# RULES, REGULATIONS, RATES AND POLICIES

# 2008

# THE CITY OF MARYVILLE

# WATER QUALITY CONTROL

# DEPARTMENT

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# RULES, REGULATIONS, RATES

# AND POLICIES FOR

# THE CITY OF MARYVILLE

# WATER QUALITY CONTROL DEPARTMENT

**Jesse McWhorter, P.E.**
**Environmental Engineer – Water Quality Control**
**February 2005 & November 2008 Edition**

**Angela M. Luckie, P.E.**
**Environmental Engineer - Water Quality Control**
**January 2003 Edition**

**John H. Graham, Jr., P.E.**
**Assistant Manager - Water Quality Control**
**April 2000 Edition**

**Jeffrey A. Rose, P.E.**
**Assistant Manager - Water Quality Control**
**September 1995 Edition**

**Kenneth D. Wiggins, P.E.**
**Environmental Engineer - Water Quality Control**
**April 1992 Edition**

**Originally Prepared in August, 1985 by:**
**Joseph B. Irwin, P.E. - Engineering Department**
**City of Maryville**

## REFERENCE INDEX

The purpose of this Reference Index is to catalog by name and address those agencies, associations and others who are referred to in these Standards by initials.

**AASHTO** American Assn. of State Highway
and Transportation Officials
444 N. Capitol St., NW
Washington, DC 20001

**ASTM** American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

**AWWA** American Water Works Association
6666 W. Quincy Avenue
Denver, CO 80235

**NSF** National Sanitation Foundation
Testing Laboratory, Inc.
University of Michigan
P.O. Box 1468
Ann Arbor, MI 48106

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# PART I - WASTEWATER

## RULES, REGULATIONS, RATES, AND POLICIES FOR THE GOVERNING OF THE WATER QUALITY CONTROL DEPARTMENT OF THE CITY OF MARYVILLE, TENNESSEE

## 1.0 DEFINITIONS

**1. CITY**

The City of Maryville, Tennessee

**2. PERSON OR TENANT**

Firms and corporations, as well as individuals.

**3. CUSTOMER**

Any person who receives water and/or wastewater services from the City either under an express or implied contract requiring such person to pay the City for such service.

**4. DEVELOPER**

Any person, firm or corporation, both public and private, engaged in the development of land, such as subdivisions and other land improvements.

**5. DWELLING**

Any single structure occupied by one or more persons for residential purposes.

**6. PREMISES**

Any structure or group of structures, including land, operated as a single business or enterprise.

**7. UNIT**

An individual part of a multiple unit development.

**8. MULTIPLE UNIT DEVELOPMENT**

Any multi-unit complex, such as: apartments, small business, etc. on one single parcel.

**9. CROSS-CONNECTIONS**

Any physical construction whereby the City's water supply is connected with any other water supply systems, whether public or private, or either inside or outside any building in such a manner that a flow of water into the City's water supply is possible, either through the manipulation of valves or because of ineffective check or back-pressure valves, or any other arrangement.

**10. ACCEPTED STREET**

A street or avenue located within the City of Maryville which has been accepted by the City for maintenance, or a road or highway located outside the City of Maryville which has been accepted by Blount County.

**11. EASEMENT**

A legally dedicated right-of-way for the City to install water and/or sewer lines within specified boundaries.

**12. EXISTING DEVELOPED AREA**

A developed area within the corporate limit having streets, water and/or sewer lines and appurtenances, which have been accepted for operation and maintenance by the City.

**13. NEW SUBDIVISION**

A development of a tract or parcel of land having two or more lots and having dedicated streets which have not been accepted by the appropriate governing agency.

NOTE:

Whenever the context shall admit or require words used herein in the singular shall include the plural; words used in the plural shall include the singular; words used in the masculine shall include the feminine; and words used in the feminine shall include the masculine.

# PART I

# WASTEWATER

## 1.1 SYSTEM DESIGN

### 1.1.1 Pre-design Conference

Prior to the design of a wastewater collection system extension, the design engineer should first confer with the City of Maryville Planner in regard to growth potential and density that may be expected in the general area of the extension being planned. A conference with the WQC staff should follow to discuss system standards and requirements, as well as any problems related to the mains being extended. The design engineer must have a license to practice in the State of Tennessee.

### 1.1.2 Design Period

In general, wastewater collection extensions shall be designed for the estimated ultimate tributary population.

### 1.1.3 Plans and Specifications Approval

(a) Detailed plans and specifications for a proposed extension must be submitted to the Maryville WQC Department of the City of Maryville for approval. Once approval has been obtained, the detailed plans and specifications must be submitted to the Tennessee Department of Environment & Conservation, Division of Water Pollution Control, for approval. Upon completion of the project, the **design engineer** shall revise the detailed plans to reflect "As-Built" information and submit the revisions for review to WQC. Upon acceptance of the "As-Builts" the **design engineer** shall furnish WQC with one paper copy of the "As-Built" drawings. DRAWINGS TO BE FURNISHED IN Engineering format no larger than 24 inches x 36 inches. An electronic copy of the "As-Builts" shall be submitted on a compact disc (CD) in a format that can be edited in AutoCAD.

(b) Each plan sheet shall bear an appropriate title block showing the name of the project, location, owner, engineer, date, scale in feet, true north where applicable, sheet number and revision data.

Each sheet shall contain a blank area at least 4 inches by 6 inches near the title block for imprinting the official "Approved for Construction" stamps of the Tennessee Department of Environment & Conservation and the Maryville WQC Department of the City of Maryville. Plans shall be clear and legible and shall conform to

the requirements of the Maryville WQC Department's Standards.

(c) Plans of Sewers: A plot plan of the existing and proposed sewers shall be submitted for projects involving substantial additions to the existing sewer system. The plan shall show the location, size and direction of flow of all existing and proposed sewers. Hydraulic calculations are required for all lines in the project.

All lines receiving discharge from the project shall be shown to be adequate. A vicinity map must accompany all sewer line extensions. For projects involving multiple sewer lines, include a project map showing the overall layout of the entire project.

(d) Detail Plans: Detail plans shall be submitted. Plans and profiles are required for all wastewater lines. Profiles should have a horizontal scale of not more than 50 feet to the inch. The vertical scale of profiles shall not be more than 10 feet to the inch. The plan view should be drawn to a corresponding horizontal scale. Plans and profiles shall be drawn on the same sheet and will show:

1. Location of streets and sewers; lines for the existing and proposed ground surface; location and description of survey benchmarks; size, material and type of pipe for the main and service lines; length between manholes; invert and surface elevation at each manhole; location and size of service lines and taps; and grade of sewer between each two adjacent manholes. All manholes shall be numbered on the plans and correspondingly numbered on the profiles. Stationing of the sewer line at 100-foot intervals and locations of all appurtenances by stationing shall be shown on the plan and profile. Where there is any question of the sewer being sufficiently deep to serve any residence or other source, the elevation and location of the basement floor or other low point source shall be plotted on the profile of the sewer which is to serve the house or source in question. The engineer shall state that all sewers are sufficiently deep to serve adjacent basements or sources except where otherwise noted on the plans. Whenever possible, sewer service lines shall discharge into a manhole.

2. Locations of all special features such as inverted siphon, concrete encasements, elevated sewers, etc.

3. All known existing structures both above and below ground which might interfere with the proposed construction, particularly water mains, gas mains, storm drains, etc.

4. No other utilities shall be drawn on the sheet except for clarification or reference.

5. Sufficient detail shall be shown on the plans to allow for materials take off and location of lines in the field by a third party.

(e) The following note(s) must be included in the plan sets:

THESE PLANS ARE BASED ON AN ACTUAL FIELD SURVEY AND LAYOUT OF THE SEWER SYSTEM. THE MEASUREMENTS GIVEN AND LAYOUT SHOWN ARE SUFFICIENT FOR ORDERING OF MATERIALS AND FIELD LAYOUT OF THIS PROJECT. ALL ELEVATIONS NOTED FOR MANHOLES AND APPURTENANCES ARE ACTUAL FIELD MEASURED ELEVATIONS.

THE CONTRACTOR SHALL NOTIFY TENNESSEE ONE CALL AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION FOR UTILITY LINE LOCATES. ANY DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND THE ACTUAL FIELD LOCATIONS SHALL BE IMMEDIATELY COMMUNICATED TO THE DESIGN ENGINEER AND THE CITY OF MARYVILLE, WATER QUALITY CONTROL.

### 1.1.4 Design Factors

(a) In determining the required capacities of sanitary sewers, the following factors must be considered:

1. Maximum hourly quantity of wastewater

2. Additional maximum wastewater from industrial plants

3. Ground water infiltration.

### 1.1.5 Design Basis

(a) Per capita flow: Sewer systems serving residential development should be designed on the basis of an average daily per capita flow of wastewater of not less than 100 gallons per day when no water use information is available. This amount of flow is assumed to cover nominal infiltration, but an additional allowance should be made where conditions are unfavorable.

Generally the sewers shall be designed to carry, when running full, not less than the following daily per

capita contributions of wastewater, exclusive of wastewater from industrial plants:

1. Laterals and sub-main sewers: 400% of average design flow

2. Main, trunk and outfall sewers: 250% of average design flow

## 1. 2 DETAILS OF DESIGN AND CONSTRUCTION OF WASTEWATER COLLECTION LINES

### 1.2.1 Minimum Size

No sewer collection line shall be less than 8 inches in diameter.

### 1.2.2 Depth

Sewers shall be deep enough to drain basements and to prevent freezing. Any exception must be approved by WQC Engineering. Where practical, a minimum depth of 5 feet shall be maintained.

### 1.2.3 Slope

All sewers shall be so designed and constructed to give mean velocities, when flowing half full, of not less than 2.0 feet per second. The minimum required slopes for 8-inch through 18-inch sewer mains are shown below. However, these slopes, should be used only when required. All sewers shall be laid with uniform slope between manholes.

| SEWER SIZE (inches) | RECOMMENDED MINIMUM SLOPES (Feet/100 Feet) |
|---|---|
| 8 | 0.50 |
| 10 | 0.39 |
| 12 | 0.30 |
| 14 | 0.12 |
| 15 | 0.11 |
| 16 | 0.10 |
| 18 | 0.09 |

### 1.2.4 Alignment

Sewers shall be designed with straight alignment between manholes.

### 1.2.5 Increasing Size

When a smaller sewer joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An acceptable approximate method for

securing these results is to place the 0.8 depth point of both sewers at the same elevation.

### 1.2.6 High Velocity Protection

Ductile iron pipe shall be used when slopes are greater than:

| SEWER SIZE | SLOPE (Ft/100 Ft.) |
|---|---|
| 8″ | 18′ |
| 10″ | 13′ |
| 12″ | 9′ |

### 1.2.7 Pipe Bedding

(a) All sewers shall be designed to prevent damage from superimposed loads. Proper allowance for loads on the sewer shall be made because of the width and depth of trench. Backfill material from a foot above the pipe should not exceed 6 inches in diameter at its greatest dimension. In roadways where cover is less than 4 feet, or in open areas where cover is less than 2½ feet, ductile iron pipe shall be used. Ductile iron pipe shall be required when sewer installation occurs in areas of non-virgin soil (i.e. areas of "fill"). Piers shall be provided for when necessary for support. A precast impermeable barrier or concrete encasement shall be used at the transition from fill to virgin soil to prevent piping of water through the crushed stone bedding. For structural reasons, ductile iron pipe or relocation shall be required when culverts or other conduits are laid such that the top of the sewer is less than 18 inches below the bottom of the culvert or conduit. Special care shall be used in placing bedding in the haunching region.

1. Ductile Iron Pipe: Each sewer pipe section shall be laid on a 6-inch bed of Size No. 7 crushed stone and shall be backfilled to the springline of the pipe using Size No. 7 compacted crushed stone.

2. SDR 26/ASTM D3034 PVC Pipe: Each sewer pipe section shall be completely encapsulated with 6 inches of bedding material on the top, both sides, and the bottom of the pipe. Bedding materials shall be Size No. 7 crushed stone.

(b) Sewer lines laid in fill shall be:

1. ductile iron pipe, and

2. installed on piers.

This requirement may be waived in whole or in part by WQC Engineering if sufficient compaction has been achieved in the fill (95% AASHTO T-99 minimum).

### 1.2.8 Joints and Infiltration

Sewer joints should be designed to minimize infiltration and to prevent the entrance of roots. Standard laying lengths for PVC pipe shall not exceed 14 feet.

### 1.2.9 Air Pressure Testing

Low pressure air exfiltration testing of all pipes shall be performed on all line segments. The pressure drop during the testing period shall be a maximum of 0.2 psig after initial pressure stabilization in the line segment. minimum test time shall be either 5 minutes for each line segment, or the time calculated using the following table, whichever is greater.

