherence to Metro Nashville's pretreatment program is proposed to be added to the City Code.

A copy of the current Sewer Use Ordinances can be found at: http://www.brentwood-tn.org/legal (Chapter 70).

The following information is attached with this item:

13-1 A copy of an email exchange between Assistant Director Kevin Colvett and City Attorney Roger Horner where advice is given that no additional alterations to the City Code need to be made in order for the Department to meet its obligations with the CMOM program.

13-1 **A copy of an email exchange between Assistant Director Kevin Colvett and City Attorney Roger Horner where advice is given that no additional alterations to the City Code need to be made in order for the Department to meet its obligations with the CMOM program.**

Colvett, Kevin

From: Horner, Roger
Sent: Tuesday, March 25, 2008 3:06 PM
To: Colvett, Kevin
Cc: Milton, Chris
Subject: RE: Sewer Ordinance Updates

Kevin – With the recently adopted rate adjustment and the upcoming amendment regarding enforcement of the FOG regulations, we should be in good shape. I am not aware of any other amendments that will be needed in the near future.

Roger Horner
City Attorney
City of Brentwood
P. O. Box 788, Brentwood, TN 37024-0788
Ph – (615) 371-0060; Fax – (615) 370-4767
hornerr@brentwood-tn.org

From: Colvett, Kevin
Sent: Tuesday, March 25, 2008 2:53 PM
To: Horner, Roger
Cc: Milton, Chris
Subject: Sewer Ordinance Updates

Roger,

Now that we've modified the ordinance to reflect the rate adjustment and are going to be tweaking the FOG portion for the April 28 agenda, are you aware of anything else we need to be doing at this time to update our City Code for our sewer operations?

Kevin Colvett, Assistant Director

Brentwood Water Services

1750 Gen. George Patton Dr.

Brentwood, TN 37024-0788

(615) 371-0080

colvettk@brentwood-tn.org

Item #14 – Develop and Implement a Contingency Plan

Development date: November 2007 – April 2008

Discussion: Emergencies experienced by the Water and Sewer Department include:

- Line blockages
- Force main breaks
- Pump failures (mechanical or electrical)

Responses to the emergencies in the gravity or force mains are covered in the SOP for Sewer Overflow Response. The contingency plan for the pumping stations was developed as part of the overall lift station O&M manual, and overlaps with the aspects of the CMOM program developed with Item #22 (develop an emergency O&M procedure for pump stations and implement improvements at the pump stations to allow for bypass pumping setup).

Additionally, the Water and Sewer Department updated its Emergency Operations Plan in 2008 and in 2010 to meet the requirements of TDEC, Division of Water Supply. Pertinent sections of that document deal with lines of communication during an emergency and contact information for emergency suppliers, contractors, personnel, and governmental agencies.

The City is a participant in the TNWARN program, which facilitates mutual aid in the event of an emergency.

The following information is attached with this item:

14-1 A copy of the Pump Station Contingency Plan Program

14-1 A copy of the Pump Station Contingency Plan Program

Section 4
Pump Station Contingency Plan Program

A contingency plan has been developed for the utility that includes Standard Operating Procedures (SOP) to be used in the event of an emergency. The plan clearly identifies the procedures that staff should follow for several types of emergencies that could potentially occur. Developed SOPs were identified and created based on past experience and through evaluation of potential future emergencies. Contingency planning is viewed as dynamic and flexible and therefore, assessment of need for additional Standard Operating Procedures (SOP) and the revision of already developed SOPs will continue to occur on an on-going basis. The program currently includes the following SOPs that may be found in this section.

- SOP – Power Failure Response Procedure
- SOP – Using Standby Pumping
- SOP – Wastewater Pump Station Alarms – General Response Actions

Brentwood Water Services Standard Operating Procedure	Version No: 1 Version Date: 3/14/08
SOP NAME: Power Failure Response Procedure	

1.0 OBJECTIVE

To provide direction in the determination and resolution of power failure or electrical problems at any of the wet well/drywell or submersible lift stations:

- **Chenoweth Lift Station**
- **Moore's Lane Lift Station**
- **Edmonson Park Lift Station**
- **I-65 Lift Station**
- **Scales School Lift Station**
- **Arden Woods Lift Station**
- **Owens Corner Lift Station**
- **Willowick Lift Station**
- **General Macarthur Lift Station**
- **Crockett Springs Lift Station**

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Electrical and Mechanical Hazards**
- **Noxious and Toxic Atmospheres**
- **Confined Space Entry**
- **Infection and Disease Hazards**

WARNING

Electrical work should only be performed by a qualified individual. Serious injury or death may result if the proper training, procedures, preparation, tools and safety precautions are not followed.

3.0 PROCEDURES

The following describes the operational checks for a Power Failure at any of the Lift Stations. The reader should consult the associated SOP "Using Standby Pumping at I-65 Lift Station" if applicable.

1. Upon arrival at the lift station,
   a. Survey the area and look for anything unusual.

   i. *Example. Look for local power outages, down power pole, charred or smoking transformer, down power line, smoke or flames, etc.*
   ii. *WARNING: If smoke or fire is detected, call 911 immediately. Then notify Water Services and the Supervisor. Unlock the gate but do not enter the area.*
   iii. *WARNING: If an electric utility asset appears to have a problem, notify Water Services and Supervisor immediately. Stay clear of down power lines, poles, transformers, or other electrical equipment and wait for instruction.*
2. If the area is safe to enter, unlock the gate and enter the station grounds.
3. Open the lift station wet well hatch and check for flooding.
   a. If the wet well is rising to a level know to flood residences or the rate of inflow is high (daytime operations), call the Supervisor for Pumper Assistance immediately.
   b. If the station is provided with a by-pass pumping connection, Call the Supervisor and implement the "By-pass Pumping" SOP.
4. Locate the incoming power service pole and power meter. If a main power disconnect switch is provided, check to see if it has tripped.
   a. Reset the main disconnect if possible. Observe for re-tripping.
      i. *If the main disconnect re-trips, notify Water Services and Supervisor immediately and discontinue investigations.*
      ii. *If the main disconnect does not trip again or there is no main disconnect switch, proceed as follows.*
5. For a submersible lift station, locate the above-ground pump power disconnect panel or control panel. (For a wet well/drywell lift station, proceed to Step #6.)
   a. Before opening the panel cover, feel the housing for unusual heat and smell for smoke or burnt odors.
      i. *WARNING: If smoke or fire is detected, call 911 immediately. Then notify Water Services and the Supervisor. Leave the cover closed.*
      ii. *If it is safe, open the panels cover and proceed to Step #7 below.*
6. For a wet well/drywell lift station, the pump power disconnect panel or control panel may be located in the dry well.
   a. Before opening the hatch, feel the station housing for unusual heat and smell for smoke or burnt odors.
      i. *If it is safe, open the hatch cover and again smell for smoke.*

ii. *WARNING: If smoke or fire is detected, call 911 immediately. Then notify Water Services and the Supervisor. Leave the hatch cover closed but unlocked.*

b. If the station is without power, auxiliary lighting and ventilation and Confined Space Entry Procedures are required prior to entry.
   i. *CAUTION: Review and execute the City confined space entry procedures prior to entry.*
   ii. *Contact the Supervisor for auxiliary lighting and ventilation.*

c. If the lift station grounds have power but the pumps do not, station entry is required to continue investigations. Prior to entry:
   i. *Check for exhaust fan flow from top of station.*
   ii. *Check for proper station lighting.*
   iii. *Visually check for station flooding from top of station.*
      1. *If station is flooded, portable pumping is required. Contact the Supervisor for assistance and prior to entry.*
   iv. *Follow Confined Space Entry Procedures*
   v. *Set up fall protection/confined space equipment.*

7. For either the submersible or dry well/wet well lift station style, the Pump Power Disconnect Panel or Lift Station Control Panel requires investigation.
   a. With box closed, look for discoloration due to arcing or fire and feel for heat.
      i. *If visible signs of arcing or electrical fire, contact supervisor for an electrician.*
      ii. *If control box shows no signs of arcing or fire:*
   b. Open the panel and check if a breaker is open or TRIPPED, and/or check for open or blown fuses (this procedure may require an electrician).
      i. *If a breaker is tripped or fuse is open, investigate panel to try to determine why the breaker tripped/fuse blew.*
      ii. *If there is no obvious reason to explain why the breaker tripped, reset the breaker or replace the fuse.*
      iii. *If the reset breaker trips or fuse blows again, contact the supervisor and begin your mechanical investigation.*
      iv. *If there is no obvious mechanical reason to explain why the breaker tripped/fuse blew, contact supervisor for an electrician.*
      v. *If repairs cannot be made, contact the supervisor.*
   c. Visually inspect control panel wiring for obvious signs of electrical problems such as burnt odors, burned wiring, wire off terminal, burn spots

glazing of metal terminals and contacts, or unusual appearance to wire insulation.

i. *If abnormal conditions are observed, call the supervisor for an electrician.*

d. Observe wiring from control panel to the pump looking for frayed, cut or burnt wiring.

i. *If wiring is burnt, frayed or cut, disconnect the power and pull the pump for inspection and call an electrician to locate a wiring short. If no wiring short is found, the pump and motor must be checked and serviced by a qualified company.*

8. During the power failure investigation, troubleshooting and repair; monitor and manage the wet well level to reduce the chance of flooding through the use of Pumper Assistance frequency and/or Standby Pumping using the mobile pump.
9. Once repairs are complete and station power has been restored.
    a. Ensure that all switches, controls and valves are in the correct position.
    b. Ensure all breakers are energized and in the ON position.
    c. Ensure the pumps are in AUTO mode.
    d. Record the event in the logbook and inspection sheet.
    e. Ensure all cabinets and pits are closed and their locks are in place.
10. Discontinue the use of the mobile by-pass pumping and/or use of Pumper Assistance. Observe the lift station pumps and wet well fill and draw cycle for at least one cycle.
    a. If the lift station pumps can not keep up, restart investigations.
    b. If the lift station pumps are operating normally, demobilize the by-pass pumping and/or use of Pumper Assistance.
        i. *Refer to the SOP "Using Standby Pumping at I-65 Lift Station".*
    c. Lock the station gate.
11. Radio/telephone Water Services and Supervisor that the work is complete and you are leaving the lift station.

1.0 OBJECTIVE

Describe the use of standby portable pumping to pump around the I-65 lift station in the event of station loss of power or other station pumps failure. This procedure may be applicable to other similarly configured stations in the future.

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Combustible and Fire Hazards**
- **Mechanical and Electrical Hazards**
- **Infection and Disease Hazards**
- **Noxious and Toxic Atmospheres**
- **Confined Space Entry**

3.0 PROCEDURES

The following describes the operational checks for utilizing temporary mobile pumping at the I-65 Lift Station.

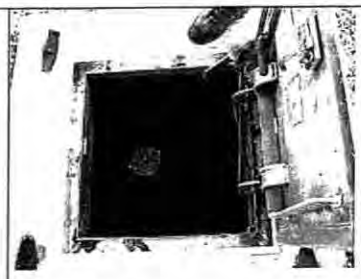
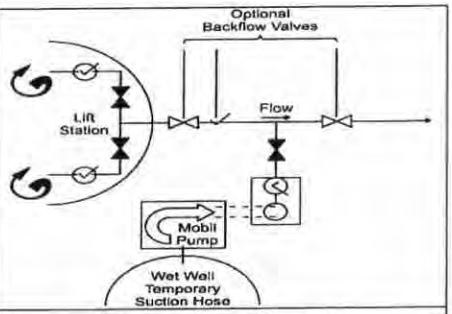
If after following the Lift Station Checks SOP, the station attendants have established that the lift station can not pump the incoming sewage, a portable (mobile) pumping unit may be required.

1. Radio/Telephone the Supervisor and/or Water Services that the I-65 Lift Station requires temporary portable pumping.
    a. Advice the Supervisor whether temporary hauler pumping may be required until the portable pumping unit can be set up and started.
        i. *Hauler pumping depends on the flooded condition of the wet well, rate of fill of the wet well, difficulty of retrieving and setting up the portable pump, and other factors.*
2. Back at the Water Services yard:
    a. Locate and prepare the portable pump for transport to the lift station.
        i. *Check oil, fuel and coolant for proper levels and replenish as required.*

ii. *Perform engine pre-start check and start the engine to confirm operability.*
iii. *The portable pumping unit should be refueled before departing the yard.*
iv. *CAUTION: The transport vehicle must be rated to tow/carry the portable pump with the proper hitch and safety chains and the unit must be road worthy if towed.*

b. Obtain the necessary portable pump hoses, tools and accessories.
   i. *Collect pumping accessories per the attached Portable Pump checklist. Fill out the checklist and keep with the unit while in operation and turn in to Supervisor after demobilizing.*

3. Transport the portable pump to the lift station and orient the pump so that there is working space around the unit and that minimal suction and discharge hoses may be required.
4. At the Lift Station with the mobile pump oriented properly:
   a. Re-check oil, fuel and coolant for proper levels.
      i. *CAUTION: Use caution when refueling a hot engine.*
   b. Couple sufficient length of suction hoses from mobile pump to wet well bottom. Use either 6-inch hoses or reduce to 4-inch hose.
      i. *Use green PVC reinforced flexible hose and attach pump trash strainer on hose suction prior to insertion into wet well.*
   c. Couple sufficient length of discharge hoses from mobile pump to 4-inch cam-lock pipe connection in vault. (See photo). Use either 6-inch hoses or reduce to 4-inch hose.
      i. *Use either PVC reinforced flexible hose or blue PVC lay-flat hose.*
   d. Fill the portable pump cavity (volute) with water if not self priming.
   e. Place the lift station pump controls to the OFF position and the pump breakers to the open or OFF position.
   f. Locate the lift station pump discharge piping valve box in the station yard and close the valve.
      i. *Alternatively, each pump discharge valve may be closed.*
   g. Locate the Emergency Mobile Pump valve box connection to the force main within the station yard and open the valve.
      i. *This isolates the station from the discharge line and permits mobile pump discharge to enter the force main. See diagram.*
   h. Start the mobile pump and adjust its speed for proper operation.

		
Suction/Discharge Hoses	Force Main Connection	Connection Diagram

5. During operation of the mobile pump:
    a. Perform routine engine and fluids checks. Refueling as necessary.
    b. Maintain a wet well withdrawal rate sufficient to prevent flooding or cavitation of the mobile pump.
    c. Repair hose leaks immediately.
    d. Keep the work area safe, organized, clean and secure.
6. After the lift station pumps have been repaired or normal electrical service restored, prepare to place the station back into normal operation.
    a. Adjust the mobile pump pumping rate to lower the wet well. Once the wet well is drained, lower the mobile pump speed to idle.
        i. *The mobile pump should not be delivering flow at idle, if it still is, shut down the mobile pump.*
    b. Open the lift station pump discharge piping valve box. (Refer to diagram)
        i. *If the pump discharge valves were closed previously, reopen these valves too.*
    c. Close the Emergency Mobile Pump valve box connection to the force main. (Refer to diagram)
    d. Place the lift station pump controls to the AUTO position and the pump breakers to the closed or ON position.
        i. *Ensure pump controls are energized and air bubbler system is operational.*
    e. Confirm that the lift station pumps are delivering flow as required.
        i. *If normal lift station pump delivery is not observed, shutdown the pumps, isolate station again, open the mobile pump valve and re-start mobile pump operations until the problem with the lift station pumps can be investigated and solved.*

   ii. *If normal lift station pump delivery is observed, shut down the mobile pump if it is still idling.*

7. When the lift station demonstrates that it is operating normally (minimum of one fill and draw cycle of the wet well):
   a. Drain the sewage from the mobile pump volute and flush with clean water back to the wet well. Open the inspection cover and clean/inspect the volute and impeller.
   b. Slowing disconnect suction hose from pump and let hose contents release to the wet well.
      i. *Completely disconnect suction hose, remove from the wet well, drain and roll up.*
      ii. *Remove and clean the suction hose trash strainer.*
   c. Disconnect discharge hose from the mobile pump and lay the hose opening into the wet well. Disconnect the discharge hose from the Force Main cam-lock connection and immediately raise the pipe higher than the wet well to drain its contents to the wet well.
      i. *Once drained, remove from the wet well, lay the line out and roll up properly.*
   d. Load pump, hoses and other equipment that was used for standby pumping for return to Water Services yard.
      i. *Complete the "Mobile Pump Equipment" form noting the condition of the equipment and return the form to the Supervisor.*

6. Leaving the lift station
   e. Ensure that all switches, controls and valves are in the correct position.
   f. Ensure all breakers are energized and in the ON position.
   g. Ensure the pumps are in AUTO mode.
   h. Record the standby mobile pump event in the logbook.
   i. Record equipment running times in the logbook and inspection sheet.
   j. Ensure all cabinets and pits are closed.
   k. Ensure all locks are in place.
   l. Ensure the gate is locked.
7. Radio/telephone Water Services that you are leaving the station.

SOP NAME: Using Standby Pumping at I-65 Lift Station

NAME: **DATE:**

Mobile Pump Equipment	Required Quantity	Quantity on Hand	Condition Returned Good,/Fair/Poor/Consumed
4-inch Suction Hose, Green PVC reinforced	40 ft		
4-inch Discharge Hose, Blue PVC lay-flat	40 ft		
Suction hose trash strainer	1		
Pin Lug Fittings (male/female)	2		
4-inch Cam and Groove couplings	2		
Cam and Groove gaskets	4		
Pin Lug Hose gaskets	4		
Stainless Steel Hose Clamps	8		
6 x 4-inch reducer	2		
Tool box	1		
• Pin lug wrench	1		
• 4-inch spanner wrench	1		
• Hand Sledge	1		
• 6 inch pipe wrench	1		
• 12 inch pipe wrench	1		
• 6 inch adjustable wrench	1		
• 10 inch adjustable wrench	1		
• Screw drivers (4)	1 set		
Fire Extinguishers (ABC)	2		
Flashlight with batteries	1		
Traffic cones	1 set		
Safety vest	1 each		
Hearing Protection	2		
Leather gloves	1		
Rubber gloves	2		
Tyvek suit	2		
Hand cleaner	1 tub		
Hand towels	1 roll		
Fuel cans (filled)	2		
Engine oil	1		
2 gallon Pail	1		
Fresh Water Carboy	6 gal		

COMMENTS -

Brentwood Water Services Standard Operating Procedure	Revision No: Revision Date:
SOP NAME: Wastewater Pump Station Alarms – General Response Actions	

1.0 OBJECTIVE

To provide general response actions for an alarm problem at any of the following wet well/drywell or submersible lift stations:

- **Chenoweth Lift Station**
- **Moore's Lane Lift Station**
- **Edmonson Park Lift Station**
- **I-65 Lift Station**
- **Scales School Lift Station**
- **Metro Lift Station**
- **Crockett Springs Lift Station**
- **Arden Woods Lift Station**
- **Owens Corner Lift Station**
- **Willowick Lift Station**
- **General Macarthur Lift Station**

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Noxious and Toxic Atmospheres**
- **Confined Space Entry**
- **Mechanical and Electrical Hazards**
- **Infection and Disease Hazards**

3.0 LIFT STATION ALARM and MONITORING SYSTEM

All lift stations are similarly equipped with a Supervisory Control and Data Acquisition (SCADA) and telemetry system: the Zetron Model 1716. At each lift station, local instruments provide either analog or digital signals to the Remote Terminal Units (RTU). The RTU polls and transmits the data signals through radio transmission to a Controller and PC Control Program located at Water Services. Polling and transmission of data by the RTU is automatic and requires no operator interface. However, local instruments still need to be checked, serviced and calibrated on a routine basis.

4.0 PROCEDURES

The following alarms are monitored by the RTU's for the respective lift station and transmitted to Water Services. The alarm data is received by the Controller and recorded on the PC Control Program. All lift station alarms are on the same priority rating and accordingly, Water Services personnel are notified as soon as the alarm is recorded. The same SCADA and monitoring system is used for the water storage tanks and pumps; for clarity and the reader's understanding, only lift station alarms are covered in this Standard Operating Procedure.

Lift Station Alarm Matrix		
Site	Alarm Name	Message
Willowick Lift	zalarm04a	"Waste Water Level Too High at Willowick Lift Station"
Willowick Lift	zalarm04b	"3 Phase Alarm at Willowick Lift Station"
Owen's Corner Lift	zalarm06a	"Waste Water Level too High at Owen's Corner Lift Station"
Owen's Corner Lift	zalarm06b	"3 Phase Alarm at Owen's Corner Lift Station "
Owen's Corner Lift	zalarm06c	"Sump Overflow Alarm at Owen's Corner Lift Station"
Moore's Lane Lift	zalarm08a	"Waste Water Level too High at Moore's Lane Lift Station "
Moore's Lane Lift	zalarm08b	"3 Phase Alarm at Moore's Lane Lift Station "
I-65 Lift	zalarm09a	"Waste Water Level too High at I-65 Lift Station"
I-65 Lift	zalarm09b	"Sump Overflow Alarm at I-65 Lift Station"
I-65 Lift	zalarm09c	"3 Phase Alarm at I-65 Lift Station"
Gen McArthur Lift	zalarm10a	"Waste Water Level too High at General McArthur Lift Station"
Gen McArthur Lift	zalarm10b	"3 Phase Alarm at General McArthur Lift Station"
Crockett Spgs Lift	zalarm11a	"Waste Water Level too High at Crockett Springs Lift Station"
Crockett Spgs Lift	zalarm11b	"Sump Overflow Alarm at Crockett Springs Lift Station"
Crockett Spgs Lift	zalarm11c	"AC Alarm at Crockett Springs Lift Station "
Chenoweth Lift	zalarm18a	"Waste Water Level too High at Chenoweth Lift Station"
Chenoweth Lift	zalarm18b	"3 Phase Alarm at Chenoweth Lift Station"
Edmondson Lift	zalarm20a	"Waste Water Level too High at Edmondson Pike Lift Station"
Edmondson Lift	zalarm20b	"3 Phase Alarm at Edmondson Pike Lift Station"
Arden Wood's Lift	zalarm26a	"Waste Water Level too High at Arden Woods Lift Station"
Arden Wood's Lift	zalarm26b	"3 Phase Alarm at Arden Woods Lift Station"
Scales School Lift	zalarm27a	"Waste Water Level too High at Scales School Lift Station"
Scales School Lift	zalarm27b	"3 Phase Alarm at Scales School Lift Station "
Metro Lift Station	zalarm36a	"Bypass alarm at Metro Lift Station"
Metro Lift Station	zalarm36b	"High wet Well level at Metro Lift Station"
Metro Lift Station	zalarm36c	"AC power failure at Metro Lift Station"

Upon receiving a station alarm or being dispatched to respond to an alarm, the station attendants will:

1. Upon arrival at the pump station,
    a. Survey the area and look for anything unfamiliar.
2. Unlock the gate
    a. Observe for unusual sights, sounds or smells.
        i. *If the station is flooding, Radio/Telephone the Supervisor and/or Water Services that the Lift Station requires temporary portable pumping. Refer to the SOP "Using Standby Pumping" if applicable.*
        ii. *If the smell of fuel or other petroleum products are noted, notify Water Services and Supervisor immediately.*
        iii. *If there are local power outages, down power lines, charred or smoking transformer, smoke or flames, etc. notify Water Services and Supervisor immediately*
        iv. *If smoke or fire is detected, call 911 immediately. Then notify Water Services and the Supervisor. Unlock the gate but do not enter the area.*
3. If the area is safe to enter, unlock the gate and enter the station grounds.

There are five basic types of alarms that station attendants may respond to:

General Categories of Alarms:
"Wastewater Level too High"
"3 Phase Alarm"
"Sump Overflow Alarm"
"AC Alarm" or "AC Power Failure"
"Bypass alarm at Metro Lift Station"

If the alarm "Wastewater Level too High" was received: Typically indicates a failure of the pumps to deliver resulting in a high wet well level or failure of the level monitoring system resulting in a false alarm.

4. Inspect the wet well for proper operating level.
    a. If the wet well level is normal and the alarm condition still exists.
        i. *Check wet well for grease and debris buildup; clear from around alarm floats.*

ii. *Raise, tilt and hold the HIGH level float upside down for 30 seconds. Then lower the float to normal position, reset alarm. If this does not clear the alarm, notify the Supervisor and replace the float.*

iii. *If the station is provided with an air bubbler level control system and the High Level alarm is associated with the bubbler system, check the system for proper air delivery, pressure settings or problems.*

b. If the wet well level is higher than normal indicating a true high level condition.

i. *If the station is flooding, Radio/Telephone the Supervisor and/or Water Services that the Lift Station requires Haulers or temporary portable pumping. Refer to the SOP "Using Standby Pumping" if applicable.*

ii. *For additional high wet well level troubleshooting information, refer to the applicable SOP "Pump Station Inspections" for either the submersible or wet well/dry well lift stations.*

If the "3 Phase Alarm" was received: Typically indicates that one of three phases has been disconnected from the station. It may be possible for equipment to run on only two of three phases but motor and electrical damage will result.

5. Visually inspect the Control Cabinet and breakers.
   a. Examine for discoloration due to arcing or fire, burnt odors, burned wiring, wire off terminal, burn spots, or other unusual observations.
      i. *WARNING: Electrical work should only be performed by a qualified individual. Serious injury or death may result if the proper training, procedures, preparation, tools and safety precautions are not followed.*
      ii. *NOTE: Refer to SOP "Power Failure Response Procedure" for further guidance.*
   b. Shut down the lift station pumps until the cause of the loss of phase can be investigated and corrected. Continuing to run the motors can cause damage.
      i. *Notify the Supervisor and/or Water Services that the Lift Station requires temporary portable pumping. Request that a qualified electrician check the service.*

1. *Refer to the SOP "Using Standby Pumping" if applicable.*

ii. *Monitor the station wet well level and use of Haulers or by-pass pumping until the electrical problem can be corrected.*

If the "Sump Overflow Alarm" was received: Sump Overflow Alarms will only be generated at wet well/dry well type can lift station. The alarm typically indicates a failure of the sump pump to remove the contents of the dry well sump resulting in a high level alarm or failure of the level monitoring system resulting in a false alarm.

6. Visually check for station flooding from top of station prior to entry
   a. Refer to the SOP "Wet Well/Dry Well Pump Station Inspection" for procedures to enter the dry well side of the station.
   b. If the station is flooded and equipment or panels are submerged, Radio/Telephone the Supervisor and/or Water Services that the Lift Station requires Haulers or temporary portable pumping. Refer to the SOP "Using Standby Pumping".
      i. *Once wet well standby pumping is in place, begin pumping out the flooded dry well for entry and inspection.*
      ii. *CAUTION: Electrical service may need to be disconnected prior to entry and an electrician may be required to access the electrical components. Consult the Supervisor for further guidance.*
      iii. *Investigate the source of the excess water entering the station and correct the problem.*
   c. If there is standing water (less than 6 inches) and no equipment or panels are submerged in water, retrieve a portable sump pump to lower into the station to remove the standing water and permit entry.
      i. *Once the standing water has been lowered and entry conditions are safe, investigate the source of the excess water into the station and/or the cause of the failure of the sump pump to remove the water.*
      ii. *Correct the source and clear the sump of debris, test the pump and observe for normal operations. Consult with the Supervisor if problems are noted.*
   d. If the sump level is normal (station not flooded) and the alarm condition still exists.
      i. *Check the sump for debris buildup; clear from around alarm floats.*

ii. *Raise, tilt and hold the HIGH level float upside down for 30 seconds. Then lower the float to normal position, reset alarm. If this does not clear the alarm, notify the Supervisor and replace the float.*

If the "AC Power Alarm" was received: Typically indicates that there is a loss of power at the station.

7. Refer to and implement the SOP "Power Failure Response Procedure"

If the "Bypass Alarm at Metro Lift Station" was received: It is likely that the Brentwood-Metro Sewage Lift Station is experiencing flows greater than the ability of the pumps to remove the flow resulting in the wet well level rising and surcharging the incoming main. The surcharging main may cause excess flow to overflow the bypass structure adjacent to the Lift Station.

8. Visually check the bypass structure to determine if it is flowing.
    a. The bypass structure contains a short discharge pipe and flap gate. Flow may be observed coming from this flap gate under actual bypass conditions.
        i. If flow is observed and the station has reached its maximum pumping capabilities, notify the Supervisor that a bypass event is taking place. Fill out the required paper work, log book entry and readings sheet.
    b. If flow is not observed coming from the overflow line and the overflow alarm is present, investigate the wet well.
        i. If the alarm is present and the wet well level is high but not overflowing the bypass, notify the Supervisor that an event is likely but not occurring yet.
        ii. If the alarm is present and the wet well level is low and there is no indication that the bypass has overflowed, then the alarm is in fault and the cause of the failure must be investigated.

Item #15 – Complete the Development of an SOP for Application of Corrosion Control Chemicals

Development date: 2007

Discussion: In 2007, the City began requiring all new construction to be comprised of corrosion resistant materials. All new manholes are to be installed using a Xypex admixture, and all ductile iron pipe used in the sewer collection system is to be coated with a Protecto 401 finish. When a new force main connection is made to the gravity portion of the collection system, three manholes downstream are to be coated with an epoxy finish. New or replacement force mains are either ductile iron coated with Protecto 401 or PVC (typically for the smaller diameter grinder pump sewer systems).

As part of the sewer rehabilitation program, it became obvious in 2007 that the pipe in the system subject to corrosion (concrete) needed to be lined, so lining activities took the place of corrosion inhibitors in much of the system. Similarly, the rehabilitation program is focusing on a corrosion-resistant epoxy, instead of just concrete, in its application.

In 2007 and 2008, chemical addition was piloted at two lift stations, primarily for odor control, but the result was not as effective as simple line cleaning so that program was discontinued. Bioxide is added at the Brentwood Pumping Station at the connection to the Metro Nashville system.

The following information is attached with this item:

15-1 A copy of an email exchange between Director Chris Milton and Assistant Director Kevin Colvett discussing the corrosion control specification additions.

15-2 The City's specification for epoxy manhole coatings.

15-1 A copy of an email exchange between Director Chris Milton and Assistant Director Kevin Colvett discussing the corrosion control specification additions

Colvett, Kevin

: Milton, Chris
ubject: RE: Addendum to Constr. Standards..

From: Colvett, Kevin
Sent: Wednesday, November 07, 2007 8:34 AM
To: Milton, Chris
Subject: RE: Addendum to Constr. Standards

By the way, this is now in our "corrosion control program" file for CMOM, as is a requirement in the specs to coat manholes where force mains connect PLUS three more downstream.

From: Milton, Chris
Sent: Tuesday, November 06, 2007 4:20 PM
To: Rigsby, Richard; Lankford, Travis; White, Mick
Cc: Colvett, Kevin
Subject: Addendum to Constr. Standards

As of November 1st, 2007 the following changes to the construction standards take effect and will be required by developers/builders:

1. manholes shall be coated TNEMEC Series 20 or XYPEX ADMIX.
2. Ductile Iron Pipe in sewer applications shall be lined with Protecto 401 Ceramic Epoxy or approved equal such as PolyBond Plus.

These changes will apply to sewer construction plans submitted for approval after this date. However, for projects currently under construction, we can recommend the contractor apply these changes on future installations such as starting a new Phase of a project.

Kevin has placed the standard drawings for most of these materials on our website should a contractor wish to download, or he can forward a copy of to whomever as needed. Let me or Kevin know if you have any questions.

Thanks,

Chris Milton, Director
Brentwood Water Services
1750 Gen. George Patton Dr.
Brentwood, TN 37024-0788
(615) 371-0080
miltonc@brentwood-tn.org

15-2 The City's specification for Epoxy manhold coatings

SECTION 02765

SANITARY SEWER MANHOLE REHABILITATION
(Level Yellow, Level Blue and Level Green Manhole Rehabilitation)

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Sanitary sewer manhole rehabilitation including:

1. Level "Yellow" Rehabilitation - Rehabilitation and leak-proofing of manholes by lining with spray applied or centrifugally cast lightweight structural reinforced concrete.

2. Level "Blue" Rehabilitation - Rehabilitation and leak-proofing of manholes by lining with spray applied epoxy resin systems.

3. Level "Green" Rehabilitation - Rehabilitation and leak-proofing of manholes as specified by Level "Yellow", and followed by lining with spray applied epoxy resin systems.

4. The repair and sealing of the manhole base, invert, walls, corbel/cone, and chimney of brick, block, or precast manholes, including the removal of any unsound material.

5. The inspection and testing of the various types of work to insure compliance.

1.2 LINING SYSTEMS

A. The lining system used shall result in a monolithic structure to the shape and contour of the interior of the existing manhole. The lining system shall be completely water tight and free of any joints or openings other than pipe inlets, pipe outlets and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

B. Lining system shall be of the type that allows rehabilitation of a concentric, eccentric or flat top manhole without removing the manhole ring and top section or corbel.

1.3 SUBMITTALS

A. Submit the following as required in Section 01340 at least 14 days prior to starting manhole rehabilitation:

1. Manufacturers' Certificate of Compliance certifying compliance with the applicable specifications and standards. The certifications shall list all materials furnished under this Section.
2. Certified copies of test reports of factory tests required by the applicable standards, the manufacturer, and this Section.
3. Manufacturer's handling, storage, and installation instructions and procedures.
4. Recommended lining thickness design to withstand groundwater pressure as specified in Part 3 of this Section.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. The materials used shall be designed, manufactured and intended for sewer manhole rehabilitation and the specific application in which they are used. The materials shall have a proven history of performance in sewer manhole rehabilitation. The materials shall be delivered to the job site in original unopened packages and clearly labeled with the manufacturer's identification and printed instructions. All materials shall be stored and handled in accordance with recommendations of the manufacturer. All materials shall be mixed and applied in accordance with the manufacturer's written instructions.

2. The Contractor shall warrant and save harmless the Owner and his Engineer against all claims for patent infringement and any loss thereof.

3. Handle and store all materials and dispose of all wastes in accordance with applicable regulations.

4. Each system shall be designed for application over wet surfaces (but not active running water) without degradation of the final product and/or the bond between the product and the manhole surfaces.

B. Stopping active leaks in concrete and masonry manholes:

1. A quick setting hydraulic cement compound used to stop seepage leaks in masonry or concrete (Permacast-Plug or equal). A premixed fast-setting, volume-stable waterproof cement plug consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder or gas-forming agents, or promote the corrosion of steel it may come in contact with. Set time shall be approximately 60 to 180 seconds. Ten-minute compressive strength shall be approximately 500 psi.

2. The elastomeric polyurethane resin-soaked method, using dry twisted jute oakum or resin-rod with polyurethane resin (water activated).

3. Chemical grouts (Avanti AV-202 Multigrout Urethane Resin or equal) injected to the exterior for stopping *very* active infiltration in accordance with manufacturer's recommendations.

C. Patching, repointing, filling, and repairing nonleaking holes, cracks, and spalls in concrete and masonry manholes:

1. A premixed nonshrink cement-based patching material consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C-191) shall be less than 30 minutes. One-hour compressive strength (ASTM C-109) shall be a minimum of 200 psi and the ultimate compressive strengths (ASTM C-882-Modified) shall be a minimum of 1700 psi.

D. Spray applied or centrifugally cast lightweight structural reinforced cement manhole lining:

1. The material applied to the surface of the manhole (similar to Strong Seal MS-2, Permacast CR-9000, or Quadex QM-1S) shall be a cementitious blend of acid resistant binders, silicious aggregates, non-metallic fibers and other additives for constructing a liner that is impervious to the flow of water, is resistant to sulfide attack, and restores structural integrity to existing manhole walls.

2. A monolithic liner shall be formed which covers all interior manhole surfaces and shall have the following minimum requirements at 28 days:

a.	Compressive Strength (ASTM C-109)	9,000 psi
b.	Tensile Strength (ASTM C-496)	600 psi
c.	Flexural Strength (ASTM C-293) (Modified)	750 psi
d.	Shrinkage (ASTM C-596)	0%@90%R.H.
e.	Bond (ASTM C-882)	2,000 psi
f.	Density, when applied	135± pcf

E. Spray applied epoxy resin system manhole lining:

1. The material sprayed onto the surface of the manhole shall be an epoxy resin (similar to Raven 405, or Warren Environmental Systems M-201 and S-301) system formulated for application within a sanitary sewer environment. The resin will exhibit suitable corrosion resistance and enhance the structural integrity of the existing manhole.