**MINIMUM TEST TIME FOR VARIOUS PIPE SIZES**
(Based upon ASTM C828-80)

| Nominal Pipe Size (Inches) | Time (Min./100 feet) |
|---|---|
| 6 | 0.7 |
| 8 | 1.2 |
| 10 | 1.5 |
| 12 | 1.8 |

### 1.2.10 Manholes

(a) Location: manholes shall be installed at the upper end of each collection sewer line, at all changes in horizontal and vertical alignment, at points of changes in size, and at all pipe intersections. Manholes shall be installed at distances not greater than 350 feet apart. Any exception shall require permission from the Maryville WQC Department Engineer.

(b) Drop Manholes: A drop pipe shall be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert should be U-shaped to prevent deposition of solids. All drop manholes shall be constructed as per the detail drawings. The upper horizontal entry line for all drop manholes shall be Class 51 Cement mortar lined ductile iron pipe and shall extend from the manhole wall to the tee and from the tee a minimum of one full joint of pipe. The drop assembly shall consist of a mechanical joint cement mortar lined ductile iron pipe tee with appropriate gaskets for the material used.

A drop pipe of Class 51 cement mortar lined ductile iron pipe, a 90 degree mechanical joint bend, a Class 51 cement mortar lined ductile iron pipe connection into the bottom of the manhole. The lower 90 degree bend and lower horizontal line shall be fully supported by 3,000 psi minimum strength concrete that is poured against native ground with a minimum unconfined compressive soil strength of 2,000 pounds per square foot.

(c) Diameter: the minimum diameter of manholes shall be 48 inches. The entrance tube shall be at least 24 inches in diameter.

### 1.2.11 Vacuum Testing

Vacuum Testing shall be conducted on each wet well, and/or manhole. The test shall be performed such that the integrity of each component (i.e. pipe connections, seal(s) between manhole sections, seal between manhole and frame) is verified.

Prior to testing, all pipe inlets and outlets shall be plugged and braced. A vacuum of ten (10) inches of mercury shall be drawn and the vacuum pump shut off. With no additional vacuum added by the pump, the wet well/manhole assembly will be accepted if the time measured for the vacuum to drop to nine (9) inches does not violate the table below. If these times are exceeded, repairs shall be made or manhole parts replaced until the test times are met. Any apparent leaks in the manhole as determined by the inspector shall be sealed and the manhole re-tested.

**MINIMUM TIMES FOR WETWELL/MANHOLE VACUUM TEST (Seconds)***

| **DEPTH** (in feet) | <4 | 6 | 8 | 10 | 12 | 14 | |
|---|---|---|---|---|---|---|---|
| **DIAMETER** | **TIME OF TEST** (in seconds) | | | | | | |
| 48 inches | 10 | 15 | 20 | 25 | 30 | 35 | 5 seconds / each Additional 2 feet |
| 60 inches | 13 | 20 | 27 | 34 | 41 | 48 | 7 seconds / each Additional 2 feet |
| 72 inches | 16 | 24 | 32 | 40 | 48 | 56 | 8 seconds / each Additional 2 feet |
| 96 inches | 22 | 33 | 44 | 55 | 66 | 77 | 11 seconds / each Additional 2 feet |

Other diameters to be as per current ASTM C1244-93.

### 1.2.12 Protection of Water Supplies

(a) Water Supply Interconnections: There shall be no physical connection between a potable water supply line and a sewer or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply.

(b) Relation to Other Utilities: There shall be no other utility lines installed in the same trench parallel to existing water or sewer lines.

(c) Relation to Water Mains:

1. Horizontal Separation: Whenever possible, sewers (gravity and force mains) should be laid at least 10 feet horizontally from any existing or proposed water pipe. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to the water main if it is laid in a separate trench and if the elevation of the top of the sewer pipe is at least 18 inches below the bottom of the water pipe.

2. Vertical Separation: Whenever a sewer (gravity and force mains) must cross under a water main, the sewer shall be laid at such elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be varied to meet the above requirement, the water main shall be relocated to provide the separation or reconstructed with ductile iron pipe for a minimum distance of 10 feet on each side of the sewer. At least one full length of water main should be centered over the sewer so that both joints shall be as far from the sewer as possible.

3. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, both the water main and the sewer shall be constructed of ductile iron pipe and shall be pressure-tested to assure water tightness.

### 1.2.13 Force mains

(a) Velocity: At design flow, velocity in excess of two feet per second shall be maintained.

(b) Air Release Valve: An automatic air release valve shall be placed at high points in the force main to prevent air-locking.

(c) Termination: Force mains shall terminate in the invert of a manhole.

(d) Pipe Diameter:Force mains are to be designed and sized for pump they are serving.

(e) A maximum Hazen and Williams "C" factor used should not be greater than 130 regardless of that actually determined for the pipe.

(f) Force mains using minimum 4-inch ductile iron, epoxy coated Class 51, or AWWA C-900 DR18 PVC slip-on type joint meeting the latest requirements of AWWA Standard C151 with a minimum of 3 feet of cover will be acceptable to the Maryville WQC Department.

(g) All force mains shall include a connection manhole within twenty (20) feet of the pump station on the discharge line that will allow for the connection of a pump station bypass pump to the force main. Said connection shall include an appropriately sized tee, reducer as needed, corrosion resistant gate, or ball valve (PVC preferred) and a four-inch quick connect coupling compatible with the City of Maryville hydraulic portable pump hoses. The connection shall be housed in a standard manhole with drainage provided in the bottom of the manhole to prevent flooding of the connection.

(h) When AWWA C-900 DR-18 PVC pipe is used, 12 gauge toning wire shall be installed along the entire length of the pipe for detection. The ends of the wire shall terminate in a valve box or other acceptable location whereby detection equipment may be attached. PCV or other GREEN plastic warning tape labeled "SEWER" shall be installed approximately midway in the trench prior to backfilling with soil.

### 1.2.14 Wastewater Lift Stations

Wastewater lift station design criteria is not provided under these Standards. However, lift stations shall be of the wet well/dry sump configuration. Construction of the lift station shall include a paved (asphalt or concrete) driveway, minimum 8-foot high chain-link fence enclosing the site, minimum 12-foot wide gate for access, a permanent potable water supply, radio SCADA units compatible with the existing City of Maryville SCADA system, and a DBI Sala Model L4030 Davit Arm complete in place with a Model L4032 Base for concrete. The design engineer shall design and certify a base mounting sufficient to meet the requirements noted in the manufacturer's manual under "Installation of Bases" as noted for "Fall arrest, no certification, and work positioning, with minimum design loads of 5, 000 lbs vertical load and 10,000 ft.-lbs moment. The wet well of the wastewater lift station shall be constructed to allow for the insertion of a portable Gorman Rupp hydraulic pump without interference from the suction elbows for emergency pumping conditions. A flat area in the bottom of the wet

well shall be provided of sufficient size to allow the hydraulic pump to be set in place on the pump station floor without induced tilt on the pump and without having to remove the normal wet well piping. The Maryville WQC Department will evaluate separately the materials and criteria proposed for use in the design of wastewater lift stations. Plans and specifications must be submitted to the Maryville WQC Department for approval. once approval has been given by the Maryville WQC Department, plans and specifications must be submitted to the Tennessee Department of Environment & Conservation, Division of Water Pollution Control, for approval.

## 1.3 PRODUCTS

Pipe and all accessory fitting and appurtenances, etc., shall be made in America where possible unless approval is obtained from the Maryville WQC Department for the use of a product that is not made in America. This requirement shall be construed in a manner, which does not violate the North American Free Trade Agreement, any amendments thereto, or any other free trade or other laws.

### 1.3.1 Pipe

(a) PVC Pipe:

1. Shall be manufactured from virgin, NSF approved resin conforming to the requirements of ASTM Standard D1784.

2. All PVC Pipe shall conform to the requirements of either: 1) ASTM Standard D3034 or ASTM F-679 and have a Standard Dimension Ratio (SDR) of 26 or, 2) AWWA Standard C900.

3. The gaskets used for joining PVC sewer pipe shall conform to ASTM Standard F477.

4. All PVC pipe shall be clearly marked with the manufacturer's name, nominal diameter, SDR, ASTM 3034; or AWWA C900 and NSF approved seal.

5. Use of ASTM 3034/SDR26 PVC pipe shall be limited to depths less than or equal to sixteen (16) feet. Where depths to the sewer invert exceed sixteen (16) feet, ductile iron pipe shall be used.

(b) Ductile Iron Pipe:

1. As a minimum, ductile iron pipe shall meet the latest requirements of AWWA Standard C151, Class 51, cement-mortar lined, meeting the latest requirements of AWWA Standard C110, with either

mechanical joints or slip-on joints with rubber gaskets.

2. Pipe sections shall be clearly marked with the manufacturer's name, D.I. or Ductile, weight, class or nominal thickness.

3. Ductile iron pipe shall be American, U.S. Pipe, Griffin or McWane pipe, or approved equal.

4. Ductile iron pipe shall be required where depths exceed sixteen (16) feet to the sewer invert.

**1.3.2 Pipe Fittings**

(a) PVC pipe fittings shall be manufactured from virgin, NSF approved resin conforming to the requirements of ASTM Standard D-1784.

(b) Ductile Iron and Cast Iron Fittings:

1. Ductile iron fittings for use in sewer lines shall be 350 psi pressure rating, cement-mortar lined, mechanical joints, meeting the latest requirements of AWWA Standard C153.

2. Cast iron fittings for use in sewer lines shall be 250 psi pressure rating, cement-mortar lined, mechanical joints, meeting the latest requirements of AWWA Standard C110.

3. Rubber gasket joints shall meet the latest requirements of AWWA Standard C111.

4. Ductile iron or cast iron fittings or other fittings approved by the Engineer shall be used in conjunction with ductile iron and AWWA C900 PVC pipe.

(c) Fitting for Connections Between Dissimilar Pipe materials.

1. When laying uphill and transitioning from SDR 26 PVC to ductile iron or C900 PVC pipe, a cast iron or ductile iron mechanical joint sleeve will be installed. Appropriate gaskets for the pipes joined shall be used.

2. When laying uphill and making a transition from ductile iron to PVC a bell connection as per the standard drawings shall be used.

3. When laying uphill and transitioning from C900 to SDR26, a cast iron or DI mechanical sleeve will be installed. Gaskets shall be appropriate for the pipes joined.

### 1.3.3 Concrete materials

Concrete used in conjunction with the installation or repair of sewer lines and appurtenances shall be as follows:

1. Minimum compressive strength: 28 days, 4,000 psi average any 3 cylinders.

2. Coarse aggregates: Size No. 57 crushed limestone.

3. Fine aggregates: Natural sand or manufactured limestone sand proportioned by dry weight of fine to total aggregates between 30-45 percent.

4. Slump: 2-4 inches.

5. Mixing Water: maximum 6.0 gallons per sack. Deduct the moisture content of the aggregate from the amount of mixing water required.

6. Cement: Use Portland cement meeting the requirements of ASTM Standard C150. Use minimum 6.6 sacks of cement per cubic yard of concrete.

7. Dry aggregate per cement sack: Coarse aggregate280, fine aggregate using manufactured limestone sand-194, fine aggregate using natural sand-187.

### 1.3.4 Manholes

(a) General Requirements

Manholes shall be precast reinforced concrete meeting the requirements of ASTM Standard C478 except as may be provided otherwise in the following: (See Appendix I for standard drawings)

1. Manhole inside diameter shall be 48 inches for 18 inch and lesser diameter pipe and 60 inches for 21 inch to 30-inch diameter pipe.

2. Wall thickness shall be a minimum of 5 inches.

3. The minimum compressive strength of precast manhole risers, bases, cone or top sections, and grade rings shall be 4,000 psi.

4. The access opening in cone or top sections shall be a minimum of 24 inches.

5. Joints: The reinforced concrete manhole base and riser sections, excepting grade rings, shall be formed with male and female ends, so that when the manhole base, riser, and top are assembled they will make a continuous and uniform manhole.

6. Lift eyes or holes may be provided in each section for the purpose of handling but must not protrude through the concrete walls.

7. Poured-in-place reinforced concrete manholes, polyethylene manholes, or fiberglass manholes may be used with prior permission of the City.

8. The outside surface of manhole bases, risers, and cones, shall be completely coated with bituminous coating as required.

9. Manhole joints and parts shall be compatible with the majority of the existing City of Maryville precast manholes and capable of meeting the vacuum testing requirements without field modifications.

(b) Precast Reinforced Concrete Manhole Bases:

1. The base riser sections shall be precast with integral floors.

2. Bases for pipe 10 inches diameter or less shall have a minimum outside height of 24 inches.

3. Bases for 12 inch through 18-inch diameter pipe shall have a minimum outside height of 36 inches.

4. Heights of bases for pipes greater than 18 inches in diameter shall be according to the manufacturer's specifications, subject to prior approval of the City.

(c) Precast Reinforced Concrete Tops:

Precast tops shall be eccentric cone type. Concentric cone and flat slap tops may be used with prior approval by WQC Construction Inspector only.