2. The cured epoxy resin system shall conform to the following minimum structural standards:

CURED PRODUCT	TEST METHOD	EPOXY RESULTS
Tensile Strength	ASTM D-638	7,000 psi
Flexural Strength	ASTM D-790	11,000 psi
Flexural Modulus	ASTM D-790	500,000 psi
Compressive Strength	ASTM D-695	12,000 psi

PART 3 - EXECUTION

3.1 REHABILITATION OF MANHOLE STRUCTURE

A. General Procedures:

1. Safety: The Contractor shall perform all work in strict accordance with all applicable OSHA, TOSHA, and manufacturer's safety standards. Each method of manhole rehabilitation in this Section requires some degree of manhole entry by workers. Particular attention is drawn to those safety requirements regarding confined space entry and respiratory protection from airborne particulate materials during cleaning and product mixing and application.

2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be

clean. All grease, oil, laitance, coatings, loose bricks, mortar, unsound brick or concrete and other foreign materials shall be completely removed. Water blasting utilizing a 210° F steam unit and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall be removed from the manhole and not allowed to be carried downstream.

3. Stop Infiltration: After surface preparation and prior to the application of mortars and linings, infiltration shall be stopped. This applies to defects within the manhole as well as any annular spaces between a host pipe and pipe liner. Water seepage shall be stopped with waterproof cement plug material or water activated polyurethane resins. Severe leaks which cannot be stopped with either of these two specified materials shall be reported to the Owner. If so directed by the Owner, then these severe leaks shall be stopped using chemical (urethane) grout injected through the manhole wall, the invert or the bench (as appropriate). Excess cured grout shall be completely removed from the inside surface before further patching or lining.

4. Patching: All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar repointed using a nonshrink patching mortar. All cracked or disintegrated material shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement and greater than 1/16 inch in width shall be routed out to a minimum width and depth of 1/2 inch and patched with nonshrink patching mortar.

5. Flow Control: The Contractor shall be responsible for plugging or diverting the flow of sewage as needed for repair and lining of manhole inverts and benches.

6. Remove all loose grout and rubble from existing channel. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy

entrance of maintenance equipment including buckets, T.V. camera, etc.

7. Manhole steps: Inspect all manhole steps prior to rehabilitation. Report to the Engineer any steps which appear loose, deteriorated, broken, or otherwise unsafe.

8. Each system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. For manholes greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall withstand the pressures associated with groundwater depth of 12 feet. Measure groundwater depth from manhole bench to top of ground surface.

9. Application of products shall be by factory certified applicators.

3.2 SPRAY APPLIED LIGHTWEIGHT STRUCTURAL REINFORCED CEMENT (Level "Yellow" and Level "Green")

A. The surface prior to spraying shall be damp without noticeable free water droplets or running water. Materials shall be spray-applied to a minimum uniform thickness to insure that all cracks, crevices, and voids are filled and a somewhat smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond.

B. The first application shall have begun to take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending upon ambient conditions) before the second application to assure a minimum total finished thickness of 1/2 inch. The final finished thickness may need to be greater than 1/2 inch as recommended by the manufacturer to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness. The surface then shall be troweled to smooth finish with care taken not to over trowel so as to bring additional water to the surface and weaken it. Manufacturer's recommendations shall be followed whenever more than 24 hours have elapsed between applications.

C. The bench covers used to catch debris shall be removed and the bench and invert sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than 1/2 inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.

D. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 95° F, precautions shall be taken to keep the mix temperature at time of application below 90° F, using ice if necessary.

E. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow.

3.3 CENTRIFUGALLY CAST STRUCTURAL REINFORCED CEMENT (Level "Yellow" and Level "Green")

A. The rotating casting applicator shall be positioned to evenly apply the material and be withdrawn at a rate to assure a final minimum thickness of 1/2-inch. The final finished thickness may need to be greater than 1/2-inch as recommended by the manufacturer to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness.

B. The bench covers used to catch debris shall be removed and the bench and invert sprayed or hand applied so that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than 1/2-inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.

C. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 95° F, precautions shall be taken to keep the mix temperature at time of application below 90° F.

D. The final application shall have a minimum of one (1) hour cure time before being subjected to active flow.

3.4 SPRAYED APPLIED EPOXY RESIN SYSTEM (Level "Blue" and Level "Green")

A. The epoxy resin shall be sprayed onto the surfaces of the manhole walls, and the benches to produce a smooth coating and yield the required structural integrity and corrosion resistance. A depth gauge shall be used during application at various locations to verify the required thickness.

B. The epoxy resin shall be applied to a minimum thickness of 0.125 inches at the top of the manhole and gradually thickened, in accordance with manufacturer's recommendations, to withstand groundwater pressures. The application shall

have a minimum of three hours cure time before being subjected to active flow.

C. The sloped surface of the manhole bench shall be made non-skid by broadcasting aluminum oxide or sand into the surface prior to gelatin/set.

3.5 MANHOLE REHABILITATION ACCEPTANCE

A. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of any test results.

B. Testing for Level "Yellow" and Level "Green" Rehabilitation (lightweight structural reinforced concrete).

1. Two test cubes (2" cube specimens according to ASTM C 109/C) of the spray applied or centrifugally cast lightweight structural reinforced concrete material shall be taken randomly as directed by the inspector at contractors's expense to verify strengths.
2. Thickness shall be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than the minimum specified thickness shall immediately receive additional material.

C. Testing for Level "Blue" and Level "Green" Rehabilitation (epoxy coating).

1. During application a wet film thickness gauge, meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used. Measurements shall be taken, documented and attested to by Contractor for submission to Owner.

2. After the coating product(s) have set in accordance with manufacturer instructions, all surfaces shall be inspected for holidays with high-voltage holiday detection equipment. Reference NACE RPO 188-99 for performing holiday detection. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional coating can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations. Documentation on areas tested, results and repairs made shall be provided to Owner by Contractor.

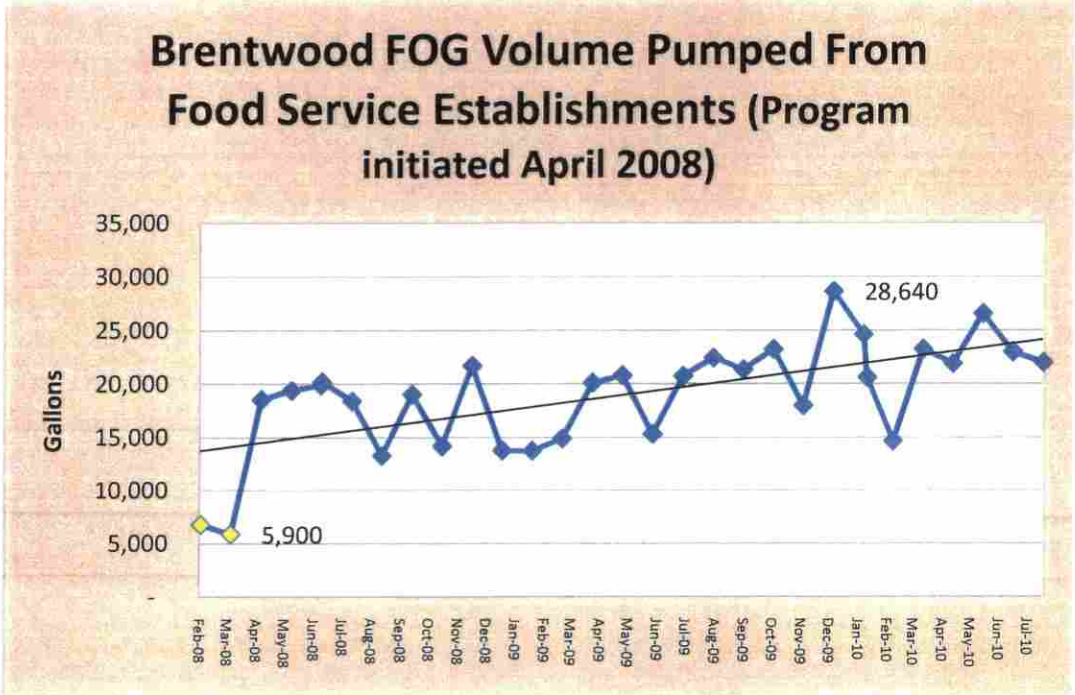
END OF SECTION

Item #16 – Develop and Implement a Fats, Oils and Grease (FOG) Program

Development date: Developed in September, 2007. Program implemented in 2008.

Discussion: Prior to 2007, the City of Brentwood essentially handled FOG control through its Planning and Codes development process. For the most part, food service establishments were consistently required to install grease control equipment. However, there was no program to require them to perform maintenance on that equipment, and the Water and Sewer department subsequently needed to perform reactive maintenance to issues created by FOG in the collection system, including backups and odor complaints.

The new FOG program requires each food service establishment to certify their grease control equipment is in good working condition and to provide a report of the pumping volume and frequency from the grease control equipment. Each year, the City performs an on-site inspection of each food service establishment, inspecting the operations as well as the equipment. When applicable, educational materials are provided to the manager. In some instances, notices of non-compliance are issued, but to date no food service establishment has failed to rectify their issues cited in the notice. For reference, the quantity of FOG pumpage since 2008 is shown below, showing a dramatic and steady increase:



There have been no SSO's due to grease since the inception of the CMOM program.

The following information is attached with this item:

16-1	A copy of the current FOG program for the City of Brentwood
16-2	A copy of the 2010 report of food service establishments' grease control equipment inspections. Reports for 2008 and 2009 are also available if requested.
16-3	An example copy of a grease waste hauler's pumping report
16-4	A copy of a recent Grease Interceptor Certification.

16-1 A copy of the current FOG program for the City of Brentwood

City of Brentwood, TN Water & Sewer Department
Fats, Oils & Grease (FOG) Management Policy

Scope & Purpose:

The purpose of this policy is to prevent sewer system blockages, obstructions and overflows due to the contribution and accumulation of fats, oils and grease (FOG) from food service establishments, commercial facilities and industrial facilities. The accumulation of FOG within the collection system (sewer lines and pump stations) can result in the decreased carrying capacity of sewers due to congealed, cooled grease which coats the inside of the sewer pipes. Once a pipe becomes constricted, the potential for a collection system blockage increases. Collection system blockages may cause sanitary sewer overflows (SSOs). SSOs can degrade the quality of local receiving waters. FOG blockages may also cause sewer back-ups into homes and businesses.

Authority:

The ***Code of Ordinances, City of Brentwood, Tennessee (hereinafter, the Brentwood Municipal Code), Chapter 70,*** including ***Sec. 70-45. Prohibited discharges to public sewers; Sec. 70-46. Substances, waters, etc., director may prohibit; Sec. 70-47. Director's authority regarding certain wastes; Sec. 70-48. Interceptors; Sec. 70-49. Preliminary treatment facilities;*** and ***Sec. 70-28. Penalties*** provides authority for the City of Brentwood FOG Program. In addition, the United States Environmental Protection Agency's *Capacity, Management, Operation and Maintenance* program documents contain requirements for FOG program implementation.

Definitions:

1. Additives: Include, but are not limited to, products that contain solvents, emulsifiers, surfactants, caustics, acids, enzymes and bacteria.
2. Director: The Director of the Brentwood Water Services Department or his designee.
3. Exemption: A release from the requirement to install grease control equipment (GCE). Exemptions are approved by the Director based on responses to questions on the Grease Control Inquiry Form.
4. Extensive Remodeling: Modifications made to an existing FSE that increases seating capacity or is sufficient to warrant full compliance with other updated codes, such as Americans with Disabilities Act or the latest edition of the International Building Code.

5. Fats, Oils, & Grease (FOG): Organic compounds derived from animal and/or plant sources. FOG may be referred to as "grease" or "greases" in this section.
6. Food Service Establishment (FSE): Any establishment, business or facility engaged in preparing, serving or making food available for consumption. Single family residences are not a FSE. Food Service Establishments will be classified as follows:

   Class 1: Deli – engaged in the sale of cold-cut and microwaved sandwiches/subs with no frying or grilling on site, Ice Cream shops and beverage bars as defined by North American Industry Classification System (NAICS) 72213 with the exception of coffee shops which brew coffee on the premises, Mobile Food Vendors as defined by NAICS 722330

   Class 2: Limited-Service Restaurants (i.e. Fast Food Facilities) as defined by NAICS 722211 and Caterers as defined by NAICS 722320

   Class 3: Full Service Restaurants as defined by NAICS 722110

   Class 4: Buffet and Cafeteria Facilities as defined by NAICS 72212

7. **Class 5:** Institutions (i.e. Schools, Hospitals, Prisons, etc) as defined by NAICS 722310.
8. Grease (Brown): Fats, oils and grease that is discharged to the grease control equipment, or is from kitchen or food prep wastewater.
9. Grease (Yellow): Fats, oils and grease that has not been in contact or contaminated from other sources (water, wastewater, solid waste, etc…) and can be recycled.
5. Grease Control Equipment (GCE): Devices for separating and retaining FSE wastewater FOG prior to entering the Brentwood sewer system. The GCE is constructed to separate and trap or hold fats, oils and grease substances from entering the Brentwood sewer system. GCE should only receive kitchen wastewater. Devices include grease interceptors, grease traps, or other devices approved by the Director.
6. Grease Interceptor: GCE identified as a large multi-compartment tank, usually 1,000 gallon to 2,000 gallon capacity with proper inlet and outlet T's, and other necessary components, that provides FOG control for a FSE. No sanitary wastewater (black water) line should be connected to the grease interceptor. Grease interceptors shall be located outside the FSE.
7. Grease Trap: GCE identified as an "under the sink" trap, a small container with baffles, or a floor trap. For a FSE approved to install a grease trap, the minimum size requirement is the equivalent of a 20-gallon per minute/40 pound capacity trap. Grease traps shall have flow restrictor and a vent pipe installed. No dishwasher, or sanitary wastewater (black water), line shall be allowed to be connected to a "under the sink" or a floor grease trap.
8. Grease Recycle Container: A container used for the storage of yellow grease.
9. NAICS: North American Industry Classification System. The website is found at: (http ://www.census.gov/epcd/www/naics.html)
10. Series: (Grease Interceptors Installed in Series): Grease interceptor tanks installed one after another in a row and connected by plumbing pipe.
11. Sewer Use Ordinance: Article II, Division 2 of the Brentwood Municipal Code.
12. T or Tee (Influent & Effluent): A T-shaped pipe extending from the ground surface below grade into the grease interceptor to a depth allowing recovery (discharge) of the

water layer located under the layer of FOG. Influent & effluent T's are to be made of PVC – schedule 40 or equivalent material. Influent T's should extend 2/3 of the grease interceptor water depth, and effluent T's should extend to within 12" of the bottom of the interceptor tank to prevent short-circuiting.

13. Water (Black): Wastewater containing human waste, from sanitary fixtures such as toilets and urinals.
14. Water (Gray): Wastewater other than black water as defined in this section.

Pretreatment of Wastewater
Food Service Establishments (FSEs) shall install and maintain adequately sized grease control equipment (GCE) in accordance with this policy.

Schedule for Compliance with the FOG Management Policy:
FSEs discharging to the Brentwood collection system are subject to the FOG Management Policy. GCE shall be installed, operated, maintained and repaired solely at the owner/operator's expense.

New construction of FSEs shall be in full compliance with the policy before commencing operations. FSEs undergoing extensive remodeling shall be in full compliance with the policy before recommencing operations after the remodeling work is completed.

FSEs existing prior to this policy will be grandfathered until such time as extensive remodeling is performed at the FSE facility, the facility's existing GCE is deemed to be of substandard size and/or design, and/or the FSE is shown to be the cause of a FOG build-up in Brentwood's collection system. The Director will make the determination of whether a FSE has caused or contributed to a blockage in the collection system, as well as what actions will be required of the FSE to return to compliance.

Existing FSEs found to be in noncompliance with this policy that are required to install GCE will be given a deadline not to exceed six (6) months from the date of notification to install such GCE.

Exemptions from the Requirement to Install GCE
Single service kitchens with no onsite food preparation (heat and serve only), and which use only disposable service ware (utensils) will not be required to install grease control equipment. The establishment must complete and submit a Grease Control Inquiry Form to the Director in order to be considered for an exemption. High volume coffee shops will not receive an exemption from the Director due to dairy products, additives and the pH of coffee that could cause sewer corrosion.

General Requirements:

1. GCE shall be designed and constructed in accordance with the provisions of this FOG Management Policy.
2. GCE design and construction plans shall be approved by the Director prior to connection to the public sewer.
3. The FSE or designee shall submit a completed Grease Control Inquiry Form and one set of FSE facility plans to the City of Brentwood Water & Sewer Department located at 1750 General George Patton Drive, Brentwood, TN 37024-0788 for review and approval.

- The plans shall include the following sheets: a floor plan detailing kitchen prep equipment and showing how greasy waste lines discharge to GCE, plumbing sheets, and GCE specification sheets.
- If the plans are approved, the Director will contact the FSE or designee.

4. The discharge from the following fixtures shall be plumbed to the **Grease Interceptor:** all sinks (Pre-rinse sink for the dishwasher, 3-compartment, 2-compartment, vegetable prep sink, mop sinks, floor sinks, etc), floor drains in food preparation and storage areas, food waste grinders, dishwashers, and other kitchen fixtures through which grease may be discharged.
5. Only one kitchen fixture unit may be connected to an under the sink **Grease Trap.** If additional fixture units require GCE, and there is no available area to install an outdoor grease interceptor, then a separate grease trap shall be installed for each fixture unit. Fixture units that can be attached to grease traps include: 3 compartment sinks, 2 compartment sinks, pre-rinse sinks. Automatic dishwashers shall not be connected to an under the sink grease trap.
6. Grease Interceptor or Grease Trap Annual Certification Requirement. FSEs under the City of Brentwood's jurisdiction must have their grease interceptor or grease trap inspected and certified annually. Certification of the interceptor or trap must be conducted by a certified grease waste hauler or plumber to verify that all necessary components of the grease interceptor or grease trap are properly installed and in proper working condition. If a grease interceptor or grease trap "Passes" the certification requirement, then no further action is required. If a grease interceptor or grease trap "Fails" the certification requirement, then a corrective action response is required from the FSE owner or authorized representative to the Director *(see #7 below)*. Completed certification forms {Grease Interceptor Certification (Form A) or Grease Trap Certification (Form B)} must be completed and signed by the "certified" grease waste hauler or plumber, as well as the FSE owner or authorized representative, and mailed to:

   City of Brentwood

   Water and Sewer Department

   Attn: FOG Program

   P.O. Box 788

   Brentwood, TN 37024-0788
7. Failure of a Grease Interceptor Certification, or Grease Trap Certification: The FSE owner or authorized representative is responsible for including detailed "Corrective Action Response" information on the Grease Interceptor Certification form, or the Grease Trap Certification form that is submitted to the Director. If necessary, additional pages may be attached to the certification form. At a minimum, the "Corrective Action Response" information must include the reason for the failed certification, what corrective action will be taken to correct the problem, and the date the corrective action will be completed.
8. FSEs with GCE shall maintain a log of the pumping/cleaning maintenance activities performed for each GCE on the premises. GCE maintenance records shall include, at a minimum, the name and address of the FSE, the date of cleaning/maintenance, the company or person conducting the cleaning/maintenance, amount or volume of grease wastewater removed.

9. GCE maintenance records shall be available at the FSE premises so they can be provided to Department personnel or their representative, and/or the Public Health Department. The FSE shall maintain GCE maintenance records onsite for three (3) years.
10. Each Grease Interceptor shall, when pumped, be fully evacuated (pumped of complete contents) unless the volume is greater than the tank capacity of the pumper vehicle in which case the hauler shall arrange for additional transportation capacity so that the GCE is fully evacuated within a 24 hour period. Partial pumping of grease interceptors is not acceptable.
11. The return of gray water back into the Grease Interceptor from which the waste was removed is prohibited.
12. Waste removed from GCE shall be disposed of at a facility permitted and authorized to receive such waste in accordance with applicable federal, state and local laws and regulations. Pumped waste shall not be discharged to a private or public sewer unless as permitted above.
13. It shall be a violation of the Brentwood Sewer Use Ordinance to push or flush the non-water portion of GCE into the public sewer.
14. No FSE shall discharge oil and grease in concentrations that cause a violation of the Brentwood Sewer Use Ordinance.
15. FSEs shall dispose of yellow grease in an approved container, or recycle container, and the contents shall not be discharged to any storm water grate, drain or conveyance. Yellow grease, or oils or grease, poured or discharged into the FSE sewer lines or Brentwood sewer system is a violation of the Brentwood Sewer Use Ordinance.
16. FSEs shall observe Best Management Practices (BMPs) for controlling the discharge of FOG from their facility. Examples of BMPs include:
    A. Recycle waste cooking oil, dispose in Grease Recycle Bin or Container. Do NOT pour any grease into sinks, floor drains or mop sinks.
    B. Post "NO GREASE" signs above all kitchen sinks to remind employees.
    C. "Dry Wipe" and scrape into a trash container as much food particles and grease residue from pots, pans, and plates as possible.
    D. Use Strainers in sink drains and floor drains to prevent large food particles and containers from going into the sewer line.
    E. If an oil or grease spill occurs, clean up using "dry" oil absorbent material or use ice to make grease solidify. Scoop up and dispose into a trash container. Do NOT wash oil or grease into drains!
    F. Dispose of food items in the trash. Food grinder use is discouraged due to build up of solids in the GCE which causes decreased efficiency and need to increase pumping frequency of the GCE.
    G. Educate and train all employees on grease control and preventing sewer pipe clogs and sewer overflows.

Grease Control Equipment Sizing:

Minimum acceptable size of GCE for each FSE Classification will be as follows:

Class 1: Deli, Ice Cream shops, Beverage Bars, Mobil Food Vendors- 20 gallons per minute/40 pound Grease Trap

Class 2: Limited-Service Restaurants / Caterers – 1,000 gallon Grease Interceptor

Class 3: Full Service Restaurants- 1,000 gallon Grease Interceptor

Class 4: Buffet and Cafeteria Facilities- 1,500 gallon Grease Interceptor

Class 5: Institutions (Schools, Hospitals, Prisons, etc)- 2,000 gallon Grease Interceptor or two 1000 gallon Grease Interceptors installed in series.

Size

1. Grease Interceptor minimum size will be 1,000 gallon capacity, and maximum size will be 2,000 gallon capacity. If additional capacity is required, the FSE shall install multiple interceptors in series.
2. Grease interceptors installed in series shall be installed in such a manner to ensure positive flow between the tanks at all times. Therefore tanks shall be installed so that the inlet invert of each successive tank shall be a minimum of 2 inches below the outlet invert of the preceding tank.
3. Tanks installed in series shall have adaptors or gaskets or flexible transition couplings used as piping connections between grease interceptors installed in series constructed of a minimum of schedule 40 PVC.

The Director will review GCE sizing information received from the completed Grease Control Inquiry Form or the FSE's engineer, architect or contractor. The Director will make a decision to approve, or require additional grease interceptor volume, based on the type of FSE, the number of fixture units, and additional calculations. Grease interceptor capacity shall not exceed 2,000 gallons for each interceptor tank. In the event that the grease interceptor calculated capacity needs to exceed 2,000 gallons, the FSE shall install an additional interceptor of the appropriate size. If additional interceptors are required, they shall be installed in series.

Grease interceptors that are installed in series shall be installed in such a manner to ensure positive flow between the tanks at all times. Therefore, tanks shall be installed so that the inlet invert of each successive tank shall be a minimum of 2 inches below the outlet invert of the preceding tank.

Grease interceptors that are installed in series shall include adaptors, gaskets or flexible transition couplings of minimum of schedule 40 PVC pipe.

New Food Service Establishments, or Upgrade to Existing FSEs:
New FSEs, as well as existing facilities that are undergoing extensive remodeling shall install and maintain at a minimum, an approved 1,000 gallon grease interceptor located outside the FSE building. FSEs in one of the above mentioned categories shall submit a Grease Control Inquiry Form and plumbing plans. The Director reviews and approves FSE plumbing plans to ensure that adequate grease control equipment is included. The submitted plumbing plans shall include identification of all cooking and food preparation equipment (i.e. fryers, grills, woks, etc...); the number and size of dishwashers, sinks, floor drains, and other plumbing fixtures; kitchen wastewater plumbing lines, the location of GCE, and specifications for the GCE. The Director will review the plumbing plan and grease interceptor sizing and approve, or make changes as necessary to aid in the protection of a FOG discharge from the FSE.

New construction of FSEs shall have separate sanitary (restroom) and kitchen process lines. The kitchen process lines shall be plumbed to appropriately sized GCE. No sanitary wastewater or stormwater shall be plumbed to the GCE.

When an existing building and/or building's plumbing is being renovated and the facility is a FSE, internal plumbing shall be reconstructed to separate sanitary (restroom) flow from kitchen process flow. Sanitary flow and kitchen process discharges shall be approved separately by the Director and shall discharge from the building separately. The kitchen process line(s) shall be plumbed to appropriately sized GCE. Kitchen process lines and sanitary lines may combine prior to entering the public sewer; however the lines cannot be combined until after the GCE.

New Multi-Unit Facilities:
New multi-unit facility, or new "strip mall" facility, owners shall contact the Director prior to conducting private plumbing work at the multi-unit facility site. Multi-unit facility owners, or their designated contractor, shall have plans for separate private wastewater lines for kitchen and sanitary wastewater for each "individual" unit. In addition, the plans shall identify "stub-out" locations to accommodate a minimum 1,000 gallon grease interceptor for each unit of the multi-unit facility. New multi-unit facility, or new "strip mall" facility owners shall consider suitable physical property space and sewer gradient that will be conducive to the installation of an exterior, in-ground GI when determining the building location.

FSEs located in a new multi-unit facility shall have a minimum of a 1,000 gallon grease interceptor installed, unless that FSE is identified as a Class 1 facility. Class 1 FSE facilities are exempt from the requirements to install grease interceptors/traps. Sanitary wastewater, or black water, cannot be connected to GCE.

Substandard GCE:
In the event an existing FSE's GCE is deemed by the Director to be either undersized or substandard in design, the FSE owner(s) will be notified in writing by the Director of the deficiencies and required improvements, and given a compliance deadline not to exceed six (6) months to comply.

Grease Interceptor (GI) Design and Installation:

Piping Design

1. The inlet and outlet piping shall have 2-way cleanout tees installed
2. The inlet piping shall enter the receiving chamber 2 1/2" above the invert of the outlet piping.
3. On the inlet pipe, inside the receiving chamber, a sanitary tee of the same size pipe in the vertical position with the top unplugged shall be provided as a turndown. To provide air circulation and to prevent "air lock", a pipe (nipple) installed in the top tee shall extend to a minimum of 6" clearance from the interceptor ceiling, but not less that the inlet pipe diameter. A pipe installed in the bottom of the tee shall extend to a point of 2/3 the depth of the tank. See illustration on page 6.
4. The outlet piping shall be no smaller than the inlet piping, but in no case smaller than 4" ID.
5. The outlet piping shall extend to 12" above the floor of the interceptor and shall be

made of a non-collapsible material. The top of the outlet T pipe should be no less than 4" above the static water line.

6. The outlet piping shall contain a tee installed vertically with a pipe (nipple) installed in the top of the tee to extend to a minimum of 6" clearance from the interceptor ceiling, but not less that the pipe diameter, with the top open. **See illustration on page 11.**

Baffles

1. The inlet compartment shall be 2/3 of the total liquid capacity with the outlet compartment at 1/3 liquid capacity of the interceptor.
2. The grease interceptor shall have a non-flexing (i.e. Concrete, steel, etc.) baffle the full width of the interceptor, sealed to the walls and the floor, and extend from the floor to within 6" of the ceiling. The baffle shall have an inverted 90 degree sweep fitting at least equal in diameter size to the inlet piping, but in no case less than 6" ID. The bottom of the sweep shall be placed in the vertical position in the inlet compartment 12" above the floor. The sweep shall rise to the horizontal portion, which shall extend through the baffle into the outlet compartment. The baffle wall shall be sealed to the sweep. **See illustration on page 11.**

Access Openings (Manholes)

1. Access to grease interceptors shall be provided by a minimum of one manhole per interceptor division (baffle chamber) and of 24-inch minimum dimensions terminating 1 inch above finished grade with cast iron frame and cover. An 8" thick concrete pad extending a minimum of 12'' beyond the outside dimension of the manhole frame shall be provided. One manhole shall be located above the inlet tee hatch and the other manhole shall be located above the outlet tee hatch, so as to provide a clear view of both the inlet and outlet T for inspection. A minimum of 24" of clear opening above each manhole access shall be maintained to facilitate maintenance, cleaning, pumping, and inspections.
2. Access openings shall be mechanically sealed and gas tight to contain odors and bacteria and to exclude vermin and ground water, in a manner that permits regular re-uses.
3. The manholes are to be accessible for inspection. Manhole covers shall be secure, sturdy and able to withstand vehicle traffic and loading.

Leak Testing

GIs shall comply with one of the following:

1. **Water test** - Seal the interceptor, fill with water raised to the flow-line of the outlet fitting, and let stand for a minimum of 1 hour. There shall be no visible leakage. Prefabricated concrete gravity grease Interceptors shall not be rejected for damp spots due to condensation on the exterior surface.
2. **Air test** - Air test procedure shall follow STI F 921 and PEI RP 100 Section 3.

Note: The regulated air supply test pressure used for this test is not to be less than 3 psig (21 kPa) nor more than 5 psig (35 kPa). Use only calibrated diaphragm type air pressure gauges with a zero to 10 psig dial span. Set pressure relief valve in test air supply line at 4.5 psig.

Temporarily plug, cap or seal of all tank openings to hold pressure. Install air supply piping to appropriate tank penetration with air supply piping, over pressure relief device, air isolation valve and pressure gauge. Close air isolation valve to tank and turn on air supply. Slowly open air isolation valve to pressure primary tank. Pressure gauge should read minimum 3 psig to 5 psig maximum. Record the pressure reading. Close air isolation valve and disconnect air supply line to tank.

Note: A steady drop in pressure indicates there may be a leak in the primary tank.

Hold primary air test for 1 hour minimum. No leaks shall be allowed.

If the tank(s) fails to meet the testing described above, it shall be repeated with new samples. Test reports shall show total number of tanks tested, number passing, number failing, and reason for failure.

Location

1. GIs shall be located so as to be readily accessible for cleaning, maintenance, and inspections. GIs shall be located close to the fixture(s) discharging the greasy wastestream. GIs shall not be installed in "drive-thru" lanes or a parking area. GIs shall never be paved over.
2. GIs shall be installed at a minimum distance of 10 feet from sinks and dishwashers to allow adequate cooling of wastewater. The influent to GIs shall not exceed 140 degrees Fahrenheit (140° F).

NOTE FOR FOOD GRINDERS and DISHWASHERS: Where food waste grinders and/or automatic dishwashers are installed, the GI size shall be increased by 30% of the sizing requirement. Automatic dishwashers' discharge is allowed to not to be connected to the grease interceptor. No other kitchen fixture unit may by-pass the grease interceptor, only the automatic dishwasher.

Construction Material

1. GIs shall be constructed of sound durable materials, not subject to excessive corrosion or decay, and shall be water and gas tight. Each GI shall be structurally designed to withstand any anticipated load to be placed on the GI (i.e. vehicular traffic in parking or driving areas). Concrete is the standard material approved, however, the Director will consider other materials, such as fiberglass or plastic grease interceptors, if a professional engineer provides calculations and evidence that the device will meet the requirements and not be a danger to the public or environment.

Note: Concrete materials and other grease interceptor materials shall meet the American National Standards Institute, Inc. (ANSI) and International Association of Plumbing and Mechanical Officials (IAPMO) standards.

ANSI and IAPMO Concrete Materials Requirements as per IAPMO/ANSI Z1001-2007 document are:

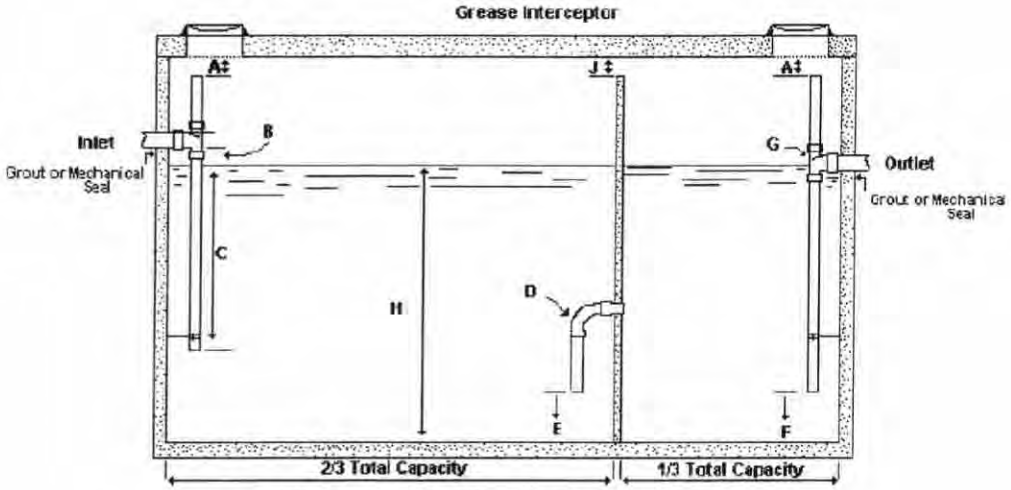
- **Concrete**: Material requirements shall comply with the "Materials and Manufacture" section of ASTM C 1613 and shall have a minimum compressive strength of 4000 psi (28 MPa) at 28 days of age and shall have a maximum water to cementitious ratio (w/c) of 0.45.
- **Sealants:** Flexible sealants employed in the manufacture or installation of tanks shall comply with ASTM C 990. Rigid (mortar) sealing or grout sealant of tank sections shall

not be permitted.

- **Lifting:** Lifting devices, embedded or otherwise attached to the tank, shall comply with the requirements of ASTM C 890.
- **Synthetic fiber-reinforced concrete tanks:** Polypropylene or polyolefin fibers are only permitted as a secondary reinforcing material, at the manufacturer's option, in precast concrete septic tanks. For purposes of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Only fibers of Type III conforming to the requirements of ASTM C 1116 shall be accepted.
- **Steel fiber-reinforced concrete tanks:** Steel fibers are only permitted as a secondary reinforcing material, at the manufacturer's option, in prefabricated septic tanks. For purpose of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Steel fibers shall meet the requirements of ASTM A 820.
- **Fiberglass-reinforced polyester.** Fiberglass reinforced polyester prefabricated gravity grease interceptors shall comply with the requirements for fiberglass – reinforced polyester septic tanks in paragraph 4.2 of IAPMO/ANSI Z1000.
- **Gaskets:** Gaskets shall be of a resilient material, resistant to attack by acids or alkalies that may be present in soils or sewage. The manufacturer shall specify the appropriate ASTM standards that the gasket material meets and the acids or alkalies that the material is resistant to.
- **Polyethylene:** Polyethylene prefabricated gravity grease interceptors shall comply with the requirements for polyethylene septic tanks in paragraph 4.3 of IAPMO/ANSI Z1000.
- **Coated steel:** Interior steel tank walls shall be coated with material complying with the requirements of UL 58 and UL 1746 and manufactured per the requirements of the Steel Tank Institute (STI).

Marking and Identification

1. Prefabricated gravity grease interceptors shall be permanently and legibly marked with the following:
   - Manufacturer's name or trademark, or both
   - Model number
   - Capacity
   - Month and year of manufacture
   - Load limits and maximum recommended depth of earth cover in feet; and Inlet and outlet.
2. Marking shall appear on a plate that has been permanently attached, molded, cast, or wet set onto the interceptor, located either on the left hand side of the inlet or on top of the interceptor near the inlet. Permanent markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the interceptor.
3. Each interceptor shall be accompanied by manufacturer's installation instructions.



A.) Minimum 6", but not less than pipe diameter.
B.) Inlet pipe invert to be 2 1/2" above liquid surface.
C.) Inlet pipe to terminate 2/3 depth of water level.
D.) 90 degree Sweep, minimum size - 6".
E.) 12" from floor to end of sweep.
F.) 12" from floor to end of outlet pipe.
G.) Outlet pipe no smaller than inlet pipe, minimum - 4".
H.) Minimum depth of liquid capacity - 42".
J.) Maximum distance from ceiling - 6".

Grease Interceptor Cleaning/Maintenance Requirements:

1. Partial pump of interceptor contents or on-site pump & treatment of interceptor contents will **not** be allowed due to reintroduction of fats, oils and grease to the interceptor and pursuant to the Code Federal Regulation 40 CFR403.5(b)(8), which states "Specific prohibitions. In addition, the following pollutants shall not be introduced into a POTW: Any trucked or hauled pollutants, except at discharge points designated by the POTW".
2. Grease interceptors must be pumped-in-full when the total accumulations of surface FOG (including floating solids) and settled solids reaches twenty-five percent (25%) of the grease interceptor's overall liquid depth. This criterion is referred to as the "25 Percent Rule". At no time, shall the cleaning frequency of the grease interceptor exceed 90 days, unless approved by the Director. Some existing FSEs in Class 2 through 5 will need to consider a 30 day pumping frequency or a 60 day pumping frequency to meet the 25 Percent Rule requirement.
3. **All FSEs in the Brentwood jurisdiction must have a certified grease waste hauler or plumber complete a grease interceptor certification annually.** The grease interceptor certification must be signed by the FSE owner or authorized representative. If a grease interceptor certification fails, then the FSE owner or authorized representative must provide a corrective action response to the Director. The corrective action response will identify the reason for the failure, what corrective action will be taken to correct the problem, and the date the corrective action will be completed.
4. Special pumping frequency approval may be granted by the Director, on a case by case basis, for unusual circumstances.
5. Grease interceptor effluent-T will be inspected during cleaning and maintenance and the condition noted by the grease waste hauler's company or individual conducting the

maintenance. Effluent-T's that are loose, defective, or not attached must be repaired or replaced immediately.

Grease Trap Design and Installation:

1. Grease traps must have the Plumbing Drainage Institute certification. The **minimum** acceptable size is rated at 20 gallons per minute / 40 pounds capacity. All grease traps shall be installed as per manufacturer's specifications, which include the flow restrictor and venting prior to the discharge entering the grease trap.
2. **All** grease traps shall have flow restrictor and vent pipe installed.
3. No dishwasher shall be connected to an under-the-sink grease trap or floor grease trap. Dishwashers will cause hydraulic overload of the grease trap.

Grease Trap Maintenance:

1. Grease Traps shall be cleaned of complete fats, oils, and grease and food solids at a minimum of every two (2) weeks, unless more or less cleaning frequency is authorized by the Director. If the FOG and food solids content of the grease trap are greater than 25% of the water depth capacity of the grease trap, then the grease trap shall be cleaned every week, or as frequently as needed to prevent 25% of capacity being occupied with FOG and food solids.
2. **FSEs in the Brentwood jurisdiction shall have a certified grease waste hauler or plumber complete a grease trap certification annually**. The grease trap certification shall be signed by the FSE owner or authorized representative. If a grease trap certification fails, then the FSE owner or authorized representative shall provide a corrective action response to the Director. The corrective action response shall identify the reason for the failure, what corrective action will be taken to correct the problem, and the date the corrective action will be completed.
3. During cleaning of the grease trap, the flow restrictor shall be checked to ensure it is attached and operational.
4. Grease Trap waste shall be sealed or placed in a container to prevent leachate from leaking, and then disposed.
5. Grease Trap waste shall not be mixed with yellow grease in the grease recycle container.

Accidental Discharge-Safeguards:

FSEs shall provide such facilities and institute such procedures as are reasonably necessary to prevent or minimize the potential for accidental discharge of fats, oils, and grease into the sewage collection system. This includes implementation of "Best Management Practices" protocols.

"Additives" Prohibition for use as Grease Management and Control:

1. If the Director identifies an FSE that is using "additives" and is contributing FOG to the Brentwood sewer system, or has caused any interference to the sewer system, the FSE shall immediately stop use of the "additive".
2. At no time shall additives be used just prior to under the sink traps or floor grease traps.
3. The use of additives is prohibited with the following exceptions:

a. Additives may be used to clean the FSE drain lines but only in such quantities that it will not cause fats, oils and grease to be discharged from the grease control equipment to the sewer system, or cause temporary breakdown of FOG that will later re-congeal in the downstream sewer system.

b. If the product used can be proven to contain 100% bacteria, with no other additives. Approval of the use of the product must come from the Director, and the FSE must submit a full disclosure Material Safety Data Sheet and certified sample results from the manufacturer of the product.

4. The use of approved additives shall in no way be considered as a substitution to the maintenance procedures required per this policy.

Right of Entry – Inspection and Monitoring

The Director shall have the right to enter the premises of FSEs to determine whether the FSE is complying with the requirements of this policy and/or the City of Brentwood Sewer Use Ordinance. FSEs shall allow City personnel, upon presentation of proper credentials, full access to all parts if the premises for the purpose of inspection, monitoring, and/or records examination.

The Director may require that the FSE install monitoring or additional pretreatment equipment deemed necessary for compliance with this policy and/or the Brentwood Sewer Use Ordinance.

FSE Inspections, Permit Option:

The Director may conduct inspections of FSEs for GCE installation and maintenance, review of best management practices, and to gather information regarding FOG discharge impacts. The Director has the right to enter the FSE's premises to determine impacts to the City of Brentwood sewer system. The City will conduct any additional monitoring of the food service establishment to determine compliance with the City of Brentwood Water & Sewer Department FOG management policy.

FSE Monitoring Option:

The Director may conduct monitoring of the effluent from GCE for the purpose of determining compliance with the FOG Management Policy and/or the City of Brentwood Sewer Use Ordinance and/or to assess a surcharge to the FSE.

Fee Option:

The Director may charge inspection, monitoring, assessment, impact, and other fees to the food service establishments to get reimbursement for the FOG program costs.

Enforcement Action

Enforcement action may result against a FSE for instances that include, but are not limited to, failure to clean or pump grease control equipment, failure to maintain grease control equipment including inspection and installation of properly functioning effluent-T and baffles on the grease interceptor, failure to install proper grease control equipment, failure to control FOG discharge from the FSE, contributing to a sewer line blockage or obstruction, contributing to a Sanitary Sewer Overflow event, allowing inflow/infiltration of stormwater from the FSE via the GCE to the sanitary sewer system and use of additives in such quantities so that FOG is pushed downstream of the FSE. Enforcement action will include Noncompliance Notifications, Notices of Violation (NOV), and Citations for

Municipal Ordinance Violations issued to the FSE.

Noncompliance Notifications may be issued by the City, or the City's designated representative, to the FSE and will normally allow the FSE 30 days for a response to the City of corrective action taken to resolve the noncompliance issue. A Notice of Violation may be sent by the City to the FSE in instances where the FSE has not responded to a Noncompliance Notification or when the FSE has caused significant problems to the sewer system. At the City's discretions, enforcement action may include termination of the customer's water service or a Citation for Municipal Ordinance Violation. A "significant problem" may include, but is not limited to, causing a sanitary sewer overflow event, causing sewer obstruction/blockage, or causing corrosion or other damage to the sewer system.

16-2 A copy of the 2010 report of food service establishments' grease control equipment inspections. Reports for 2008 and 2009 are also available if requested

City of Brentwood, TN
Water & Sewer Department

Fats, Oils and Grease Control Program

FOG Management Program Report
September 2010

Prepared by:

MMS
MONITORING AND MANAGEMENT SERVICES

City of Brentwood, TN Water & Sewer Department
Fats, Oils and Grease Program Report
September 13, 2010

TABLE OF CONTENTS

City of Brentwood, TN Water & Sewer Department
Fats, Oils and Grease Program Report
September 13, 2010

Summary of Findings

A total of 98 food service establishments (FSEs) were inspected by Monitoring & Management Services and City of Brentwood personnel from July 2010 through September 2010. Proper grease control equipment maintenance and observance of best management practices were noted at most of the FSEs inspected. There were 5 FSEs that received Noncompliance Notifications (NCNs) for inadequate fats, oils and grease control. Four of the FSEs that received NCNs responded with corrective actions taken within 30 days of the NCN. One of the FSEs did not provide a written response to the NCNs within 30 days, and were re-inspected and issued a second NCN. A summary of the 2010 issued NCNs is provided in *Attachment A*. A summary of 2008 through 2010 NCNs issued to FSEs is provided in *Attachment B*, and is recommended to be used as a FOG "Hotspot" sewer line checklist for the Sewer Maintenance Division. The Brentwood FOG database (MMS SOFT) was updated with 2010 FSE inspections, noncompliance notifications, and grease control equipment certification results.

Five FSEs have gone out of business since the 2009 inspections:

- Harpeth Grill-146 Pewitt Drive (replaced by Local Taco)
- Strouds BBQ-5024 Harpeth Drive (replaced by Subway)
- Maggie Moo's-101 Creekside Crossing
- Beef O'Bradys-1724 Carothers Parkway
- Quizno's-119 Franklin Road

Five FSEs have started business since the 2009 inspections:

- Local Taco-146 Pewitt Drive
- Chill Spot-330 Franklin Road, Ste. 908-D
- Jimmy Johns-101 Creekside Crossing
- Bagel Works & Perks-115 Penn Warren Drive
- Subway-5024 Harpeth Drive

Brentwood Active Food Service Establishments by Type

• Restaurants	69
• Schools	11
• Grocery w/ Food Process	4
• Quick Stop Markets	3
• Hotel	2
• Retirement/Nursing Home	2
• Misc.	11

Summary of Active Food Service Establishments (98) Grease Control Equipment:

Facilities w/ Grease Interceptors:	**65**	66%
1 – 700 gallons		
1 – 750 gallons		
38 – 1,000 gallons		
15 – 1,500 gallons		
4 – 2,000 gallons		
6 – 3,000 gallons		
Facilities w/ Grease Traps:	**29**	30%
1 – 5 gpm/10 lbs		
1 – 10 gpm/20 lbs		
3 – 15 gpm/30 lbs		
18 – 20 gpm/40 lbs		
1 – 25 gpm/50 lbs		
2 – 35 gpm/70 lbs		
3 – 50 gpm/100 lbs		
Facilities w/ No Grease Control Equipment*:	**4**	4%

** FSEs with no grease control equipment are deli style facilities with limited FOG potential.*

Noted Improvements:

1. **Brighton Gardens** at 103 Arcaro Place connected all kitchen drain lines to its grease interceptor. No significant FOG was found in the downstream sewer line. In the past, the downstream sewer line had moderate to heavy FOG causing obstruction to the sewer on a regular basis.

2. **214 Wards Circle Strip Mall:** The Stanton Group (property mgt. firm for the strip mall) has the two interceptors at the facility pumped on an acceptable schedule and both interceptors passed certification. Only slight FOG was found in the downstream sewer. Previously, moderate to heavy FOG has been in the downstream sewer. .

3. **Subway** at 5024 Harpeth Drive started business this year in a building that was previously Strouds BBQ. Strouds BBQ did not do proper maintenance on the grease interceptor, and as a result the 2010 inspection identified that the interceptor FOG layer was overflowing the top of the outlet T and contributing FOG to the City sewer. Subway contacted the property owners and got the interceptor pumped, and is to have the inlet T repaired. This should prevent further FOG discharge to the sewer.

City Sewer below Subway (formerly Strouds BBQ) that is to be cleaned; Maintenance on the Subway interceptor should prevent future FOG problems.

4. **Kroger** at 300 Franklin Road stated that they plan to install a new interceptor by the end of 2011. Currently, Kroger has 5 indoor traps that are difficult to service and does not control the FOG discharge as good as an interceptor would.

5. **Zoes Kitchen** at 101 Creekside Crossing was confirmed to be connected to a 2,000 gallon interceptor that was shared with Maggie Moo's.

6. **Brentwood Academy** at 219 Granny White Pike had a broken interceptor manhole lid that was a safety issue. The City of Brentwood (Greg Roberson) supplied a manhole lid for the school.

7. **Mazatlan** at 116 Wilson Pike Circle did not have adequate flow restrictor devices installed during the inspection. Within one week the proper flow restrictor devices were installed, and the FSE manager was very cooperative in educating the employees.

8. The Sewer Pumping Station below Sonic at 1618 Franklin Road had much less FOG than last year.

9. The **Chile Burrito's** new grease interceptor was inspected and approved.

Enforcement Action
See *Attachment A* for 2010 Noncompliance Notification details.

1. **Outback Steakhouse** at 8005 Moores Lane was issued a NCN on 7/28/10 for moderate to heavy FOG in the sewer line. Previously, this FSE was issued a NCN in 2009 for FOG in the City sewer. The City requested that Outback conduct dye tests to confirm that all kitchen drain lines were connected to the interceptor, have the interceptor certified to ensure all components were working properly, and get the interceptor on a 60 day complete pump schedule. A written response was received from the Outback GM, stating that the dye tests demonstrated that all kitchen drains were connected to the interceptor, and a grease interceptor certification was conducted and passed. The City is to clean the downstream sewer, then check the downstream sewer in 3 months and again in 6 months to determine if further corrective action will be necessary.

Outback discharge to the City Sewer (7/28/10)

2. **Pizza Hut** at 330 Franklin Road received a NCN on 7/23/10 for poor maintenance on its grease interceptor and moderate FOG in the downstream sewer. Griffin Industries pumped the interceptor on 7/26/10 but failed to submit a grease interceptor certification to the City. On 9/8/10 another inspection was conducted and requested that a certification be submitted to the City by 11/1/10, and reminded the FSE manager to make sure that a complete pump of interceptor contents was done during the pump/clean event.

3. **Vittles** at 4944 Thoroughbred Lane had been issued previous NCNs for moderate to heavy FOG in the downstream sewer line. The 7/21/10 inspection of the FSE identified that the new, inside undersink grease trap had the flow restrictor installed on the wrong side of the trap, and the outside, floor style trap needed to be cleaned. Moderate to heavy FOG was identified in the first downstream manhole. No NCN was issued but a warning and written inspection notice was provided to correct the flow restrictor problem and have both traps pumped. On 9/8/10 a follow-up inspection was conducted, the inside trap did have the flow restrictor repaired and the outdoor floor trap had been cleaned. This FSE has been made aware that moderate to heavy FOG has been discharged in the past and any future continued discharges of FOG can result in escalation of enforcement action. The City is to clean the downstream sewer line, including the immediate sewer manhole near the FSE, which is considered a private manhole, to establish a baseline to determine if FOG continues to be discharged.

First downstream manhole from Vittles

4. **Ruby Tuesday** at 279 Franklin Road was issued a NCN for moderate FOG in the downstream sewer, no records of interceptor maintenance, no interceptor certification, inlet T not visible and interceptor size appears inadequate. No response was received due to a new manager hired. A follow-up inspection on 9/8/10 identified that the interceptor had been pumped but no certification or response was done. A second NCN was issued for interceptor certification to be completed by 10/8/10.

5. **O'Charleys** at 100 East Park Blvd was warned that its interceptor was not adequately maintained and it needed to be on a minimum 90 day schedule. Also, a certification was requested to be completed within 90 days. A grease waste hauler company (Mahoney Environmental based in Indiana) apparently has a corporate account with O'Charleys. MMS fears that the grease waste hauler may not be conducting a complete pump of interceptor contents. MMS requests that the City clean the downstream sewer line from O'Charleys to establish a baseline.

Downstream sewer from O'Charleys- Moderate FOG.

16-3 An example copy of a grease waste haulers pumping report

RESIDUE RESCUE DECEMBER '09 SCHEDULE

BRENTWOOD - KEVIN COLVETT - FAX 371-2225

DATE	SCHEDULE	RESTAURANT	ADDRESS	POSTAL	GALLONS
12/04/09	3 WEEKS	SHONEY'S 1258	791 OLD HICKORY BOULEVARD	37027	50
12/07/09	3 MONTHS	AMERIGO'S	1656 WESTGATE CIRCLE	37027	1000
12/10/09	3 MONTHS	CHILI'S 1048	107 CREEKSIDE CROSSING	37027	1500
12/18/09	1 MONTH	CORKY'S	100 FRANKLIN ROAD	37027	700
12/23/09	3 WEEKS	SHONEY'S 1258	791 OLD HICKORY BOULEVARD	37027	50
12/23/09	3 MONTHS	JASMINE RESTAURANT	8105 MOORES LANE	37027	1000
12/26/09	2 MONTHS	AMERICAN GENERAL	2000 AMERICAN GENERAL WAY	37027	500
12/08/10	1 MONTH	JUDGE BEAN'S	7022 CHURCH STREET EAST	37027	40
12/09/10	3 MONTHS	BRICK OVEN CAFÉ	330 FRANKLIN ROAD, STE 914-D	37027	1000
12/18/10	2 MONTHS	AMERICAN GENERAL	2000 AMERICAN GENERAL WAY	37027	500
12/21/10	1 MONTH	CORKY'S	100 FRANKLIN ROAD	37027	700
12/22/10	3 WEEKS	SHONEY'S 1258	791 OLD HICKORY BOULEVARD	37027	50

16-4 A copy of a recent Grease Interceptor Certification

This certification form must be completed by a "Certified" Grease Waste Hauler or Plumber.

GREASE INTERCEPTOR CERTIFICATION (Form A)

City of Brentwood Water & Sewer Department

Every food service establishment in the City of Brentwood must have their grease interceptor certified annually, to verify that all components of the grease control equipment are present and in good working condition. Furthermore, the inspection will identify any structural problems with the grease interceptor.

Facility Name: PUBLIX # 0142 Phone #: 615-221-9880

Address: 8105 MOORES LANE City: BRENTWOOD ,TN. Zip Code 37027

	PASS	FAIL*
1. Interceptor completely emptied and cleaned before inspection?	☑	☐
2. There is access to all interceptor chambers for cleaning and inspections?	☑	☐
3. Influent (inlet) T is attached and extends downward at least 2/3 depth of tank?	☑	☐
4. Effluent (outlet) T is attached and extends downward to within 12" of tank bottom?	☑	☐
5. Effluent (outlet) T is made of non-collapsible material that does not easily flex or bend (i.e. minimum – schedule 40 PVC, etc.), and is secure, not allowing fats, oils or grease to escape around edges?	☑	☐
6. Interceptor tank does Not have visible holes or leaks?	☑	☐
7. Mid-wall baffle(s) is secure and operational?	☑	☐
8. Interceptor maintaining structural integrity?	☑	☐
9. No Sewer clean-out covers missing or damaged?	☑	☐

*** IMPORTANT REQUIRED INFORMATION & RESPONSE: If the answer to any of the above questions is "Fail", the equipment has failed certification. A statement of the plan of action to be taken, with date to be completed, needs to be provided on the attached sheet under "Response Comments" (attach additional sheets to explain corrective action if necessary):**

Inspector Certification **– This grease interceptor has ☑ PASSED ☐ FAILED certification.**

I Tommy Costello (print name of inspector) of ONSITE (print company name)

certify that the above listed facility has an approximate 1000 gallon capacity interceptor. I have examined the interceptor and provided the above information.

Tommy Costello (signature) 12-23 10 (date) 615-228-3901 (phone number)

Facility Owner/Manager Certification

Rick Christian (print name) certify to the best of my knowledge the above statements to be true and correct. (signature) 12-23-10 (date)

SUBMIT **ORIGINAL CERTIFICATION FORM TO:*

City of Brentwood, FOG Control Program, P.O. Box 788, Brentwood, TN 37024

MUST COMPLETE ALL INFORMATION

Item #17 – Review and Update Standard Requirements for Service Connection

Development date: This action is included in the Engineering Program Improvements (Item #4.

Item #18 – Review and Update the City's Pump Station Standard Maintenance Procedures, Including Grinder Pumps

Development date: November 2007 – April 2008

Discussion: This is included as part of the Lift Station Operations and Maintenance Guidance Manual which has been referenced in other sections. Section 5 of that manual (included as an attachment to this Item) discussed the current preventive maintenance approach to the pumping stations in the sewer collection system. As discussed elsewhere, stations are visited daily during the regular workweek and are monitored by SCADA constantly. No overflows due to pump station failure have occurred since 2007, and some of the reactive maintenance procedures at the pumping stations are detailed in Item #22.

The following information is attached with this item:

18-1 A copy of Section V of the Pump Station O&M Manual: Pump Station Preventive Maintenance Program.

18-1 A copy of Section V of the Pump Station O&M Manual: Pump Station Preventative Maintenance Program

Section 5
Pump Station Preventive Maintenance Program

5.1 Preventative Maintenance

Preventive maintenance is an on-going, proactive activity to maintain and extend the service life of equipment. The WSD has developed written standard operating procedures for the inspection of lift stations and these procedures include the care and upkeep of the station but a defined program to extend the service life of equipment is required.

The Preventive Maintenance (PM) program identifies the PM tasks and their frequency for the lift station equipment. PM procedures should include specific activities required by and listed in the respective manufacturers' service manuals. These tasks may be modified or new ones created as operating experience dictates.

A preventive maintenance program, to include equipment lubrication, inspection and adjustment, must include task planning and scheduling and define a frequency to repeat the task(s) daily, weekly, monthly, quarterly, semi-annual and annual, or other. These tasks must be documented as to their frequency and need and as to whether they were completed as required.

To aid in the on-going development and refinement of the WSD's lift station preventive maintenance program, the following tables of information are provided.

Suggested PM sorted by Task:	Provides a listing of suggested preventive maintenance activities or tasks sorted by equipment and then frequency.
Suggested PM sorted by Frequency:	Provides a listing of suggested preventive maintenance activities or tasks sorted by frequency and then by equipment.
20 Point Service Check List:	Provides a 20-point preventive maintenance service of a lift station pump. This intensive service should be performed annually or at least biennially.
Equipment Maintenance Record:	Provides a method to schedule and document equipment PM throughout the year.

Brentwood TN
Collection System Lift Stations
Suggested PM sorted by Tasks

Preventive Maintenance Procedures	Frequency
Alarm Testing	Monthly
Alarm Beacon and Light Inspection	Daily
Backflow Preventer Inspection	Semi-annual
Chemical Odorant Feed System Inspection	Monthly
Dehumidification Inspection and Cleaning	Monthly
Electric Motor Meggar	Biennial
Electrical / Starter Panel Inspection	Annual
Electrical Panel Lights and Fuses Inspection	Daily
Electrical Thermography Inspection	Biennial
Flow Meter Inspection and Calibration	Semi-annual
Heating Unit Inspection	Monthly
Lift Station Annual Inspection	Annual
Lift Station Daily Inspection	Daily
Lift Station Monthly Inspection	Monthly
Pump Draw Down Tests	Semi-annual
Pump Hoist Inspection	Annual
Pump Impeller Inspection	Annual
Pump Vibration Testing	Biennial
Radio Inspection & Calibration	Annual
Sump Pump Inspection and Testing	Monthly
Sump Pump Pit Flush and Clean	Monthly
Valve Gate, Globe, Plug Inspection and Lubrication	Annual
Valve Check Inspection	Annual
Ventilation Inspection	Monthly
Wet Well Cleaning and Inspection	Semi-annual
Wet Well Float Control Inspection and Testing	Monthly
Wet Well Bubbler Level Control Inspection and Testing	Daily
Pump Wear Ring Clearance Inspection and Adjustment	Annual
Pump Shaft Lubrication	Semi-annual
Pump Packing Disassembly and Inspection	Annual
Pump Motor Lubrication	Semi-annual
Pump Motor Cleaning and Inspection	Monthly
Station Ladder Integrity and Hardware	Monthly
Station Latch, Hatch, Hasp and Lock Inspection and Lubrication	Semi-annual
Station Fence, Gate and Lock Inspection	Semi-annual
Station Vaults, Boxes, Manholes Inspection	Semi-annual
Pump Packing Strainer/Filter Inspection and Cleaning	Weekly
Pump Packing Supply Line Flushing	Weekly
Ventilation Operations Inspection	Daily
Electric Lighting Inspection	Daily

Per the Manufacturers' recommendations, general overhauls on pumps are recommended on most pumps after 3 years of service if operated in normal conditions. If pumps are operated in a corrosive environment, it is recommended every 1.5 years.

Brentwood TN
Collection System Lift Stations
Suggested PM sorted by Frequency

Preventive Maintenance Procedures	Frequency
Alarm Beacon and Light Inspection	Daily
Electrical Panel Lights and Fuses Inspection	Daily
Lift Station Daily Inspection	Daily
Wet Well Bubbler Level Control Inspection and Testing	Daily
Ventilation Operations Inspection	Daily
Electric Lighting Inspection	Daily
Pump Packing Strainer/Filter Inspection and Cleaning	Weekly
Pump Packing Supply Line Flushing	Weekly
Alarm Testing	Weekly
Chemical Odorant Feed System Inspection	Monthly
Dehumidification Inspection and Cleaning	Monthly
Heating Inspection	Monthly
Lift Station Monthly Inspection	Monthly
Sump Pump Inspection and Testing	Monthly
Ventilation Inspection	Monthly
Wet Well Float Control Inspection and Testing	Monthly
Pump Motor Cleaning and Inspection	Monthly
Station Ladder Integrity and Hardware	Monthly
Backflow Preventer Inspection	Semi-annual
Pump Draw Down Tests	Semi-annual
Sump Pump Pit Flush and Clean	Semi-annual
Wet Well Cleaning and Inspection	Semi-annual
Pump Shaft Lubrication	Semi-annual
Pump Motor Lubrication	Semi-annual
Station Latch, Hatch, Hasp and Lock Inspection and Lubrication	Semi-annual
Station Fence, Gate and Lock Inspection	Semi-annual
Station Vaults, Boxes, Manholes Inspection	Semi-annual
Flow Meter Inspection and Calibration	Semi-annual
Electrical / Starter Panel Inspection	Annual
Lift Station Annual Inspection	Annual
Pump Hoist Inspection	Annual
Pump Impeller Inspection	Annual
Radio Inspection & Calibration	Annual
Valve Gate, Globe, Plug Inspection and Lubrication	Annual
Valve Check Inspection	Annual
Pump Wear Ring Clearance Inspection and Adjustment	Annual
Pump Packing Disassembly and Inspection	Annual
Electric Motor Meggar	Biennial
Electrical Thermography Inspection	Biennial
Pump Vibration Testing	Biennial

Per the Manufacturers' recommendations, general overhauls on pumps are recommended on most pumps after 3 years of service if operated in normal conditions. If pumps are operated in a corrosive environment, it is recommended every 1.5 years.

SCHEDULED PUMP PREVENTATIVE MAINTENANCE

20 POINT SERVICE CHECK LIST

1. Check electrical condition of insulation on power cable(s) and on all phases of the motor.
2. Check for any loose or faulty electrical connections within the pump control panel.
3. Check voltage supply between all phases of the electrical control panel.
4. Check voltage between all phases on the load side of the pump control panel with pump on.
5. Check amperage draw on all phases of the pump motor.
6. Check condition and operation of the motor thermal protection control system (if so equipped)
7. Removal of pump from the tank for physical inspection.
8. Check condition of inner shaft seals (inspect condition of motor/stator housing)
9. Check condition and operation of motor/stator leakage detector if so equipped
10. Check outer shaft seals (inspect condition of oil in oil housing)
11. Change oil (yearly).
12. Check for worn or loose propeller.
13. Check impeller wear ring (rotating & stationary).
14. Check for any unusual noise in the upper and lower bearings.
15. Clean, reset, and check operation of the level control system (if so equipped)
16. Clean, reset, and check operation of the level control system (if so equipped)
17. Check for correct shaft rotation.
18. Reinstall the pump and check operation (if liquid level in the wet well permits).
19. Test of pump operating cycle under submerged load (if liquid level in the tank permits)
20. Check for unusual noise, vibration, and vortices (correct if necessary)

NOTES:

Equipment Record

Year: _____

Equipment: _____ Lift Station: _____
Manufacturer: _____ Model: _____
Unit Type: _____ Vendor: _____
Motor Info: _____ Address: _____
Appurtenance: _____ _____
Component: _____ Telephone: _____

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Jan																															
Feb																															
Mar																															
Apr																															
May																															
Jun																															
Jul																															
Aug																															
Sep																															
Oct																															
Nov																															
Dec																															

Code	Freq	Type of Maintenance Required
1	___	
2	___	
3	___	
4	___	
5	___	
6	___	
7	___	
8	___	
9	___	
10	___	
11	___	
12	___	
13	___	
14	___	
15	___	
16	___	
17	___	
18	___	
19	___	
20	___	

Lubricant Type: Oil: _____ Grease: _____
Consumable Type: Cartridge: _____ Air Filter: _____
Packing: _____ Oil Filter: _____
Service Advisements: _____

Item #19 – Develop Standard Maintenance Procedures for Cleaning of Gravity Sewers

Development date: August, 2007 for Annual TV and Cleaning Contract
September, 2007 for Rehabilitation Contractor Work

Discussion: Most of the televising and cleaning work performed in the City's collection system is performed by outside contractors. Part of that work, as is detailed in Item #5 (CSAP) is performed programmatically, and the specification for that work was developed in August of 2007. Other work is performed by rehabilitation contractors, and the specification for that work was developed in September of 2007.

The following information is attached with this item:

19-1 A copy of the specification for the programmatic cleaning and televising of the sewer collection system, from August of 2007.

19-2 A copy of the specification for the rehabilitation contractors' work associated with televising and cleaning the sewer collection system, from September, 2007.

19-3 Photos of the City's TV van and Jet truck are below:

19-1 A copy of the specification for the programmatic cleaning and televising of the sewer collection system, from August of 2007

City of Brentwood, TN

Bid Specifications

for an

Annual Sanitary Sewer Collection System
Preventative Maintenance Program

August, 2007

General Information
The City of Brentwood, TN, Water Services Department will receive at its City Hall offices, located at 5211 Maryland Way, Brentwood, TN, until 2:00 PM on Thursday, August 23, 2007, bid proposals for a Sanitary Sewer Collection System Preventative Maintenance Program. Bids shall be made only on the enclosed bid form, on Page 4 of this packet, and shall be properly executed and enclosed in a sealed envelope bearing the name of the bidder, the bid item, and the bid due date and time. Bids shall be written in ink or computer generated. Mistakes may be crossed out and corrections inserted adjacent thereto and must be initialed in ink by the person signing the bid.

Any addendum issued by the City during the time of bidding shall be acknowledged with the bid and shall be made a part of the bid submittal and contract. Do not include federal, state or local taxes with the bid price.

Any questions relating to this bid request should be directed to Kevin Colvett, Assistant Director, P.O. Box 788, Brentwood, TN 37024, Phone 615-371-0080, email colvettk@brentwood-tn.org.

Purpose
The City of Brentwood Water Services Department, in conjunction with its Capacity Management, Operations and Maintenance (CMOM) program, intends to implement a preventative maintenance program for its sanitary sewer collection system. This work will generally consist of cleaning, televising, documenting and reporting the condition of the gravity line portion of the collection system. In addition, there is a requirement for monthly maintenance for cleaning the City's 10 sewer lift stations.

In comparing bid submissions, consideration will not be confined to price only. The successful bidder will be the one whose services and price are judged to best serve the interests of the City. The City of Brentwood reserves the right to reject any or all bids or any part thereof, and to waive any informalities.

General
The specification herein demonstrates the minimum requirements of the City. The City of Brentwood reserves the right to reject any bid not prepared and submitted in accordance with the specifications, or any bid lacking sufficient technical literature to enable the City to make a reasonable determination of compliance to the specifications.

Bid Validity
Bid and prices must be valid for a minimum of 90 days after the bid submission date.

Bid Submission

Each bidder is required to submit the following information with their bid:

a. References from at least 3 other systems of similar size for whom such services have been performed.
b. Completed Bid Form
c. Samples of the output from the TV investigation
d. Explanation of deviations, if necessary

Any deviation from these specifications must be clearly noted with the submission. Alternatives will be considered, as will additions to the minimum requirements as outlined in this document.

Bid Price Submittal Form

TASK	EST. QUANTITY	UNITS	UNIT PRICE	TOTAL
Lift Station Cleaning	120	EACH		
Clean & Inspect Sanitary Sewers – light cleaning req'd	90,000	LF		
Clean & Inspect Sanitary Sewers – heavy cleaning req'd	10,000	LF		
Root Cleaning	40	HOURS		
JetVac Operation (Heavy Cleaning)	40	HOURS		
TOTAL QUOTE				

Prices quoted valid for 90 days

Company name: _____

Address: _____

_____

_____

Authorized bidder signature: _____ Date: _____

Name: _____

Title: _____

Contract Requirements

Lift Station Cleaning

The City owns and operates 10 sewer lift stations. As part of this program, each month each station shall be pumped down and cleaned of debris. A report of a visual inspection of any equipment within the wetwell shall be provided to the City for usage in the Pump Station Maintenance Program (a separate CMOM program). The cost for each cleaning shall include all equipment, materials and labor to perform the task, including but not limited to mobilization, pumping, cleaning, and disposing of the collected material.

Cleaning and Inspecting Gravity Sewer Lines

As part of the CMOM program, the City has committed to perform approximately 100,000 LF per year of sewer TV inspection. The following standards will apply in regard to the cleaning and televising of the gravity system:

1. All operators must be National Association of Sewer Service Companies (NASSCO) PACP certified, and the TV analysis software must be PACP certified. It is possible that the deliverables might not be required to be in PACP database format, but the operators and software must be certified with the PACP program.

2. TV contractor must have the ability to clean and televise sewers ranging from 6" – 30" pipe.

3. TV contractor must have the ability to clean and televise the municipal portion (typically 6") and the private portion (typically 4") of service laterals from the cleanout typically located near the property line. Brentwood requires that lateral defects be located and described in the same manner as regarding mainline defects.

4. The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow for a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing picture quality to the satisfaction of Brentwood and, if unsatisfactory, equipment shall be replaced and no payment will be made for an unsatisfactory inspection.

5. Pipe shall be cleaned to the point that the entire pipe is visible. Very light deposits may, in the opinion of Brentwood, be acceptable. However, any deposits that obscure a pipe joint, obscure a potential defect or result in any "holding of flow" shall not be acceptable. Any pipe sections that are, in the opinion of Brentwood, not properly cleaned shall be re-cleaned and re-televised at no additional cost. Cleaning shall be conducted at least 1 hour prior to TV inspection in order to give the pipe surface above the flow line time to dry so that leaks can be more clearly observed. No cleaning shall be conducted simultaneous with TV inspection. If satisfactory cleaning is accomplished by up to two cleaning passes the cleaning is considered to be ***light cleaning***. If more than two cleaning passes are required the cleaning shall be considered ***heavy cleaning***. All deposits shall be vacuumed out of the sewer system and properly disposed of.

For pipe with diameters between 6 and 10 inches - flow control shall be used if the initial depth of flow to pipe diameter ratio is greater than 20%. For pipe with diameters between 12 and 24 inches - flow control shall be used if the initial depth of flow to pipe diameter ratio is greater than 25%. For pipe with diameters greater than 27 inches - flow control shall be used if the initial depth of flow to pipe diameter ratio is greater than 30%. Acceptable flow control shall include solid plugs, flow through plugs, baffling, in a low portion of the cycle. In any instance, the contractor shall not allow an overflow in an upstream manhole. It is not acceptable to use the jet nozzle to control flows.

If these flow control measures will not achieve sufficient flow level reduction, then Brentwood shall be notified and suggested alternatives such as by-pass pumping shall be priced on a case by case basis. The process will be to either negotiate a change order or authorize the inspection to be accomplished without the additional flow control.

6. Unless area conditions prohibit, all inspections shall be initiated by obtaining a steady video of above ground conditions by standing on the manhole and facing the camera toward the connecting manhole in the direction that camera will proceed. Unless manhole conditions prohibit, a steady video of the manhole invert and wall shall be obtained and the pipe inspection itself shall include video beginning with a view of the MH/pipe connection and proceeding with a view of the pipe from the manhole wall (established as 0.0 LF) with observation location estimated until the pre-set point is reached.

7. TV inspection must be conducted at a maximum rate of 30 LF per minute and shall stop as necessary to permit documentation of the sewer's condition. The camera shall be propelled through the pipe at a steady, consistent rate with a device that does not obscure the camera view. TV inspection shall be conducted in the downstream direction (with flow) unless the upstream manhole is not accessible. If, during the inspection operation, the television camera will not pass through the entire pipe section, the contractor shall set up the equipment so that the inspection can be performed from the opposite manhole. If, again, the camera fails to pass through the entire pipe section, the inspection shall be considered complete and no additional inspection will be required.

8. With the exception of cleaning issues (debris and grease) Brentwood desires to view the pipe in its pre televised condition. For this reason such occurrences as roots, protruding services, etc. shall not be removed even if this is necessary to complete the TV inspection.

9. The operator shall stop the camera at all suspected defects and all service connections and pan and tilt to closely observe the defect or service lateral. The entire extent of a defect shall be observed.

10. Any defect observed at or up a service tap shall be referred to in remarks using PACP coding terminology or a modified terminology similar to PACP as agreed-upon by City personnel. Particular attention shall be given to observing whether service taps appear to be sloped such that no sewage collects or ponds in the service invert.

11. If clear flow is observed at a service connection and no visible defect is causing this flow, the operator shall stop the camera for at least 2 minutes in order to help determine whether the flow may be infiltration or inflow. If the flow rate does not vary and no evidence of sewage such as suds or sewer solids, etc. is observed then the operator shall determine what structure the tap serves and go to that structure and attempt to speak to an occupant or view the water meter and try to determine whether any in-structure source is causing the clear flow.