(d) Precast Reinforced Concrete Grade Rings:

1. Grade ring wall thickness shall be a minimum of 5 inches.

2. Grade rings shall be either 2 inches, 4 inches, 6 inches, 8 inches or 12 inches in height.

3. The combined height of grade rings shall be a maximum of 12 inches.

(e) Concrete Manhole Coating: The outside surface of manhole bases, risers, and cones shall be coated with 2 layers of bituminous coating applied at right angles to each other as required.

(f) Manhole Steps:

1. Manhole steps shall be aluminum fabricated from aluminum alloy 6061, T6.

2. Manhole steps shall be corrosion resistant, free from sharp edges, burrs, or other projections which may be a safety hazard and shall be of sufficient strength to have a live load of 300 pounds imposed at any point.

3. The minimum width of cleat shall be 10 inches.

4. The legs and struts shall be of sufficient length for the cleat to project a minimum clear distance of 4 inches from the wall when the step is securely imbedded in the manhole wall.

5. The top surface of the cleats shall be designed to prevent foot slippage.

6. Steps should be positioned vertically over a pipe inlet/outlet and at a maximum spacing of 16 inches.

7. Steps shall be the same size, projection, spacing, and alignment in each manhole.

(g) Openings in the base section wall shall be factory installed for the required number and size of pipes and shall be manufactured as to allow up to 20 degrees axial deflection as shown on the approved plan.

(h) Section Joints: Base risers, section risers, and tops shall be designed for confined O-ring gasket joints meeting the latest requirements of ASTM Standard C-443 or flexible butyl resin sealant meeting the latest requirements of AASHTO Standard M198-B.

(i) Pipe Entrance Couplings:

1. A watertight pipe to manhole gasket system using a flexible molded neoprene compound boot meeting the latest requirements of ASTM Standard C443 or a rubber boot meeting the latest requirements of ASTM Standard C923 shall be installed for each core opening furnished in base riser sections.

   i. Gaskets shall be designed to allow deflection as per manufacturers recommendations and not to exceed 20 degrees axial deflection.

   ii. Internal expanding bands or power sleeves shall be of a type 304 stainless steel or

glass-fiber reinforced nylon meeting the latest requirements of ASTM Standard C923 and shall be designed to allow contraction around the boot to clamp and seal the boot to the pipe.

iii. The pipe entrance coupling shall be Kor-NSeal™, Press-Boot™, or approved equal.

2. Pipe openings made in the field in existing manhole walls for PVC or Ductile Iron pipe installation shall be one of the following:

i. Concrete manholes shall be cored in the field. Each core shall have installed a flexible molded neoprene compound boot meeting the requirements of section 1.3.4 (i) 1. of these standards.

ii. Existing brick manholes shall be evaluated in the field for replacement with a precast concrete manhole. Whenever new sewer main lines are to connect to an existing brick manhole, the manhole shall be replaced unless approval is obtained from the Maryville WQC Department to leave the existing manhole in place. If a tap is to be made: A rigid entrance coupling of asbestos cement with a confined rubber O-ring meeting the latest requirements of ASTM Standard C428 and ASTM Standard D1869 for receiving pipe shall be installed using non-shrinking cement grout. Any deviations from the above will be evaluated on a case by case basis by the Maryville WQC Department prior to tap being made.

3. Other specially designed flexible products may be approved by the Maryville WQC Department.

(j) Manhole Covers: (See Appendix I)

1. Manhole frames and covers shall be of gray cast iron meeting the latest requirements of ASTM Standard A48, Class 30, (30,000 psi). The total weight of the frame and cover shall not be less than 375 pounds.

2. Manhole covers shall be round and machine ground horizontally.

3. Manhole frames shall have clear openings of 24 inches, heights between 7 & 8 inches, and overall base diameters between 35 & 37½ inches. The base shall have four uniformly spaced holes for attachment to the manhole using 5/8-inch diameter

bolts. The maximum bolt circle diameter shall be 33 inches.

4. Manhole covers shall have a thickness as specified by manufacturer and diameters of 26 inches.

5. Manhole covers shall have two non-penetrating pick holes for lifting purposes.

6. The top face of the manhole covers shall be embossed with the seal of the City of Maryville and the words "SANITARY SEWER" with letters approximately two (211) inches in size.

7. Painting of the inside frame and lid may be required.

8. Manhole frame and cover dimensions and specifications are shown in drawings MH-3 and MH-4 in Appendix I of this part.

(k) Watertight Manhole Covers: (See Appendix I)

1. Watertight manhole frames and covers shall be of the outer lid/inner watertight cover configuration.

2. The frame and outer lid shall meet the requirements of Section 1.3.4 (j) of these Standards.

3. The steel locking bar for the inner watertight cover shall be equipped with a minimum 3/4-inch diameter stainless steel bolt for securing the cover. The bolt shall be equipped with a minimum 1/2-inch diameter, 4-inch long “tee” handle for installation and removal.

4. The inner watertight cover shall be equipped with two (2) cast iron, stainless steel, or brass eyehooks for ease of removal and installation of the cover.

5. A watertight seal between the inner cover and frame shall be achieved using a minimum 3/8-inch diameter O-ring gasket. This gasket shall be set in a groove in either the inner cover or the frame. The groove shall be at least one half the diameter of the O-ring gasket. If the gasket is set in the inner lid, then it shall be attached to the inner lid so that it will not fall off while removing the lid.

6. Watertight manhole frame and cover dimensions and specifications are shown in drawings MH-3 and MH-4 in Appendix I of this part.

### 1.3.5 Air Release valve

Air release valves for use on pressure sewage mains shall be Vent-O-Mat TM. Series RGX or approved equal. Each valve shall be designed/sized for its particular application. Reference the standard detail drawing in Appendix I. Valves are to be located outside of paved areas whenever possible and graded to assure positive drainage away from the valve installation. Rodent screens are required on all vent lines. Perforated lids may be substituted for the vent lines with the Maryville WQC Department approval.

## 1.4 EXECUTION

(a) All construction on the City of Maryville's wastewater collection system that is not performed by the Maryville WQC Department shall be executed by a person, firm, or corporation licensed to engage in municipal utility contracting as set forth in the Tennessee Contractors Licensing Act of 1976 (TCA 62-601). This requirement shall apply to all construction regardless of the amount of work involved.

(b) Contractors shall hold the appropriate license designation for the work they are to perform and a valid City of Maryville or Blount County Business License.

### 1.4.1 Preparation

(a) Precautions and Permit to Excavate:

1. Notify utility companies to locate existing facilities.

2. Abide by other utility companies, requirements when repairing, replacing or disturbing existing facilities.

3. Prior to trench excavation within any public right-of-way, including public alleys, a permit shall be obtained from the governing authority to perform such excavation. As a minimum, the trench backfill and street repair shall be made in accordance with the Maryville Land Development and Public Works Standards.

(b) Prior to laying pipe, prepare suitable bedding in accordance with 1.2.7 of these Standards.

(c) Before placing pipe in trench, field inspect for cracks or other defects; remove defective pipe from construction site.

(d) Swab the interior of the pipe to remove all undesirable material.

(e) Prepare the bell end and remove undesirable material from the gasket and gasket recess.

**1.4.2 Installing Gravity Sanitary Sewers**

(a) Lay pipe true to the lines and grades from the grade and alignment stakes, or equally usable references. Where laser equipment is used, offset hubs shall be provided at intervals of 100 feet and every manhole location for purpose of checking grade between sections.

(b) Accurately establish the centerline of each pipe using a string stretched between targets and a plumb line extended to the centerline of the pipe.

(c) Carefully inspect all pipe and each fitting prior to its placement in the trench, and reject any defective pipe or fitting from the job site.

(d) Lay pipe progressively upgrade, with bell upstream in such a manner as to form close, concentric joints with smooth bottomed inverts. Joining of all pipe shall be in accordance with manufacturer's specifications.

(e) Bed and/or support each pipe section in accordance with Section 1.2.7 of these Standards.

(f) Provide all gravity sewer lines with a minimum of 4 feet of cover in roadways and 2.5 feet of cover in open areas, unless ductile iron pipe is used.

(g) Do not allow walking on completed pipelines until backfill has been placed to a depth of at least 6 inches above the crown of the pipe.

(h) Keep the pipe free of all unneeded material, and upon completion of a section between any two manholes, it shall be possible to view a complete circle of light when looking through the pipe.

(i) When laying pipe ceases, close the open ends of the pipe with a suitable plug for preventing the entrance of foreign materials.

(j) Couplings and adapters used for joining dissimilar gravity pipe materials for repairing and rejoining sections of gravity sewer shall be of neoprene construction with stainless steel clamps.

### 1.4.4 Final Testing

(a) Before the sewer line is accepted and before any houses are connected, a final testing procedure is to be followed.

(b) Perform a visual inspection. A TV-inspection of the line may be required. All visible leaks shall be repaired.

(c) If there is evidence of infiltration, make measurement with suitable pipe weirs or other instrumentation.

1. If the flow through the lowermost manhole of a continuous section of sewer pipe does not exceed 25 gallons per day per inch of pipe diameter per mile of pipeline and the groundwater level is representative of the highest annual level, the entire continuous section shall be approved for leakage.

2. The leakage test will be conducted with all lines connected, including service lines.

3. If the apparent infiltration rate exceeds 25 gallons per day per inch of pipe diameter per mile, then take additional weir measurements to isolate those sections leaking.

4. Any single reach of pipeline which exhibits an apparent infiltration rate in excess of 25 gallons per day per inch of pipe diameter per mile will not be accepted and all leaks will be located and corrected.

(d) A low-pressure air exfiltration test shall be made.

1. Such tests will be conducted in accordance with ASTM C 8 2 8. Procedures for a low-pressure air exfiltration test are provided under Section 1.2.9 of these Standards.

(e) When PVC pipe is used, pulling an approved "go -no go" deflection mandrel of 95/100 pipe diameter through all reaches of gravity sewer is required. No sections will be accepted that exhibit a deflection of more than five (5%) percent. Test shall not be made until a minimum of 24 hours has passed since the fill over the pipe was completed.

### 1.4.5 Installing Manholes

(a) Manholes shall be furnished as provided under Section 1.3.4 of these Standards.

(b) Depth of manholes shall be the vertical distance from the lowest invert in the manhole to the base of the manhole cover frame.

(c) Backfill manholes with the same material used for pipelines.

(d) Prepare manhole subgrade on undisturbed earth. Remove all loose earth prior to placing crushed stone base or concrete slab. Fill all disturbed areas below subgrade level with compacted bedding stone.

(e) Manholes having a depth of less than 12 feet shall be set on a compacted Size No. 7 crushed limestone base of minimum 6 inches thickness. Manholes having a depth of 12 to 16 feet or more shall be set on a 6-inch thick concrete slab having a minimum diameter 1 foot greater than the outside diameter of the manhole base section. The concrete pad may be poured-in-place or precast and set on 6 inches compacted Size No. 7 crushed stone bedding. Manholes greater than 16 feet in depth shall be set on a poured-in-place concrete pad with a minimum of 6 inches thickness and diameter 1 foot greater than the manhole base section. The base pad shall be poured on undisturbed soil and allowed to cure at least 24 hours before installing the manhole. The poured-in-place pad shall be reinforced with a minimum of Size No. 4 rebar 12 inches on center or the equivalent area of approved reinforcement material. Concrete shall meet the conditions of Section 1.3.3 of these standards.

(f) The crushed limestone base shall be placed on dry consolidated and, when possible, undisturbed soil. Where a manhole cannot be installed on undisturbed soil or where field inspection shows a soft subgrade, the engineer shall design a footer that will support the manhole and prevent damage to the sewer line due to differential settling.

(g) Manholes shall be set plumb.

(h) Manhole inverts shall be accurately shaped, using concrete, to a smooth surface texture. Invert f low channels shall be shaped having the same radii as those of the pipes for which the channels are being provided. The depth of the channels shall be a minimum of 1/2 the diameter of the pipes being accommodated. From the edge of the shaped flow channels to the manhole walls, inverts shall be sloped upward at a minimum of 1 to 6.

(i) Inlets and outlets of each manhole shall be finished smooth and flush with the sides of the manhole wall so as not to obstruct the flow of wastewater through the manhole.

(j) When completed, the manhole shall be free from channel obstruction and leakage.

(k) Seal joints between manhole sections with rubber O-ring gaskets or flexible butyl resin sealant. Manufacturer's recommendations for placing gaskets or sealant shall be followed.

(1) Lift holes shall not completely penetrate the manhole walls.

(m) Precast concrete grade rings shall be set using Portland Cement mortar and/or flexible butyl resin sealant. Care should be exercised so as not to allow too much water in the Portland Cement Mortar which may cause shrinkage. All Manhole cover frames that are attached to 2 or 4 inch grade rings shall be attached to the grade rings using Portland Cement Concrete mortar and/or butyl resin sealant. A minimum of 2-inch thickness of mortar shall also be placed over the lip of the cover frame as shown on standard drawings. Joints of precast concrete grade rings and manhole frames shall be made so as to prevent leakage and pass vacuum testing.