12. The televising system shall be capable of locating any observation to within 1.0 LF accuracy. Locations shall be from the manhole wall. If the start manhole wall is other than 48" in diameter this shall be noted in the comments.

13. Root cleaning shall be provided as required and paid on an hourly rate. All cuttings shall be removed from the pipe. Provide recommendations regarding possible chemical treatment at certain locations.

14. If the camera lens becomes covered with sewage, grease, deposits etc. and this results in poor picture quality then the inspection shall be stopped and the camera shall be removed and cleaned. The inspection can then be resumed at the last clear camera location.

15. Deliverables shall include digital files, printed logs and video. The digital files shall be in a format similar to PipeScan and shall utilize a Microsoft Access platform. Printed logs shall include all header information, every observation, the location of every observation and any remarks. The video shall include a continuous footage counter and audio that calls out all defect codes, the location of the defect and an explanation of any unusual condition. All reports, videos and analysis shall be delivered within 14 days of site demobilization.

16. Video shall be in digital MPEG1 format and shall be non-proprietary and able to be viewed with Windows Media Player.

17. Routine traffic control shall be provided by the Contractor as part of this work, including cones, signs, and other traffic control devices. Any need for lane closures or police escorts will be negotiated on a case-by-case basis.

19-2 A copy of the specification for the rehabilitation contractors' work associated with televising and cleaning the sewer collection system, from September 2007

SECTION 02762

SANITARY SEWER CLEANING AND INSPECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Sewer line cleaning to remove foreign materials from the lines and restore the sewer to a minimum of 95% of the original carrying capacity, for proper seating of pipe lining, or as required for other specified rehabilitation.

B. Closed-circuit television inspection of lines cleaned.

PART 2 - PRODUCTS

2.01 CLEANING EQUIPMENT

A. Hydraulically Propelled Equipment: The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment which cannot be collapsed is used, special precautions to prevent flooding of the sewers and public or private property shall be taken.

B. High-Velocity Jet (Hydrocleaning) Equipment: All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor and produce at least 2000 psi pressure. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.

C. Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

2.02 TELEVISION INSPECTION EQUIPMENT

A. The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear color picture of the entire periphery of the pipe. The camera shall be capable of 360-degree viewing area. The television system shall be equipped with a device that indicates the camera travel distance in feet by display on the video viewing screen. The camera shall be operative in 100% humidity conditions. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner's Representative; and if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.

B. Two copies of each DVD shall be provided to the Owner in a format where it is clear which portion of the collection system is being viewed at any given instance. While the purpose of this aspect of the project is NOT to perform a Sanitary Sewer Evaluation in a formal sense, some method of documenting the status of the pipes is required, and the PACP method is preferred as a standard to follow.

PART 3 - EXECUTION

3.01 CLEANING

A. Cleaning Precautions: During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. When possible, the flow of sewage in the sewer shall be utilized to provide the necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant.

B. Sewer Cleaning: The designated sewer sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of lines at the time the work commences. The equipment and methods selected shall be satisfactory to the Owner's Representative. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole section, it will be assumed that a major blockage exists and the

cleaning effort shall be repeated with other types of equipment and shall be deemed "heavy cleaning".

C. Root Removal: Roots shall be removed from sections designated to be relined. Special attention shall be used during the cleaning operation to assure complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners. Roots that cannot be removed by normal cleaning and jetting methods will be addressed separately from the base contract.

D. Material Removal: All sludge, dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.

E. Disposal of Materials: All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of at a site designated by the Owner. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as approved by the Owner.

F. Internal Service Reinstatements/Renewals: All sewer service reinstatements and/or renewals by internal means shall be inspected with 360-degree camera equipment.

G. Final Acceptance: Acceptance of sewer line cleaning shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the Owner's Representative. If TV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to reclean and reinspect the sewer line until the cleaning is shown to be satisfactory. In areas where television inspection is not performed, the Owner's Representative may require the Contractor to pull a double squeegee (with each squeegee the same diameter as the sewer) through each manhole section as evidence of adequate cleaning. If lining is to follow the television inspection, particular attention should be given to the adequacy of the cleaning to insure that proper seating of the lining can be achieved.

3.02 SEWER FLOW CONTROL

A. When sewer line depth of flow at the upstream manhole of the manhole section being worked is above the maximum allowable for testing, television inspection, or pipe lining; the flow shall be reduced to the level shown below by operation of pump stations, plugging or blocking of the flow, or by pumping and bypassing of the flow as

specified.

B. Depth of flow shall not exceed that shown below for the respective pipe sizes as measured in manhole when performing television inspection.

1. Maximum Depth of Flow ..... Television Inspection

6" - 10" Pipe	20%	of pipe diameter
12" - 24" Pipe	25%	of pipe diameter
27" & up Pipe	30%	of pipe diameter

C. Plugging or Blocking: A sewer line plug shall be inserted into the line upstream of the section being worked. The plug shall be so designed that all or any portion of the sewage can be released. During TV inspection, testing and sealing operations, flow shall be reduced to within the limits specified above. After the work has been completed, flow shall be restored to normal.

D. Pumping and Bypassing: When pumping and bypassing is required the Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.

E. Flow Control Precautions: When flow in a sewer line is plugged, blocked, or bypassed; sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

3.03 TELEVISION INSPECTION

A. After cleaning, the sections shall be visually inspected by means of closed-circuit television. The inspection will be done one manhole section at a time and the flow in the section being inspected will be suitably controlled as specified.

B. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the

inspection operation, the television camera will not pass through the entire manhole section, the Contractor shall set up his equipment so that the inspection can be performed from the opposite manhole. If, again, the camera fails to pass through the entire manhole section, the inspection shall be considered complete and no additional inspection work will be required.

C. When manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be set up between the two manholes of the section being inspected to insure good communications between members of the crew.

D. The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a meter device. Marking on the cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be checked by use of a walking meter, roll-a-tape, or other suitable device, and the accuracy shall be satisfactory to the Owner's Representative.

E. Documentation of the television results shall be as follows:

1. Television Inspection Logs: Printed location records shall be kept by the Contractor and will clearly show the location in relation to an adjacent manhole of each infiltration point observed during inspection. In addition, other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such records will be supplied to the Owner.
2. Photographs: Digital photographs of the television picture of problems shall be taken by the Contractor upon request of the Owner's Representative, as long as such photographing does not interfere with the Contractor's operations.
3. Video Recordings: The purpose of recording shall be to supply a visual and audio record of problem areas of the lines before rehabilitation and after rehabilitation that may be replayed. The videotape recording shall include, at a minimum, a display of the footage meter and a display of the manhole segment number being televised. Where appropriate, comments should be included by concurrent audio recording on the tape or electronic display. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop-motion playback features may be supplied at the option of the Contractor. Two copies of the DVD shall be supplied by the Contractor for review for the project identification phase.

END OF SECTION

Item #20 – Develop Standard Maintenance Procedures for the Inspection of All Air Release Valves

Development date: June, 2008

Discussion: Air valve maintenance has historically not been an issue in the City of Brentwood collection system. However, as part of the preventive maintenance program, a SOP for inspections of air release valves was developed. Recently, the City purchased equipment that can be used to clean out air release valve pits, but no instances of this being necessary have been found to date. One air release valve pit was recently repaired after being damaged by a vehicle, but that is the extent of maintenance in the past several years.

The following information is attached with this item:

20-1 A copy of the Air Valve Maintenance Standard Operating Procedure
20-2 A photo of the Vac-Tron system is shown below:

20-1 A copy of the Air Valve Maintenance Standard Operating Procedure

Brentwood Water Services Standard Operating Procedure	Revision No: 1 Revision Date: July 7, 2008
SOP NAME: Force Main – Air/Vacuum Relief Valve Procedures	

1.0 OBJECTIVE

Air/vacuum relief valves are used to allow air to escape the discharge piping when pumping begins and to prevent vacuum damage to the discharge piping when pumping stops. Combination air relief valves are used at high points in force mains to evacuate trapped air. The purpose of this procedure is to provide guidance in the inspection and upkeep of the devices.

2.0 SAFETY PROCEDURES

Personnel should observe all safety policies and regulations established by the City of Brentwood during execution of this SOP to include but not necessarily limited to:

- **Confined Space Entry**
- **Non-Atmospheric Pressures**
- **Mechanical Hazards**
- **Work Zone Traffic Control**
- **Noxious and Toxic Atmospheres**
- **Infection and Disease Hazards**
- **Cross Contamination of Potable Water Sources**

3.0 PROCEDURE

1. At the Air Relief Valve manhole, pull the truck in to face traffic, turn on the truck sign board and/or hazards. Crew members should put on reflective vests before exiting the truck. While a crewman flags traffic, the other sets up cones around the work zone, refer to "Work Zone Traffic Control" practices.

CAUTION: Always use proper work zone traffic control methods, procedures and devices to block and mark off the work zone prior to commencing work.

2. Using a pick and shovel, pull the cover and inspect the manhole (MH) contents.
   a. If the manhole is flooded, a Vac Truck or portable pump will be required.
   b. If the liquid is sewage, the valve float mechanism may have stuck. Isolate the valve, drain and depressurize for disassembly and inspection/cleaning.

3. Air/vacuum relief valves should be inspected annually. The need for back flushing should be checked by opening the bottom drain valve on the side of the vale body. If sewage drains out easily, back flushing is not required.
    a. If back flushing is required, an external source of clean water is required.
        i. *The air/vacuum reief valve should be isolated from the main line.*
        ii. *The flushing water source is connected to the air valve's upper inlet connection.*
        iii. *A section of hose is connected to the bottom connection and its end placed in a suitable vessel to capture the contaminated flush water.*
        iv. *The drain valve and flushing water valves are opened and flushed through the bottom drain valve until it is clean.*

CAUTION: It is highly recommend that distribution system potable water not be used as the flushing water source. Instead, clear water from a portable water tank and pump is used as the flushing water source thus protecting against potential backflow.

    b. The main line air relief valve's isolation valve should be exercised annually.

4. The air/vacuum relief valve body should be cleaned, corrosion removed, primed and painted every five years or more often depending on inspection and need.

4.0 COMMON PROBLEMS and POSSIBLE SOLUTIONS

Leakage at Inlet Connection:
Tighten valve threaded connection. If leaks persist, remove valve and re-seal the threads with pipe sealant or tape.

Leakage at Cover/Body joint:
Tighten bolts per the manufacturer's recommendations. It may be advisable to replace the cover/body gasket first.

Orifice not Releasing Air Under Pressure:
Check that the valve's actual operating pressure does not exceed its design Working Pressure as stamped on the valve's nameplate. If the valve is operating within its design pressure range, isolate, drain and depressurize the valve for inspection and cleaning.

Liquid Leakage through Air Blow Off:
Back flush the valve to remove debris. If back flushing is not effective, disassemble and inspect the internal seat, orifices, float and float guide for wear or damage. Replace as needed with a float kit or seat kit from the manufacture.

CAUTION: Always isolate and drain the valve (de-pressurizing it) before opening the cover/body or removing the valve.

Item #21 – Develop SOP's for Responding to Line Breaks or blockages

Development date: June, 2007

Discussion: These SOP's are included as part of the SOP for Overflow Response, as discussed in Item #8.

Item #22 – Develop an Emergency O&M Procedure for Pump Stations and Implement Improvements at the Pump Stations to Allow for Bypass Pumping Setup

Development date: O&M Procedure developed November 2007 – April 2008. Pump Station Improvements ongoing.

Discussion: The final section (Section VI) of the Lift Station O&M Manual deals specifically with reactive maintenance. A goal set in 2011 is to create such an SOP at each sewer lift station to account for improvements at several of the facilities since 2007. As background, the only station since 2005 where there has been a bypass has been the I-65 Sewer Lift Station, which had two such incidents in 2007. Because of this, the I-65 station was the first station fitted with a "quick connect" valve for bypass pumping. Since 2007, there have been no mechanical incidents at this station where bypass pumping would be required.

At the time the SOP was developed, the assumption was that bypass pumps could be obtained and delivered in a timely manner to minimize overflows due to pump failure. Although this has not occurred in Brentwood, advice from other systems was provided that encouraged the City to purchase its own bypass pump, which was recently procured. In 2009, two sewer lift stations, the Owens Corner and Crockett Springs facilities, were completely rehabilitated, including new pumps, valves and controls. Later, in 2010, the Scales School lift station was similarly rebuilt. At each of these facilities, a "quick connect" valve was installed to facilitate emergency bypass pumping.

Two more lift stations, Chenoweth and the aforementioned I-65 station, are completing design in early 2011 and should be built later on in 2011. A quick connect valve at Chenoweth is included as part of the design. Two more stations are budgeted for upgrades: one in 2012, and another in 2014, and although the specific stations have not yet been prioritized, they will probably be the Edmonson Pike station and the Arden Woods station (which recently had a new pump installed). This would leave the extremely small General MacArthur lift station, with approximately one days' worth of storage in the wetwell, and the Moores Lane lift station, with a bypass valve to an adjacent collection system already in place, as the only facilities without quick connect valves installed.

The following information is attached with this item:

22-1 A copy of the Pump Station Reactive Maintenance section of the Lift Station O&M.
22-2 A copy of all grinder pump maintenance at each address in the grinder pump maintenance program.

22-3 Select photos of the pump and the existing quick connects are shown below:

The portable pumping system has the capacity to pump at each of the City's lift stations, except for the Metro lift station, which is maintained by Nashville Metro Water Services and has a permanent auxiliary power system on-site (shown below). Additionally, the pump has the capacity to bypass any section of gravity sewer line at normal flows except for a small portion of 30" line at the lowest portion of the collection system.

A typical quick connect is shown below:

The valves are included, from left to right below, at I-65, Crockett Springs, Owens Corner, and Scales School lift stations.

22-1 A copy of the Pump Station Reactive Maintenance section of the Lift Station O&M

Section 6
Pump Station Reactive Maintenance

6.1 Responding to Reactive Maintenance

All WSD pump stations are unmanned but are provided with station alarm monitoring and telemetry capabilities. An emergency call out list has been established to ensure personnel is available to respond to sewer emergencies 24 hours a day. This list is updated bimonthly.

The telemetry system at the pump stations notifies the Service Center of any problems at the pump stations with the operation of the pumps. The telemetry system is monitored by office personnel during normal business hours. After hours, any emergency calls are directed to the Brentwood police station. The appropriate person on the call out list is notified. The call out list contains contact information for personnel that are qualified and have the authority to use every available option to correct the particular alarm to return the pump station to normal operations. Once notified, the contacted personnel will arrive at the pump station to take corrective action or contact appropriate maintenance personnel to correct the alarm status. All maintenance personnel have cell phones.

- Refer to the SOP – Wastewater Pump Station Alarms – General Response Actions found in SECTION 4.

When there is an overflow, the telemetry system will automatically email the supervisors' cell phones after hours. The system will continue to send a message until it is successfully received by a cell phone.

- Refer to the SOP – Using Standby Pumping found in SECTION 4.

The most common reactive maintenance issue pertaining to the pump stations is power failure. Middle Tennessee Electric, providing service to seven pump stations, and Nashville Electric Service, providing service to 3 pump stations, typically restore power on a priority basis to utilities. The Brentwood Pump Station is equipped with a permanent backup power generator.

- Refer to the SOP – Power Failure Response Procedure found in SECTION 4.

6.2 Reactive Maintenance Program

All stations were designed with one redundant pump so that if one pump fails, there is another pump with sufficient capacity to continue to operate the station. This allows the pump station to remain in operation until a pump can be repaired.

The Equipment Operation and Maintenance (O&M) manuals for each pump station are located at the Service Center. All maintenance crews have access to these manuals. These manuals allow maintenance crews to view information

related to replacement parts, electrical line diagrams, and other essential information needed to perform repairs. The supervisor is responsible for tracking warranties for each piece of equipment to ensure that repairs are not done by the maintenance crews that could void warranties.

Once the warranty has expired on the equipment, equipment repairs are handled by a local repair shop.

22-2 A copy of all grinder pump maintenance at each address in the grinder pump maintenance program

GRINDER PUMP MAINTENANCE

ADDRESS	DATE	REPLACED	FLOAT	CAPACITOR	CONTACTOR	MISC.	MISC.	MISC.	MISC.				
ALAMO RD													
811[illegible]	9/03,2/26/09	rep pump 2/09	adj float			retro-fit kit	rep hose	rep control panel					
ARABIAN DR													
1[illegible]0	1/12-14/2009					no problem	reset pump						
1[illegible]08	5/02,3/18/10		rep float			turned on	roots	grease buildup					
[illegible]07	3/05,7/22/10		adj/rep float			rep discharge line							
[illegible]12	8/07	rep pump 8/07				rep discharge line	rep flex hose	rep slide-face valve	rep control panel				
[illegible]1	9/08,3/24/09		adj/rep floats			heavy grease	rep flex hose	rep discharge line					
BELCHVILLE TERRACE													
1904	9/13/2006		rep float										
1905	7/99;6/28/01					rep fuse	opened valve						
1908	4/99;8/12/03		adj floats			heavy grease	paint in pump						
1909	6/06;3/20/10		rep floats			reset breaker	cleaned tank	heavy grease	rep discharge line	rep hose			
1912	8/02;12/29/08		rep floats			cleaned tank	rep hose	retro-fit kit	rep discharge line				
[illegible]13	8/09,10/7/10		rep float			no problem	rep discharge line	rep hose	rep slide-face valve				
1916	11/07 1/4/08	rep pump 11/07	rep floats			reset pump	switch off	reset breaker	cleaned tank	rep discharge line	rep hose	rep slide-face valve	unclogged cutters
1917	2/08;7/15/10		adj/rep floats			rep discharge line							
1920	12/08	rep pump 12/08				rep discharge line							
1921	1/09;4/20/09	rep pump 4/09				drained j-box	grease buildup	reset pump	reset breaker	uncovered tank	retro-fit kit	rep control panel	rep cord
1924	8/19/2002					breaker tripped	reset overload						
BRENTHAVEN DR													
1402	9/02,5/16/03		adj/rep float										
1403	4/02;3/31/10		rep float			power off at box	unclogged pump						
1404	1/08;2/18/10		adj/rep floats			rep hose	rep flange	rep breaker					
1405	5/06;10/31/07		adj float			not enough voltage	rep discharge line						
1408	9/02,3/28/10		adj/rep floats			water in j-box							
1409	8/08,8/16/10	rep pump 8/10				rep discharge line	rep relay	retro-fit kit	rep ck valve	reset circuit			
1413	5/01;12/23/08		adj/rep floats										
1414	10/10/2010					heavy grease	cleaned tank	drained j-box					
1414	4/05;11/11/09		adj/rep float			heavy grease	rep starter						
1415	12/02	rep pump 12/02				rep hose	rep control panel	rep cable					
1416	1/07;4/13/10		adj float			rep float switch							
1417	6/06;4/10/07	rep pump 4/07				retro-fit kit							
1418	8/08;6/18/09	rep pump 6/09				rep discharge line							
1420	6/98;8/21/04		adj floats										
1423	10/07;7/8/08		adj floats										
1424	8/28/2003		adj float										
8107	10/07;1/22/09		adj float			reset breaker	removed roots	retro-fit kit	rep discharge line	rep hose			
81[illegible]9													
8[illegible]10													
8111	8/98;7/7/04		rep float			breaker was off							
8112	8/30/2004		rep float										
8[illegible]13	7/06; 8/10/07		adj/rep floats			rep hose	rep sideface						
8115	12/97,7/27/10					rep discharge line	retro-fit kit	rep hose					
8116	11/01;3/11/07	rep pump 3/07	rep float		rep contactor	rep hose	rep sideface	rep bladder	rep control panel				
8117													
8118	10/03;8/24/08					reset breaker							
8119	10/07;11/9/09		adj floats			rep bolts/washers	rep helicores	rep fuse					
8120	3/98;12/14/09		rep float			power off in house	retro-fit kit	rep hose	rep discharge line				
BRENTWOOD LN													
1103	10/99;4/19/05	rep pump 4/05	rep float			retro-fit kit							
BRIDLEWOOD LN													
3200													
6202	8/05;10/23/06		rep floats			prob inside house	rep discharge line						
6203	2/10;12/23/10		adj/rep floats			valve was off							
6204	11/06;9/1/10		adj/rep floats			rep discharge							
6206	3/06;1/8/07	rep pump 1/07	adj/rep floats			heavy grease	rep cable	rep bladder	rep control panel	retro-fit kit			
6208													
6208	8/97;6/21/04		adj float			inside prob	drained j-box						
6210	12/09;4/5/10	rep pump 4/10	adj/rep floats			valve closed inside tan	retro-fit kit	grease buildup	rep hose	rep cord	rep control panel		
6[illegible]11	6/02,1/28/03		rep float			heavy grease							
6[illegible]13	7/04,12/12/07		adj floats			alignment problems							

6213	7/05;7/15/10		adj/rep floats							
6214	6/13/2002				rep breaker					
6216										
6218	12/02;10/21/06		adj float		grease buildup					
6220	10/2/1997				grease buildup					
6221	8/31/1998			rep contactor	rep relay					
6222	8/27/2004		rep float							
6223	7/97;8/17/06	rep pump 6/06			rep bulb	rep hose	rep bladder	rep control panel	retro-fit kit	removed roots
6224	2/08;8/16/08	rep pump 8/08	adj float	rep contactor	grease buildup	rep hose	rep discharge line	retro-fit kit		
6225										
6226	8/31/2002		adj float							

BRYANT										
6100	10/96;4/1/03		rep/adj float							
6101	3/99;3/6/00		rep float		scraped tank					
6102	9/16/2005				reset pump					
6103	7/4/2008		adj float							
6104	4/03;1/4/11	rep pump 1/11	rep float		retro-fit kit	rep hose	rep cord	rep control panel		
6105										
6106										
6107	7/21/2008				reset breaker					
6108	9/25/1997				inside problem					
6109	4/04;4/19/10		rep floats		paper towels/cutters					
6110	3/10	rep pump 3/10			retro-fit kit	rep hose	rep cord	rep control panel		

BURNT LEAF CT										
6212										
6213										
6214	4/00;5/8/00	rep pump5/00			reset pump					
6215	6/20/2007		adj floats							

BURNT LEAF LN										
202	3/3/1999		adj float							
204										
206	4/99;5/4/06	rep pump 4/99			cleaned tank					
208	4/19-26/06	rep pump 4/06	rep float		cleaned tank	rep flex hose				
209	7/99;11/23/09		adj/rep floats		no problem					
210	7/03;5/10/04	rep pump 7/03	adj floats		rep fuse	retro fit kit	rep discharge			
209	3/02;1/20/09		rep/adj float		cleaned tank	heavy grease	rep discharge	rep hose		
213	1/04;5/29/10		adj floats							
211	1/05;8/21/07		adj float		electrical problem	heavy grease				
212	9/25/2003		rep float							
213	6/06;3/4/08		rep float		rep discharge	rep flex hose	rep slide face			
214	6/98;5/24/04		adj float		seal light failure					
215	12/02;4/13/07		adj float		rep hose	heavy grease				

CALLA DELET PL										
9002	8/97;10/27/05		rep floats		align pump	rep discharge line	rep breaker			
9003	7/8/1998		rep float							
9004	9/07,7/23/09	rep pump 7/09			rep ck valve	retro-fit kit	heavy grease buildup	rep bladder	rep equalizer	
9005										
9006	5/03;10/6/05		adj floats							
9007	12/08;7/16/09				grease build-up	retro-fit kit	rep hose	rep discharge line		
9008	8/17/2007				rep discharge line					
9010										
9011	12/09;1/16/10	rep pump 1/10	rep float		rag in cutters	unclogged pump	reset pump	retro-fit kit	rep hose	rep control panel	rep slide-face valve
9012	2/04;5/27/06		adj/rep floats		adj straps	removed roots				
9013	3/06;6/14/10		adj floats	rep contactor	bad breaker	rep bolt				
9014	5/17/2001		rep float							
9015	3/01;2/4/08		rep floats		reset pump					
9016	3/01;5/9/06	rep pump 3/01	adj floats		flex hose					
9017	10/98,10/20/05		adj float		rag in cutters	tank dirty				
9018	7/01,10/19/04		rep float	rep contactor						
9019	5/04;6/13/04	rep pump 6/04	adj floats		put in jumper	cutter hung	retrofit kit			
9020	2/20/2008				unjammed pump					

COVINGTON CT

8112	5/09; 8/6/10	rep pump 8/10	rep/adj floats	rep contactor	removed roots	removed sock	reset pump	rep hose	rep control panel	rep cord
8113	10/04;9/27/06	rep pump 9/06	adj floats		retro-fit kit					
8114	9/00;8/31/07		adj float		heavy grease buildup					
111	9/5/2006	rep pump 9/06			retro-fit kit					

COVINGTON DR

1502	8/02;5/18/06	rep pump 5/06	adj float		rep nipple	rep hose	rep bladder	rep slideface	rep control panel	
150	3/07;9/13/07		rep float		power off	heavy grease	rep discharge line			
1504	9/06;8/12/08		rep/adj floats		cleaned tank					
1505	8/99;1/10/11		adj float		reset breaker	retro-fit kit	rep discharge line	rep hose		
1506	6/07;4/8/08		rep/adj floats		rep discharge line					
1508	5/03;3/10/09		adj/rep float		adj slideface valve					
1509	10/16/2000				rep discharge line					
151	12/99;6/26/06	rep pump 6/06			retro-fit kit	rep hose	rep bladder	rep control panel		
1511										
151										
151	7/08;7/10/09		adj float	rep contactor	installed heliocoils	rep fuse	rep relay			
1514										
151	8/06;3/19/07	rep pump 3/07	rep floats		rechecked pump	rep discharge line	retro-fit kit	rep hose	rep bladder	rep control panel
151	10/15/2002		adj float							
151	10/05;1/14/09		adj floats		removed roots					
1518	10/04;2/22/08		adj floats		rep discharge					
1519	5/03;6/23/08	rep pump 2/97	rep float	rep. capacitor	rep starter	removed roots				
1520	11/04;6/21/09		rep floats							
1521	10/98;4/7/01		adj/rep float							
1522	7/07;9/19/10		adj/rep floats		ok	re-anchored j-box	removed root ball	heavy grease buildup		
1523	9/15/2008		rep float							
1524	11/04;3/29/06	rep pump 11/04			shoe string in cutters	retro-fit kit	no problem			
1601	12/01;12/15/05		adj floats							
1602	9/20/2005				unclogged pump					
1604	1/30/2007				reset pump					
1605										
1606	4/09;7/2/09				unclogged cutters	rep slide-face valve	rep hose			
1607										
1301	8/29/2002				lightning struck discharge line					
1609										
1610	8/00;3/16/09		adj/rep floats		retro-fit kit	rep hose	reset breaker			
1611	3/17/1998	rep pump 3/98	adj float	rep contactor						
1612										
1613	7/05;10/2/06		adj/rep floats		rep discharge line					
1614	11/05;4/8/09		adj float		rep discharge line	unjammed pump				
1615	8/03; 12/6/06	rep pump 12/06	adj/rep floats		retro-fit kit	rep hose	rep bladder	rep cable	rep slide face	rep control panel
1616										
1617	9/1/2009		adj float		no problem					
620										
1651	4/98;8/31/10	rep pump 8/10	adj float		contractor fixed sewer line		rep cord	rep control panel	rep hose	
1540	1/08;7/7/08		adj/rep float		cut-off at road not on	heavy grease	unjammed pump			

CROCKETT HILLS BLVD

1518	3/02;9/2/09		rep/adj floats		rep discharge line	rep hose	rep slide-face valve	unjammed pump		
1519	9/05;2/13/09		rep floats		rep discharge line					
1520	1/10/2006		adj floats							
1521	12/03;5/21/08	rep pump 5/08	rep float		rep hose	rep cable	rep control panel	retro-fit kit		
1522	6/05;3/28/06	rep pump 6/05	adj floats		unclogged cutters	cleaned pump				
1525	4/08;11/16/09	rep pump 11/09	adj/rep floats		retro-fit kit	rep cable	rep control panel			
1524	*2/97;5/28/98		adj/rep floats		scraped tank	buildup				
1527	7/05;9/7-10/10		adj floats							
1701	6/22/1998				power off					

DAVIS DR

504	10/98;8/13/01		rep float		no problem					
505	2/03;8/21/09	rep pump 3/09	adj float							
507	6/04;2/19/07		rep/adj floats	rep contactor	rep discharge line	cleaned tank				
508	1/06;3/8/10	rep pump 3/10	adj/rep floats		no problem	retro-fit kit	rep hose	rep bladder	rep control panel	
509	1/07;8/22/08	rep pump 8/08	adj/rep floats		no problem	retro-fit kit	rep hose			
510	8/1/1998		adj float							
513	5/00;5/28/02		rep/adj floats							
514	9/04; 5/4/10	rep pump 5/10			tighten wire	reset pump	rep hose	rep bladder	rep control panel	
516	9/08;6/21/10		adj/rep floats							
517	5/06; 11/28/06	rep pump 11/06	adj/rep floats		rep hose	rep bladder	rep cable	rep control panel		
518	5/99;9/27/05		rep floats							
602	11/01;7/12/04		adj floats		rep fuse	reset breaker				

602	5/1/2000			rep contactor						
604	10/98;1/25/99	rep pump 7/97		rep contactor	tied wires	power off				
605	9/98;11/24/00		rep float	rep contactor	rep breaker					
606	9/97;4/18/06	rep pump 4/06			need to clean lines	rep hose	rep bladder	rep control panel		
607	1/04;9/15/08		adj floats	rep contactor	flex hose and flange					
608	2/01;4/14/10				cleaned sand pile	reset pump				
609	10/99;10/15/03	rep pump 10/03	adj float		retro fit kit					
613	4/98;6/4/98				reset pump	ground water				
614	4/26/2005	rep pump 4/05			rep hose	rep stand				
615	5/00;9/1/02		rep float		reset pump	drained j-box				
616	12/06; 3/39/07	rep pump 3/07	adj float	rep contactor	rep breaker	retro-fit kit				
704	3/09;8/23/10	rep pump 8/10	rep float		heavy grease	rep hose	rep cord	rep control panel	rep pipe	retro fit kit
705	9/20/2006		rep float							
706										
707	4/3/2001				cleaned tank					
709	10/09;1/4/11		adj/rep floats		not enough voltage	noise inside house	unclogged pump			
711	11/06;5/22/07	rep pump 5/07	adj float		cleaned ck valve	retro-fit kit	rep hose	rep slide-face valve	rep control panel	
715	10/04;2/27/06		rep/adj floats		rep hose	rep flange	heavy grease			
716	6/7/2004	rep pump 8/04			retrofit kit					
717	11/2/2007				rep discharge line					
718										
719	5/05;5/23/08		rep/adj float	rep contactor	cutters clogged	rep discharge line				
720										
722	8/07;9/9/08		rep floats		rep discharge line	rep hose	rep slide-face valve	rep stand		
801	8/01;8/19/02		rep float		breaker off					
802	11/06;6/29/07		adj/rep floats		rep control panel					
803	3/05;4/2/10	rep pump 10/01	adj/rep float	rep contactor	heavy grease	rep flange				
804	4/01;1/12/09	rep pump 1/09	adj/rep float		heavy grease	retro-fit kit	rep hose	rep control panel	rep cord	
805										
806	5/05;4/14/08		adj floats		heavy grease	discharge line	reset breaker			
807	12/06;8/27/10		adj/rep floats		heavy grease	water in j-box				
808	9/3/2003	rep pump 9/03			E-one retro kit					
809	9/03;12/5/05		adj/rep floats	washed tank						
810	2/06;4/13/06	rep pump 10/03		grease build-up	rep check valve	no problem	retro fit kit	rep discharge line		
811	6/00;9/6/07	rep pump 6/00	adj/rep floats	new discharge line						
812	7/15/2005				no problem					
813	9/6/2008	rep pump 9/08								
814	7/22/2009				no problem					
DEVIN DR										
901	11/05;11/6/09	rep pump 11/09			reset pump	rewired pump	retro fit kit			
9104	7/09;6/25/10		adj/rep floats							
9105	3/09;7/19/09		adj/rep floats		inside problem	heavy grease	reset breaker	rep hose		
9106	9/06;9/15/09		adj/rep floats		rep hose	rep slide-face valve	rep discharge line			
9108	3/97;6/1/06	rep pump 6/06			infiltration	rep hose	rep control panel	rep bladder	rep slideface	
9109	1/04,10/13/04		adj/rep float							
9110	8/03;9/15/04	rep pump 9/04	rep float		rep bladder	rep flex hose	rep control panel	retro fit kit		
9111	10/06;9/15/10	rep pump 9/10	adj/rep floats		retro-fit kit					
9112	6/98;8/28/08		adj floats							
9113	11/08;12/6/10	rep pump 12/10	adj/rep floats		roots in tank	retro-fit kit	rep control panel	rep hose	rep bladder	
9114	9/05;2/6/07		adj floats		breaker off	rep PVC pipe	installed flex hose			
9115	11/12/2001		rep float							
9116										
9118	1/02;10/4/10		adj float		retro-fit kit	rep discharge line	rep hose			
9119	9/03;5/3/06		adj floats		rep flange					
9120	7/15/2008				rep discharge line	retro-fit kit				
9122	3/09;3/1/10	rep pump 3/10	adj float		retro-fit kit	rep hose	rep control panel	rep cable		
9123										
9124	3/23/2006	rep pump 3/06			rep hose	rep bladder	rep control panel			
9125	2/97;6/24/10	rep pump 6/10		rep contactor	rep cord	rep control panel				
9126	1/04;2/12/07				ck ok	clogged cutters	rep discharge line			
9127										
9128	2/03;4/30/09	rep pump 4/09			line leak	grease buildup	rep hose	retro-fit kit	rep cord	rep control panel
9129	5/02;4/28/08		adj/rep float		rep discharge line					
9130	3/02;4/5/10				heavy grease	rep hose	retro-fit kit	rep discharge line		
9131	3/4/1997				prob in house					
9133	1/03;3/25/03				rep discharge	rep hose	heavy grease			
9134	6/00;1/26/03		adj float		rep discharge					
DOZIER CT										
1423										
1424										
1425	3/99;11/19/05				breaker off	rep ck valve				
1426	9/23/2004	rep pump 9/04								