Alternate attachment for 6 in height grade rings and direct attachment to the manhole cone:

The following alternate may be used in lieu of Portland cement mortar for attaching Manhole Frames to grade rings 6 inches in height or directly to the manhole cone. Manhole Frames shall be bolted by means of 4, 5/8 inch anchor bolts and shall be set in a bed of flexible butyl resin sealant. No Portland Cement Mortar will be required around the frame when this alternative is used.

(n) Drop Manholes:

1. The drop pipe construction shall be of ductile iron pipe and ductile iron fittings. The inlet piping of an outside drop shall be bedded in 6 inches of concrete. The remainder of the outside drop shall be backfilled with compacted Size No. 7 crushed stone. Ductile iron pipe shall meet the requirements of Section 1.3.1 (b) of these Standards. Fittings shall meet the requirements of Section 1.3.2 (b) of these Standards. One full joint of class 51 ductile iron pipe shall be installed prior to the drop assembly.

2. Concrete used in constructing drop pipe assemblies shall meet the conditions under Section 1.3.3 of these Standards.

(o) Flexible couplings shall be packed with Portland Cement Mortar. The use of bricks or other materials to fill the flexible coupling "boot" is not allowed.

**1.4.6 Sewer Service Assemblies**

(a) Fittings shall be furnished and installed by the developer in the gravity sewer pipes for individual service assemblies for any and all existing lots and/or lots to be platted in the development.

1. The standard collector tap shall consist of a tee connected with a 6-inch diameter branch. The tap will consist of fittings made of the same material as that of the line except that PVC fittings may be used on vitrified clay lines. Ductile iron pipe and either ductile iron fittings shall be used in roadways where cover is less than 4 feet, or in open areas where cover is less than 2.5 feet. Also, ductile iron pipe shall be used where velocities greater than 15 feet per second are attained.

2. Sewer service assemblies having 45 degree angles or less measured from the horizontal may be used when the depth of the sewer collector is greater than 8 feet or when their use will facilitate connection of individual services.

3. All sewer service assemblies having angles of 30 degrees or greater measured from the horizontal shall be placed-in a bedding of compacted Size No. 7 crushed stone having a minimum width of 3 times the pipe diameter, a minimum thickness under the pipe equal to the pipe diameter, and an overall thickness of twice the pipe diameter. A minimum of 6 inches of bedding stone shall be placed above the top of all PVC risers in accordance with the provisions of Section 1.2.7 of these standards.

4. Tee branches not to be used immediately shall be plugged with stoppers of the same material and joints used on the collector lines.

(b) Service Pipe and Fittings:

1. Service pipe and fittings shall be supplied by the developer and shall have a minimum diameter of 6 inches and shall be installed from the collector lines to the street right-of-way lines or edges of easements provided. In cases where other utilities or structures are present the service line may be required to be extended beyond the interfering structures. The decision as to extending the service line shall be made in

the field by the City of Maryville WQC inspector. Service pipe and fittings shall meet the conditions under Section 1.2 of these Standards.

2. Ends of service pipe shall be plugged and covered the same as collectors, where possible.

3. The minimum grade on service pipes shall be one percent or 1/8 inch per foot.

4. Service pipes shall be bedded in accordance with the provisions of Section 1.2.7 of these Standards.

5. Ends of service pipes shall be field located (1) by recording the distances measured along the collector lines from the nearest downstream manhole to points at right angles to such service pipe ends and recording the perpendicular distances measured between the collector lines and the service pipe ends and, (2) by installing a length of 2-inch diameter PVC pipe at the service pipe ends, placed at the end of the assembly and protruding 2 feet above the ground surface vertically above such service pipe ends. (See Appendix I for Standard drawings).

(c) The 6-inch branch sewer service assembly shall be extended to the lot it is intended to serve as per (b) above. Minimum 6-inch sewer service pipe grade is 1%. The sewer service pipe grade may be increased provided that the lowest buildable corner of the lot may be served from the end of the 6-inch service pipe under the following assumptions:

1) On Lot service pipe grade 2% from end of the 6-inch branch sewer service pipe to the furthest buildable corner.

2) Minimum depth at furthest buildable corner 2 feet.

3) Or a minimum finish floor elevation for service shall be established by the engineer and included in the final plat.

(d) Design of new sewer mains to provide services at existing homes and new subdivisions shall include:

1) Physical verification of the invert elevation of existing "on lot" sewer lines.

2) Statement by the design engineer in cases where the house sewer cannot be connected to the gravity sewer without a pump.

3) Where feasible, the sewer line shall be deep enough to serve existing and roughed in plumbing and the proposed lots by gravity connections.

### 1.4.7 Annual Inspection

Approximately twelve (12) months following acceptance of the utility line, a follow-up inspection will be made to determine if any failures or deficiencies have occurred as a result of Contractor's or Developer's work and/or materials. Present at this inspection will be a representative of the Maryville WQC Department and the Developer or other appropriate parties. In the event that a representative of the Developer is not present, the inspection shall be completed by the Maryville WQC Department representative, and a notice of the inspection and its findings shall be forwarded in writing to the Developer. The Developer will be responsible for correction of all failures or deficiencies of a mechanical nature and for failures or deficiencies caused by the work and/or materials of Developer and/or his agents which occur in the first year of operation. Any other failures or deficiencies which occur in the first year of operation will be the responsibility of the title owner of the affected property except that any failures or deficiencies on property dedicated to the City of Maryville by the Developer shall remain the responsibility of the Developer throughout the one year warranty period. The Developer and/or property owner, as appropriate, is further responsible for any additional damages done in completing the required repairs. Within ninety (90) days of notification of the findings of the one-year inspection, it is the responsibility of the Developer and/or property owner as appropriate to ensure that any and all changes and/or repairs have been completed. If the Developer is in compliance and no changes or repairs are needed either initially or within the ninety (90) day cure period, any bond posted shall be returned to the Developer within sixty (60) days of completion and acceptance of the work by the City following the one year inspection. If the Developer fails to complete any required repairs or changes and the ninety (90) day cure period passes after notice, any bond posted shall be paid immediately to the City of Maryville for the purpose of remedying any of the deficiencies and/or for completion of the project. Such funds shall remain the sole property of the City of Maryville, even to the extent that the actual costs of the work done are less than the amount of the bond forfeited to compensate the City of Maryville for the additional time and manpower needed to complete the work or to see that the work is completed. The Maryville WQC Department will oversee completion of the needed work at the expense of Developer and will charge Developer any overage incurred over the bond amount for the cost of the completed work. The Developer is responsible for such charges. If a bond has not been provided, the City may file suit or make other collection efforts against the Developer or any other appropriate parties immediately after

the expiration of the ninety (90) day cure period for the cost of the work done or to be done to bring the property into compliance. The City shall receive from the Developer or any other appropriate party its reasonable litigation costs incurred as a result of Developer and/or other appropriate defendant failing to timely complete the required repairs identified in the one-year inspection. Such litigation costs include, but are not limited to, reasonable attorney's fees, court costs and deposition fees.

### 1.4.8 Bond Requirement

The Maryville WQC Department shall maintain a list of delinquent developers who are in default and have not in the past performed repairs required by the City of Maryville or the WQC Department after the ninety (90) day cure period following the inspection done at the one year warranty period. These developers shall be required to perform or pay for the required repair work and any and all prior projects for which the developer is responsible; otherwise, the developer will be required to post a performance bond acceptable to the Maryville WQC Department before commencement of any new projects involving the Maryville WQC Department. Such bond shall be in an amount equal to at least ten percent (10%) of the contracted cost of the water and sewer utility installation for the development. The performance bond shall be payable to the City of Maryville and shall be executed by a surety company duly authorized and qualified to do business in the State of Tennessee. This bond shall be conditioned upon the developer's completion of all requirements of the Maryville WQC Department as set forth in any contractual agreement with the City and in the Rules, Regulations, Rates and Policies for the City of Maryville, WQC Department pertaining to warranty work and required repairs to the water, sewer, and wastewater utility systems for the project.

## 1.5 STANDARDS FLEXIBILITY

### 1.5.1 Interpretations of these Standards and Design criteria

Interpretations of these Standards and Design Criteria or the determination of any other Maryville WQC Department standards and design criteria not covered under these Standards shall be at the discretion of the Director of the Maryville WQC Department. The decision of the Director of the Maryville WQC Department shall be based on past practices, traditional policies, widely accepted professional principles and practices of the industry.

### 1.5.2 Right of Appeal

Any disagreement with the interpretations or determinations made by the Director of the Maryville WQC Department of the City of Maryville with respect to these Standards or any

other standards not covered herein may be appealed to the Development Standards Board of Appeals.

## 1.6 WASTEWATER PRETREATMENT DEVICES

### 1.6.1 Requirement for Devices

(a) Commercial or industrial dischargers of wastewater into the City of Maryville wastewater collection system are required by the Sewer Use Ordinance, International Plumbing Code, 2003 Edition and Related Amendments, or other ordinance or regulation of the City of Maryville to install and maintain a gravity-type separator, interceptor, or other such device for the removal of oil, grease, sand, grit, entrails, or other such material likely to create or contribute to a blockage of the wastewater collection system or otherwise interfere with the operation of the sanitary sewer system or the Regional Wastewater Treatment Plant (RWWTP).

(b) Commercial establishments which are not required to install pretreatment devices include, but are not limited to:

1. Commercial establishments which are not involved in food processing, preparation, packaging, or handling;

2. Commercial establishments with food preparation, but no deep fryer, or grill;

Although these establishments are initially excluded from the pretreatment device requirement, if it is determined that these businesses are causing sewer line stoppages due to grease or other problems, then pretreatment devices will be required.

(c) If a commercial establishment plans to add a deep fryer or a grill, that establishment must notify the City prior to installation and submit plans as specified in Subsection 1.6.3 of this section.

### 1.6.2 Inspection

Each commercial or industrial user required to own and maintain such pretreatment devices will be inspected several times each year to determine the maintenance and operation of these systems. Maintenance records shall be kept and shall be available for review by WQC personnel during inspections.

### 1.6.3 Submittals

Prior to installation of new gravity-type separators, grease traps, screens, or other pretreatment devices, plans and design calculations shall be submitted to WQC personnel for review and approval. No specifications for pretreatment devices are detailed in these regulations except for grease traps. Grease trap specifications are outlined on drawing number GR-1, and in Subsection 1.6.4 of this section. WQC personnel will evaluate separately the materials and criteria proposed for use in the design of other pretreatment devices.

### 1.6.4 Grease Trap Size

Grease trap sizes will be determined by the following formula:

Grease Trap Size (gallons) = F.U. x 0.5 x 5 gpm x 20 minutes

Where F.U. = fixture units plumbed into the grease trap (fixture unit values as list in the Southern Building Code)

Gpm = gallons/minute

Minimum grease trap size shall be 1,000 gallons.

## 1.7 WASTEWATER RULES, REGULATIONS, & POLICIES

### 1.7.1 Application for Sever Service

Persons desiring sewer service connections shall make application to the City. The application shall state that the applicant shall abide by the Rules, Rates and Charges of the City then in force, or which thereafter is adopted. The application shall be signed by the owner or tenant of the premises, and shall state the location of the premises to be served, including street, lot number, and relevant elevations of the main floor or basement so that the City can determine the availability of service.

### 1.7.2 Connection with Sewer Required

In accordance with the City of Maryville municipal Code, Title 8, Chapter 2, (See PART I, Section 1.10 of this document) regulating the use of public and private sewers, owners of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes situated inside or outside City limits and abutting on any street, alley or right-of-way in which there is located a public sanitary sewer of the City, and is within three hundred (300) feet of the building drain are hereby required, at their expense, to connect such houses, buildings or properties to the City's public sanitary sewerage system.

### 1.7.3 Sewer Service Charges

All water customers of the City whose premises are connected with the sanitary sewerage system shall pay sewer service charges in accordance with the Customer Service Policy Manual.

### 1.7.4 Sewer Service Connections

All service connections to an existing City sewerage system shall be made at suitable locations selected by authorized personnel of the City. The City will establish proper grades for service connections when required. The City will install the sewer service line at its expense from the existing sewer main to the edge of the right-of-way or edge of easement.

The sewer connection charge is shown in the Customer Service Policy Manual. A charge must be paid upon application for service for each connection or tap to be made to the City sewerage system. Houses, buildings or properties having one roof line and containing multi occupancy units may be connected to the City system by means of a single connection or tap, providing such single connection or tap is shown to have adequate capacity to carry the maximum quality of sewage in accordance to the International Plumbing Code, as amended and adopted from time to time by the City.

The service line or building sewer within the property lines of the applicant shall be installed, owned, and maintained at the expense of the applicant and shall be at least ten (10) feet distance from any water service line. Service lines must pass inspection before being covered over and placed into service.

### 1.7.5 Customer Service Lines Not To Serve Others

A separate and independent building sewer shall be provided for every platted lot served. Said building sewer shall be located on the lot itself or in a private easement expressly dedicated and recorded for the use of the building sewer and separate from any public utility easements. (Building sewer is defined as "That part of the drainage system that extends from the end of the building drain and conveys the discharge to a public sewer, private sewer, individual sewage disposal system or other point of disposal.")