DOCIER PL												
9112	6/8/2006	rep pump 6/06			rep hose	rep bladder						
9103	3/4/2005		rep float									
8964	3/07;6/1/10		rep float		rep discharge line	rep hose	rep slide-face valve					
9105	6/97;3/5/10		adj/rep floats									
8906	9/98;4/5/08	rep pump 4/97			rep ck valve	removed roots						
8134	7/13/2002		rep float									
9108	10/09;11/2/09	rep pump 11/09	adj/rep floats		cleaned tank	heavy grease	retro-fit kit	reset pump				
8109												
8110	11/07;12/10/09		adj/rep floats		adj wire in j-box							
9111	7/3/2007		rep float		removed roots							
9112												
8117	9/97;4/24/07		adj float		removed roots							
EATBOURNE DR												
8404	9/04;1/24/06		adj floats		rep discharge line							
8405	3/06;11/1/06		rep float		heavy grease buildup							
8401	7/02;10/22/06		rep float		rep flex hose	rep stand	rep breaker					
8403	3/23/2010		adj floats									
8412	7/31/2006	rep pump 7/06			retro-fit kit	rep bladder	rep hose	rep control panel				
9413	1/05;3/9-11/05	rep pump 3/05	rep float		cleaned cutters							
8416	2/04;6/26/07		rep float		rep discharge line							
8417	12/2/1996				pump off							
8420	10/05;4/27/06	rep pump 4/06			odor	heavy grease	rep discharge line					
142	5/05;4/28/09		rep float		cleaned cutters	heavy grease	reset pump					
8425	1/01;4/14/03		rep float		power off							
FORD DR												
9001	5/03;11/13/06		adj float		unclogged pump							
9005	6/06;4/10/10	rep pump 4/10	adj/rep floats		retro-fit kit	rep hose	rep bladder					
9007	1/10;6/14/10		adj/rep floats		grease buildup	cleaned floats/tank	rep discharge line	rep stand	rep hose	rep sidefuse	rep starter	unclogged pump
9018	2/10; 4/8/10		rep float		switch was off	rep fuse						
9017	9/13/1999		adj float									
9020	12/01;12/14/09	rep pump 12/09	adj float		reset overload	rep hose	rep cable	rep control panel	retro-fit kit			
9021	4/98;1/9/04	rep pump 1/04			align pump	retro fit kit						
9022	1/99;1/11/02		rep float		reset breaker	installed cleanout						
9023	9/27/2001				breaker off							
9024	1/00;8/2/03		adj floats		no problem							
9026	8/7/2005	rep pump 8/05			retro-fit kit							
9128-A	10/05;10/27/10		adj float		cleaned tank	rep discharge line	realigned pump	reset pump	rewired j-box	retro-fit kit	rep hose	
9128-B	11/99;8/25/01		rep float		reset pump							
FOREST LAWN DR												
9025	7/97;8/8/06	rep pump 8/06			repaired conduit	rep bladder	rep hose	rep control panel	rep side face valve	rep cable		
9027	4/12/2010	rep pump 4/10										
9029	3/2-25/08	rep pump 3/08	rep floats	rep capacitor	rep hose	rep flange	heavy grease	cleaned cutters	rep bladder	rep control panel		
9033	2/04;12/30/05	rep pump 12/05	adj floats		rep fuse	cleaned tank	no problem	rep hose	installed slide face			
9035												
FRONTIER LN												
8235	12/07;7/10/09	rep pump 7/09	adj/rep floats		rep discharge	cleaned cutters	rep hose	rep cable	rep equalizer			
8240	6/20/2002				rep flange	rep gate valve						
324												
8244	8/05;8/7/07		rep floats		heavy grease	cleaned cutters						
GEN MACARTHUR DR												
1104	3/07;10/29/07	rep pump 10/07	rep/adj float		fixed light	turned breaker on	rep hose	rep bladder	rep control panel			
1105	3/99;11/3/06	rep pump 11/06			discharge line broken	rep bladder	odor	rep hose				
1106	3/01;7/7/10	rep pump 7/10										
1107	11/02;9/4/08	rep pump 9/08	adj float									
1108	1/06;6/2/09	rep pump 6/09	rep float		rep hose	rep bladder	rep control panel					
1109	11/02;9/26/08	rep pump 11/02	rep/adj float		rep ck valve	reset breaker						
1110	7/04;6/26/06	rep pump 7/00	rep float		rep discharge	clean cutters	reset pump	rep hose	no problem			
1111	10/05;1/2/10	rep pump 1/10	adj float		seal light	rep hose	rep bladder					
1112	11/05;1/8/09	rep pump 1/09	rep float		rep wires	clean tank	grease buildup	rep hose	rep bladder	rep fuse		
1113	1/02;1/10/06	rep pump 1/06	rep float		rep check valve	retro-fit kit						
1114	12/05;8/5/09	rep pump 8/09	rep float		sewer clogged	grease buildup	rep bladder	rep hose	rep slide-face valve			
1115	7/28/1998				reset							
1116												
1117	7/2001;1/30/02		adj float		rep ck valve							
1118	12/98;2/11/99	rep pump 12/98	rep float		inside problem							
1119	11/07;1/20/10	rep pump 1/10	rep float		seal light	no problem						

1120	8/00;1/31/06	rep pump 1/06	adj/rep float		rep hose	rep bladder	rep control panel				
1121											
1200	3/03;12/17/05	rep pump 12/05	adj float		heavy greaase	retro fit kit					
1201	2/01;1/30/06	rep pump 1/06	adj float		rep fuse	overload box					
1202	8/02;12/21/05	rep pump 12/05	adj/rep float		reset pump						
1203	7/02;1/30/06	rep pump 1/06	rep float	rep capacitor	rep hose	rep bladder	rep control panel				
1204	8/97;4/17/08	rep pump 4/08	rep float		adj cutters	reset pump	rep hose				
1205	11/04;1/29/08	rep pump 1/08	rep float		shoestring in cutters	rep hose	discharge broken				
1207	11/04;1/31/06	rep pump 1/06	rep/adj floats		rep ck valve	rep bladder	rep control panel	rep hose			
JORDON PETTY CT											
8230	1/04;7/1/05	rep pump 7/05	adj floats		reset pump	heavy grease	retro-fit kit				
8202	9/97;3/22/10		adj floats		cleaned tank						
8203	4/24/2006				heavy grease						
8204	5/00;12/5/09		adj floats		heavy grease						
8205	1/05;5/20/06		adj/rep floats								
8206											
8207	12/10/2002		rep float								
8208	4/2/1997		adj float								
8209	5/03;1/18/07	rep pump 1/07	adj float		rep cable	rep bladder	rep control panel	rep stand			
GORDON PETTY DR											
1605	8/06;6/7/10	rep pump 6/10	adj/rep floats		heavy grease	retro-fit kit	rep hose	rep bladder	rep control panel	rep slideface	
1607	1/12/2010		rep float								
1608	11/00;9/7/07	rep pump 9/07			retro-fit kit						
1609	8/03;1/7/11	rep pump 11/00	rep float		adj cutters	heavy grease	retro-fit kit	rep discharge line	rep hose		
1610	7/00;5/11/09		adj/rep floats								
1611	9/16/1999		adj float								
1612											
1613											
1618	3/99;7/3/07		adj float		seal failure light	removed roots					
1619	5/09;9/24/10	rep pump 9/10	rep float	rep contactor	rep relay	rep control panel	rep discharge line	rep wires			
1621	9/2/2003				heavy grease						
1620	11/98; 6/13/03	rep pump 6/03	adj float		retro fit kit						
1627	5/03;4/13/06	rep pump 4/06	adj float		retro fit kit						
1622	7/11/2005		rep float								
1623	6/06;8/13/07	rep pump 8/07			rep ck valve	rep discharge line	retro-fit kit				
1624	6/1/2005				rep clean-out cap						
HABER DR											
200	3/09;4/8/10		adj float		rep hose	rep slideface valve					
1201	11/05;6/29/08		adj/rep floats	rep capacitor							
1202	1/6/2000				cleaned tank	rewired j box					
1203	6/11/2009		rep float								
1204	4/99;6/7/99	rep pump 6/99	adj/rep float								
1208	2/00;1/31/05	rep pump 1/05	adj float		reset pump	retro-fit kit					
1210	8/00;11/17/04	rep pump 11/04	adj float		grease buildup	retro-fit kit					
1207	5/18/2006		rep float								
1209	2/06;8/2/06		rep floats		breaker off in house						
205	8/04;12/1/05		adj/rep floats		breaker off in house						
1210	11/06;4/4/07	rep pump 4/07			removed plumber's snake		heavy grease	cleaned pump	retro-fit kit	rep hose	rep bladder
211	7/03;10/11/10	rep pump 10/10	adj float		breaker off	scraped tank	heavy grease	rep cord	rep control panel		
1212	5/08;11/13/09		rep/adj floats		owner prob	power off	unjammed pump				
1213	6/06;6/25/06		rep floats		no problem						
1214											
1215	4/08;4/29/10		rep floats		rep discharge line	heavy grease buildup	unjammed pump	added riser to pump			
216	3/99;12/27/05		rep floats		adj cutters	heavy grease buildup					
1217											
1218	11/05;8/4/08		adj floats		rep discharge line						
1220	6/21/2008				unclogged cutters						
1221											
1222	7/01;2/2/06		rep float		heavy grease	rep discharge line					
1223	11/08;8/20/10	rep pump 8/10	rep floats		heavy grease	rep cord	rep j-box	rep control panel			
1224	3/06;6/22/09		adj/rep floats		sewer odor						
1225	8/05;8/16/07		adj/rep floats								
1226	6/00;7/28/06	rep pump 7/06	adj float		slow drain	rep hose	rep bladder	rep control panel			
1227	5/97;4/4/09		adj floats								
1228	3/08;10/5/10		adj/rep floats		overload kicked	reset breaker					
1301	8/12-18/08	rep pump 8/99	adj/rep floats		rep hose	rep discharge line	retro-fit kit	no problem			
1302	11/1/2007		adj floats		removed roots						
1303											
1304	8/02;12/23/08		rep floats		rep discharge						
1305	10/07;2/23/09	rep pump 2/09	rep/adj float		rep discharge	retro-fit kit	rep cord	rep control panel			
1251	12/28/2010				retro-fit kit	rep hose	rep discharge line				

1607	7/09;10/30/09	rep pump 10/09			seal light on	retro fit kit				
1608	1/07;6/13/08		rep floats		removed roots					
1609	10/02;11/9/07	rep pump 11/07	adj/rep float		inlet pipe too low	material in cutters	retro-fit kit	rep hose	rep control panel	
1610	7/01;7/27/10		adj/rep floats		call plumber	cut limbs from tank				
1611	3/02;9/10/07		adj/rep floats		removed roots					
1612	4/00;6/17/08		adj/rep floats		cleaned tank	rep breaker				
1613										
1615	3/99;12/24/09		adj/rep float		cleaned tank	inside problem				
1616	9/03;4/18/05		rep float		rep discharge line					
1618	4/08;10/22/08	rep pump 4/08	adj/rep floats		inside problem	installed bolts	rep hose	retro-fit kit	rep control panel	rep cable
1620	2/02;8/20/05				heavy grease	rep hose	rep slide face			
NORTH RIVER DR										
1702	7/16/2009		rep float		retro-fit kit	rep hose	rep discharge line			
1703	2/06;2/24/07		adj floats		heavy grease buildup	no problem				
1803	5/01;7/2/03	rep pump 7/03			cleaned tank	heavy grease	retro fit kit			
1804	5/04;7/23/06		rep/adj float		something in cutters					
1805	8/03;4/5/08	rep pump 3/00	reo float	rep contactor	rep ck valve	rep discharge line				
1808	1/06;9/6/07		adj/rep floats		rep discharge line	rep check valve				
1811	1/02;9/12/02	rep pump 9/02	reo float	rep contactor	rep stand	rep hose	rep breaker			
1812	6/06;12/18/06		adj floats		heavy grease					
1813	10/27/2010				retro-fit kit	rep hose	rep discharge line			
1815	11/00;1/3/05	rep pump 1/05	adj float		retro-fit kit					
1817										
1824	8/05;9/28/09		adj/rep floats							
1825	10/13/2004		adj floats							
1827	5/09;11/17/10	rep pump 11/10	adj/rep floats		rep hose	rep slide-face valve	rep discharge line	rep cord	rep control panel bracket	
1836	1/08;7/2/09		adj/rep floats		cleaned tank	reset pump				
1840	1/99,10/10/01	rep pump 1/99	rep float	rep capacitor						
1842	6/98;1/5/08		adj floats							
1845	6/08;12/2/10	rep pump 12/10	rep float							
1849	10/02;10/6/05				adj wires	reset pump				
1901	1/08;1/12/09		rep float		cleaned cutters	no problem	rep discharge line	rep hose	re-set breaker	unclogged pump
1904	11/06,12/7/07		adj floats		ck ok	rep fuse				
1906										
1908	5/97;8/5/08		rep floats		inside prob					
1909	5/05;6/29/06		adj/rep floats							
1914	5/23/1998		adj float							
1915	6/98;8/4/06	rep pump 8/06			need plumber	rep hose	rep bladder	rep control panel		
1916										
1919										
1920	5/01;5/9/03				need plumber	high water	water in j-box	no problem		
1923	8/06;11/20/06	rep pump 11/06	adj floats		rep hose	rep bladder	rep slideface	rep control panel		
1924	7/06;3/3/08	rep pump 2/98	rep floats		reset pump	slow drain	heavy grease buildup			
1928	5/01;5/1/03		adj/rep float		heavy grease					
1932	1/07;9/17/10	rep pump 9/10			on/off switch bad					
1935	7/06;11/30/09		rep float		no problem	reset breaker				
1940										
1944	9/06;12/27/10		rep float	rep contactor	rep discharge line	heavy grease buildup				
HEDGEWOOD DR										
9013	2/05;6/5/10		adj/rep floats		rep fuse	rep discharge line				
9004	7/04;12/20/04	rep pump 12/04	rep/adj floats		heavy grease	retro-fit kit				
9005	8/06;2/12/10		rep/adj floats		heavy grease	removed roots				
9006	6/00;3/13/03		rep float		breaker off	electricity off	heavy grease			
9008	10/04;10/7/08	rep pump 3/02	rep float		rep stand	rep flex hose	heavy grease	rep discharge line	retro-fit kit	
9010	5/16/2001		rep float							
9020	4/16/2004		adj float							
HIGH LEA RD										
101	5/00;6/7/02	rep pump 5/00		reset contactor	heavy grease					
103	4/22/1997		adj float							
111	1/10;3/15/10	rep pump 3/10	adj float		unjammed pump	retro-fit kit	rep hose	rep control panel	rep cord	
113	8/09;9/28/10		adj floats		rep fuse	rep discharge line	rep hose	rep slide-face valve		
200	7/06 7/5/10		rep float		unjammed pump					
201					inlet pipe too long					
202	4/00;5/27/04		rep/adj float		needs plumber					
203	1/23/1997				adj tie wires	breaker on				
204	11/05;9/19/07		rep float		sewer odor	set breaker				
206	6/00;5/12/10				drained j-box	unjammed pump				
209	5/24/2004		rep float							
211	5/08;7/22/09		adj floats		rep discharge line	rep hose	unclogged cutters			
213	3/25/2001	rep pump 3/01								
215	6/05;1/2/07		adj floats		relaid discharge line	inside problem				

217	10/09;6/1/10		rep floats		needs plumber	rep discharge line	retro-fit kit	rep hose				
219	10/09;6/1/10	rep pump 6/10	adj floats		water in junction box	retro-fit kit	rep hose	rep control panel	rep cord			
304	10/07;9/5/08	rep pump 10/07	adj/rep floats		bad flange on discharg	rep control panel	rep hose					
305	8/09,8/20/10				breaker off	retro-fit kit	rep hose	rep discharge line	unjammed pump			
306	2/12/2001				rep discharge							
307	11/06;7/16/10	rep pump 7/10			water in j-box	heavy grease	hair/paper in cutters	power off	retro-fit kit	rep hose	rep control panel	rep cord
308	7/21/2004		rep float									
HILLDALE DR												
8108	2/24/2005	rep pump 2/05			retro-fit kit	rep bladder	rep hose					
8109	9/7/2010	rep pump 9/10										
8110	8/06;8/15/06		adj/rep floats									
8111	7/09;1/24/10		adj/rep floats		heavy grease buildup							
8112	1/19/2007	rep pump 1/07			retro-fit kit	rep bladder	rep hose					
8113	9/23/2009	rep pump 9/09			retro-fit kit	rep hose	rep control panel	rep cord				
8114	2/08;2/6/09		adj float		heavy grease buildup							
8115	2/98;7/14/98	rep pump 2/98	adj float									
8116	8/08,2/4/09		adj floats		rep discharge line	rep hose						
HOLLY RD												
8117												
8118	5/98;3/26/00		adj float									
8119	5/31/2004		rep float									
8120	3/06;1/29/10		adj/rep floats		rep relay							
8121	3/03;7/2/08	rep pump 7/08	rep float		breaker off	rep fuse	repaired conduit	inside problem	heavy grease	rep hose	rep control panel	
8122	3/02,4/26/10		rep floats									
8123												
LONG PL												
9008	4/03;2/16/10	rep pump 2/10	adj float		cleaned pump	rep hose	rep cable	rep bladder	rep control panel	rep cord		
9010	3/99;8/28/08	rep pump 8/08	rep/adj float		no problem	rep hose	rep cable	rep control panel	retro-fit kit			
9011	4/00,8/26/08				rep discharge	cleaned cutters	removed roots					
9012	9/07;8/31/10		rep/adj float	rep contactor	rep fuse	rest tripped	rep discharge line	rep ck valve	rep hose	rep slide-hose valve	rep stand	no problem
9013	9/05;10/21/05		rep floats	rep contactor	removed roots	rep bolt anchors						
9015	5/06;10/6/10	rep pump 10/10	rep float		grease on float	reset pump						
9016	11/09;12/12/09	rep pump 12/09	rep float		no problem	rep cord	rep control panel					
9017	9/03;11/24/10		adj/rep float		grease on float	retro-fit kit	rep discharge line	rep hose				
9018	7/03;6/5/07	rep pump 6/07			retro fit kit							
9019	8/05;7/28/08		rep float		removed roots	reset breaker						
JOHNSON CHAPEL RD												
6099												
6100	2/26/2001				noise inside house							
6101	4/98,12/1/02		rep float		recheck amps							
6103												
6104	11/28/2002		adj float									
6105												
6106	4/06;2/17/09	rep pump 2/09	adj floats		clogged cutters	retro-fit kit						
6107												
6108	11/11/2006		rep float									
6109	12/23/2010				retro-fit kit	rep discharge line	rep hose					
6110												
6111	3/13/1997		adj float									
6112	8/09;6/4/10		adj/rep floats		orb inside house	cleaned tank	grease buildup	retro-fit kit	rep hose	rep discharge line		
6113												
6114	10;98,2/26/03		rep float		no problem							
6115	10/96;1/14/10	rep pump 1/10	adj floats		retro-fit kit	rep hose	rep cord	rep control panel				
6202												
6203	4/04;10/19/10				heavy buildup	retro-fit kit	rep hose	rep discharge line				
6400												
6410	5/22/2008	rep pump 5/08			rep hose							
6414	7/09;6/21/10	rep pump 6/10			rep hose	rep bladder	toilet wipes in tank	reset breaker				
6416	11/02;10/29/07	rep pump 10/07			prb inside	rep hose						
6418	11/02;11/9/10	rep pump 11/10			rep hose							
6420	7/05;1/17/08	rep pump 6/04			installed bladder	rep hose	not enough voltage	reset breaker				
6422	4/09;5/24/10	rep pump 5/10										
6424	12/5/2002	rep pump 12/02			rep hose	rep EQD						
6426	12/05;10/19/06	rep pump 10/06			retro-fit kit							
6429	5/09;10/2/09	rep pump 10/09			reset pump	rep bladder						
KIPLING DR												
1706	6/98;10/12/04		adj floats									
1707	11/08;1/5/09		rep/adj floats		no problem							

1708	11/8/1997			breaker off					
1709	9/00;11/1/10		adj/rep floats						
1710	9/99;9/12/03		adj float						
1711	12/18/2009		rep floats						
1712	9/01;5/12/04	rep pump 5/04		rep disharge line	retrofit kit				
KNOLL CT									
939	11/99;9/2/08	rep pump 9/08	rep/adj float	rep discharge line	rep hose	rep control panel	rep cord		
8008	12/05;9/25/07		rep/adj floats	rep discharge line					
8009	9/96;3/27/10		adj/rep floats	cleaned tank					
8010	3/00;6/30/09		rep float	discharge leaking	removed roots				
8011	12/2/2008	rep pump 12/08		rep hose	rep cord	rep control panel			
8012	8/04;9/12/09		adj/rep floats	rep discharge	rep flex hose	rep gate valve	reset pump		
8014									
KNOX VALLEY DR									
1403	8/09;2/1/10	rep pump 2/10		reset pump	rep discharge line	retro-fit kit	rep hose	rep cable	rep control panel
1405									
1407	3/07;12/14/09	rep pump 12/05		call plumber	rep hose	rep bladder			
1409	12/4/2001			no problem					
1411									
1413	10/09; 11/24/09		adj/rep floats	breaker off	rep discharge line	retro-fit kit	rep hose	rep fuse	
1415	11/13/2006			cutters clogged					
1417	2/10;5/20/10	rep pump 5/10		cutters clogged	retro fit kit	rep bladder			
1419	5/03;5/7/08	rep pump 5/08		discharge line broken	heavy grease	retrofit kit			
1421	3/21/2007	rep pump 3/07		rep hose	rep bladder	retrofit kit	rep control panel		
LA MADA PL									
1207	6/06;3/26/07	rep pump 3/07		reset breaker					
1213									
1215	9/01;4/23/07		adj/rep float	bolts missing	rep discharge line				
1217	8/22/1996		rep float						
1219	8/98;1/99;10/99		adj/rep float	power off					
1220									
1221	5/01;10/31/05		adj float	discharge broken	sewer smell				
1405	11/25/1997	rep pump 11/97	rep float						
1408									
1310	12/3/2007	rep pump 12/07		retro-fit kit	rep hose	rep control panel			
LIBERTY RD									
1304	5/07;12/14/10	rep pump 12/10		retro-fit kit	rep hose	rep bladder	rep slideface	rep control panel	
1306	2/29/2008		adj float	heavy grease buildup					
1307	4/03;6/8/06		adj/rep floats	heavy grease buildup					
LIPSCOMB CT									
1209	5/3/2010	rep pump 5/03		inside problem	retro-fit kit	rep slide-face valve			
8010	11/1/2010			removed roots					
8013									
LIPSCOMB DR									
1105	6/09;7/22/10	rep pump 7/10	rep/adj floats	needs plumber	rep panel	rep flex hose	rep bladder		
1106	11/9/1998		rep float						
1107	8/98;1/1/99		rep float	seal failure					
1101	7/06;10/23/10	rep pump 10/10		breaker tripped	rep discharge line	rep flange	rep ck valve		
1109									
1111	5/15/2010	rep pump 6/10							
1112	11/99;9/19/06		rep float	needs plumber	rep discharge line				
1113	9/01;4/10/03			cycled pump	cleaned pump	rep discharge			
1114	1/02;10/20/08		adj/rep floats						
1115	5/06;3/3/09		adj/rep floats	heavy grease	rep discharge line	rep hose	retro-fit kit		
1116	5/20/2010		adj floats						
1117	6/05;12/7/05	rep pump 6/05	adj floats	rep bladder	rep cable	rep control panel	rep hose	rep slide face valve	turned on at street
1118	1/06;5/1/10		adj floats	rep discharge	unhung cutters	heavy grease	reset pump		
1119	6/99;2/25/06		rep float	rep jumper	valve closed				
1200	12/04;1/20/05		rep float	rep discharge line	rep hose	rep stand			
1401	1/99;6/22/06	rep pump 6/06		rep pipe	grease buildup	rep hose	rep bladder	rep control panel	
1403	9/02;6/5/06			rep discharge line	turned valve on	cleaned cutters			
1404	3/5/2007	rep pump 3/07		retro fit kit					
237	12/21/2003	rep pump 12/03		retro fit kit					
1206	12/09;11/29/10	rep pump 11/10	rep/adj floats	heavy grease	rep fuse	retro-fit kit	rep hose	rep control panel	rep cord

1209	3/06;2/8/10	rep pump 2/10	rep float			rep discharge line	rep flex hose	heavy grease	rep control panel	rep Hardie		
1210												
1211	5/05;5/8/07	rep pump 5/07				rep discharge line	rep hose	rep control panel	rep slide-face valve			
1212												
1213												
1214												
1215												
1216												
1217												
1218	1/02;10/18/06	rep pump 1/02	rep float	rep capacitor		rep hose	rep slide face					
1219	4/12/2001	rep pump 4/01										
1220	5/04;1/2/09	rep pump 1/09				retro-fit kit						
1221	12/08;6/8/09	rep pump 6/09				retro-fit kit						
1223	8/00;7/19/05	rep pump 7/05				odor	retro-fit kit					
1224	4/19/2005	rep pump 4/05				retro-fit kit						
1226	7/00;3/25/00	rep pump 3/00			adj contactor							
1227	9/30/2002	rep pump 9/02				rep hose	rep stand					
1228	3/06;9/9/08		adj/rep floats			heavy grease						
1229	5/05;7/5/10		adj/rep floats									
1230	6/06;6/21/10		rep/adj floats			sewer smell	cleaned tank					
1231	12/01;3/26/07					cleaned	rep discharge line					
1232	6/03;4/19/10	rep pump 4/10	adj floats									
1233	2/27/2004					rep relay						
1234												
1235	2/06;9/25/08		adj/rep floats			off in house	rep discharge line					
1236	3/99;8/16/03		rep float			no problem						
1237	3/05;3/20/10		adj/rep floats			switch off	cleaned tank					
1238	2/01;1/2/07	rep pump 1/07	adj float			turned on breaker	cleaned cutters	retro-fit kit				
1239	2/03;4/10/10		adj/rep floats			heavy grease buildup						
1240	8/08;5/29/10	rep pump 5/10	rep float			retro-fit kit	rep hose	rep control panel	rep slide-face valve	no problem		
1242	1/12/2009	rep pump 1/09				retro-fit kit	rep hose	rep cord				
1243	11/04;12/2/04	rep pump 12/04				reset pump	cleaned cutters	rep discharge line	retrofit kit	female products		
1244	3/04;3/30/10		adj floats									
1245	3/07;2/18/08		rep/adj floats			rep fuse	repaired line	rep discharge line				
1246	3/09;9/28/10	rep pump 9/10	adj/rep floats			cleaned cutters	rep fuse	rep discharge line	rep control panel	retro-fit kit	rep cable	rep hose
1247												
1248	5/00;1/2/08		rep floats			reset breaker						
1249	9/07;5/25/09		rep/adj floats			cleaned tank	heavy grease buildup					
1250	12/15-16/08		adj floats			rep discharge line	rep hose	unjammed pump				
1251	7/07;1/7/08	rep pump 1/08	rep floats			rep ck valve	rep hose	rep cord	rep control panel			
1400												
1402	12/97;5/24/04		adj floats			rep discharge line	heavy grease					
1403	8/04;8/31/06		rep float			heavy grease	cleaned tank	reset kicked out	rep discharge line			
1404	8/06;3/21/09		rep floats		rep contactor	rep fuse	cleaned tank	rep hose	rep slide-face valve	rep stand		
1405	4/05;5/22/06		adj float			rep discharge line	turn on pump	reset breaker				
1406	8/02;8/6/09		rep float			retro-fit kit	rep hose	rep discharge line				
1407	3/99;7/20/99		adj float			rep ck valve						
1408	8/06;6/11/08		rep float			reset pump	removed roots					
1409	7/01;5/6/01	rep pump 7/01	rep float			cleaned tank						
1411	11/07;9/24/10		adj/rep floats			retro-fit kit	rep hose					
1412	7/9/2007		rep float									
1413	5/07;9/11/10		adj/rep floats			reset pump	rep hose	rep slide-face valve				
1414	11/06;2/14/08		rep floats			rep discharge	removed roots					
1415	3/15/2010		rep floats			retro-fit kit	rep discharge line	rep hose				
1416	1/04;6/23/05	rep pump 6/05	adj float			cleaned-heavy grease	adj cutters	retro-fit kit				
1417	7/02; 7/23/10		adj/rep floats									
1418	2/06;4/19/10		adj floats			rep discharge line						
1419	5/07;9/27/07	rep pump 9/07	rep float			baby wipes in cutters	retro-fit kit					
1420	3/06;8/14/09		adj/rep floats			no problem						
1421	8/07;7/20/09	rep pump 8/07				rep hose	rep bladder	rep slide-face valve	rep control panel	reset breaker		
1501	10/07;6/3/09		adj/rep floats			no problem	rep discharge line	heavy grease buildup				
1503	7/05;10/8/07	rep pump 10/07	adj float			retro-fit kit	bad heat sensor					
1504	4/10;7/12/10	rep pump 7/10	rep float			retro-fit kit	rep hose	rep bladder	rep control panel	rep slideface		
1505	12/05;7/14/08		adj floats									
1506	10/04,1/26/07		rep float			dischage line broken	rep hose	rep stand	rep slide-face			
1508	1/08;3/10/08		adj floats			no problem	need plumber	cleared cutters				
1509	9/01;1/22/10		adj floats			rep discharge	cleaned floats	adj discharge line				
1510	3/07;2/8/10	rep pump 2/10	adj/rep floats			cleaned blockage	E-One Retro					
1512	4/04,11/3/08	rep pump 11/08				ck valve off	E-One Retro					
1513	2/06;12/17/09		adj/rep floats			removed roots	retro-fit kit	rep discharge line	rep hose			
1514	10/07,8/18/08		adj/rep floats			bolted lid	rep discharge line					
1515	3/12/2003	rep pump 3/03				E-One Retro						
1516	11/3/2005					rep discharge line						
1517	5/07,3/26/09	rep pump 3/09				rep discharge line	retro-fit kit					
1518	7/04;5/13/08		adj floats			breaker off						
1519	1/7-19/10	rep pump 9/01	adj/rep floats		rep contactor	cleaned cutters	rep discharge line	grease buildup				
1520	10/07;4/28-30/08		adj/rep floats			rep discharge line						

1519	1/05;7/5/07				no problem	switch off	full of paper	cleaned cutters			
1521	1/05;8/12/10		adj/rep floats		removed roots						
1524	8/00;11/3/05		adj floats		serv line leak						
1529	9/02;5/5/03		rep floats		rep discharge line						
1535	8/26/2000		rep float								
1536											
1537	8/05;12/17/08		adj/rep float		rep service line						
1539	12/2-13/05	rep pump 12/05	rep float		clean tank	removed paper	retro fit kit	rep hose	rep control panel		
1550	9/05;4/21/07				rep discharge line	cleaned cutters					
1571	5/08;11/9/10	rep pump 5/08			rep hose	no power					
1580	6/08;11/16/09	rep pump 11/09									
1583	7/09;10/5/09	rep pump 10/09									
1587	6/27/2008				reset breaker						
LONG VALLEY RD											
109	3/28-31/06				rep discharge line	rep hose	rep ck valve				
111											
193	7/28/2008		adj float								
197	12/06;10/1/07	rep pump 10/07			breaker tripped	rep hose	rep control panel	rep slide-face valve			
115	12/24/2010		rep float		retro-fit kit	rep hose					
114	9/96;4/28/09		adj float		no problem						
116											
190	3/07;7/5/08		rep float		rep discharge line	adj pump					
202											
205	9/7/2010		rep float								
208	7/27/1999				slow drain						
210	8/21/2007		adj float		rep hello coil						
211	12/02;10/9/07		adj/rep floats		cleaned cutters						
212	5/06;11/13/07		rep float		rep fuse	install cap	breaker tripped				
213	6/4/2009	rep pump 6/09			retro-fit kit	rep hose	rep control panel	rep cable			
214	9/07;8/3/10		adj/rep floats		rep slide-face valve	rep hose					
215	9/04;3/16/10	rep pump 3/10			retro-fit kit						
216	5/22/2003		adj floats								
217	11/07;4/14/10	rep pump 4/10			retro-fit kit	rep hose					
218	11/14/2006	rep pump 11/06			rep hose	rep bladder	rep slideface	rep control panel	rep stand		
219	9/08;8/26/10	rep pump 8/10			reset pump	rep discharge line	rep hose	rep side-face valve	rep stand	rep control panel	rep cord
220											
302	12/98; 2/22/01		adj float		no problem						
303	5/10,6/5/10	rep pump 7/99	adj/rep floats		rep fuse	clean cutters					
305	8/03;8/19/04	rep pump 8/03			opened valve	rep hose	rep control panel	rep bladder	rep cable	rep bolts	
307	5/17/2007			rep contactor	rep fuse						
MARYLAND LN											
8115	6/04;4/6/06	rep pump 4/06			sewer backup-not grinder pump		rep discharge line	rep hose	rep bladder	rep control panel	
8117	4/03;8/10/10	rep pump 8/10	adj float		fem pad in cutters	retro-fit kit	rep hose	rep cable	rep control panel		
8119											
8119	4/20/2009	rep pump 4/09									
8117	2/04;7/29/08	rep pump 1/97	adj/rep floats		rep discharge line						
8115	7/08;10/29/10		adj float		retro-fit kit	rep discharge line	rep hose	rep bolts			
8110	8/29/1996		rep float								
8117	1/04;1/3/06	rep pump 1/06	adj float		heavy grease	rep discharge line	retro-fit kit	rep bladder	rep control panel		
8116	12/02;8/15/07		reo float		rep ck valve	clean ck valve	grease buildup	breaker off			
8119											
8120	11/18/2001				grease buildup						
8121	5/04;12/5/05	rep pump 12/05	adj floats		no problem	retro-fit kit					
8123	5/09;10/27/09		adj/rep floats	rep contactor	rep starter						
8126	3/18-3/26/06	rep pump 3/06	adj float	rep contactor	set breaker	low voltage	rep hose	rep control panel	rep stand	rep cable	
8123	3/08;6/16/10		rep float		no problem	rep hose	rep discharge line	rep stand			
8129	10/01;10/20/03		adj float								
8130	8/06;4/6/10	rep pump 4/10	rep float		retro fit kit	rep hose	rep cable	rep control panel			
8131	11/05;12/26/08	rep pump 12/08			retro fit kit						
8132	4/03;9/25/05		adj floats		no problem	rep discharge	rep breaker				
8133											
8135	3/13/2006				rep discharge line						
8204	11/2/2009		rep float								
8203	3/03;9/14/07		rep floats		reset breaker	rep discharge line	rep hose	rep slideface valve			
8206	4/11/2006	rep pump 4/06			rep bladder	rep hose	rep control panel				
8207	11/97;12/2/10		adj/rep floats	rep contactor	clean cutters						
8208	6/7/2002		rep float								
8209	12/02,4/21/08		rep floats		no problem	reset pump	rep discharge line				
MEADOWLAWN DR											
8109	7/98;10/27/06		rep floats		rep discharge line						
8018	8/9/2001		rep float								
8018											

9141	11/06;6/8/08	rep pump 6/08	rep float		rep hose	rep stand	rep bladder	rep slideface			
9122	2/19/2007				turn pump on						
9126	3/06;5/19/08		adj float		reset breaker						
9127	6,8/98;3/23/99		adj float		high water						
9130	1/05;9/28/10	rep pump 9/10			rep hose	rep bladder	rep alarm light				
MILBROOK CT											
205	2/06;8/12/09	rep pump 8/09	adj/rep floats		rep hose	rep bladder	rep control panel				
207	11/26/2007				unclogged pump	rep discharge line	rep hose	rep side-face valve			
207	3/09;11/9/10		rep floats		broken discharge line						
208	11/04;5/22/08	rep pump 5/08			roots	heavy grease	rep hose				
MILBROOK RD											
6205	4/07;7/16/08		adj/rep floats		added enzymes	rep discharge line					
6206											
6207	7/08;6/3/10		rep float		comp coupling	rep discharge line					
6208	11/03;8/7/09		adj float		adj breaker	rep discharge line	rep hose	retro-fit kit	rep check valve		
6210	8/7/2001		rep float								
6212	5/12/2005	rep pump 5/05			retro fit kit						
6214	2/20/2008		rep float								
6216	6/2/2010	rep pump 6/10									
6220	9/06;4/20/07	rep pump 4/07	adj floats		scraped tank	rep hose	rep slideface	retro-fit kit			
6227	8/05;10/9/08	rep pump 10/08	rep float		rep fuse	rep hose	rep control panel	rep cord			
6274											
6226	5/1/2003		adj floats								
6231	5/23/1998				leak at meter						
6233	9/06;5/17/10	rep pump 5/10	adj float		retro-fit kit	rep hose	rep cord	rep control panel			
6235	6/04;5/23/08		adj/rep floats								
6300	4/02;10/12/06		rep/adj float		no problem found						
6301	5/6,5/9/98				reset pump	need electrician					
6302	4/14/2002		rep float								
6303	5/00;7/27/01				no problem	need plumber					
6305											
6307	7/05;6/9/08		adj/rep floats		reset breaker	no problem	cleaned cutters	seal failure light on			
MEADOW DR											
111	9/04;1/19/07		adj/rep floats								
8112											
8113	1/03;2/7/06				power off	inside problem					
8114	3/06;8/10/09		adj/rep floats								
3116	6/24/2005				rep discharge line						
8117	7/5/2000				power off						
8116	2/05;9/17/10	rep pump 9/10			retro-fit kit						
8119	5/98;12/22/04	rep pump 12/04			rep relay,bolts,coils	rep heater	retro-fit kit				
MOTTES LN											
8117	4/08;6/11/10	rep pump 6/10	rep float		rep discharge line	heavy grease	reset breaker	retro-fit kit	rep hose	rep control panel	rep cable
8114	8/04;8/1/06	rep pump 1/99	adj/rep floats	rep contactor	heavy grease						
3114	12/09;1/29/10		adj floats		adj cutters						
8115	4/07;1/28/10	rep pump 1/10	adj float		rep relay	rep discharge	install flex hose	rep flange	rep control panel		
8118	11/04;5/22/09				rep discharge line	rep hose	install flange/stand	unjammed pump	removed roots		
8120	2/99;9/30/03	rep pump 9/03	rep float		reconnected wires at breaker		adj cutters	retro fit kit			
8121	12/01;9/11/06		rep float		breaker off in house						
8123	2/09;10/4/10		adj/rep floats		rep hose	rep slide-face valve					
8125	12/1/2003				adj straps						
8127	6/03;9/1/10	rep pump 9/10	rep float	rep contactor	no problem	retrofit kit					
8129	1/99;10/22/06	rep pump 9/96	adj float	rep contactor	seal around alarm light						
8130	1/11/1999		rep float								
8131	9/27/2010				rep switches						
8132	11/03;3/6/09	rep pump 3/09		rep contactor	no problem	check valve off	retro fit kit	rep slideface valve			
8133	9/12/2003		adj float								
8134	11/01;3/23/09		adj float		ground water	rep discharge line	retro-fit kit	rep hose			
8135	10/10/2005		adj float								
8136	9/98;2/1/08	rep pump 9/98	adj floats								
8137	9/03;8/3-16/10		adj/rep floats		cleaned tank						
8138	7/3/2006		rep float								
8139	5/08;8/18/09		adj/rep floats		inside prob	deodorant	rep discharge line				
8141	5/00;11/25/01		rep float		turn on breaker						
8143	1/02, 11/28/06	rep pump 11/06	rep float		breaker off	retro-fit kit	rep hose	rep cable	rep control panel		
8231	9/08;12/11/09		adj/rep floats		breaker off						
8202											

JARH AMPTON PL											
1925	4/01;9/24/10	rep pump 9/10	rep float		retro-fit kit	rep hose	rep control panel	rep cord			
1903	6/08;10/15/08		adj/rep floats		rep discharge line						
1912											
1915	9/02;10/19/07		adj/rep floats		breaker off						
1917											
1920	12/9/2002		adj float								
1921	3/25/2009		rep float								
1925	5/01;3/5-8/07	rep pump 3/07	rep float		tampon in cutters	no problem	rep discharge	rep hose	rep bladder	ren control panel	rep slideface
GDEN CT											
9001	11/00;7/10/05				scraped/washed tank						
9003	8/00;7/22/06		rep floats								
9004	5/16/2003		adj floats								
9007	12/03;9/13/10	rep pump 9/10	rep float		rep hose	rep control panel	rep cord	retro-fit kit			
9008											
9009	7/00;5/11/08	rep pump 2/00	adj/rep floats	rep contactor	rep switch						
9010	10/02;6/4/05		adj floats		power off						
9012	4/07;1/22/09		rep floats	rep contactor							
9015	2/08;4/1-4/09		adj floats		no problem	rep ck valve					
9016	2/09;4/14/09		adj/rep float	rep contactor	reset pump	unclogged cutters	rep fuse				
9017	9/02;1/1/06	rep pump 1/06	rep float		rep ck valve	rep bladder					
OLD SMYRNA RD											
9002	6/03;6/14/06		rep float		breaker off						
9003	11/01;10/28/02				rewired pump	problem inside					
9006	12/08;1/24/09		adj/rep floats	rep contactor	rep discharge line	retro-fit kit	unclogged pump	reset pump			
9007	9/07;5/30/09		adj/rep floats								
9008	5/07;8/31/07	rep pump 8/07	rep floats		rep discharge line	rep hose	rep slideface valve	rep cable	lightning strike 8/07		
9009	4/08;9/24/09	rep pump 9/09	rep floats		reset breaker	rep cord	rep control panel	retro-fit kit			
9010	4/01;4/4/09		adj floats		flushed line						
9011	12/05;11/30/06		rep/adj floats	rep contactor							
9012	2/03;3/24/08	rep pump 3/08	rep/adj floats	rep contactor	rep fuses	clean tank	heavy grease	rep hose			
9013	8/05;11/5/05	rep pump 11/05	adj float		reset pump	call plumber	retro-fit kit				
9015	12/02;3/25/03	rep pump 3/03		adj contactor	rep hose	rep bladder	rep cable	rep control panel			
9017	10/98;3/6/07			rep contactor	rep discharge valve						
9021	10/96;1/15/05		adj float		remove plastic						
9022											
9023	7/05;12/7/06	rep pump 12/06			no problem						
9026	1/08;3/19/09	rep pump 3/09	rep floats		retro-fit kit	rep hose					
9030	5/31/2006		rep floats								
9031	1/08;2/28/08		adj/rep floats		rewired box	rep discharge line	rep hose	rep slide-face valve			
9032	6/05;3/21/09		rep floats		heavy grease	removed roots					
9034	5/05;6/8/06	rep pump 6/06			rep flex hose	retro-fit kit					
9033											
PADDOCK PL											
9104	7/97;6/20/08				washed tank	rep discharge line	retro-fit kit	rep hose			
9105	6/01;1/13/02		rep float		cleaned cutters						
9106	2/08;11/3/08		adj/rep floats	reset contacto	cleaned cutters	heavy grease	rep discharge line	rep hose	retro-fit kit		
9107	1/15/2002				inside problem						
9109	10/03;5/13/08		adj/rep floats								
9111	8/98;8/11/06	rep pump 8/06	rep float		retro-fit kit	rep hose	rep bladder	rep control panel			
9112	4/09;7/1/09		adj/rep floats		cleaned tank	heavy grease	reset pump				
9113											
9114	1/13/2004		rep float								
9115	1/06;9/26/06		rep floats		removed roots	rep hose	rep slideface				
9116	8/02;9/23/10		rep/adj floats		unjammed pump						
9117	7/01;7/9/10		rep floats		rep ck valve						
9118	10/07;11/26/08	rep pump 11/08			reset pump	retro-fit kit	rep hose	rep cord	rep control panel		
9119	4/07;5/28/10		rep/adj floats		rep bolts	rep broken wire					
9121	11/26/2002				reset breaker						
PANORAMA DR											
9318											
9325	9/28/2000				switch off						
9334	12/02;8/8/05		adj floats		cleaned cutters	dried out j-box					
9336	7/28/2008	rep pump 7/08			rep discharge line	retro-fit kit	rep cord	rep control panel	rep hose		
9347	7/09;10/17/09	rep pump 10/09									
9348	9/10;11/18/10	rep pump 11/10			retro-fit kit	rep discharge line	rep hose	unjammed pump	rep control panel	rep cord	
9350	4/00;11/8/10		rep float		cleaned tank	retro-fit kit	rep hose				
9353											
9351	8/03;4/21/08		adj floats		paper towel on float	removed roots					

6355	9/29/1998		adj floats							
6358										
6359	8/24/2008		adj floats							
6383	10/98;3/21/05		adj floats		homeowner problem					
6400	11/20/2005				rep discharge line	reset pump				
6415	12/5/2004				rep discharge line					
6405	8/97;6/26/08		rep float		rep screw	rep control box				
6439	2/97;10/9/06		rep/adj floats		rep ck valve					
6442										
6443	8/98;8/10/05		rep floats		rep bolts	new wire nuts				
6417										
6418	4/98;10/26/02		adj floats		breaker tripped	reset overload				
6421	3/08;8/6/10	rep pump 8/10			unclogged pump					
6422	8/00;9/10/07			reset contactor	rep discharge line	rep slide-face valve	rep hose	rep stand		
6435	4/17/2009		adj floats							
6426	11/08;3/23/09	rep pump 3/09	adj float		rep ck valve	rep cleanout cap	retrofit kit	rep bladder	rep hose	rep electric box
6429	6/98;7/15/03		rep float		no problem					
6430	3/05;6/4/09		adj float		prob. inside	cleaned cutters				
6432										
6434										
PARKER PI										
1200	9/02;1/20/06		adj/rep floats		jumper on seal failure	failure light		ground water		
1202	6/98;9/10/07	rep pump 9/07			ground water	retro-fit kit				
1203										
1204	1/07;12/12/08		adj floats		retro-fit kit	rep discharge line	rep hose			
1205										
1206	2/25/2000		rep float							
1207	9/02;5/26/05		adj float		plumber needed					
1208	11/08;7/30/10		rep float		removed roots	unhung pump	cleaned tank			
1210	5/97;10/23/10	rep pump 10/10	adj float		retro-fit kit	rep hose	rep cord	rep control panel		
1211	8/02;4/8/09		adj/rep floats							
1214	3/5/1999		rep float							
1219	11/06;9/12/08		rep floats		inskle problem	rep discharge line				
1220	2/05;11/26/10		adj/rep floats		rep hose	rep discharge line	rep flange			
1222	1/09;10/8/10		rep floats		rep hose	rep discharge line	retro-fit kit	removed roots	unhung pump	
1224	2/1/2005	rep pump 2/05								
1300										
1302	5/4/2007		rep float		rep discharge line					
1304	11/30/2007				rep discharge line	rep hose				
1305	9/16/2004		rep float		reset breaker					
1306	9/05;8/25/10		adj floats		retro-fit kit	rep hose	rep discharge line			
1310	8/08;9/8/08	rep pump 9/08	adj float		no problem	rep hose	rep bladder	rep control panel	rep cord	rep slideface valve retro-fit kit
1311	7/06;10/12/09		adj floats		reset pump					
1314	10/00;5/23/02		rep float		reset pump	rep relay	grease buildup			
1318										
1321	5/24/2009				remove roots					
1322	8/18/2003				cleaned reset					
1323	11/7/2002		adj float							
1324	6/03;8/14/03	rep pump 8/03			air locked	odor	retro fit kit			
1400	8/00;10/11/04	rep pump 10/04			pump ok	retro fit kit	rep flex hose	rep bladder	rep control panel	rep ECD cord
1404	3/04;3/23/06		adj floats		heavy grease					
1405	10/12/2004		rep floats							
1407										
1408	7/16/2005		rep float							
1409	11/6/2006				rep discharge line					
1410	2/03;5/25/04		rep/adj float		reset pump	rep check valve				
1411	4/02;6/11/09		rep float		rep discharge line					
1412	6/07;9/3/08	rep pump 5/00	rep/adj floats		no problem					
1413	8/06;3/11/10	rep pump 3/10	adj/rep floats		rep fuse	rep hose	rep bladder	rep control panel		
1417	4/05;4/25/09		adj/rep floats		removed roots					
1418	5/06;6/7/08		rep/adj floats		cleaned floats					
1419										
1419	8/01;2/18/08		rep/adj floats		rep bolts in lid	discharge line	no problem			
1420	2/12/2008		adj floats							
1421	1/4/2002		adj float							
1422	4/29/2008				removed roots					
1423	6/2/1997		adj float							
1424	4/13-19/04	rep pump 4/04			heavy grease	retrofit kit				
1425	4/22/2008		rep float	rep contactor						
1426	11/16/2004				no power					
1427	8/28;8/29/00		rep float		rep split switch					
1428	1/4/2008		adj floats							
1432	8/29/2008				reset breaker					
PATRICIA AVE										

[illegible]	7/08;1/30/09	rep pump 1/09	adj float		reset breaker	rep control panel	rep cord	rep hose		
[illegible]	12/09;1/6/11		adj/rep floats		unjammed pump					
[illegible]	3/03;9/22/04		adj floats		rep discharge line	reset overload				
[illegible]	9/5/2004		rep floats							
5108	9/28/2004		rep floats							
8107										
[illegible]										
[illegible]	10/06;10/3/09	rep pump 10/09	rep float		rep hose	rep bladder	rep slideface	rep control panel		
9110	6/99;7/17/07		rep/adj floats		cut inlet pipe					
[illegible]										
[illegible]	12/01;2/6/06	rep pump 2/06			full of paper	rep hose	rep bladder	rep slide face	rep control panel	
[illegible]	10/7/1999		adj float							
9115	6/08;10/12/10	rep pump 10/10	rep floats		retro-fit kit	rep hose	rep control panel	rep cord		
[illegible]										
1705	10/04;2/16/09	rep pump 2/09	adj floats		line clogged	heavy grease	rep hose	rep cord	rep control panel	
1709	10/28/2007				unjammed pump					
1710	9/01;9/22/08		rep float		rep discharge line	retro-fit kit	rep hose			
[illegible]										
1423	5/4/2009		adj float		rep discharge line	rep hose	rep slide-face valve			
1424	2/26/2001				tampon in cutters					
1426	9/09;8/20/10	rep pump 8/10	rep floats		retro-fit kit	rep hose	rep control panel	rep cord		
[illegible]	7/03;1/6-7/08		adj floats		cleaned tank	rep discharge line				
[illegible]	1/4/2010	rep pump 1/10			retro-fit kit	rep control panel	rep hose	rep cord		
1434	1/99;12/26/02	rep pump 12/02	adj float		rep hose	rep control panel	rep cable			
1501	2/03;8/21/05	rep pump 2/03			water in j-box	rep control panel	slow drain			
1502	5/17/2005	rep pump 5/05			retro-fit kit					
1505										
1507	6/21/2004		rep float							
1509	9/17/2007		adj floats							
1511	12/02;6/8/06		adj/rep floats							
1512	6/04;3/30/07	rep pump 3/07	adj float		breaker out	adj cutters	needs plumber			
1515	1/16/2002				rep bladder	rewired	rep panel	rep hose		
1516	8/27/2008		adj float		rep discharge					
1517	7/07;5/19/08		adj/rep floats							
1518	7/08;11/6/08		adj/rep floats		removed roots					
1519	4/09;4/2/10	rep pump 4/09	rep float		reset breaker	rep hose	retro-fit kit	rep control panel	rep cord	rep discharge line
1520	4/04;5/4/06	rep pump 2/04			retro fit kit	rep discharge line	no problem			
1521	5/16/2002	rep pump 5/02								
1522	12/18/2007			rep contactor						
1523	12/15/2005	rep pump 12/05								
1525	12/12/2005	rep pump 12/05			rep hose					
1526	6/03;11/2/04				rep discharge	heavy grease				
1527										
1528	8/08;7/1/10	rep pump 7/10			retro-fit kit	rep control panel	rep hose			
[illegible]										
5203	9/29/2010				retro-fit kit	rep hose				
6105										
[illegible]										
1201	6/08;10/29/09	rep pump 10/09	rep float	rep contactor	unjammed cutters	retro-fit kit	rep hose	rep control panel	rep cord	
8203	4/03;3/17/06		adj floats		NO DISCONNECT					
8204										
8205	1/06;5/16/08		adj floats		rep discharge line					
8207	5/03;6/16/09		adj floats		homeowner problem	no power	reset pump			
8208	11/09;9/7/10	rep pump 9/10	adj floats		removed roots	retro-fit kit	rep hose	rep control panel	rep cord	
8209	4/3/2003		rep float							
6210	9/08;5/25/10	rep pump 5/10		reset contactor	rep discharge line	rep cord	rep control panel			
8211	3/08;9/28/09	rep pump 9/09			no power	rep hose	rep control panel	rep cable		
8212	9/13/2007		rep float							
[illegible]										
103	10/05;4/10/07		adj floats		heavy grease					
104	10/09;3/16/10		rep float		retro-fit kit	rep hose	rep discharge line			
107	NO PUMP									
201	10/07;10/23/09		adj/rep floats							
203	1/29/1997			rep contactor	rep fuse					
208	6/08;7/2/08		adj/rep floats		ok					
210	11/01;10/30/07	rep pump 10/07			cleaned cutters					
212	6/05;9/1/09		adj/rep floats		prob in house	turned on	heavy grease	retro-fit kit	rep hose	

[illegible]	7/06;10/11/09		adj floats		odor prob in house	retro-fit kit	cleaned floats	rep hose	rep discharge line
[illegible]	6/07;11/20/08	rep pump 11/08	adj floats	rep contactor	tie wires	needs plumber	retro-fit kit		
[illegible]									
305	1/02;6/14/10		adj/rep floats		prob in house	heavy grease			
[illegible]56	9/07;5/6/10		rep float		aligned pump	enzymes	no problem	rep fuse	
[illegible]	5/04;9/20/10		rep float		heavy grease	retro-fit kit	rep hose		
30[illegible]									
307	8/04;10/16/07		adj floats	rep capacitor					
308	4/10/2002		adj float						
310	9/03;3/29/05		adj/rep floats						
312	6/05;1/24/08	rep pump 1/08	adj/rep floats		breaker off in house	retro-fit kit	rep hose		

[illegible] MEGATE CT

6[illegible]	4/08;11/8/10	rep pump 11/10	adj floats	no problem	retro-fit kit	rep hose	rep slide-face valve	rep cable
[illegible]								
0301	5/06;11/29/10		rep floats	cleaned cutters	retro-fit kit	rep hose		
[illegible]	12/99;3/15/02		adj float	seal light fixed	switch was off	removed roots		
0304	8/02;5/23/10	rep pump 5/10		rep flex hose	rep stand	retro-fit kit	rep control panel	rep slide-face valve
0305	5/00; 3/14/01		adj float	seal light on	electrical problem	cleaned tank		
[illegible]08	11/03,12/30/08	rep pump 12/08		plumber	retro fit kit			
0307	12/17/2002		rep float					

ROSEWOOD VALLEY CT

6311	6/05;5/5/10		adj/rep floats	retro-fit kit	rep discharge line	rep hose		
5317	3/97;12/27/05	rep pump 12/05	adj float					
[illegible]								

[illegible]NOXZI VALLEY DR

[illegible]V0	5/4/1998			high water				
[illegible]40[illegible]	1/9/2006	rep pump 1/06		rep hose	rep control panel	rep stand	rep slideface	
1905	11/08;10/15/10	rep pump 10/10		no problem	tampon in cutters	retro-fit kit		
1908	12/97;5/25/98		adj float	no problem				
1909	5/02;5/1/07		adj floats	slow drain				
1910	3/07;3/17/08		rep floats	rep discharge line	rep hose	rep stand	rep slideface	
1918	2/06;12/23/09		adj floats	unclogged pump	cleaned tank			
[illegible]47								
1920	4/04;9/8/10	rep pump 9/10		rewired pump	cleaned pump	heavy grease		
1921	8/98;10/26/01		rep/adj float	took out jumper				
[illegible]4	8/09;9/10/09		rep floats	heavy grease	reset pump			
[illegible]24	8/98;12/18/06		rep/adj floats	switch off	rep fuse			
1928	5/97;2/25/09		adj floats					
1929	10/00;5/29/08		rep float	no problem	need plumber			
1937	10/18/2007		adj float					
1[illegible]3								
1935								
1937	8/6/2008		adj float					
1940	9/10/2004		rep float					
1941	5/06;6/29/07		adj/rep floats	electricity off				
1945								

SAD[illegible]ELBOW DR

81[illegible]	4/98;1/16/99		adj float	turned on				
8117	11/99,11/25/09		rep float	rep contactor	removed roots			
8126	4/02,3/15/04			prob inside house	rep ck valve			
[illegible]120								

SHADY PL

810[illegible]	11/30/2010		adj floats	inside problem				
8[illegible]3	9/09;9/1/10	rep pump 9/10		rep hose				
8110	8/04;11/13/10	rep pump 11/10		rep hose	rep bladder			
8[illegible]14	5/10/2010	rep pump 5/10						
81[illegible]5	8/07;3/25/09	rep pump 8/07	rep float	reset box	cloth in cutters	rep hose	reset breaker	
8[illegible]16	10/03;12/22/10		rep floats	breaker off				
81[illegible]								
8[illegible]18	7/01,7/5/05	rep pump 7/05	rep floats	retro fit kit				
8[illegible]19	10/08;8/31/09	rep pump 8/09	adj floats	rep discharge line	rep cord	rep control panel		

SHAMROCK DR

1856										
1857	3/02;7/10/03		adj float		sock in cutters					
1861	10/5/2010				retro-fit kit	rep discharge line	rep hose			
1861										
1884	5/04;6/5/06		adj floats		heavy grease					
1864	7/17/2006		adj floats							
1865	6/2/2005		adj float							
1869	5/12/2002				rep stand	rep hose				
1870	2/3/2007		rep float		removed roots					
1880	7/08;5/31/10		adj/rep floats		rep discharge line	rep hose				
1885	5/08;6/20/08		adj float		unclogged pump					
1890	8/08;1/19/09		adj/rep floats		reset breaker					
1895	7/08;12/9/08		rep floats		reset breaker					
1903	9/16/2005				rep discharge					
1913	6/01;5/12/03		rep/adj float		rep discharge					
1917	10/06;9/18/09		rep floats							
1825	4/02;5/31/06	rep pump 5/06	adj float		retro-fit kit					
1829	12/9/2003		adj float							
1931	10/06;5/8/08		rep floats		cleaned pump	rep discharge line	cleaned cutters	heavy grease		
1933	6/97;1/25/06		adj floats		rep fuse					

SHAMROCK DR

509	12/05;3/1/06				heavy grease	inside problem	power to house off			
512	3/98;4/20/06	rep pump 4/06			cleaned tank	rep hose	rep bladder	rep control panel		
513	6/98;5/14/07	rep pump 6/98	adj floats	rep contactor	roots in tank	seal light				
514	12/27/2004	rep pump 12/04			retro-fit kit	rep hose	rep bladder			
515	8/09;10/14/09	rep pump 10/09			reset pump	rep hose	retro-fit kit	rep control panel	rep cord	
516	4/02;5/21/10	rep pump 6/00	rep float	rep contactor	rag in cutters	reset pump	rep brackets	rep discharge line	cleaned	retro-fit kit
517	11/06;7/16/09		adj floats							
518	7/03;8/12/08	rep pump 8/08	adj float		power off	cleaned cutters	retro fit kit	rep hose		
520	8/09;3/29/10			rep contactor	rep fuse	rep discharge line	rep hose	unclogged pump	rep bolts in lid	
608	7/07;4/15/10		rep/adj floats		no problem	j-box wet	rep flex hose	heavy grease	underwear in cutters	
604	10/03;2/28/06		rep/adj float	rep contactor	heavy grease					
605	9/06;12/26/07				no problem	rep discharge line	rep fuse			
604	2/06;9/12/06		adj/rep floats		pump off					
607	3/99;8/14/09		rep float		rep fuse	rep discharge line	retro-fit kit	rep hose		
606	9/99;2/8/08		adj floats							
609	5/06;5/10/10	rep pump 5/10	adj float		reset breaker	no problem	rep slide-face valve			
610a	4/05;3/26/08		adj float		cleaned tank	cleaned floats	grease buildup			
609	12/99;5/5/09	rep pump 12/99	rep floats	reset contactor						
610	5/02;2/8/05		adj/rep float							
611	11/01;8/21/06	rep pump 11/01	rep float							
612	4/04;5/31/05	rep pump 4/04			prob in house	retro-fit kit	inlet clogged			
615	6/98;4/26/02		adj float		seal failure light					
703	2/09;6/16/09			rep contactor	no problem					
704	10/05;7/2/10	rep pump 7/10	adj float		rep hose	rep bladder	rep panel			
705	2/05;10/10/07		rep/adj floats	rep contactor	rep fuse	rep breaker	cleaned tank			
703	10/06;1210-13/06	rep pump 12/06	adj floats		homeowner problem	cleaned cutters	retro-fit kit			
711	9/17/2003	rep pump 9/03			E-one retro kit					
712	5/5/2010				retro fit kit	rep discharge line	rep hose			
713	8/03;11/21/07	rep pump 11/07			retro fit kit					
714	8/04;2/17/06		adj/rep floats							
715	1/3/2005	rep pump 1/05			retro-fit kit					
717	1/98;9/19/08				rep fuse	rag in cutters	rep breaker			
718	4/6-20/09		adj floats		washed inside	tampon in cutters	cleaned cutters			
719	1/98;8/30/08	rep pump 8/08	adj float		rag in cutters					
720	8/28/1997				rep fuse					
800	10/01;9/28/10		adj/rep floats		tampax in cutters	retro-fit kit	rep discharge line			
801	7/05;9/27/10	rep pump 11/00	adj floats		no problem					
802	5/07;4/28/08	rep pump 4/08	rep/adj floats		reset breaker	heavy grease buildup	rep cord	rep control panel	rep hose	retro-fit kit
804	11/00;11/25/10		adj float		reset breaker					
805	4/00;5/4/08		adj/rep floats		discharge leaking					
805	5/06;9/21/10	rep pump 9/10	adj/rep floats		cleaned tank	retro-fit kit	rep control panel	rep cord		
806	2/02;10/4/10	rep pump 10/10			no problem	cleaned tank	retro-fit kit	rep cord	rep hose	rep control bracket
807	7/23/2002	rep pump 7/02			rep hose	rep stand	rep cord	rep control panel		
809	10/03;7/8/07		adj/rep floats		rep discharge line					
811	1/08;8/19/08	rep pump 12/98	adj/rep floats		inside problem	rep ck valve	re-set breaker			
811	12/07;9/15/08	rep pump 9/08	adj/rep floats	rep contactor	heavy grease	rep hose	rep slide-face valve	rep control panel		
812	10/02;10/17/08		adj/rep floats		removed roots					
813	8/02;11/2/09		rep/adj floats		discharge clogged	rep discharge line	rep check valve	retro-fit kit	rep hose	
814	4/4/2003	rep pump 4/03			rep hose	rep bladder	rep control panel	rep cable		
815	3/10;5/6/10		adj/rep floats		re-set pump	removed roots	retro-fit kit	rep discharge line	rep hose	
816	2/9/2008	rep pump 2/08			retro-fit kit	rep hose	rep slide-face valve	rep control panel		

SHERWOOD DR

176[illegible]	10/98;10/3/05		adj floats							
1707	4/16/2003	rep pump 4/03			rep hose	rep bladder	rep slide face	rep cable	rep control panel	
1708	10/21/2008				rep hose	retro-fit kit	rep discharge line			
1709	11/06;7/29/10		adj/rep floats							
1710	2/00;6/30/06	rep pump 6/06	rep float		rep hose	rep bladder	rep control panel			
1711	7/04;8/3/10	rep pump 8/10			cleaned tank	retrofit kit	rep bladder	rep flex hose		
SKYLINE DR										
210	12/02;3/12/10	rep pump 3/10	rep float	rep capacitor	retro-fit kit					
212	5/02;6/1/10	rep pump 6/10			hole in discharge line					
214	1/19/2006	rep pump 1/06								
216	1/99;9/9/08	rep pump 9/08			pump off	rep circuit board	rep hose			
218	1/6/2011	rep pump 1/11			rep equalizer					
220	11/01;1/3/06	rep pump 1/06	rep float		discharge line	retro-fit kit	rep hose	rep control panel	rep bladder	
SPLITRAIL DR										
710	4/7/2002				discharge line					
711	10/26/1998			rep capacitor	tightened wires					
716										
719										
STUART LN										
7311	12/04,6/7/06	rep pump 6/06	rep float	rep contactor	rep clean out cap					
7314	6/06,9/11/08		rep/adj floats		heavy grease					
7319	5/04 4/18/07	rep pump 4/07	adj/rep floats	rep contactor	rep circuit breaker	rep control panel	retro-fit kit	rep hose	rep bladder	
7314	8/11/2002		rep float							
7316	10/31/2005	rep pump 10/05			rep flex hose	rep breaker				
7318	10/14/2003		rep float							
SUZANNE DR										
8120	2/26/2003		adj float							
8121	11/03;8/11/09		adj/rep floats		rep discharge line	rep hose				
8122	6/08;12/23/09		adj/rep floats		rep discharge line	rep hose	rep fuse			
8123	9/5/2003				plumber					
8124	10/02;10/23/05		adj/rep float		removed diapers/rags		heavy grease			
8125	8/14/2001		adj float							
8126	6/00;4/25/03				slow drain	cleaned tank				
8127	4/03;5/25/09		rep/adj floats		cleaned tank					
8130										
8132	11/03;1/7/11		adj/rep float		retro-fit kit	rep discharge line	rep hose			
8134	12/02;10/14/08		adj/rep floats		cleaned tank	retro-fit kit	rep discharge line	rep hose		
8135										
8136	12/03;9/4/04		rep float		inst flex hose	inst flange				
8138	4/12/2007	rep pump 4/07			retro-fit kit	rep hose	rep control panel			
8140	4/07;11/12/07	rep pump 11/07	rep/adj float		rep discharge line	rep hose	rep control panel			
8142	5/15/2008		rep floats							
8220	4/02,3/26/03		adj floats		high water	rep discharge				
UPPER PL										
5214	11/99;2/26/10		adj/rep floats		clean tank	disconnect off	retro-fit kit	rep discharge line	rep hose	
5216	4/06;2/25/08		adj/rep floats		heavy grease buildup					
5217	8/98;10/11/00		rep float		needs plumber					
5218	7/04;12/2/08	rep pump 12/08	adj floats		breaker tripped	rep discharge line	rep wires	rep control panel		
5219	1/04;4/19/09	rep pump 4/09			breaker off	retro-fit kit				
5302	11/05;8/1/08	rep pump 8/08	rep float	rep contactor	no problem	heavy grease	rep discharge line	rep hose	rep control panel	rep cable
5303	5/4,5/17/00		adj float							
5304	3/13/2008		adj float		removed root ball					
5305	10/08;11/8/08		adj/rep floats		removed root ball					
VALLEY DR										
8005	10/5/2005		rep float							
8006	12/16/1996		adj floats							
8008	9/6/2007		adj floats							
8009	10/07;11/5/09		adj floats							
8010	8/07;8/8/09				roots in tank	re-set breaker	reset pump			
8011										
8100	11/02;11/24/10	rep pump 11/10	adj float							
8101	6/07; 9/19/07		adj/rep floats		removed roots					

8104	2/06/10/20/06	rep pump 10/06	adj floats		rep discharge line	rep flex hose	rep flange	retro-fit kit	rep hose	rep bladder
8105	12/07,6/1/09		rep/adj floats		rep discharge line	re-set breaker	rep bolts			
8106	5/97;6/17/09		adj floats		cleared obstruction					
8107	5/04,3/28/08	rep pump 3/08	rep/adj floats		heli coil	line leak	install riser	rep hose		
8108	2/04,9/4/05		rep float			rep discharge line				
8109	11/08;1/6/10	rep pump 1/10			retro-fit kit					
8110	5/08,6/22/09		adj/rep floats		rep leak	need plumber inside				
8111	4/04;3/3/05		adj float		heavy grease					
8112	12/5/2007	rep pump 12/07			retro-fit kit	rep hose	rep cable	rep control panel		
8113										
8114										
8115	12/28/2010		rep float							
WARNER CT										
1701	10/05;4/15/06		adj/rep floats		heavy grease					
1210										
WARNER RD										
3009	7/04;12/16/04		rep/adj floats							
8011	3/08;3/8/10		adj float		heavy grease buildup					
8012	3/31/2004	rep pump 3/04			retro fit kit					
8014	12/11/2006				rep discharge line					
8015	12/21/2010				retro-fit kit	rep hose	rep ck valve			
8016	9/12/2005		adj floats							
8018	4/4/2006				inside problem					
8014	11/10/2001		adj float							
8102	10/98;8/18/08		rep float		rep discharge line	rep hose				
8106	1/08;8/12/10	rep pump 8/10	rep float		breaker off	removed roots	rep hose	rep cord	rep control panel	
8107	7/00;1/8/02		adj float							
8108	10/98;5/12/02		adj/rep float							
8109	3/97,4/13/99		rep float		no problem					
8115	10/06;5/10/10		adj floats		retro-fit kit	rep hose				
8116	3/02;11/25/03		rep float		teeth in cutters					
8117	8/29;8/30/01	rep pump 8/01	rep float		rep conduit	rep wires				
WESTBOURNE DR										
8106	10/06;11/2/06		rep float		cleaned cutters					
8404	5/05;7/30/08		adj float		tampon in cutters	installed slideface	rep flex hose			
8501	8/00;5/15/02	rep pump 8/02	clean float		scraped tank	weight on float				
8508	2/01;9/8/08				cleaned cutters	rep discharge line	rep hose	retro-fit kit		
8409	3/16/2010	rep pump 3/10			retro-fit kit	rep hose	rep cord	rep control panel		
8411	9/06;11/20/06		adj/rep floats		removed roots					
8416	9/99;7/23/00				realigned pump	adj discharge				
8417										
8420	12/19-26/08		adj/rep floats							
WEST CONCORD RD										
8102	2/14/2000		rep/adj float							
8111	8/04;7/29/08		adj/rep floats							
8113										
8114	6/09;8/27/10	rep pump 8/10	rep/adj floats	rep contactor	retro-fit kit	rep hose	rep discharge line	rep cable	rep control panel	
8117	8/04,1/5/06		rep floats	rep contactor	rep control panel					
WILKLE RD EAST										
8007	9/22/2008		rep float							
8008	8/04;5/16/09		adj floats							
8010	1/15/2008				removed roots					
8011	8/27/2005		adj floats							
8012	7/02;11/29/10	rep pump 11/10	adj floats		reset pump					
8013	11/00;7/23/04		adj floats		cleaned cutters	rep reset switch				
8014	9/09;10/29/10	rep pump 10/10			rep hose	rep bladder				
8015	5/9/2007	rep pump 5/07			rep hose	rep bladder	retro-fit kit	rep control panel	rep slideface valve	
8016	12/04;10/16/08	rep pump 10/08			rep hose	rep bladder	retro-fit kit			
8104	3/02;4/19/08		adj/rep floats							
8105	10/08;9/7/10	rep pump 9/10	adj/rep floats		scraped tank	rep breaker	reset switch	retro-fit kit	rep control panel	
8107	9/01;3/24/04		rep floats							
8108										
8109	7/06;10/22/08	rep pump 10/08			retro-fit kit	rep bladder	rep hose	rep control panel		

8107	6/07;3/1/10	rep pump 3/10	rep floats		rep cord	rep control panel				
8108	5/10/2004		rep float							
8109	5/97;7/12/07		adj floats							
8110	5/02;4/19/06				rep nipple	rep flex hose	rep gate valve	breaker tripped		
8111	1/00;1/14/08	rep pump 1/08	rep float		rep hose	rep cord	rep control panel			
8112	2/06;3/3/06	rep pump 3/08	rep float		rep cable	rep slideface	rep control panel			
8113	5/14/2001		adj/rep floats							
8114	5/06;3/13/09		adj/rep floats		heavy grease					
8115	1/08;1/11/10	rep pump 1/10	adj floats		adj cutters	reset pump	retro-fit kit	rep hose	rep control panel	rep [illegible]
8116	8/25/2010		rep float							
8120	9/08;5/13/10	rep pump 5/10	rep float		cleaned cutters	rep hose	rep control panel	rep cord		
8121	6/17/2009				reset breaker					
8122	4/06;9/2/07		adj floats							
WILLOWOOD DR										
635	3/06;7/22/10		adj floats		inside prob 5/97;3/06					
6354	7/10/2007				rep discharge line					
6360										
6405	10/97;4/11/06		rep float		rep discharge line					
6409										
6409	12/7/2008		rep float		rep switch	rep bolt				
6413	10/96; 2/23/01		adj floats							
6413	6/04;8/8/08	rep pump 8/08			cut inlet pipe	rep stand	rep flex hose	no problem	rep 3 fuses	rep 3 [illegible] retro-fit kit
WILLOWOOD VALLEY DR										
6331	8/1/2003				cutters clogged					
6332	8/99;10/20/06	rep pump 10/06			ck valve was off	call electrician	retro-fit kit	rep hose	rep bladder	rep control panel
6334	5/15/1999		rep float							
6335	3/31/2009				retro-fit kit	rep hose				
6339	4/09;12/16/10	rep pump 12/10			retro-fit kit	rep hose	rep cord			
6340										
6343	12/22/2003		adj/rep floats							
6344	10/28-29/04	rep pump 10/04	adj float		clogged cutters	reset pump	retro-fit kit			
6407										
6408										
6409	3/4/2010				inside blockage					
6406	9/00;11/2/04				pump ok	inlet pipe	removed roots	rubber glove in cutters		
6409	6/02;10/8/07		adj float		no problem	adj metal weight				
6410										
6412	1/00;5/27/06		adj float		need plumber					
6413	2/00;7/27/05	rep pump 2/00			installed discharge line	heavy grease				
WILSON PK										
312	10/13/2003		rep float							
317	8/07;4/7/08		rep float		rep discharge line	towel in cutters				
401	11/2/1998				unclogged line					
402	3/30; 4/12/01		adj float		rewired j-box					
405	6/09;9/17/10	rep pump 9/10								
407	8/24/2005	rep pump 8/05			rep hose	rep bladder				
408	4/14/2006		adj floats							
410	4/09;12/9/09	rep pump 12/09			leak at ck valve	bad disconnect	unjammed cutters	rep cord	rep control panel	
502	10/01;8/9/03	rep pump 8/03			no problem	reset tripped	rep ck valve	rep coupling		
508	9/97;4/16/07		adj float		rep discharge line	underwear in cutters				
512	9/97;7/5/00		rep float							
514	4/00;5/30/05		adj float		rep discharge line	rep flex hose				
516	3/11/2010	rep pump 3/10								
518	8/03;9/10-11/07	rep pump 9/07	adj float		valve not open	rep fuse	reset kicked out	retro-fit kit	rep check valve	
602	1/09;8/6/09	rep pump 8/09	adj/rep floats	rep contactor	retro-fit kit	rep cord	rep control panel			
604	8/07;7/20/09	rep pump 7/09	rep/adj floats		reset breaker	rep control panel	rep cord	rep bladder		
706	2/08;12/24/09	rep pump 12/09	adj float		retro-fit kit					
708	1/3/2000		cleaned floats		cleaned tank					
710	6/7/1998		adj float							
712	12/07;12/26/08	rep pump 12/08		rep contactor	rep hose	rep bladder	rep control panel			
726	4/03;11/22/08		rep float		rep discharge line	rep hose	retro-fit kit			
728	7/13/2010				rep discharge line					
730	6/05;5/8/09		adj/rep floats		retro-fit kit	rep hose				
732	10/00;8/19/07		adj floats		no power to box					
738	9/99;9/24/05		rep/adj floats		rep discharge	rep hose	rep slide face			
802										
803	12/13/2005		adj floats		removed roots	heavy grease				
804										
805	6/06;1/5/07		adj/rep float		rag in cutters	hair in cutters				
810										
814	4/03;2/15/06	rep pump 2/06	adj float		reset pump	retro-fit kit	rep hose	rep bladder	rep control panel	