Note: State of Tennessee Department of Environment and Conservation (TDEC) requires that any sewer collection system be permitted for operation. A sewer collection system is any common sewer line that accepts flow from more than one lot.

Specifically, TDEC requires:

(a) The collection system must be permitted by TDEC.

(b) The collection system must have an operator certified by the TDEC Board of Water and Wastewater Operator Certification.

(c) The collection system must be a legally established and liable operating entity.

(d) The collection system must make all appropriate reports and pay all appropriate fees to the State of Tennessee.

(e) The collection system must have in place an agreement from an appropriate publicly owned treatment works to accept the sewage from the collection system.

This does not eliminate the extension of separate individual building sewers crossing other properties, nor does it prohibit multiple connections to a line provided the line is operated by a certified collection system operator as part of a TDEC permitted collection system.

### 1.7.6 Compliance with International Plumbing Code

The customer shall be responsible for installing and maintaining his service line in compliance with the International Plumbing Code as adopted and amended from time to time by the City. Should the Plumbing official or WQC representative or his authorized inspector determine the customer's service line needs to be rehabilitated or replaced, it shall be the responsibility of the customer to perform the necessary corrective work.

### 1.7.7 Sewer Service with The City And Water From Another Utility Or Well

Customers connected to the City sewerage system but not connected to the City water system, will be charged for sewer service based on metered water used, if obtainable. If the customer has water service from a source other than the City and fails to pay the City for sewerage service, the City has the right to disconnect or plug his sewer service line serving the property.

Single dwelling customers served by an unmetered water supply and connected to the City sewerage system shall pay a monthly flat rate sewerage charge in accordance with rates shown in the Customer Service Policy Manual.

Multi-dwelling customers served by an unmetered water supply and connected to the City sewerage system shall pay a monthly charge per unit in accordance with the rates as shown in the Customer Service Policy Manual.

Commercial customers shall meter their water supply regardless of the water source to establish the sewer charge.

### 1.7.8 Use of Existing Systems

All cesspools, privies, and septic tank systems in use in the City may continue to be used if kept in a proper and sanitary condition until such time as a sewer shall be constructed in a public right-of-way or easement abutting the property containing such systems, after which said properties shall be connected to the City system.

### 1.7.9 Sewer Line Stoppages

The City's personnel will unstop sewer lines outside the property line of the customer's premises at the expense of the City. It will be the responsibility of the customer to unstop blocked service lines on the customer's premises; however, in the event there is some doubt as to location of the stoppage, the City may unstop the line. Should the City determine that the blockage was located on the customer's premises; the customer shall pay for actual cost of unstopping the line by the City crew. (Resolution No. 73.)

### 1.7.10 Compliance with Rules And Regulations

The City can, at its discretion, discontinue services to those customers who fail to comply with the foregoing Rules and Regulations, ordinances, Resolutions, or any other policy of the City that may apply.

### 1.7.11 Sewage Received From Septic Tank Hauler

The City will receive domestic-type septic tank sewage from haulers that are duly licensed and sanctioned by the Blount County Health Department. The City will bill haulers for sewage received into its system in accordance with rates established by the City and which are shown in rates of the Customer Service Policy Manual. (Ordinance No. 1381)

### 1.7.12 Extension Of Sever Mains

The extension of sanitary sewer mains shall be made in accordance with and subject to the conditions as set forth in the Customer Service Policy manual.

### 1.7.13 Damage Claims

The Maryville WQC Department shall not accept responsibility for damages incurred by a customer of the WQC Department, when said damages have resulted from the following actions:

(a) damages caused by defective operation or condition of the customer's plumbing system;

(b) damages caused by a defective condition in the wastewater system, unless the department receives actual or constructive notice of the defective condition.

All claims resulting from negligent operation, negligent installation, or negligent repairs, and all claims arising out of sudden and unexpected emergency repair work, will be handled on a case by case basis within the scope of the Tennessee Municipal League Risk Management Pool policies, and within the scope of general law, including the Tennessee municipal Tort Liability Act. (Resolution No. 116)

**1.8 WASTEWATER RATES AND CHARGES:**

Rates, fees and other charges for the sanitary sewer system will be in accordance with current City of Maryville fee schedule as located in the Customer Service Policy Manual. Fees not included in the above policies will be charged based on actual costs.

**1.9 SEWER MAIN EXTENSIONS** (Resolution Number 86)

In addition to the following regulations, each proposed water and/or sanitary sewer extension shall be evaluated for acceptance or rejection, especially sewer main extensions involving a sewage lift station(s). The merits of which an extension is evaluated shall include, but not be limited to, the following:

1. Cost of operations and maintenance of equipment;

2. Projected revenues from utility sales generated as a direct result of the extension;

3. Concerns with respect to the environment and/or ecology; and

4. Overall budget considerations.

In general, and insofar as possible, each extension should be economically viable and self-sustaining on its own with minimal impact on the utility ratepayers as a whole.

**1.9.1 Extensions within Existing Developed Areas of the City**

The City will extend sewer mains within the existing developed areas (existing platted lots of record) along accepted streets and easements within the corporate limit of the City of Maryville where economically feasible or where there exists a threat to public health caused by gross pollution resulting from inadequately operating or overflowing underground sewage disposal fields, and where the City can feasible provide sufficient funds for such extensions.

When determined necessary, sewer main extensions shall be made for a distance no greater than 100 feet, at the City's expense, provided, however, that the City will not extend any mains where ground elevations are such that said mains

cannot be installed feasiblely to drain into the existing sewerage system. All extensions beyond 100 feet shall be made at the expense of the applicant. However, should the City determine that the design capacity of the line should be increased to allow the service of areas other than that of the applicant, the City will pay the difference between the cost (including installation) of the line sized for the applicant versus the cost of the main to serve the expanded area. The size of such larger mains shall be at the discretion of the City.

The City may connect a main to or extend a main from any main previously installed in accordance to the above terms without obligation to the applicant who may have borne the expense on such previously installed main.

Any sewer extension involved in implementing sewer installation plans based on the City Engineering Department's study, entitled, Feasibility Study of Connecting Unsewered City Sewerage System for the Board of Utilities of the City of Maryville, dated May 4, 1984, and as amended from time to time by the City, shall not be affected by the 100-foot extension at the City's expense.

The Westwood Subdivision was declared economically unfeasible to sewer by the referenced study and the City. This subdivision, therefore, will not be covered under the guidelines of the 100-foot extension rule.

In no event will the City make any extension at its expense should the operating budget of the Maryville WQC Department not have sufficient funds for such extension.

### 1.9.2 Extensions within New Subdivisions in the City

All sewer main extensions within new subdivisions being developed within the corporate limit of the City of Maryville shall be installed by and at the expense of the developer. However, should the City determine that the design capacity of the line should be increased to allow the service of the areas other than the development; the City will pay the difference between the cost of the line sized for the development (including installation) versus the cost of the main to serve the expanded area. The size of such larger mains shall be at the discretion of the City.

If sewer service is not available to the nearest new proposed subdivision, the City will at its expense, extend the first 100 feet toward the property line of an owner of a parcel of land on which there is a new subdivision which has been given preliminary approval by the Maryville Regional Planning Commission. The remaining sewer to be extended, if any, will be at the expense of the developer.

The City may connect a main to, or extend a main from any main previously installed in accordance with the above terms

without obligation to the developer of the newly developed subdivision.

### 1.9.3 Extensions outside City Limit

All proposed sewer main extensions outside the City of Maryville must be granted approval to proceed from the City prior to preparation of plans. The City reserves the right to reject any extensions.

All sewer main extensions outside the City of Maryville shall be installed by and at the expense of the developer from the end of the existing sewer main whether it is inside or outside the City limit. However, if the City determines that it is in the best interest of the City, it may install or have installed said extensions and charge the developer a lump sum fee which shall include all applicable connection fees and line extension construction costs. Also, should the City determine that the design capacity of the line should be increased to allow the service of areas other than the development, the City will pay the difference between the cost (including installation) of the line sized for the development verses the cost of the main to serve the expanded area. The size of such larger mains shall be at the discretion of the City.

The City may connect a main to, or extend a main from, any main previously installed in accordance with the above terms without obligation to the developer or consumer who previously installed such main.

### 1.9.4 Exception

The regulations governing the extension of sewer mains shall not limit the City from participating in the cost of sewer main extensions when the application warrants consideration due to high volume consumption or favorable return on investment.