[illegible]	1/07;10/6/08	rep pump 10/08			rep hose	rep bladder				
[illegible]					kink in discharge					
[illegible]	1/03,4/2/10	rep pump 4/10			rep bladder					
[illegible]	4/04;7/16/08	rep pump 12/02			rep bladder	rep hose	reset breakers			
[illegible]	8/00;8/11/03	rep pump 8/03			no problem	rep bladder	rep hose			
201 (Fire Station 2)	8/6/1998				checked ok					
WINCHESTER RD										
1104	1/9/2009				reset pump	rep discharge line				
[illegible]	1/20/2005		rep float							
1107	11/06;9/17/07	rep pump 9/07	rep/adj floats		breaker off	retro-fit kit	rep hose	rep cable	rep control panel	rep slide-face valve
1108										
1109										
[illegible]	11/28/1999		rep float		clean tank					
[illegible]	11/13/2002				pbl inside					
1312										
1317	5/5/2010	rep pump 5/10			rep hose	rep control panel	rep cord	rep check valve		
1317	2/04;7/13/06	rep pump 7/06	adj float		cleaned cutters	retro-fit kit	rep hose	rep bladder	rep control panel	
AUBURN LN										
814	9/02;7/22/05		rep float		sock in cutters	no power				
815	3/20/2002				cleaned/bugged					
816	5/08;3/29/10	rep pump 3/10	adj floats		retro-fit kit	rep cord	rep control panel			
[illegible]	11/18/1996				adj cutters					
MAYFIELD CT										
9020	3/06;2/21/08		adj/rep floats		rep discharge line	rep hose				
9021	5/03;8/1/08		adj float	rep contactor	rep fuse	turned pump on				
9024	10/05,9/30/09		adj/rep floats		rewired	rep discharge line	installed hose			
9025	12/07;8/11/10		adj/rep floats		removed buildup	rep discharge line	installed hose			
9026	11/21/2005		adj/rep floats							
CHATFIELD CT										
75	4/09;10/15/10	rep pump 10/10	rep float		retro fit kit					
275										
276	6/06,11/19/09	rep pump 11/09			no problem	reset overload	retro fit kit	rep hose		
CHATHAM CT										
8202	12/05;12/30/08		adj floats		rep ck valve	removed roots				
8206	3/18/2003		rewired floats							
SMITHSON LN										
9451	4/6/1997				contractor prob					
9457										
9461	8/28/2002		rep float							
9462										
9932	6/07;8/18/07	rep pump 8/07			rep ck valve	rep start relay	no problem	rep hose	rep bladder	rep control panel
946	*Not on agreement*				rep ck valve					
9437	1/04;12/24/04		adj floats		rep relay	clean tank	heavy grease			
4439										
9475	3,7/98;2/25/99		adj floats		build up	scraped tank				
9477	10/02;8/20/03		rep float		rep fuse	rep relay	heavy grease			
9479	7/99,11/24/09	rep pump 11/09			no problem					
[illegible]	12/09,4/12/10	rep pump 4/10	adj floats		reset pump	rep discharge line	retro-fit kit	rep hose		
9487	6/3/2008	rep pump 6/08			rep hose					
9482										
9483	12/97;8/11/99		adj float		no odor-12/97	no problem				
9485	7/6/2007				drained j-box					
9487	1/08;7/23/10	rep pump 7/10			rep hose	rep control panel				
EDMONDSON PK										
711	10/99;2/19/09	rep pump 2/09			plumber needed	rep hose				
715	7/13/2004	rep pump 7/04			rep hose	rep bladder				

72	9/09-11/13/09	rep pump 11/09			rep breather	rep discharge line				
722	3/25/2000	rep pump 3/00								
726	5/29/2008	rep pump 5/08			rep hose					
733	9/01;11/12/03	rep pump 9/01			rep bladder	no problem				
746	7/00;6/27/08	rep pump 6/08			rep hose	rep cord				
75	2/01;9/28/05	rep pump 9/05								
752	9/9/2003	rep pump 9/03			rep hose	rep bladder				
757	7/00;6/8/06	rep pump 6/06			rep hose	rep bladder				
766	12/02;11/16/06	rep pump 11/06			rep hose	rep bladder	rep fuse	reset breaker	unlocked	
767	12/07;10/3/08	rep pump 10/08			rep hose	rep bladder				
780	10/04;6/5/06	rep pump 6/06			removed roots	rep bladder	rep hose			
771	7/12/2010	rep pump 7/10								
775	10/03,10/23/03	rep pump 10/03			rep hose	rep bladder	inside problem			
786	1/7/2005	rep pump 1/05			rep hose	rep bladder				
808	4/17/2005				rep hose	rep bladder	moved pump			
829	12/02;12/03	rep pump 12/03			rep hose	rep bladder	rep control panel			
831	3/03,9/8/04	rep pump 9/04			rep hose	rep bladder				
837	7/26/2002	rep pump 7/02								
8	7/07,1/11/10	rep pump 1/10			rep discharge line	rep bladder	rep hose	rep control panel	repair discharge valve	rep cord
883	7/6/2004				rep fuse					
8F	4/19/2003				reset breaker					
895	9/21/2010		rep float		retro-fit kit	rep hose	rep discharge line			
73	11/01,12/13/06	rep pump 12/06	rep/adj float		retro-fit kit					
920	3/06;8/2/06		adj floats		rep bolts/washers					
920	6/27/2009	rep pump 6/09								
925	7/1/2009		adj floats							
945	3/08;5/30/06		adj floats		removed control box	heavy grease				
962	8/12/2010	rep pump 8/10			rep wires	rep control bracket				
1012	12/6/2005		adj floats							
1016	11/04;4/26/06				cleaned cutters	rewired j-box				
6145	1/23/2006	rep pump 1/06			rep hose	rep bladder	rep PVC pipe			

CROCKETT PARK

200 Horse	3/05;1/16/10			rep contactor	rep discharge line	retro-fit kit	rep hose			

SOUTHERLAND FL

9024	5/06;8/16/06		rep float	rep capacitor	rep hose	rep relay	rep flange	heavy grease buildup		
9025	9/05;5/19/08	rep pump 5/08			rep discharge line	retro-fit kit	rep hose			
9028	3/08;10/24/10	rep pump 10/10	rep float		water in junction box	retro-fit kit	rep hose	rep control panel	rep cord	
9029	4/02;11/21/06	rep pump 4/02			rep hose	rep stand	rep off switch			
9033	5/01,9/1/03		adj float		ground water	heavy grease				
9039	8/03,11/12/07	rep pump 11/07		rep contactor	discharge broken	install flex hose	retro-fit kit	rep slide-face valve	rep cable	
9042	12/26/2007				rep ck valve					
9044	10/04;7/6/09		adj float	rep contactor	ground water	install flex hose	rep discharge line			

410	3/30/2006				reset breaker					
41	3/09,10/24/10		adj floats		retro-fit kit	rep hose	rep discharge line			
42	8/05;5/6/10	rep pump 5/10	rep/adj float							
42	7/04;9/27/07		rep float		rep discharge line					
427	10/07;11/26/07	rep pump 11/07			heavy grease	retro fit kit	rep control panel	rep cable	rep hose	
428	3/21/2009				rep hose	rep slide-face valve	rep stand			
431	9/03;11/6/06	rep pump 11/06			rep hose	rep bladder	rep control panel	rep cable		
435	5/30/2000		rep float		rewired box					
437	12/09;9/3/10		rep floats		turned off horn	rep fuse	rep hose	turned on cut-off	rep slide-face valve	
439	2/09;11/6/09		adj/rep floats	rep contactor	no problem	retro-fit kit	rep hose			
442	2/09,10/11/09	rep pump 10/09	adj float	rep contactor	heavy grease	rep ck valve	rep bolts			
443	6/97;1/23/10	rep pump 1/10	rep/adj float		rep cord	rep control panel	rep hose			
446	7/04;9/7/10	rep pump 9/10			retro fit kit	rep ball valve	rep ck valve			
447	11/09,12/23/10	rep pump 12/10	adj float		cleaned tank/floats	retro-fit kit	rep discharge line	rep cord	rep control panel	

[illegible]												
5218	7/07;9/21/07		rep float			rep discharge line						
5100	7/99;8/8/05					breaker off	rep disharge line					
5302	7/4/1999		adj float									
5303	4/00;10/30/01		adj float			reset pump	cutters clogged	cleaned tank				
5304	7/21/2004					no problem						
5305												
5306												

[illegible] OW LANE RD												
5209	10/01;2/17/02		adj float			deodorized	pipes clogged	seal failure	reset breaker	rewired		
5019	3/26/2008		adj float			heavy grease						
5311	9/04;4/10/07		adj float			reset relay	tampon in cutters					
5014	3/9/2003					reset overload						
5101	9/09;6/7/10	rep pump 6/10				rep discharge line	rep hose	rep cord	rep control panel	retro-fit kit		
5102	4/07;8/23/07		adj float			rep discharge line	no problem					
5103	4/4/2004		rep/adj floats			roots						
5104	5/09;6/23/10	rep pump 6/10	adj/rep floats			heavy grease	lost glasses	cleaned cutters	retro-fit kit			
5105	1/06;2/2/07		adj floats			heavy grease	no problem					
5107	4/12/2007					rep discharge line						
5108	6/24/2006					no problem						
5109	7/01;3/11/02		rep float			cleaned tank	reset relay	electrical problem				
5110	6/10;9/16/10	rep pump 9/10	adj floats			retro-fit kit	rep hose	rep discharge line	rep control panel	rep cord		
5111	7/13/2001		adj floats			rep wire						
5112	9/23/1997		adj floats									
5113	3/06;1/9/11					no problem	rep discharge line	rep hose				
5115	10/4/2010		rep float									
5117	4/07;8/22-23/08		adj floats			cleaned tank	rep discharge line	retro-fit kit	rep hose	drained water from box		
5121	2/08;12/7/09	rep pump 12/09		rep capacitor	rep contactor	rep breaker	adj pump/discharge	rep control panel	rep hose	rep stand	retro-fit kit	heavy grease
5123	8/21/1998					deodorized						
5201	9/2/2009		rep float									
5204	8/10/1998					no problem						
5206	7/8/2009		adj float			rep starter						
5207						retro-fit kit	rep discharge line	rep hose				
5208	1/04;2/21/06		adj floats			heavy grease	valve closed					
5209	8/98;12/20/98		adj float			inside problem						
5210	6/03;3/21/06		adj float			rep discharge line	rep hose	rep slide face				
5213	5/07;11/15/10		rep float			reset breaker	rep breaker	rep check valve				
5214	7/20/2001					reset pump						
5215	5/01;6/25/08		adj/rep floats			cleaned tank						
5216	5/09;11/5/09	rep pump 11/09				retro-fit kit	unclogged cutters					
5217	6/05;7/15/10					cleaned cutters	retro-fit kit	rep hose	rep discharge line			
5218	5/1/2002					cut inlet pipe						
5219	8/8/2005					electrical problem						
5220	8/5/1998					sewer coming from tank beside house						
5302	11/11/2008					retro-fit kit	rep discharge line	rep hose				
5307	7/6/2006		adj float									
5308	12/08;1/4/11	rep pump 1/11				cleaned tank	retro-fit kit	rep discharge line	unjammed pump			
5309	3/08;12/17/09	rep pump 12/09	rep float			inside problem	pump under warranty					
5310	7/01;2/27/03		adj float			reset pump						
5311	1/21/1998					cut inlet pipe						
5312			adj floats									
5314	5/22/2006					heavy grease buildup						
5315	11/12/2009	rep pump 11/09				retro-fit kit	rep hose	rep cord	rep control panel			
5316	2/08;10/3/09		adj/rep floats			heavy grease buildup						
5318	12/3/1999		adj float									
5401	8/7/2006	rep pump 8/06				retro-fit kit	rep hose	rep bladder	rep control panel			

WILLIAMSBURG RD												
5011	8/09;3/31/10		rep float			rep discharge line	retro-fit kit	rep flex hose	unjammed pump			
5013	6/1/2009					rep discharge line	retro-fit kit	rep flex hose				
5103	8/27/2006	rep pump 8/06										
5109	11/23/1998					reset breaker						
5113	3/4/2007		adj floats									
5104	7/6/2008					reset breaker						
5107	7/27/2004					no problem						
5106	4/15/1999					inside problem						
5107	7/01;8/10-13/09					inside problem	reset relay	no problem				
5108	3/29/1998		cleaned floats									
5201	8/10/2009		rep float									
5202	12/07;3/9/09	rep pump 3/09	adj floats			rep hose	rep cord	rep control panel				
5203	10/15/2008		rep float									
5205	7/01;3/7/08					reset relay	rep discharge line					

[illegible]108	6/10/2002			no problem				
[illegible]204	10/99;5/5/10			breaker off	plumber needed	retro-fit kit	rep discharge line	rep hose
5211	5/98;7/6/01		adj float	rep ck valve				
5212	7/26/2010		rep float	retro-fit kit	rep hose	rep discharge line		
5213	6/03;8/18/03		adj float	internal problem				
5214	7/04;7/21/06		adj floats	rep cutters	rep discharge line			
5220	6/28/1997		adj float					
5224	11/7/2005		adj floats					
5224	7/12/2003			turned off				
5225			adj floats					
5226	12/97;7/7/98		adj float	repaired lid				
5227	8/14/2007	rep pump 8/07		rep hose	rep discharge line	rep control panel		
5228	8/24/1998			add deodorizer				
5229	11/4/2002		adj floats	heavy grease				
5230	3/00;3/30/02			cleaned tank	water in j-box			
5231	10/06;2/19/10		rep float	reset breaker	rep discharge line			
5232	5/98,1/24/02			unstopped valve	rep ck valve			
5233	7/5/2003		adj floats					
5237	11/08 9/26/09		adj floats	rep discharge line	rep hose			
5238				slow drain				
5241	9/02;5/26/10			rep fuse	inside problem	retro-fit kit	rep discharge line	rep hose
5300	12/3/2007			unclogged pump				
5302	8/01;3/4/09		rep float	no problem				
5304	3/03;8/16/04		adj floats	heavy grease	paper towels on floats			
5306	4/99;7/29/09	rep pump 7/09	adj float	rep hose	rep cord	rep control panel		
5310	7/3/2006		adj floats					
5316	10/7;10/12/99			rep check valve	rep gate valve			
5410	8/06;8/7/08		adj/rep floats					

MARYLAND WAY

3020	7/97;9/28/02			passed insp	rep ck valve			

WILLIAMSBURG CIR

224	8/2/2005		adj floats					
228	5/08;8/22/05		adj floats	discharge angled up				
229	11/14/2006		rep float	removed roots	breaker off			
230	2/98;10/11/02		rep float	tightened bolts	grease buildup			
233	2/06;5/11/06	rep pump 5/06		call plumber	breaker off	retro-fit kit	rep bladder	rep hose rep control panel
235	7/14/1999		adj float					
333	11/05;2/9/09	rep pump 2/09	adj float	rep check valve	breaker off	retro-fit kit		
237	7/31/1997		adj floats	switched wires				

RIVER PARK

Peshtigo	8/04;8/8/08			removed panties	cleaned cutters			

GREEN HILL BLVD

1431								
1457	11/28/2007			unclogged pump				

SEWARD ST

300	12/3/2009		rep float					
307	8/10/2009		rep float					
303	3/09;9/16/10		rep float	no problem				
304								
305	6/02,5/3/10			rep wires	tested pump			
306	11/23/1999		adj float					
309	12/6/2005			reset breaker				
310	3/15/1998		rep float					
311	10/12/1999			reset pump				
312	3/05;6/28/05		adj floats	reset breaker	heavy grease	cleaned tank		

113	12/09;2/4/10	rep pump 2/10			no problem	rewired pump	rep cord	rep hose	rep control panel
5009	2/08;3/3/09		adj floats		loose wire	grease buildup	re-set breaker		
5005	5/28/1998				reset pump				
5101	2/09;3/31/10		adj floats	rep contactor	rep fuse				
5102	8/03;6/22/04				no problem	rep fuses	turned on control box		
[illegible]	7/98;1/30/03				seal failure light	no problem			
2145	7/07;6/15/10	rep pump 6/10			retro-fit kit				
5108	5/09;1/4/11	rep pump 1/11	adj/rep floats		reset overload	power off	rep hose	rep control panel	rep slideface valve
5107	9/07;10/15/08		adj/rep floats		rewired panel	rewired pump			
5109	8/20/1998		adj float						
5109	6/06;10/18/10		rep float		breaker tripped	grease buildup	rep ck valve	removed root ball	
5110	7/01;5/29/10				need plumber	grease buildup			
5112	7/22/2001				no problem				
5113	2/08;8/3/10	rep pump 9/10			no problem	retro-fit kit	rep hose	rep control panel	rep cord
5114	8/06;9/9/09		adj floats						
5115	8/00;3/17/08		rep float		no problem	rep discharge line	rep hose	retro-fit kit	
5116	7/04;1/11/06	rep pump 1/06	adj floats		rep hose	rep bladder	rep slide face		
5117	6/04;2/28/06		adj floats		heavy grease				
5118	4/02;5/3/05				shoestring in cutters				
5119	8/98;5/3/10		adj/rep floats						
5120	10/05,9/6/07		adj float		kotex in cutters				
5121	11/7/1998		adj float						
5122	10/06;4/30/10		rep/adj floats		cleaned tank	reset breaker			
5123	3/10;5/12/10				heavy grease	rep discharge line	retro-fit kit	rep hose	replace j-box
5124	4/1/2000		adj float						
SHADOW RIDGE CT									
9330	10/07;5/5/08	rep pump 5/08	adj/rep floats		rep relay	retro-fit kit			
7342	5/17/2010	rep pump 5/10			retro-fit kit	rep hose	rep cord	rep control panel	rep conduit
9348	8/99;2/11/09		rep float		rep fuse	kotex in cutters			
9354	10/07;9/20/08				cleaned cutters	reset pump	removed paper towels		
[illegible]									
[illegible]									
9387	2/06;2/11/08		rep floats		rep discharge line	rep breaker	rep hose	rep slide-face valve	
9390	4/98;6/9/06	rep pump 6/06	rep float		retro-fit kit				
9391	2/07;5/13/09				rep discharge line	rep flex hose	paper towels	adj hose	
9400	6/04;1/22/09	rep pump 1/09			retro-fit kit				
9409	5/04;10/2/06	rep pump 10/06	rep float		cleaned tank	no problem	retro-fit kit		
9410	6/00;2/9/09		rep float	rep contactor	retro-fit kit	rep hose			
9411	7/03;8/8/07		rep floats						
9420	5/09;7/18/10	rep pump 7/10	adj float		rep discharge line	retro-fit kit	rep cable	rep control panel	
[illegible]									
[illegible]									
308	11/19/2010				retro-fit kit	rep discharge line	rep hose		
305	7/01;12/18/06				reset relay	female products			
306	9/04; 2/16/05	rep pump 9/04	adj float		adj chain	rep hose	rep stand	rep controls	no power
311	1/28/2003				broken discharge				
312	9/24/2004		rep float						
313	12/27/2004		adj float						
314	10/14-15/2008		adj/rep floats						
316			adj float						
317					sev line leak--contractor				
319	6/98;8/30/10				no power	retro-fit kit	rep hose	rep discharge line	
402	10/12/2004		adj floats						
434	3/09;12/21/10	rep pump 12/10	adj floats		installed 6"riser	rep cord	rep lid	retro-fit kit	
[illegible]									
SPLIT LOG RD									
9414	11/5/2009	rep pump 11/09			retro-fit kit	rep control panel			
9400	7/14/2008	rep pump 7/08			retro-fit kit				
[illegible]									
HAYESWOOD DR									
305	12/04;7/10/09		adj floats		no problem				
307	8/15/2007				rep discharge line	rep hose	rep slide-face valve		
330	7/30/2007				rep discharge line				
309	1/8/2006				raised pump	tightened flange			
311	3/00;7/3/00		rep float		cleaned tank				
312	11/05; 12/7/06	rep pump 12/06	rep float		retro-fit kit	rep hose	rep bladder		
313	9/03;9/11/04		rep float		reset pump	seal fail light			

514	10/97;12/26/01		adj float								
515	8/13/2006		adj floats								
CORNWALL DR											
422	3/28/2005		adj floats								
45	12/21/2010		adj floats								
36	9/29/2005					rep check valve					
403	4/05;12/31/10		adj float			grease buildup					
5101	3/20/2001					reset pump					
5103	1/04;11/11/06		adj floats			rep discharge line					
5104	10/04;2/9/10	rep pump 2/10				retro-fit kit					
5105	7/01;10/4/02					reset relay	seal failure				
5106	5/30/2007					rep discharge line					
5107	2/06;5/2/09		adj/rep floats								
5108	1/07;6/16/09		rep floats			rep check valve					
5109	9/04;1/15/09	rep pump 1/09				reset overload	retrofit kit				
5110	6/98;7/13/01					switched to auto	reset pump				
5112	7/01;11/29/01		rep/adj floats			grease buildup					
5113	11/97;9/25/06	rep pump 9/06		rep capacitor		rep check valve					
WESTGATES CT											
9504	5/09;8/17/09		rep floats			rep discharge line					
9505	11/02;8/29/07				rep contactor	breaker off	heavy grease	rep switch	rep breaker	rep fuse	
9512	8/07;10/15/07	rep pump 10/07	adj/rep floats			rag in toilet	heavy grease	rep fuse	rep hose	rep control panel	retro-fit kit
LIBERTY CHURCH RD											
9514	3/05;11/5/07		adj floats			no problem	rep discharge line	rep hose	rep fuse		
9516	3/23/2005		adj floats								
9524	12/31/2010					rep fuse					
9525	6/03;9/10/03	rep pump 9/03			rep contactor	reset pump	E-one retro kit				
9533	5/07;10/31/07	rep pump 10/07				opened ck valve	rep ck valve	rep control panel	rep hose		
9541	7/5/2007	rep pump 7/07									
9571	1/06;4/15/10	rep pump 4/10				rep hose	rep bladder				
9577	2/05;5/2/08	rep pump 5/08				rep hose					
9578	9/02;7/28/10	rep pump 7/10				rep hose					
9581	1/06;4/19/10	rep pump 1/06				rep hose	rep bladder	rep check valve	attached hose		
9582	3/05;8/10/08	rep pump 8/08				E-One retro kit					
9586	7/06;12/10/08	rep pump 12/08				rebuilt E-One	rep bladder	rep hose			
9587	10/7/2010	rep pump 10/10									
9590	11/26/2008	rep pump 11/08									
JUSTY CHURCH TRAIL											
1005	6/22/2010	rep pump 6/10									
1006	8/17/2010	rep pump 8/10				rep cable	rep pipe				
SALTAIN											
870	5/03;5/8/06	rep pump 5/06	adj floats			rep hose	rep bladder	rep slideface	rep control panel		
871	5/1/2009					rep discharge line					
874	12/30/2002					cleaned cutter					
878	11/01;5/4/04		adj float			heavy buildup					
879	5/98; 4/24/03					contractor problem	rep ck valve				
FOX JOHN DR											
9217	3/18/2002		rep float								
9219	6/21/2009		adj floats								
9221	11/05;11/25/07			rep capacitor		rep relay	rep fuse	rep discharge line	unclogged pump		
9223	12/3/2001			rep capacitor		rep relay					
9224	8/11/2008		adj floats								
9225	10/12/1998		adj float								
9226	1/29/2002		rep float								
9227	1/06;8/29/07		adj/rep floats			removed roots					
9228	8/9/2004					condoms	reset breaker				
9230	3/06;7/13/07	rep pump 7/07	adj floats			heavy grease	reset breaker	reset control panel	rep hose	rep bladder	rep control panel

[illegible] HILL RD									
614	10/02;4/25/09		adj/rep floats	rep fuse	rewired pump				
710	9/99;1/4/05		rep float						
720	6/21/2000		adj float						
1000	7/04;12/4/07	rep pump 12/07		rag in cutters	no problem	retro-fit kit	rep hose	rep cable	rep control panel
1007	9/30/2003			reset breaker					
1003	12/3/2001			rewired					
1004	5/21/1999		rep float						
1006	8/31/2009		rep float						
1009	6/06;5/4/10			prob in house	water in j-box	retro-fit kit	rep hose	rep discharge line	
1011	4/6/2001			seal failure					
1014	8/27/2007		rep float						
[illegible] EN									
701	7/01;8/9/10			reset relay	no problem				
241	2/11/2009			rep hose					
303	1/02;5/2/05		adj/rep floats	checked cutters					
704	12/03;6/30/07		adj float	aligned discharge	rep bolts	rep discharge line			
405	6/2/2009			retro-fit kit	rep hose	rep discharge line	rep slide-face valve		
306	10/01;3/15/09	rep pump 3/09	rep float	rep hose	rep cord	retro-fit kit	rep control panel		
308	11/8/2001		adj float						
302	1/13/2007		adj floats						
716	5/09;12/16/10		adj/rep floats	retro-fit kit	rep hose	rep discharge line			
[illegible]									
303	1/09;2/9-11/09			cleaned cutters	unclogged pump	reset breaker	removed tampon		
704	8/07;8/14/09		adj/rep floats	check valve	rep discharge line	unjammed pump			
309	7/00;6/3/05			deodorized	serviced pump				
311	6/4/1998		adj float						
312	8/7/1998			tighten wires					
313	11/99;7/15/08		rep float	shower stopped up	rep discharge line				
MANSION CT									
501	8/05;7/15/09		adj float	rep ck valve	retro-fit kit	rep hose	rep discharge line		
502	5/10;6/8/10	rep pump 6/10	rep float	pump ok	retro-fit kit	rep control panel	rep cord		
503	2/04;11/12/07	rep pump 11/07		inside problem	rep bladder	rep hose	rep control panel	rep cable	rep valve
504	9/19;9/23/99		adj floats	switch off					
[illegible]									
502	2/09;5/4/09	rep pump 5/09		retro-fit kit	rep hose	rep discharge line	rep check valve		
504	4/16/2001			inside problem					
506	11/9/2009			no problem	rep discharge line	retro-fit kit			
510	1/09;7/3/10	rep pump 7/10	adj/rep floats	rep discharge line	grease buildup				
512	9/1/1999			inside problem					
513	11/9/1999			plumber needed					
514	9/03;3/13/07		adj float	rep discharge line					
515	9/08;4/21/10	rep pump 4/10		turned on cut-off valve					
516	3/00 9/7/05		rep float	cleaned tank	short in wire				
517	1/10;10/13/10	rep pump 10/10		rep discharge line	rep hose	rep slideface valve	rep contol panel	rep cord	
521	11/30/1998		adj float	scraped grease					
522	12/13/1999		adj float						
524	3/01;9/21/05			discharge line leaking	discharge line broken				
SHAWNEE TRAIL									
2001	11/05;6/16/09	rep pump 6/09	rep/adj floats	heavy grease	rep wires	rep control panel			
2002	9/13/2010		rep float						
820				rep discharge line	rep flex hose	rep stand			
9210	4/5/2006		rep float						
9211	6/99;11/28/07	rep pump 11/07		water in junction box	rep control panel	retro-fit kit			

9212	10/15/2009		rep float		rep contactor	retro-fit kit	rep discharge line				
9215	7/7/2007		rep float								
9216	4/08;8/7/08					rep discharge line	unjammed pump				
9218	4/06;11/18/10	rep pump 11/10	adj float			wires exposed					
9221	8/10	rep pump 8/10				retro-fit kit	rep hose	rep control panel	rep cord		
SHAWNEE CT											
1113	5/05;6/8/05		adj/rep floats			heavy grease buildup					
[illegible]	4/06;9/14/10	rep pump 9/10	adj/rep floats			rep bolts	heavy grease	retro-fit kit	rep hose	rep control panel	rep cord
[illegible]	8/02;12/2005	rep pump 6/02	rep floats			cleaned pump	cleaned/rep discharge	rep hose	rep stand	rep relay	rep ck valve
WILSON PIKE CIR											
7011	7/6/1998					no problem					
7013	8/05;2/8/06		adj floats		rep contactor	cleaned cutters					
7015	3/08;11/13/09	rep pump 11/09	rep/adj floats			rep hose	rep stand	reset pump	rep cable	rep control panel	retro-fit kit
7017	3/02;7/12/07					heavy grease	rep discharge line	rep hose	rep slide-face valve		
7019	5/08;5/13/10	rep pump 5/10	adj floats			reset breaker	rep wiring				
MOSLEY DR											
[illegible]	2/19/2000					cleaned floats/tank					
303	1/06;12/30/08		adj floats			reset pump	cleaned cutters				
304	7/03;4/2/09					no problem	cleaned floats/tank				
[illegible]	6/23/2008					rep discharge line					
[illegible]	10/08	rep pump 10/08				retro-fit kit	rep hose	rep control panel	rep cord		
CHEROKEE LN											
9204	6/99;4/11/07		rep float			rewired float	rep discharge line				
9206	7/04;12/15/09	rep pump 12/09	adj floats			no problem	reset tripped				
9207	22/04;11/1/09		adj/rep floats			rewired j-box	contractor problem				
9209	2/05;3/7/06	rep pump 3/06	adj/rep floats			rep hose	rep bladder				
9210	1/99;12/19/09		rep float			rewired j-box	bare wires				
[illegible]	7/05;4/11/10		rep float			retro-fit kit	rep stand	rep stand	rep discharge line		
921[illegible]	7/08;8/6/08		adj float			rewired j-box	rep discharge line	rep hose			
9214	5/03		adj float								
9218	3/08;10/30/08		rep float			valve off	rep fuse	heavy grease/needles	rep hose	rep discharge line	
9219	10/03;9/2/05		rep float			rewired j-box	no problem				
[illegible]	11/04;8/28/10		rep floats			tank covered up					
[illegible]	8/04;10/6/08		adj/rep floats								
9222	4/99;8/14/02	rep pump 8/02			rep contactor	reset pump	rep fuse	rep stand	rep hose		
CONCORD RD											
1021	2/01	rep pump 2/01									
[illegible]	6/01;3/26/05		adj float			heavy grease					
[illegible]	7/99;4/26/06	rep pump 4/06	adj float			rewired pump					
[illegible]	8/18/2008					no problem					
[illegible]	1/99;6/28/99	rep pump 6/99				rewired junction box					
9202	6/08	rep pump 6/08									
[illegible]	12/99;4/25/00		rep float			water in junction box					
9206	3/9;3/20/00					connected alarm float wires		reset breaker	rewired j-box		
9208	4/29-30/2008	rep pump 4/08				rep hose	rep bladder				
9209	5/04;4/28/08		adj/rep floats			no problem	heavy grease				
9213	5/02;3/3/10		adj float			rewired	inside problem	rep discharge line	retro-fit kit		
9218	9/00;2/16/04	rep pump 8/00	adj float	rep capacitor		weight on float	adj strap				
9219	7/11-19-20/05	rep pump 7/05	rep float			no problem	heavy grease				
[illegible]	5/00;6/29/02		rep float			loose wires	seal light on				
[illegible]	2/03;12/29/04	rep pump 12/04				reset pump	tightened wires	rep bladder	rep hose	rep panel	
[illegible]	5/31/2007	rep pump 5/07									
[illegible]	7/6/2001		rep float								
[illegible]	6/19/2010	rep pump 6/10									
[illegible]	8/3/2009					retro-fit kit	rep discharge line	rep hose			
530[illegible]	7/04;7/24/06		adj/rep floats								
94[illegible]	7/28/2004					no problem					
GEORGEBORO CT											
816	9/16/2008					rep discharge line	rep hose	rep slide-face valve			
817	11/28/2009	rep pump 11/09				retro-fit kit	rep bladder				
818	9/05;8/2/09	rep pump 8/09	adj floats			fixed leak	rep cord	retro-fit kit	rep control panel		
819	9/05;11/3/09		rep float			rep fuse	rewired pump	heavy grease			
820	3/05;5/22/05					rep discharge line	rep short in wiring				

[illegible]	6/1/2007	rep pump 6/07			retro-fit kit					
822	3/06;2/5/09		adj floats		rep discharge line		heavy grease			
[illegible]	1/24/2007				rep hose	rep slide face				

[illegible]RROWHEAD DR

1104	3/01;2/5/09				rep discharge line	retro-fit kit				
1105	2/8/2005		rep float							
[illegible]	6/05;4/28/10	rep pump 4/10			spraying	retro fit kit				
[illegible]	11/1/2008				rep discharge line	rep hose	rep slide face			
[illegible]	8/21/2006				rep discharge line	rep hose	rep slide face			
[illegible]	1/99;11/5-17/08	rep pump 11/08	adj float	rep contactor	disconnect wires	rep switch	reset pump	rep hose	rep cord	[illegible]
[illegible]	7/7/2007		rep float							
[illegible]					rep discharge line					
[illegible]	9/08;10/30/08	rep pump 10/08			reset breaker	rep hose	rep control panel	retro-fit kit	[illegible]	
[illegible]	2/12/2002				breaker off					
[illegible]	5/99;12/6/99				adj pump	clean tank				
[illegible]	5/09;12/30/10	rep pump 12/10	rep float		retro-fit kit	rep cord	rep control panel			
[illegible]	5/00;6/14/02		rep floats		ground water	rep discharge line				
[illegible]	12/30/2009		adj float							
[illegible]	5/03;12/30/09	rep pump 12/09	adj/rep floats		freezer wires cut	reset pump	retro-fit kit	rep hose	rep control panel	rep cord
[illegible]	9/12/1998		adj floats							
[illegible]	9/03;8/19/04		rep float		reset kicked out					
[illegible]	4/24/2003	rep pump 4/03			rep hose	rep control box	rep cable	rep slideface valve		
[illegible]	7/08;12/8/08				rep discharge line	retro-fit kit				
[illegible]	7/07 9/27/07				rep discharge line	removed tampons	removed underwear			
[illegible]	6/99;10/8/02		rep float		rep discharge line					
[illegible]	12/05;10/24/07		adj/rep floats		heavy grease	rep discharge line				
[illegible]	1[illegible]/6/2005	rep pump 12/05			rep hose	rep control box	rep cable	rep stand		
[illegible]	11/1/2010			rep contactor	rep fuse					

[illegible] GRANT PL

9030	5/98;9/24/07	rep pump 9/07			fixed spraying	rep control panel			
9034	11/09;2/18/10		adj/rep floats		no problem	reset breaker	heavy grease	rep discharge line	rep hose
[illegible]	2/07;8/21/07		rep floats		rep discharge line	rep slide-face valve	rep hose		