**APPENDIX I**
**DETAIL SHEETS -**
**"STANDARD DETAIL DRAWINGS SEWER"**

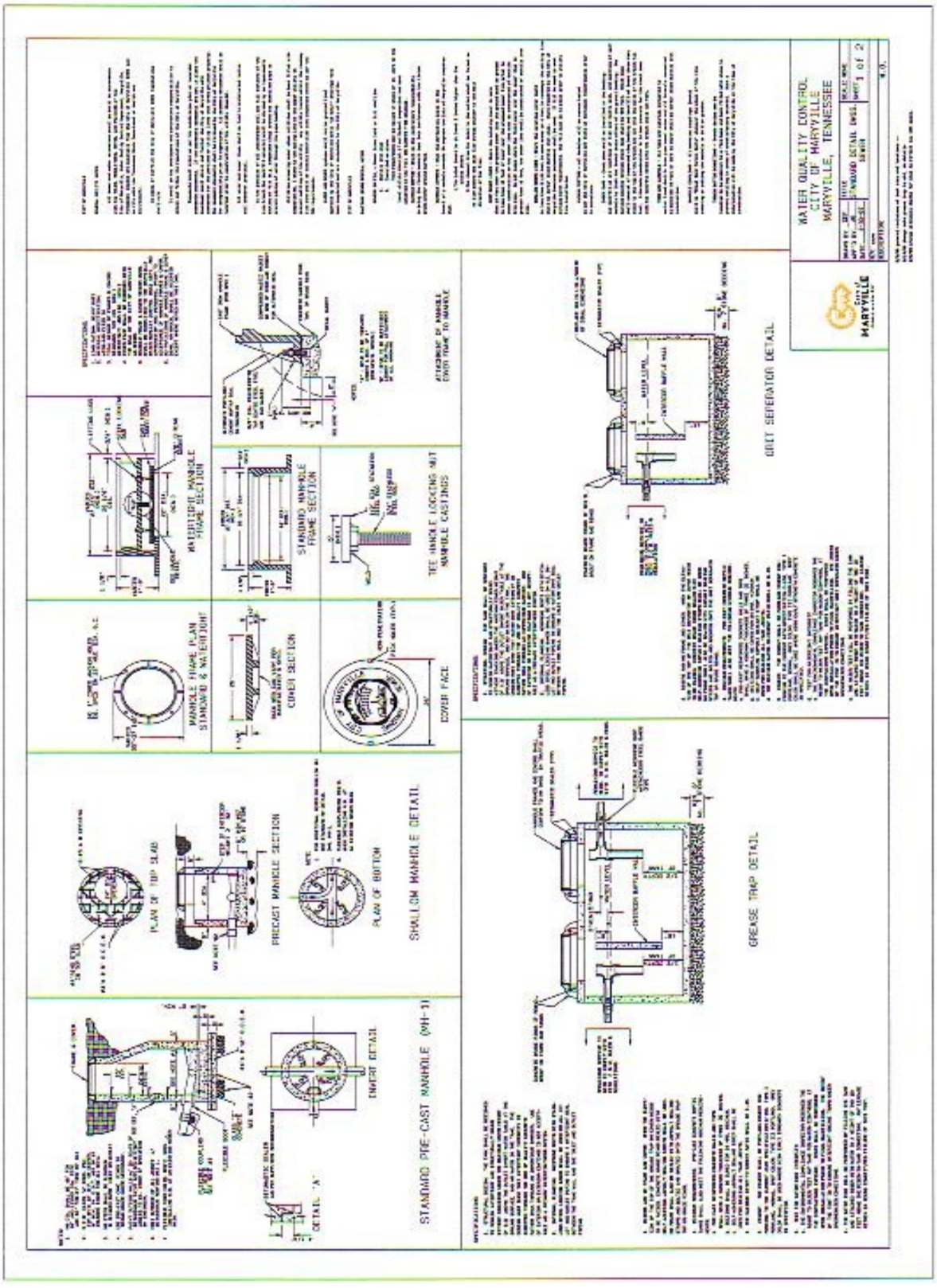
Sheet 1 of 1

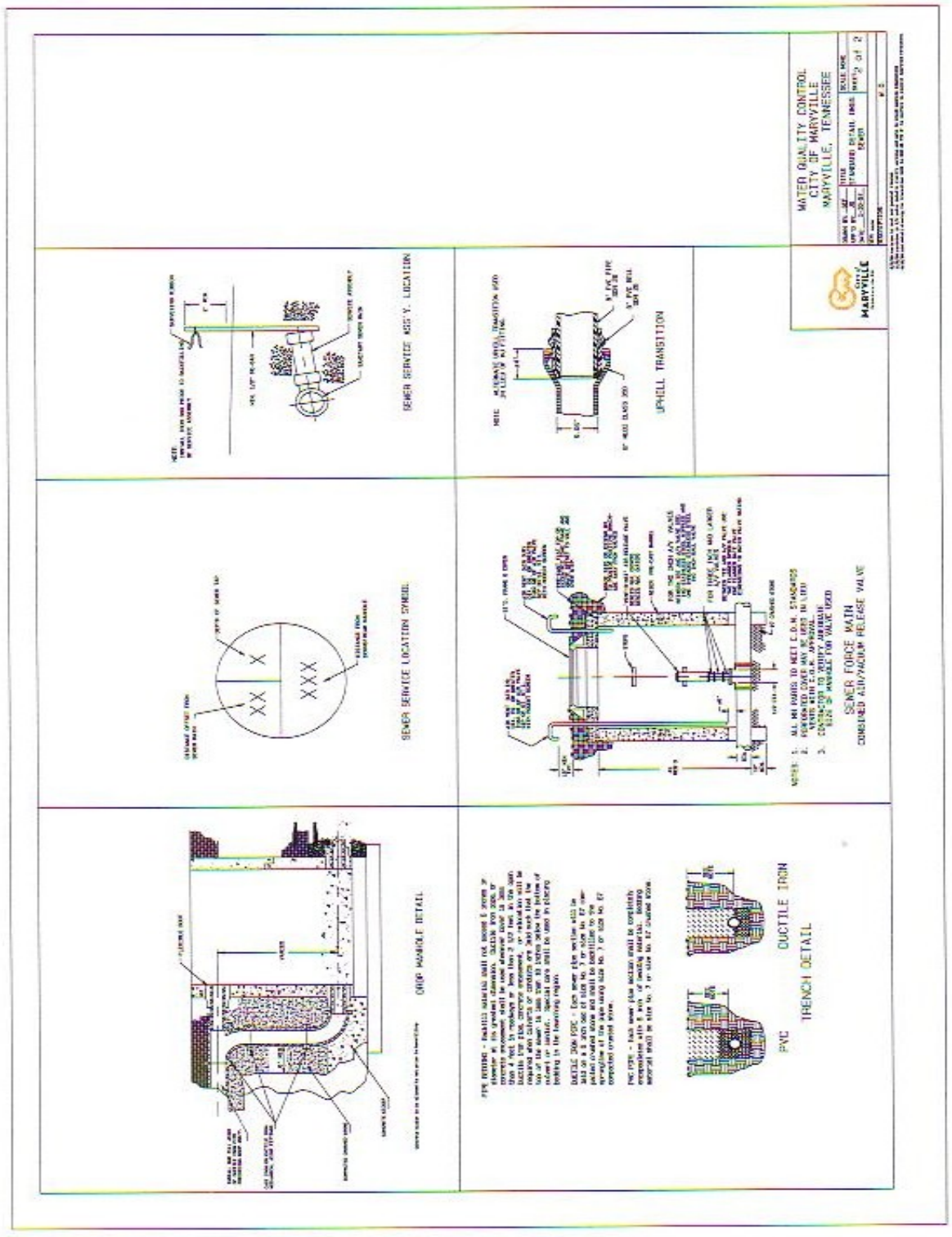
- General Utility Notes
- Sanitary Sewer Special Notes
- Manhole Frame Plan Standard and Watertight
- Watertight Manhole Frame Section
- Attachment of Manhole Cover Frame to Manhole
- Standard Manhole Frame Section
- Tee Handle Locking Nut Manhole Castings
- Cover Face
- Cover Section
- Shallow Manhole Detail
- Standard Pre-Cast Manhole
- Grease Trap Detail
- Grit Separator Detail

Sheet 2 of 2

- Sewer Service Assembly Location
- Sewer Service Location Symbol
- Drop manhole Detail
- Trench Detail
- Sewer Force main Combined Air/vacuum Release Valve
- Uphill Transition

NOTE: 24 x 36 inch detail drawings available separately.


WATER QUALITY CONTROL
CITY OF MARYVILLE
MARYVILLE, TENNESSEE
STANDARD PRE-CAST MANHOLE (MH-1)
SHALLOW MANHOLE DETAIL
GREASE TRAP DETAIL
GRIT SEPERATOR DETAIL
TEE HANDLE LOCKING KNT
MANHOLE CASTINGS
STANDARD MANHOLE
FRAME SECTION
WATERTIGHT MANHOLE
FRAME SECTION
MANHOLE FRAME PLAN
STANDARD & WATERTIGHT
COVER SECTION
COVER FACE
PLAN OF TOP SLAB
PRECAST MANHOLE SECTION
PLAN OF BOTTOM
INVERT DETAIL


WATER QUALITY CONTROL
CITY OF MARYVILLE
MARYVILLE, TENNESSEE
STANDARD DETAIL SHEET
SEWER
SEWER SERVICE ASSY. LOCATION
UPHILL TRANSITION
SEWER SERVICE LOCATION SYMBOL
SEWER FORCE MAIN
CONSIDERED AIR/VACUUM RELEASE VALVE
DROP MANHOLE DETAIL
DUCTILE IRON
PVC
TRENCH DETAIL

**APPENDIX II - EASEMENTS**

- Dedication and Transfer of Utility Lines, Easements, and Facilities

# DEDICATION AND TRANSFER OF UTILITY LINES AND PERTINENT FACILITIES

This indenture, made and entered into on this _____ day of _____, 2_____, by and between _____, of Blount County Tennessee, party of the first part, (hereinafter referred to as "Developer") and CITY OF MARYVILLE, TENNESSEE of Blount County, Tennessee, party of the second part, (hereinafter referred to as "City").

WITNESSETH that whereas, said Developer has caused to be constructed the following described utility facilities, to wit:

(City of Maryville Water Quality Control Department Work Order Numbers);

WHEREAS, said Developer desires that said utility facility be attached to and become a part of the City's existing water/sanitary sewer system and desires to dedicate, transfer and convey said facilities, including all easements and rights connected therewith, to the City and has requested that the City accept the same into its system.

NOW, THEREFORE, in consideration of the City accepting said utility facilities into the City's system, said Developer hereby dedicates, transfers and conveys unto the City, its successors and assigns, all of the afore described utility facilities together with all easements and rights connected therewith.

The Developer further warrants that all labor and materials in connection with the construction and installation of said facilities have been fully and completely paid and that there are no liens or other encumbrances existing against said facilities.

The Developer further warrants that said utility facilities are free and clear of all defects in material and workmanship, that said facilities were constructed and installed in strict compliance with all requirements of the City's rules, regulations, and orders, and does hereby agree to indemnify and save harmless the City from any and all loss, costs, expense or damage which the City may suffer as a result of any defect or defects which occur in said facilities within one (1) year from the acceptance of this instrument.

IN WITNESS WHEREOF, said Developer has caused these presents to be executed on the day and date first above written.

By:_____

Title:_____

STATE OF TENNESSEE }
}SS
COUNTY OF BLOUNT }

Personally appeared before me, the undersigned, a Notary Public in and for said County, the within named bargainor _____, with whom I am personally acquainted, and who acknowledged that he/she executed the within instrument for the purposes therein contained.

Witness my hand and official seal at office this _____ day of _____, 2_____.

Notary Public_____

My Commission Expires: _____

Accepted by City this _____ day of _____, 2_____.

By:_____

Signature Title_____

# PART II - WATER

## RULES, REGULATIONS, RATES, AND POLICIES FOR THE GOVERNING OF THE WATER QUALITY CONTROL DEPARTMENT OF THE CITY OF MARYVILLE, TENNESSEE

## 2.0 DEFINITIONS

**1. CITY**

The City of Maryville, Tennessee

**2. PERSON OR TENANT**

Firms and corporations, as well as, individuals.

**3. CUSTOMER**

Any person who receives water and/or wastewater services from the City either under an express or implied contract requiring such person to pay the City for such service.

**4. DEVELOPER**

Any person, firm or corporation, both public and private, engaged in the development of land, such as subdivisions and other land improvements.

**5. DWELLING**

Any single structure occupied by one or more persons for residential purposes.

**6. PREMISES**

Any structure or group of structures, including land, operated as a single business or enterprise.

**7. UNIT**

An individual part of a multiple unit development.

**8. MULTIPLE UNIT DEVELOPMENT**

Any multi-unit complex, such as: apartments, small business, etc. on one single parcel.

**9. ACCEPTED STREET**

A street or avenue located within the City of Maryville, which has been accepted by the City for maintenance, or a road or highway located outside the City of Maryville which has been accepted by Blount County.

**10. EASEMENT**

A legally dedicated right-of-way for the City to install water and/or sewer lines within specified boundaries.

**11. EXISTING DEVELOPED AREA**

A developed area within the corporate limit having streets, water and/or sewer lines and appurtenances which have been accepted for operation and maintenance by the City.

**12. NEW SUBDIVISION**

A development of a tract or parcel of land having two or more lots and having dedicated streets which have not been accepted by the appropriate governing agency.

**13. CROSS-CONNECTIONS**

Any physical construction whereby the City's water supply is connected with any other water supply systems, whether public or private, or either inside or outside any building in such a manner that a flow of water into the City's water supply is possible, either through the manipulation of valves or because of ineffective check or backpressure valves, or any other arrangement.

**Backflow** The undesirable reversal of flow of a liquid, gas, or other substance in a potable water distribution piping system as a result of a cross connection.

**Backflow preventer** An assembly, device, or method that prohibits the backflow of water into potable water supply systems.

**Backpressure** A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, air/steam pressure, or any other means, which may cause backflow.

**Backsiphonage** A type of backflow where the upstream pressure to a piping system is reduced to a sub-atmospheric pressure.

**Cross-connection** A connection or a potential connection between any part of a potable water system and any other environment containing other. Substances in a manner that, under any circumstances, would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, water products, steam, water from other sources (potable or non-potable), or any matter that may change the color or add odor to the water. Bypass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or any other temporary or permanent connecting arrangement through which backflow may occur are considered to be cross-connections.

**Cross-connection control** A program to eliminate, monitor, protect, and prevent cross-connections from allowing backflow.

**Direct cross-connection** A cross-connection that is subject to both Backsiphonage and backpressure.

**Double check detector backflow-prevention assembly (DCDA)** A specially designed backflow assembly composed of a line-size-approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter shall register accurately for very low rates of flow up to 3 gpm and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (i.e., a pollutant). The DCDA is primarily used on fire sprinkler systems.

**Double check valve assembly (DC or DCVA)** A complete assembly consisting of two internally loaded, independently operating check valves, located between two tightly closing resilient seated shutoff valves with four properly placed resilient-seated test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., a pollutant).

**Expansion tank** A tank used for safely controlling the expansion of water.

**Fire department connection** (FDC or **Siam se connection)**

A connection through which a fire department can introduce supplemental water with or without the addition of other chemical fire-retarding agents by the means of a pump into a sprinkler system, standpipe, or other fire-suppression system.

**Health hazard (high hazard)** A cross-connection or potential cross-connection involving any substance that could, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

**Indirect cross-connection** A cross-connection that is subjected to Backsiphonage only.

**Irrigation water** Water utilized for plant life.

**Listed-classified-approved** materials, equipment, fixtures, and other products included in a list published by an agency or organization that has successfully evaluated the item and determined compliance with the agency's established material and/or performance standards.

**Non-heath hazard (low hazard)** A cross-connection or potential cross-connection involving any substance that

generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.

**Potable water** Water that is safe for human consumption as described by the public health authority having jurisdiction.

**Premises isolation** Preventing backflow into a public water system from a user's premises by installing a suitable backflow preventer at all the user's potable water connections.

**Reduced-pressure principle backflow-prevention assembly (RP or RPBA or RPA or RPZ)** A complete assembly consisting of a mechanical, independently acting, hydraulically dependant relief valve, located between two independently operating, internally loaded check valves that are located between two tightly closing resilient-seated shutoff valves with four properly placed resilient seated test cocks.

**Reduced-pressure principle detector backflow prevention assembly (RPDA)** A specially designed backflow assembly composed of a line-size-approved reduced-pressure principle backflow-prevention assembly with a bypass containing a specific water meter and an approved reduced-pres sure principle backflow-prevention assembly. The meter shall register accurately for very low rates of flow up to 3 gpm and shall show a registration for all rates of flow. This assembly shall be used to protect against a non-health hazard (i.e., a pollutant) or a health hazard (i.e., a contaminant). The RPDA is primarily used on fire sprinkler systems.

**Service connection** A piping connection between the water purveyor’s main and a user's system.

**Service protection** Containment protection or secondary protection refers to the backflow protection installed on the water supply line to a premises as close to the service connection to the public water system as possible (see Premises isolation).

**Submerged inlet** An inlet pipe opening that is below the flood level rim of the receptacle.

NOTE:

Whenever the context shall admit or require words used herein in the singular shall include the plural; words used in the plural shall include the singular; words used in the masculine shall include the feminine; and words used in the feminine shall include the masculine.

## PART II
## WATER

## 2.1 WATER SYSTEM DESIGN

### 2.1.1 Description of System Layout

The layout of extensions of the Maryville WQC System from a design concept, for convenience, will be the circle or belt system circumventing smaller crossover or gridiron systems.

### 2.1.2 Pre-design Conference

Before beginning a system extension design, the design engineer should first confer with the City of Maryville in regard to the growth potential and density that may be expected in the general area of the extension being planned. A conference with the Maryville WQC Department's staff should follow to discuss the system standards and requirements as well as any problems related to the mains being extended.

### 2.1.3 Plans and Specifications Approval

(a) Detailed plans and specifications for a proposed extension must be submitted to the WQC Department of the City of Maryville for approval. once approval has been obtained, the detailed plans and specifications must be submitted to the Tennessee Department of Environment & Conservation, Division of Water Pollution Control, for approval. Upon completion of the project, the **design engineer** shall revise the detailed plans to reflect "As-Built" information and submit the revisions for review to WQC. Upon acceptance of the "As-Builts" the **design engineer** shall furnish WQC with one paper copy of the "As-Built" drawings. DRAWINGS TO BE FURNISHED in Engineering format no larger than 24 inches x 36 inches. An electronic copy of the "As Built" shall be submitted on a compact disk (CD) in a format that can be edited in AutoCAD.

(b) Each plan sheet shall bear an appropriate title block showing the name of the project, location, owner, engineer, date, scale in feet, true north where applicable, sheet number, revision date, and other information as may be required.

Each sheet shall contain a blank area at least 4 inches by 6 inches near the title block for imprinting the official "Approved for Construction" stamps of the Tennessee Department of Environment and Conservation and the Maryville WQC Department. Plans shall be clear and shall conform to the requirements of the Maryville WQC Department Standards.

(c) Plans of Water mains:

A plot plan of existing and proposed water mains shall be submitted for projects involving substantial additions to the existing water distribution system. The plan shall show the location and size of all proposed water mains. A vicinity map must accompany all water main extension plans. A project layout map showing the entire project may also be required.

(d) Detailed Plans:

Plans should have a scale of not more than 100 feet to the inch and must show:

1. Locations of streets and water mains, size of mains, location and size of service lines, material and type of pipe.

2. All known existing structures both above and below ground which might interfere with the proposed construction, particularly sewer lines, gas mains, storm drains, etc.

3. Stationing of the water line at 100-foot intervals and locations of all appurtenances by stationing.

4. No other utilities shall be drawn except for clarification or reference.

5. Sufficient detail shall be shown on the plans to allow for materials take off and location of lines in the field by a third party.

6. Profiles shall be drawn for water lines 10 inches in diameter and larger. Existing utility lines shall be field located whenever reasonable and the source of the utility locations noted on the plans. For all new construction of water lines eight inches in diameter and smaller, the relevant elevations of all pipelines and conflicting structures at utility crossings shall be shown. This shall include a profile view of all utility crossings and appurtenances of the water line where new utility lines are being designed.

(e) The following note(s) must be included in the plan sets:

THESE PLANS ARE BASED ON AN ACTUAL FIELD SURVEY. THE MEASUREMENTS GIVEN AND LAYOUT SHOWN ARE SUFFICIENT FOR ORDERING OF MATERIALS AND ACTUAL FIELD LAYOUT OF THIS PROJECT.

THE CONTRACTOR SHALL NOTIFY TENNESSEE ONE CALL AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION FOR UTILITY

LINE LOCATES. ANY DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND THE ACTUAL FIELD LOCATIONS SHALL BE IMMEDIATELY COMMUNICATED TO THE DESIGN ENGINEER AND THE CITY OF MARYVILLE, WQC.

**2.1.4 Minimum Distributor Pipe Size**

(a) The minimum size pipe shall be 8-inch diameter except for the following instances:

1. 6-inch pipe will be permitted when looped in a grid and no leg of such grid exceeds 800 feet in length.

2. Dead-end 6-inch lines may be permitted at lengths of 600 feet and less provided the minimum flow requirements of Section 2.1.4(b) of these standards are met, and provided it has been determined by the Maryville WQC Department that there will never be a future need for its extension.

3. Water line extensions utilizing PVC pipe shall not be allowed.

(b) The size of pipe shall be justified by hydraulic analysis performed by an engineer who holds a valid license to practice in the State of Tennessee. Distributor pipes should be capable of providing a minimum flow of 750 gallons per minute. The distributor pipe shall be designed to maintain a minimum pressure of 30 psi at ground level at all points in the system under all conditions of flow.

(c) All assumptions and any flow data used by the design engineer must be clearly documented and submitted with the hydraulic calculations. If actual flow data are not available, theoretical calculations shall be based on all storage facilities being half-full and the appropriate Hazen and Williams friction factor shall be applied for the type pipe being used, but in no case shall such friction factor be greater than 130 throughout the new pipe network.

(d) Distributor pipes should be sized for an instantaneous peak demand of 750 gallons per minute.

**2.1.5 Fire Protection**

(a) Fire hydrants should not be connected to distribution pipes that are not capable of providing a flow of 750 gallons per minute at a residual pressure of 30 psi.

(b) When fire protection is being provided, fire hydrants shall be located at points designated by the Fire Chief of the City of Maryville.

(c) The minimum pipe size to which a fire hydrant may be connected is 6-inch.

(d) The minimum standards for privately-owned sprinkler service lines shall be the following:

1. Constructed of Class 51 ductile iron pipe.

2. Low hazard, non-metered fire protection systems will require an approved above ground Double-Check Detector Backflow-prevention Assembly (DCDA).

3. High hazard, non-metered fire protection systems will require an approved above ground Reduced Pressure Principle Detector Backflow-prevention Assembly (RPDA).

4. Metered low hazard fire protection systems will require an approved above ground Double-Check Backflow-prevention Assembly (DC or DCVA).

5. metered high hazard fire protection systems will require an approved above ground Reduced-Pressure Principle Backflow-prevention Assembly (RP or RPBA or RPA or RPZ).

6. Should devices be installed outside the facility, devices must be freeze protected.

**2.1.6 Dead Ends**

(a) Dead ends shall be minimized.

(b) Water lines within residential, commercial, and industrial developments shall be extended to the exterior property line(s) where it has been determined by the WQC Department that there will be a future need for their extension.

(c) Water lines within residential, commercial, and industrial developments shall be extended and connected to lines within the existing water distribution system when required to achieve the flow requirements of Section 2.1.4(b) of these Standards.

(d) Where dead end distributor pipes occur, they should be provided with a fire hydrant.

### 2.1.7 Gate Valves

(a) Unless otherwise specified by the Director of the WQC Department, gate valves shall be placed at all intersections of distributor pipes. Two valves shall be placed at each tee; one installed in the run and the other installed in the branch. Three valves shall be placed at each cross. Valves should be positioned in the pipeline approximately 3 feet distance from the tee or cross.

(b) Valves at no time shall be placed greater than 3,000 feet apart unless otherwise specified by the Director of the WQC Department. At the discretion of WQC, valves in remote locations may be required to be permanently marked.

(c) Valves shall be placed on lead-outs approximately 3 feet from fire hydrants.

### 2.1.8 Bends

Bends in 6-inch pipe and greater shall be minimized. They should be placed in distributor pipes only in making necessary vertical or horizontal changes in pipe direction

## 2.2 DETAILS OF DESIGN AND CONSTRUCTION OF DISTRIBUTOR MAINS

### 2.2.1 Pipe Support

Adequate support shall be provided for all pipes.

### 2.2.2 Pipe Bedding

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Bedding shall be accordance with manufacturers recommendations.

### 2.2.3 Rock Excavation

Stones found in the trench shall be removed for a depth of at least six inches below the bottom of the pipe.

### 2.2.4 Pipe Cover

(a) All distributor mains shall be provided with sufficient earth or other suitable cover to prevent freezing and to provide protection to the pipe. The cover shall not be less than 36-inches for 6-inch and 8-inch pipe, 42-inches for 10-inch and 12-inch pipe and 48-inches for pipe larger than 12-inch. The cover depth shall be measured from the top of the pipe to either the existing or proposed ground elevation, whichever is lower. The listed cover depths shall be maintained throughout the construction project.

(b) Water lines constructed parallel to roadways shall be installed at a depth that will ensure sufficient cover over the water line for future driveway cuts or road widenings.

### 2.2.5 Pipe Alignment

Alignment of pipe shall be installed as true as practical. When it becomes necessary to deflect pipe alignment, such deflection shall be limited to the deflection recommended by the manufacturer.

### 2.2.6 Hydrostatic Tests

(a) Pressure and leakage tests for ductile iron pipe shall be performed in accordance with AWWA Standard C-600.

(b) The procedure for ductile iron pipe is generally described below:

1. The test pressure of the installed pipe shall be a minimum of 150 psi or 1.5 times the working pressure, whichever is greater.
2. Allowable leakage shall be no greater than as calculated in the following formula:

   $L=SD(\sqrt{P})/133{,}200$, where L is allowable leakage in gallons per hour, S is length of test section in feet, D is the pipe diameter in inches, and P is the average test pressure in psi. Pressure shall not fluctuate more than 5 psi.

### 2.2.7 Disinfection of New Distributor Mains

The specifications shall include detailed procedures for the adequate flushing, disinfection, and bacteriological testing of all new mains. Disinfection as described in current AWWA Standard C-601 will be accepted.

### 2.2.8 Disinfection When Cutting Into or Repairing Existing Distributor Mains

(a) Shall be performed when mains are wholly or partially dewatered.

(b) Shall follow current AWWA Standard C-601 procedures including trench treatment, swabbing with hypochlorite solution, flushing and/or slug chlorination as appropriate.

(c) Bacteriological testing should be done after repairs are complete, but the water line may be returned to service prior to completion of testing to minimize the time users are out of water.

(d) Leaks or breaks that are repaired with clamping devices while mains remain full of water under pressure require no disinfection.

**2.2.9 Means of Detecting PVC Pipe**

When existing PVC pipe is repaired, the existing minimum size 12 gauge copper wire shall be maintained along the entire length of the pipe. The ends of the wire shall terminate in a valve box or other acceptable location whereby detection equipment may be attached.

**2.2.10 Separation of Water Mains and Sewers**

(a) General:

The following factors should be considered in providing adequate separation:

1. Materials and type of joints for water and sewer pipes.

2. Soil conditions.

3. Service and branch connections into the water main and sewer line.

4. Compensating variations in the horizontal and vertical separations.

5. Space for repair and alterations of water and sewer pipes.

6. Offsetting of pipes around manholes.

7. Water mains and sanitary or storm sewers shall not be laid in the same trench.

(b) Parallel Installation:

1. Normal conditions - Water mains shall be laid at least 10-feet horizontally from any sanitary sewer, storm sewer or sewer manhole, whenever possible; the distance shall be measured edge-to-edge of the pipe.

2. Unusual conditions - When local conditions prevent a horizontal separation of 10-feet, a water main may be laid closer to a storm or sanitary sewer provided that:

i. The bottom of the water main is at least 18 inches above the top of the sewer;

ii. Where this vertical separation cannot be obtained, the sewer shall be constructed of

materials and with joints that are equivalent to water main standards of construction and shall be pressure tested to assure water tightness prior to backfilling.

(c) Crossings:

1. Normal conditions - water mains crossing house sewers, storm sewers, or sanitary sewers will be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer, whenever possible.

2. Unusual conditions - When local conditions prevent a vertical separation as described under Section 2.2.10(c)1. of these Standards, the following shall be used:

i. Sewers passing over or under water mains should be constructed of the materials described in Section 2.2.10(b)2.ii. of these Standards.

ii. water mains passing under sewers shall, in addition, be protected by providing a vertical separation of at least 18-inches between the bottom of the sewer and the top of the water main; adequate structural support for the sewers to prevent excessive deflection of Joints and settling on and breaking the water mains; that the length of water pipe be centered at the point of crossing so that the joints will be equidistant as far as possible from the sewer. Both the sewer and the water main shall be constructed of water pipe and tested in accordance with Section 2.2.6 of these Standards.

(d) Sewer Manholes:

No water pipe shall pass through or come into contact with any part of a sewer line or sewer manhole.

**2.2.11 Surface water Crossings**

Surface water crossings, both under and over water, present special problems which should be discussed with the Maryville WQC Department; the Tennessee Department of Environment and Conservation, Division of Water Supply; and the U.S. Army Corps of Engineers before plans are prepared.

(a) Above Water Crossings - The pipe shall be:

1. Adequately supported;

2. Protected from damage and freezing;

3. Accessible for repairs and replacement.

(b) When Crossing Water Courses which are Greater than 15-feet in width:

1. The pipe shall be of special construction, having flexible, watertight joints;

2. Valves shall be provided at both ends of the water crossing so that the section can be isolated for test or repair, the valves shall be easily accessible and not subject to flooding;

3. Sampling taps should be available at each end of the crossing;

4. Permanent taps should be made for testing and locating leaks.

**2.2.12 Cross Connections**

(a) There shall be no connections or potential connections between any part of the potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system.