STEEPLECHASE DR

[illegible]	12/9-29/2008		adj/rep floats								
[illegible]	4/09;6/6/10	rep pump 6/10	rep floats		heavy grease	retro-fit kit	rep bladder				
812	11/1/2006	rep pump 11/06			retro-fit kit						
813	5/27/2004		rep float								
814	1/17/2008		rep float								
[illegible]	4/06;8/1/06	rep pump 98/06	rep/adj floats		rep hose	rep bladder	rep control panel				
[illegible]	4/05;2/12/10	rep pump 2/10			retro-fit kit	rep cord					
817	12/07;1/5/11	rep pump 1/11	rep float		retro-fit kit	rep hose	rep control panel	rep equalizer			
[illegible]	3/06;6/26/09		adj floats		retro-fit kit	rep hose	rep discharge line				
[illegible]	10/05;5/20/08				rewired junction box	reset breaker	rewired pump				
901	10/99;5/26/07		rep/adj floats		reset breaker	cleaned j-box					
[illegible]	8/6/2009		rep/adj floats								
[illegible]	5/08;12/14/09		adj float	rep contactor	unjammed pump	rewired pump					
[illegible]	7/01;12/7/04		adj floats		rewired junction box		rewired pump	heavy grease			
905	6/1/2010		rep float		rep fuse						
[illegible]	8/07;10/8/07	rep pump 10/07		rep contactor	rewired junction box	rep short in ground	rep discharge line	rep hose	rep slide-face valve	rep control panel	retro-fit kit
907	5/24/2009				rep slide-face valve	rep hose					
908	9/05;5/7/07	rep pump 5/07			seal failure	rep control panel	rep hose	rep slide face			
[illegible]	7/10;9/27/10	rep pump 9/10			heavy grease	filled in hole in yd	retro-fit kit	rep hose	rep slide-face valve		
[illegible]	12/02;6/28/10	rep pump 6/10		rep contactor	rewired pump	rep conduit	rep cord				
911	11/05;3/9/09	rep pump 3/09	rep float		rep flange	rep bladder	rep hose	rep cable	rep control panel		
[illegible]	7/06;10/24/08	rep pump 10/08			rep hose	rep bladder	rep control panel				
[illegible]	12/07;6/8/10		rep floats		retro-fit kit	rep discharge line	rep hose				
915	9/14/2009		rep float								
[illegible]											
[illegible]	9/05;4/19/06		adj floats		heavy grease	cleaned tank					
[illegible]	12/05;11/9/09		adj/rep floats		cleaned tank	heavy grease					
[illegible]	5/17/1999				water in junction box						
[illegible]	9/05;6/8/10		adj floats								
[illegible]											
1008	8/10/2006				rep fuse						
1010	2/17/2002		adj floats								
[illegible]	3/02;10/13/05	rep pump 10/05			heavy grease	rep bladder	rep hose	rep control panel			

1013	1/08;1/26/09	rep pump 1/09			cleaned tank	rep hose	rep cable	retro-fit kit		
1014	10/05;1/13/09	rep pump 1/09	adj floats		rep discharge line	rep bladder	rep hose	rep control panel	rep equalizer	
1015	10/8/2009				rep discharge line	retro-fit kit	rep hose			
1018	7/15/2009		reo float							
1017	3/20/2006	rep pump 3/06			rep hose	rep bladder	rep control panel	rep side face		
1019	3/03;9/14/09	rep pump 9/09			retro fit kit					
1020	9/07;4/28/09		adj floats		reset breaker	rep hose	rep discharge line			
1021	6/09;9/11/10	rep pump 9/10			retro-fit kit	rep cord	rep hose	rep control panel		
CHICKASAW DR										
1106	1/09;8/19/10	rep pump 8/10	rep float		retro-fit kit	rep cord	rep control panel	rep hose		
1108	7/99;1/5-6/08	rep pump 11/98	adj/rep floats	rep capacitor	rep heliocoil	cleaned tank				
1109	9/07;11/22/10		adj floats		j-box shorted out	install flex hose	rep ck valve	retro-fit kit	rep hose	rep discharge line
1110	7/09;8/27/09		adj/rep floats		install flex hose	install slide face	unclogged line			
1111	10/08;4/30/10	rep pump 4/10			rep hose	rep bladder	rep control panel	rep cable		
1112	5/06;6/19/06	rep pump 5/06	rep floats		reset breaker					
1114	3/05;10/22/10	rep pump 10/10			retro-fit kit					
1200	2/3/2006		rep float							
1202	9/06;11/2/06		adj floats							
1204	6/25/2007	rep pump 6/07			retro-fit kit	rep hose	rep bladder	rep control panel	replica	
1206	8/6/2006	rep pump 8/06			retro-fit kit	rep hose	rep bladder	rep control panel		
LAURENS WAY										
813	8/24/1998				no problem					
SEMINOLE DR										
9304	5/29/2004		adj floats							
9305	11/98;10/13/10	rep pump 10/10			loosened pump	rep cord	rep control brackets			
9306	11/05,4/2/09		rep float		opened valve	blockage in line				
9307	5/09;9/13/09		adj/rep floats		rep discharge	rep ck valve	unjammed pump			
SEA HAWK PARK LN										
501	3/29/1999		cleaned float							
511	12/28/2007	rep pump 12/07			rep hose	rep bladder				
512	5/4/2010	rep pump 5/10			retro-fit kit	rep cord	rep control panel			
513	12/1-11/09	rep pump 12/09	rep floats		inside problem	retro-fit kit	rep hose	rep control panel	rep cord	
514	9/19/2006				rep discharge line	heavy grease				
515	8/98;6/5/06		adj float		turned pump on	removed roots				
516	3/04;6/6/07	rep pump 6/07	adj float		rep discharge line	rep hose	rep bladder	rep control panel	rep slide face valve	
517	7/10-17/09				heavy grease	female products	no problem	reset breaker	water in j-box	
518	7/06;9/21/06		rep floats		inside problem					
519	3/25/2005				heavy grease					
521	6/02,2/1/06		adj/rep floats							
CROSHBORO DR										
9235	3/07,11/26/08	rep pump 11/08	adj floats		retro fit kit					
9239	9/26/2008	rep pump 9/08			retro fit kit	rep control panel	rep hose			
9241	3/06;12/28/09	rep pump 12/09	rep float		retro fit kit	rep control panel	rep hose	no problem		
SPRING VALLEY DR										
8206	6/9/2006				water in j-box					
8207	8/28/2010	rep pump 8/10			retro-fit kit	rep cord	rep control panel	rep hose		
8236	1/10/2005	rep pump 1/05								
8239	10/98;10/17/03		adj float		gate valve off	rep discharge line				
[illegible]FORD PL										
8201	11/2/2004				pump ok					
8203	1/98;12/9/08		rep floats		reset pump					
8205	7/99;6/29/09		adj floats		power off-valve off	heavy grease buildup				
8213	8/09;5/4/10	rep pump 5/10	adj floats		rep hose	rep bladder	rep cable	rep slide-face valve		
8207	11/14/1998				valve off					
8208	4/07;1/21/09	rep pump 1/09			cleaned tank	removed roots	rep discharge line			
8209	6/04;1/11/07		adj floats		cleaned tank	rep discharge line	rep hose	rep slide-face valve		
8210	12/29/2002			rep contactor	rewired pump					
8211	5/25/2010	rep pump 5/10			retro-fit kit	rep control panel	rep hose	rep cable		

[illegible]	5/00;5/24/01		adj/rep float	rep fuse	tripped breaker	rewired pump	

[illegible]BORO CT

[illegible]	12/05;7/13/09		adj float	rewired j-box			
[illegible]	10/12/2005		adj/rep floats	rewired j-box			
[illegible]	10/26/1998			breaker off			
[illegible]	3/05;8/18/10	rep pump 8/10		rep fuse	rep cord	rep EQD	
[illegible]238	11/99;7/31/07	rep pump 11/99		no problem	rep discharge line		

LAKE CT

5[illegible]00	11/01;1/21/08		rep float	roots in line			
5[illegible]02	11/9/1998		adj float				
5203	6/7/2010	rep pump 6/10		retro-fit kit	rep control panel	rep hose	rep wire
5[illegible]04	10/05;10/19/10		rep float	inside problem	no problem		
5[illegible]38	6/02 6/27/05		adj float	no problem			
52[illegible]9	4/13/2009			rep discharge line			

WILLIAMSBURG CT

5211	7/01;5/4/10			reset relay	retro-fit kit	rep discharge line	rep hose
5213	1/99;12/30/06		adj float	rep discharge line			
5214	4/99; 3/20/00		adj float	need plumber			

[illegible]OUNTRY CLUB CT

701[illegible]	3/22/1999		clean float	scraped tank			

COUNTRY CLUB DR

700	2/07;8/1/09		adj floats	heavy grease			
7[illegible]08	5/3/1999		adj float				
701	4/00;11/1/10	rep pump 4/00	adj/rep floats	rewired pump			
7012	11/18/2009			rewired pump			
7013	4/00;5/11/00			cleaned tank	rewired pump		
7014	7/12/2004		adj floats				
7015	3/02;11/1/09	rep pump 11/09	adj float				

D[illegible]HIA CT

403	11/04;7/21/08	rep pump 11/04		no problem	rep bladder	rep hose	rep cable
4[illegible]4	1/09;4/4/09	rep pump 1/09		reset pump			
407	10/5/2010	rep pump 10/10					
[illegible]0	5/07;7/30/07	rep pump 7/07		valve off	rep slide face valve		
[illegible]3	8/08;3/23/10	rep pump 3/10		rep hose	rep wire		
409	7/7/2003	rep pump 7/03		rep hose	rep bladder	rep control panel	
411	3/05;5/8/10	rep pump 5/10		rep slide face valve	rep bladder		
412	3/3/2004	rep pump 3/04		rep EQD			
413	1/20/2004	rep pump 1/04		rep bladder	rep hose		
414	3/1/2004	rep pump 3/04		rep bladder	rep hose		
415	4/16/2004	rep pump 4/04		rep bladder			
[illegible]16	1/06;6/15/09	rep pump 6/09		rep bladder	rep hose	reset breaker	no problem
[illegible]17	5/10;6/8/10	rep pump 6/10		rep hose	re-set pump		
418	5/04;3/23/06	rep pump 3/06		no problem	rep hose	rep bladder	rep slide face
[illegible]19	12/8/2003	rep pump 12/03		rep bladder	rep hose		
5[illegible]0	9/30/2005	rep pump 9/05					
5[illegible]	4/04;10/9/06	rep pump 10/06		no problem	discharge broken	rep hose	rep bladder
504	8/05;12/29/10	rep pump 12/10		rep hose			
[illegible]05	8/04;2/12/07	rep pump 2/07		rep hose	rep bladder		
506	10/18/2004			rep hose	rep bladder		
507	10/03;8/19/08	rep pump 8/08		rep equalizer			
508	10/03;1/23/07	rep pump 1/07		rep hose	rep bladder	switches bad	

QUEENSBORO CT

942[illegible]	11/28/2006		adj floats				
9[illegible]3	3/18/2008	rep pump 3/08		rep hose	rep control panel	rep cable	retro-fit kit

[illegible]	6/06;9/5/06		rep float	rep hose	rep slideface	rep stand				
9259	5/04;1/28/07	rep pump 1/07	rep float	rep hose	rep slideface	rep control panel				
9236	7/04,9/7/10		adj floats	rep disharge line						
SUNNYBROOK CT										
[illegible]	11/06;5/5/10	rep pump 11/06		rep hose	rep bladder	rep slideface				
751	12/9/2008			no problem						
754	2/9/2009	rep pump 2/09		rep equalizer						
752	2/1/2007	rep pump 2/07								
759	1/1/2008			removed roots						
[illegible]	6/08;7/24/08	rep pump 7/08								
762	12/6/2010	rep pump 12/10		rep equalizer						
GOVERNORS CLUB										
Restroom [illegible] 3rd tee	6/4/1999									
E[illegible] CT										
1301										
1304	9/09;1/7/11	rep pump 1/11		rep bladder	rep flex hose	rep equalizer				
1306	3/02,10/28/04	rep pump 10/04		rep bladder	rep flex hose					
1307	8/26/2005	rep pump 8/05		rep bladder	rep flex hose					
MCCLENDON CT										
768	7/05;11/3/05	rep pump 11/05		contractor problems	rep bladder	breaker off	reset pump	rep hose		
[illegible]	8/21/2007	rep pump 8/07		rep hose	rep bladder					
[illegible]	7/02;4/8/06	rep pump 4/06		rep hose	rep bladder					
774	6/01,4/28/08			rewired	rep discharge line					
777	6-20-6/28/05	rep pump 6/05		rep hose	rep bladder					
DEER TRACK CT										
9612	6/09;9/7/10	rep pump 9/10		inspection	no problem	tampon buildup	grease buildup	retro-fit kit	rep cord	rep control panel
9614	1/09;9/13/10	rep pump 9/10	rep float	valve was off	rep discharge	rep hose	reset breaker	no problem		
9615	7/22/2010	rep pump 7/10								
9616	3/29/2007	rep pump 3/07		rep cable						
9618	6/09;1/19/10	rep pump 1/10		rep hose	rep bladder	rep cord	retro-fit kit			
[illegible]	6/09;1/13/10	rep pump 1/10		rep hose	rep bladder					
9620	7/06,12/19/07	rep pump 6/06		reset breaker	rebuilt E-One pump	removed screwdriver				
9621	12/3/2003	rep pump 12/03		rep bladder	rep hose					
9622	11/1/2001	rep pump 11/01								
9623	2/06;9/26/06	rep pump 9/06								
9624	3/10;4/27/10		rep float	rep check valve						
[illegible]	11/09,3/23/10		adj floats	water in j-box	retro-fit kit	rep hose	removed towel			
9625	12/08;2/17/09		adj/rep floats	retro-fit kit	rep discharge line	rep hose				
INAVALE DR										
9503	3/3/2010	rep pump 3/10								
[illegible]	8/24/2004	rep pump 8/04		rep bladder	rep straps					
9509	5/12/2004	rep pump 5/04		rep hose	rep bladder					
[illegible]	2/24/2000	rep pump 2/00								
9513	2/01; 4/4/01	rep pump 4/01		no problem	rep bladder					
[illegible]	7/07,2/17/10	rep pump 7/07		rep bolts in lid						
[illegible]	1/25/2005	rep pump 1/05		rep bladder	rep hose					
[illegible]	1/08,2/17/10	rep pump 2/10		rep bladder	rep hose					
[illegible]	3/07;1/7/10	rep pump 1/10								
[illegible]	1/00;11/20/00	rep pump 1/00								
[illegible]	1/21/2005	rep pump 1/05								
9533	5/07;10/14/09	rep pump 10/09		rep bladder	rep hose					
9536	5/10;12/6/10	rep pump 12/10		rep breather	rep bladder	rep hose	rep equalizer			
[illegible]	5/06;6/19/09	rep pump 6/09		rep bladder	rep hose					
9541	1/01;10/8/09	rep pump 10/09		rep bladder						
[illegible]	6/07;10/14/09	rep pump 10/09		rep patch	rep discharge					
[illegible]	4/06;4/23/07	rep pump 4/07		rep hose	rep bladder	unclogged pump				
[illegible]	1/02;12/13/04	rep pump 1/02		installed bladder						
[illegible]	10/08;1/8/10	rep pump 1/10		no problem	vapor locked					
[illegible]	5/03;12/10/04	rep pump 12/04		rep hose	rep bladder					
[illegible]	4/6/2009	rep pump 4/09								
[illegible]	12/03;9/11/08	rep pump 9/08		rep discharge						
[illegible]	1/19/2009	rep pump 1/09								
SUNNYBROOK DR										
9555	3/28/2005	rep pump 3/05		rep bladder	rep hose					

P556	11/04;3/17/08	rep pump 3/08			rep bladder	rep hose			
[illegible]	8/09;5/4/10	rep pump 5/10			rep bladder	rep hose			
[illegible]	12/2/2010	rep pump 12/10							
P563	9/12/2005	rep pump 9/05			rep bladder	rep hose			
[illegible]	12/03;3/21/05	rep pump 3/05			paper towels				
[illegible]	6/4/2010	rep pump 6/10							
[illegible]	5/02;3/23/06h	rep pump 3/06			rep bladder	rep hose			
[illegible]	3/2/2006	rep pump 3/06							
[illegible] BROOK CT									
[illegible]	5/06;2/2/10	rep pump 2/10			no problem	rep equalizer			
[illegible]	5/09;11/16/09	rep pump 11/09			rep hose	rep bladder	rep cable	rep control panel	rep con
755	2/10/2006	rep pump 2/06			rep hose	rep bladder			
[illegible]	3/22/2002	rep pump 3/02			rep bladder				
[illegible]	2/00;11/21/02	rep pump 11/02							
[illegible]	7/07 11/9/09	rep pump 11/09							
[illegible]	1/3/2006	rep pump 1/06			rep EQD				
[illegible] DR									
[illegible]	5/4/2004		rep float						
[illegible]	6/10;11/29/10		adj/rep floats		rewired pump	heavy grease			
[illegible]	5/15/2006				rep hose				
[illegible]	1/1/2010		rep float						
[illegible]	5/7/2007		rep float						
[illegible]	4/00;5/8/00				rep fuse	cleaned tank	reinstalled wiring		
[illegible]	8/01;7/21/08			rep contactor	rewired pump				
[illegible] CT									
[illegible]	2/26/2004		rep float						
[illegible]	9/06;1/16/09	rep pump 1/09	adj floats		rep cord				
[illegible]	3/27/2001	rep pump 3/01		rep contactor	full of tampons				
[illegible]	6/06;8/8/07		adj floats		rep discharge line				
9237	2/26/2007		adj floats						
DEERWO[illegible] LN									
[illegible]	6/07;11/30/07	rep pump 11/07			heavy grease	rep hose	rep bladder	rep control panel	
[illegible]	8/06;7/3/08	rep pump 7/08			discharge hose	rep ck valve	rep bladder	heavy grease	rep hose
[illegible]	6/3/2004	rep pump 6/04							
[illegible]	1/03;6/14/06	rep pump 6/06			rep hose	rep bladder			
[illegible]	10/23/2010	rep pump 10/10							
[illegible]	11/08;9/14/09	rep pump 9/09			air lock	discharge hose	rep bladder	rep hose	
[illegible]	7/06;8/12/08	rep pump 8/08			rep hose	rep bladder	rep electric line		
[illegible]	10/04;10/29/08	rep pump 10/08			bladder collapsed	rep hose			
[illegible]	1/09;12/30/10	rep pump 12/10			rep hose	rep bladder	reset breaker		
[illegible]	9/00;3/17/08	rep pump 3/08			rep hose				
[illegible]	12/6/2010	rep pump 12/10							
[illegible]	10/10/2002	rep pump 10/02			rep hose	rep bladder			
[illegible] RD									
[illegible]	7/00;3/17/10		rep float		cleaned tank				
[illegible] POINT DR									
[illegible]	11/1/2010				retro-fit kit	rep discharge line	rep hose		
[illegible]	5/26/2010				retro-fit kit	rep discharge line	rep fuse		
[illegible]	2/03;9/20/08		adj floats		heavy grease				
[illegible]	[illegible]/00;9/18/07		adj floats		rep discharge line				
[illegible]	[illegible]/27/2009	rep pump 3/09			retro-fit kit	rep wires			

CAIRO CT									
851	5/05;5/11/06	rep pump 5/06		rep bladder	rep hose	rep cable			
852	4/07;9/27/10	rep pump 9/10		rep bladder	rep hose				
855	10/01;9/22/03	rep pump 10/03		rep bladder	rep hose				
856	5/22-26/09	rep pump 5/09		pump ok	rep fuse	no problem	rep discharge line	rep ball valve	rep check valve
859	1/10;3/15/10	rep pump 3/10		rep hose	rep bladder	rep cable	rep control panel		
860	1/18/2005	rep pump 1/05							
863	5/21/2006	rep pump 6/06							
DEERBROOK POINT CT									
705	3/05;5/15/07	rep 3/05;5/07		rep bladder	rep hose				
708	1/17;1/25/02	rep pump 1/02		rep bladder	rep hose	unclogged discharge			
7011	6/17;9/3-4/07	rep pump 9/07		heavy grease buildup	rep hose	rep bladder	rep cable		
7012	12/03;10/16/06	rep 12/03;10/06		rep bladder	paper buildup				
DOWNING CT									
738	10/02;12/12/07	rep pump 12/07		no problem	rep hose				
739	12/21/2009	rep pump 12/09		rep hose	rep control panel	rep cord			
7312	10/28/2010	rep pump 10/10		paint/drywall in tank					
WASHINGTON CT									
7189	5/26/2005			rep discharge line					
7116	6/09;9/10/10	rep pump 9/10	adj floats	heavy grease buildup	retro-fit kit	rep hose	rep bladder		
GRAND OAKS DR									
4511	10/06;3/19/08		adj/rep floats	heavy grease buildup					
MIDWAY LN									
6001	12/01;5/23/09	rep pump 5/09		rep hose	rep bladder				
6002	1/09,7/28/10	rep pump 7/10	rep float rep capacitor	gutters clogged	installed hose	installed stand	rep cord	rep control panel	rep hose
6015	1/04;11/29/07			rep hose	rep bladder	rep discharge line			
6018	11/04;8/16/08	rep pump 8/08		rep hose	rep bladder				
6019	7/16/2004	rep pump 7/04		rep hose	rep bladder				
6025	11/05,11/28/06	rep pump 11/06		rep hose	rep bladder				
6027	12/08;3/6/09	rep pump 3/09		rep hose	rep bladder	rep discharge line			
6029	7/05,8/3/05	rep pump 8/05		no problem	rep hose				
6033	5/07;8/24/09	rep pump 8/09		rep hose	rep bladder	rep fuse			
6034	3/04;6/30/09	rep pump 6/09		rep hose	rep bladder				
6036	4/19/2001			breakers off					
6040	3/6/2002	rep pump 3/02		rep hose	rep bladder				
6043	7/2/2003			rep hose					
6100	3/09;3/31/10	rep pump 3/10		rep hose	rep bladder	rep cord	rep conduit		
6102	9/05,8/25/06	rep pump 8/06		rep hose	rep bladder	reset pump			
6131	11/13/2008	rep pump 11/08		rep cord					
6167	8/02;5/12/03			rep hose					
6168	5/05,5/18/09	rep pump 5/09		rep cleanout cap	rep bladder	rep hose	rep bolts		
6209	10/30/2001			rep hose					
6210	9/21/2004	rep pump 9/04		rep hose	rep bladder				
6214	10/05;8/27/10	rep pump 8/10		rep hose	rep bladder				
6215	10/02;5/11/07	rep pump 5/07		rep hose					
6218	10/01;12/13/10	rep pump 12/10		rep hose					
6219	11/17/2005	rep pump 11/05		rep hose	rep bladder				
6220	9/30/2002			rep hose					
6514	1/22/2010	rep pump 1/10		rep cord					
6374	4/09;12/24/09	rep pump 12/09		cleaned out debris	rep bladder	rep hose			
6428	3/6/2006			slow drain					
6432	3/16/2006			reset breaker					
6438	11/08;8/15/09	rep pump 6/09							
6441	10/27/2009			turned on valve					
6447	12/3/2003			no problem					
6452	10/05; 8/11/07	rep pump 3/07		rep hose	rep bladder				
6455	12/02;4/17/05	rep pump 4/05		rep hose	rep bladder	retro-fit kit			
6500	8/12/2002			rep hose	(Dog Bite)				
6504	7/02;8/22/05			rep hose	rep bladder				
6509	10/7/2006	rep pump 10/06		rep hose	rep bladder	rep slideface	rep helicoils	rep bolts	

Sh

[illegible] ROSE TERRACE							
642[illegible]	10/13/2008	rep pump 10/08					
643[illegible]	8/04;10/17/09	rep pump 8/04		rep hose	rep bladder	no problem	
643[illegible]	6/09;11/7/09	rep pump 11/09		no problem	rep hose	rep equalizer	
[illegible]	5/21/2007			rep fuse			
6435	8/01;1/13/07	rep pump 1/07		no problem	retro-fit kit		
6436	11/2/2008	rep pump 11/08		rep hose	rep bladder		
644[illegible]	12/02;1/31/06	rep pump 1/06		rep breaker	rep bladder	rep hose	
KE[illegible]LAND DR							
[illegible]52	3/02;5/5/09	rep pump 5/09		rep hose	rep bladder		
[illegible]	11/06;9/17/09	rep pump 9/09		rep hose	rep bladder		
[illegible]	10/04;8/31/05	rep pump 10/04		rep cable	rep hose	rep bladder	reset breakers
[illegible]	1/05;12/10/05	rep pump 12/05		bad stator	rep bladder		
[illegible]	[illegible]/28/2010	rep pump 6/10		rep hose	reset breaker		
[illegible]	4/9/2003			rep hose			
9568	4/02;8/29/03	rep pump 8/03		rep hose			
[illegible]	3/03;9/5/07	rep pump 9/07		rep hose	rep bladder		
LONGSTREET DR/CIR							
[illegible]	1/29/2004	rep pump 1/04		rep bladder	rep hose		
[illegible]	2/05;1/10/11	rep pump 1/11		retro-fit kit			
[illegible]	7/29/2008	rep pump 7/08		rep hose			
[illegible]	12/02;12/14/03	rep pump 12/03		rep hose			
[illegible]	11/01;1/17/06	rep pump 1/06		pump ok	rep hose	rep bladder	
[illegible]	3/29/2007	rep pump 3/07					
[illegible]	12/4/2004	rep pump 12/04		rep hose	rep bladder		
NORMANDY WAY							
[illegible]	12/2/2004	rep pump 12/04		rep bladder	rep flex hose		
[illegible]	10/15/2004	rep pump 10/04		rep bladder	rep flex hose		
[illegible]	1/05;12/30/10	rep pump 12/10					
[illegible]	10/04;5/27/10	rep pump 5/10		breaker off	rep flex hose	rep bladder	
[illegible]	12/01;2/27/05	rep pump 2/05					
[illegible]	1/5/2005			rep hose			
[illegible]	6/2/2008			rep discharge line			
KINGSBORO CT							
92[illegible]7	6/06;12/7/09	rep pump 12/09		rep hose	rep bladder	rep control panel	
[illegible]240	8/06;7/7/08		adj/rep floats				
FRAN[illegible]N RD							
306	2/5/2002		adj float	breaker off			
[illegible]	6/05;11/11/06	rep pump 11/06	rep/adj floats	water in j-box	rewired j-box	retro-fit kit	
[illegible]	4/08;7/20/09	rep pump 7/09		install new system			
[illegible]	6/05;5/10/10	rep pump 6/10		rep bladder	rep hose		
[illegible]	12/18-24/07			re-set breaker	re-set pump		
[illegible]	11/10/2010	rep pump 11/10					
[illegible]	6/16/2010	rep pump 6/10		rep conduit	rep cord	rep control panel	
[illegible]	5/6/2009	rep pump 5/09					
[illegible]	6/20/2006			inside problem			
JOCKEY CLUB LN							
[illegible]	6/27/2005	rep pump 6/05		rep hose	rep bladder		
[illegible]	8/06;2/26/08	rep pump 2/08					
[illegible]	3/02;8/25/09	rep pump 8/09		rep hose			
[illegible]	12/10/2005	rep pump 12/05		rep bladder			
[illegible]	2/24/2002	rep pump 2/02		rep hose			
[illegible]	12/02;2/10/04	rep pump 2/04		air-locked	rep hose	rep bladder	rep stator
[illegible]	10/06	rep pump 10/06					
[illegible]	2/07;4/6/07	rep pump 4/07		rep hose	rep bladder	rep control panel	rep cable

ROBERT E LEE LN

1303	1/09;6/9/09	rep pump 6/09	rep hose	rep bladder		

BEECH GROVE DR

1031	11/09	rep pump 11/09				
1015	12/03;10/20/04	rep pump 10/04	rep bladder	rep hose	removed rag/hair	grease buildup
1018	6/06;11/5/07	rep pump 6/06	re-set breaker			
1017	4/5/2002		prob in house			
1020	9/05	rep pump 9/05	rep hose			
1024	7/09;12/10-11/06	rep pump 12/06	pumped down tank			
1022	12/05 5/6/06	rep pump 5/06	rep hose	rep bladder		
1026	2/03;1/15/05	rep pump 2/03	rep hose	rep bladder	reset pump	
1043	12/03	rep pump 12/03	rep bladder	rep hose		
1040	4/05	rep pump 4/05	rep hose			
1041	12/28/2004		rep hose	rep ck valve		
1042	3/07	rep pump 3/07	rep hose	rep bladder		
1045	12/20/2008		no problem			
1046	8/10	rep pump 8/10				
1049	4/05;4/4/06	rep pump 4/06	rep hose			
1050	8/03	rep pump 8/03	rep hose	rep bladder		
1047	10/09 7/22/10	rep pump 7/10	rep hose	rep bladder		
1048	7/05	rep pump 7/05	rep hose	rep bladder		
1052	5/08	rep pump 5/08				

E L HALL LN

1200	10/02	rep pump 10/02	rep hose	rep bladder		

SAXONY CT

1001	11/04	rep pump 11/04	rep hose			
1002	9/04;6/11/06		rep hose	turned on breaker		
1005	9/07 8/11/10	rep pump 8/10	rep hose	disconnect repaired	rep bladder	
1004	10/06,7/16/08	rep pump 10/06	retro-fit kit	rep hose	reset breaker	
1009	12/06	rep pump 12/06				

FISHER

9402	3/16/2009	rep pump 3/09				
9409	10/30/2004	rep pump 10/04	retro-fit kit			
9405	10/04;12/28/04	rep pump 12/04	rep bladder	rep hose		
9406	11/19/2002	rep pump 11/02				
9409	11/27/2006	rep pump 11/06	retro-fit kit			
9412	8/03;3/2/07	rep pump 3/07	rep hose	rep bladder		
9413	8/03;10/5/05	rep pump 10/05	inlet pipe too long			
9411	2/04;9/7/05	rep pump 9/05	rep hose	rep bladder	rep EQD	
9417	10/08,10/8/10	rep pump 10/10	rep hose	rep bladder		

THOROUGHBRED WAY

35	12/26/2004		rep hose			
9537	11/02,5/19/05	rep pump 11/02	rep hose	rep bladder	no power to pump	
9534	9/05;12/2/05	rep pump 12/05	rep hose	rep bladder		
9538	5/09;12/2/10	rep pump 12/10	rep hose	rep bladder		
9542	10/06;8/26/10	rep pump 8/10				
9546	4/04;2/2/05	rep pump 2/05	rep hose			
9547	12/24/2006	rep pump 12/06	rep hose	rep bladder		

[illegible]WAY CT

9551	12/31/2007	rep pump 12/07	rep hose	rep bladder		
9555	2/07;12/29/07	rep pump 12/07	rep hose	rep control panel	rep bladder	reset breaker
9555	6/5/2003		rep hose			

POLEBY CT

9605	2/6/2009	rep pump 2/09				
9607	4/09;10/20/09	rep pump 10/09				
9602	5/05;12/28/06	rep pump 12/06	rep hose	rep bladder		

[illegible] LANAHAN CT

[illegible]	2/03,5/1/07	rep pump 5/07			rep hose	rep bladder			
530	2/27/2006	rep pump 2/06			rep hose	rep bladder			
505	10/03;11/8/10	rep pump 11/10			rep hose	rep bladder	rep equalizer		
50	11/24/2005	rep pump 11/05			rep cord	rep breakers			
[illegible]	1/17/2005	rep pump 1/05			rep hose	rep bladder			
GRANNY WHITE PK									
210	10/05,11/29/06				rep discharge line	reset breaker			
FOREST PARK DR									
300	1/10,8/30/10	rep pump 8/10							
515	3/10;9/3/10	rep pump 9/10			rep hose	rep bladder			
510	5/20/2010	rep pump 5/10			rep hose	rep equalizer			
354	5/8/2007	rep pump 5/07			rep hose	rep bladder			
22	7/18/2007				rep discharge line				
507	7/13/2009	rep pump 7/09							
228	4/09;10/26/10	rep pump 10/10			rep hose				
704	6/10/2009				rep discharge line				
750	10/06;2/18/08	rep pump 2/08			cleaned cutters	rep hose			
KNIGHTSBRIDGE CT									
818	10/27/2010	rep pump 10/10			retro-fit kit	rep hose	rep control panel	rep cord	
317	9/08;7/23/10	rep pump 7/10	adj floats		rep hose	retro-fit kit	rep cable	rep control panel	
710	9/05;12/27/06	rep pump 12/06	adj/rep floats	rep capacitor	heavy grease	retro-fit kit	rep hose	rep bladder	rep control panel
92	7/07;11/29/10		adj/rep floats		heavy grease				
[illegible]	8/05;2/16/09	rep pump 2/09							
210	4/10;5/10/10		rep float		rep ck valve	drained water from jbox			
417	4/3/2007				tank repaired				
318	5/6/2005				rep discharge line				
LANSDOWNE APPROACH									
109	7/09;10/8/09	rep pump 10/09	adj floats		removed paper towels	rep hose			
[illegible]	11/8/2004				rep clean-out				
[illegible]	6/5/2006	rep pump 6/06							
515	12/11/2006	rep pump 12/06							
547	12/29/2004	rep pump 12/04			rep hose	rep bladder			
BRISTOL CT									
510	12/04	rep pump 12/04			rep hose	rep bladder			
[illegible]	3/09	rep pump 3/09			rep cord	rep control panel			
79	5/09	rep pump 5/09							
700	9/08;8/31/09	rep pump 8/09							
1754	8/09;10/4/10	rep pump 10/10				rep EQD			
75	3/07;12/10/08	rep pump 3/07			no problem				
1767	12/09	rep pump 12/09							
1781	11/08	rep pump 11/08			rep hose				

[illegible]ESTBURY CT					
1[illegible]0	4/07;5/28/10	rep pump 6/10			
[illegible]ONCORD HUNT DR					
1[illegible]52	5/2/2007		rep float		
[illegible] DR					
[illegible]	8/08	rep pump 8/08			
1005	5/6/2010	rep pump 5/10			
[illegible]21	5/2007	rep pump 5/07		rep hose	rep bladder
1037	6/2009	rep pump 6/09			
[illegible]					
3060	10/16/2007			restored power	
[illegible]77					
A[illegible]FORD CT					
92[illegible]	11/07	rep pump 11/07		rep cord	rep control panel
[illegible] LN					
[illegible]	10/2009	rep pump 10/09			
[illegible]	11/2007	rep pump 11/07		rep hose	
10[illegible]4	8/08,6/14/10	rep pump 6/10		rep hose	rep bladder
[illegible]	3/2009	rep pump 3/09		rep equalizer	
[illegible]HERUB[illegible]					
1[illegible]	9/09	rep pump 9/09			
1[illegible]	11/9/2007			rep discharge line	
[illegible]FIELD RD					
[illegible]	7/08	rep pump 7/08		rep hose	rep cord
[illegible] CREEK DR					
37[illegible]	8/08	rep pump 8/08		rep hose	
376	8/09	rep pump 8/09			
37[illegible]	2/5/2008			rep discharge line	
3[illegible]	12/6/2010	rep pump 12/10			
[illegible]ELLES CT					
[illegible]	8/6/2010	rep pump 8/10		rep equalizer	
[illegible]	3/5/2008			rep discharge line	
[illegible]	10/18/2010	rep pump 10/10		rep equalizer	
[illegible]	8/08	rep pump 8/08			
[illegible]	12/5/2008			replaced EQD	
C[illegible]CTAW TRAIL					
1202	5/08;7/14/10		adj float	pump ok	
[illegible]DSIDE DR					
[illegible]	5/5/2008			reset ck valve	
[illegible]	7/5/2010	rep pump 7/10			
[illegible] RD					
[illegible]	2/25/2010			rep discharge line	
[illegible]	9/08	rep pump 9/08	NOLENSVILLE WATER/METRO SEWER (Worked on by mistake)		

MAPLEDALE LN				
6315	10/08;10/26/10	rep pump 10/10		
6315	9/27/2010	rep pump 9/10		
[illegible]				
[illegible]	12/08;2/14/09	rep pump 2/09		
HOLLYTREE GAP RD				
3[illegible]	7/09 6/1/10	rep pump 6/10		
785	1/09;4/13/09	rep pump 4/09	no problem	
8[illegible]	7/09	rep pump 7/09		
912	1/25/2010	rep pump 1/10		
IRONWOOD LN				
19	7/09;8/17/09	rep pump 8/09		
[illegible]				
[illegible]	8/09;12/7/10	rep pump 12/10		
107	3/12/2010	rep pump 3/10		
PORTOFINO DR				
5[illegible]4	11/09	rep pump 11/09		
CORDOBA LN				
461	12/09;9/21/10	rep pump 9/10	rep EQD	
[illegible]17	12/09	rep pump 12/09		
HIGHLAND RD				
1300	8/6/10	rep pump 8/10	rep equalizer	
1[illegible]8	12/09;5/9/10	rep pump 5/10	rep hose	rep bladder
1912	11/4/2010		no problem	
[illegible]	12/09	rep pump 12/09		
1917	11/29/2010	rep pump 11/10		
PEPPLEY DR				
1014	9/24/2010	rep pump 9/10		
913	7/23/2010	rep pump 7/10		
1020	3/1/2010	rep pump 3/10		
VALLE VERDE DR				
1240	4/5/2010		rep discharge line	
[illegible] VALLEY CT				
[illegible]	6/19/10	rep pump 6/10		
[illegible] TRAIL LYD				
924	7/26/10	rep pump 7/10		

SI CLOUD PT	9/10;11/8/10	rep pump 11/10
SPGLASS HILL	10/10;12/6/10	rep pump 12/10