(b) When an actual or potential hazard to the public water system exists, approval must be obtained from the City prior to construction. Such potential hazard include, but are not limited to, lawn irrigation systems, car wash mechanical rooms, commercial or coin laundries, photo processing labs, funeral homes, and fire protection systems. Proposed or existing physical connections such as these must be protected by an approved backflow protective device as promulgated in Part II, Section 2.9 of these standards.

(c) Neither gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or non-potable), or any matter that may change the color or add odor to the water shall be returned to the potable water system.

(d) In the case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create an actual or potential hazard to the public water system, the City shall require the installation of an approved backflow prevention assembly in the service line. The approved backflow prevention assembly shall be appropriate to the degree of hazard.

**2.2.13 Water Services and Plumbing**

Water services and plumbing shall conform to the International Plumbing Code, 2006 Edition and Related Amendments as may be revised and adopted from time to time by the City of Maryville.

### 2.2.14 Relations to Other Utilities

In no instance shall any other utility occupy the same trench with a water line.

## 2.3 PRODUCTS

### 2.3.1 General

(a) Used water main pipe that meet these Standards may be used again, after the pipe has been thoroughly cleaned and restored practically to its original condition.

(b) Packing and jointing materials used in the joints of pipe shall meet the Standards of the American Water Works Association. Either mechanical joints or slip-on joints with rubber gaskets are required for pipe.

(c) Pipe and all accessory fittings, boxes, etc., shall be made in America where possible unless approval is obtained from the WQC Department for the use of a product that is not made in America. This requirement shall be construed in a manner which does not violate the North American Free Trade Agreement, any amendments thereto, or any other free trade or other laws.

### 2.3.2 Pipe

(a) Pipe shall be of ductile iron meeting the latest requirements of AWWA Standard C-151, minimum Class 51 thickness, cement-mortar lined meeting the latest requirements of AWWA Standard C-110, with either mechanical joints or slip-on joints with rubber gaskets. Ductile iron pipe shall be either American Cast Iron, U.S. Pipe, Griffin, McWane Pipe, or approved equal.

(b) When repairing existing PVC pipe two inches in diameter, the pipe shall be SDR-21, Class 200 pressure rated. The pipe must meet the requirements set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-21. The pipe must bear the National Sanitation Foundation Testing Laboratories, Inc. seal of approval for potable water or an approved equal.

(c) Pipe shall be bell-end type.

(d) Gaskets and lubricants intended for use during repair of existing PVC pipe shall be made from materials that

are compatible with the plastic material and with each other when used together, but will not support the growth of bacteria and will not adversely affect the potable qualities of the water that is to be transported. Gaskets shall be the elastomeric type and shall be manufactured to conform with the requirements of ASTM F477.

(e) Solvent cemented joints in the field are not permitted for repair of existing PVC pipe.

(f) Pipe lengths shall be no greater than 20-feet.

**2.3.3 Tees, Crosses and Bends**

(a) Tees, crosses, and bends for use with ductile iron pipe shall be cement-mortar lined, all mechanical joint.

(b) Tees, crosses, and bends for use with ductile iron pipe shall be either 250 psi pressure rating cast iron meeting the latest requirements of AWWA Standard C-110 or 350 psi pressure rating ductile iron meeting the latest requirements of AWWA Standard C-153.

(c) Bends for use in repairing existing 2-inch PVC pipe shall be bell-type, factory welded and shall meet the requirements for bells of pipe as set forth in ASTIvf Standard D-2241 for 2-inch through 12-inch pipe designated SDR-21.

(d) Mechanical joint and plain end tees, crosses, or bends shall be manufactured by American Cast Iron, U.S. Pipe Griffin, McWane Pipe, or approved equal.

(e) Mechanical joint locked hydrant tees or tapping tees may be permitted.

**2.3.4 Reducers**

(a) Reducers for use with ductile iron pipe shall be cement mortar lined mechanical joint.

(b) Reducers for use with ductile iron pipe shall be either 250 psi rating cast iron meeting the latest requirements of AWWA Standard C-110 or 350 psi rating ductile iron meeting the latest requirements of AWWA Standard C-153.

(c) Mechanical joint and plain end reducers shall be manufactured by American Cast Iron, U.S. Pipe, Griffin, McWane Pipe, or approved equal.

(d) Repair of existing reducers for transition from ductile iron pipe to 2-inch PVC pipe shall be accomplished by use of a mechanical joint plug which

has been provided with a 2-inch tap. A 2-inch bell and 2-inch NPT PVC transition fitting meeting the requirements as set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-21 connected to the tapped plug will effect an approved reduction. The 2-inch connection shall be made as shown on Standard Drawing No. TI-1.

### 2.3.5 Caps and Plugs

(a) Caps and plugs for use with, ductile iron pipe shall be mechanical joint except for slip-on type plugs which shall be restrained type, with cast lugs and furnished with a minimum of four restraining cap screws, and shall be manufactured by American Cast Iron, U.S. Pipe, Griffin, McWane Pipe, or approved equal.

(b) Mechanical joint caps and plugs shall be either 250 psi pressure rating cast iron meeting the latest requirements of AWWA Standard C-110, or 350 psi rating ductile iron meeting the latest requirements of AWWA Standard C-153.

(c) An existing 2-inch PVC line may be repaired by using a galvanized cap and a PVC iron pipe thread adaptor, meeting the requirements as set forth in ASTM Standard D2241 for 2-inch through 12-inch pipe designated SDR-21.

### 2.3.6 Sleeves

(a) Sleeves for use in connecting ductile iron pipe shall be mechanical joint and shall be manufactured by American Cast Iron, U.S. Pipe, Griffin, McWane Pipe, or approved equal.

(b) Sleeves shall be 250-psi pressure rating cast iron meeting the latest requirements of AWWA Standard C-110 or 350 psi pressure rating ductile iron meeting the latest AWWA Standard C-153.

### 2.3.7 Valves

(a) Gate valves shall be mechanical joint, resilient-seat type, iron body, non-rising stem, "O"-ring, stem seal type, 2-inch square operating nut, open counterclockwise.

(b) Gate valves shall meet the latest requirements of AWWA Standard C-509.

(c) Gate valve pressure ratings shall be 200 psig.

(d) Gate valves meeting the latest requirement of AWWA Standard C-509 shall be either Mueller Company, Model A2370; U.S. Pipe & Foundry Company, Model No. 5460; McWane Pipe and Foundry, Model F-6100; Clow Company, Model Number 5065; Waterous Company, Series 500; M & H Company, Model 3067-01; and American Cast Iron Company, American Darling, or any succeeding Model numbers, or approved equal.

(e) Rubber-seated butterfly valves meeting the latest requirements of AWWA Standard C-504 will be acceptable for use on 10-inch or greater pipe. Rubber-seated butterfly valves shall be open counterclockwise, furnished with a 2-inch operating nut, mechanical joint type, Class 150-B.

(f) Shop drawings of butterfly valves must be submitted to the Maryville WQC Department for approval.

(g) Air release valves for use on water mains shall be Vent-Mat TM. Series RBX or approved equal. Each valve shall be designed/sized for its particular application. Reference the standard detail drawing. Valves are to be located outside of paved areas whenever possible and graded to assure positive drainage away from the valve installation. Rodent screens are required on all vent lines. Perforated lids may be substituted for the vent lines with City of Maryville WQC approval.

### 2.3.8 Valve Boxes

(a) Valve boxes shall be the two-piece Buffalo screw type, 51/4-inch diameter shaft, capable of extending from valve stuffing box to ground surface, constructed of cast iron.

(b) Valve box lids shall be provided with the word "WATER" embossed in the lid surface. Lids shall be compatible with the box lid receptacle.

(c) The assembled valve box weight shall be approximately 60 pounds for 18-inch to 24-inch extension; 80 pounds

for 24-inch to 36-inch extension; 90 pounds for 36-inch to 48-inch extension.

(d) Shop drawings of valve boxes shall be submitted to the Maryville WQC Department for approval.

**2.3.9 Blow-off Assemblies**

(a) Blow-off assemblies for existing dead-end pipe less than 6-inch diameter shall be affected by installing a 2-inch size flushing-type fire hydrant, 2-inch post-type flushing hydrant, or 2-inch flush-style flushing hydrant equipped with one 2-1/2-inch hose nozzle having National Standard Hose Coupling threads. Hydrant bury shall be a minimum of 36 inches. Hydrants should have 2-inch NPT screwed in connection, minimum 150-psi working pressure, open counterclockwise, operating nut. The operating nut and 2-1/2-inch hose nozzle shall be installed either aboveground or in an approved ground-level enclosure. A shop drawing of the hydrant should be submitted to the WQC Department for approval. Blow-offs shall be the Mueller 2-inch flushing-type fire hydrant; GIL Industries, Aquaris One-On-One 2-inch post-flushing, or Flushing Hidden Hydrant; or approved equal.

(b) A 2-inch gate valve meeting the requirements set forth under Section 2.3.7 (a) of these Standards shall be installed in the 2-inch PVC pipe approximately three feet from the blow-off hydrant.

(c) Blow-off assemblies for dead-end 6-inch and greater pipe shall be affected by the installation of a 3-way fire hydrant meeting the requirements under Section 2.3.10 of these Standards. A gate valve meeting the requirements under Section 2.3.7 of these Standards with a valve box meeting the requirements under Section 2.3.8 of these Standards shall be located approximately three feet from the installed blow-off hydrant.

**2.3.10 Fire Hydrants**

(a) Fire Hydrant shall conform to the latest requirements of AWWA Standard C-502.

(b) Hydrant shall be equipped with two 2 1/2-inch hose outlet nozzles and one 4 1/2-inch pumper out nozzle.

(c) Nozzle thread shall conform with NFPA No. 194 National Standard Fire Hose Coupling Screw Threads.

(d) Size of hydrant main valve shall be 51/4-inch nominal diameter.

(e) Size of hydrant inlet shall be 6-inch MJ with one set of MJ accessories.

(f) Direction of rotation of the operating nut to open shall be counterclockwise.

(g) The operating nut shall be pentagonal in shape. The pentagon shall measure 1 1/2-inches from point to flat at the base of the nut and 1-7/16 inches at the top, and the height of the nut shall not be less than one-inch.

(h) Color of the finish paint above the ground line shall be Chrome Yellow or approved equal.

(i) Hydrant shall be equipped with harnessing lugs.

(j) Affidavit of Compliance shall be furnished for each hydrant.

(k) Outlet nozzle-cap chains will not be required.

(1) Hydrant shall be the Mueller Company, Centurion, Catalog No. A-423; American Cast Iron Pipe Company, American Darling, Catalog No. B-62-B; U.S. Pipe and Foundry Company, Metropolitan 250; M & H Company, Model 929 or 909, or any acceptable revisions of these models.

### 2.3.11 Thrust Blocking

(a) Thrust forces are created in a pipeline at changes in direction, tees, dead-ends or where changes in pipe size occur at reducers. Acceptable restraint measures include concrete thrust blocks, restrained joints, and tie rods. The details and dimensional data for concrete thrust blocks for 100-psi working pressure and soil bearings at 2000 pounds per square foot are given in the WQC Department Standard Drawings. For greater pressures or less soil bearing capacity, the quantities required should be calculated by the engineer.

(b) When iron tie rods are being used, all parts of such tie rods exposed to soil or weather shall be given a final coating of bit mastic material for protection. Tie rods shall not be less than nominal 3/4 inch in diameter.

### 2.3.12 Tapping Sleeves and Valves

(a) Tapping sleeves for mains 10” and smaller shall be cast iron with mechanical joint ends rated for 200 psi working pressure. End gaskets shall be duck-tipped type. Tapping sleeves shall be appropriately sized for use on O.D. pipe to be tapped. Tapping sleeves should

be provided with tapped bosses for testing purposes. Side flange bolts and pipe shall be of corrosive resistant material. Tapping sleeve shall be U.S. Pipe Company, type 9 mechanical joint cast iron with non-corrosive bolts and nuts, duck-tipped gaskets or approved equal.

Tapping sleeves for mains 12″ and larger shall be stainless steel type

(b) Tapping valves shall meet all requirements for gate valves under Section 2.3.7 of these Standards except flanged valve inlets Class 125 and mechanical joint outlets shall be provided. Tapping valve shall be U.S. Pipe Company, Hydragate No. 6860, or approved equal, and any succeeding catalog number for same.

**2.3.13 Cut-in Sleeves and Valves**

(a) Cut-in sleeves shall be cast iron mechanical joint and plain end, class 200 pressure rated. Gaskets shall be duck-tipped. mechanical joint gland should be provided with setscrews for bonding. Cut-in sleeves shall be Mueller Company H-842, or approved equal.

(b) Cut-in valves shall be cast iron mechanical joint for use in ductile iron and cast iron pipe. Gaskets shall be duck-tipped. All other requirements for gate valves under Section 2.3.7 of these Standards shall be met. Cut-in valves shall be Mueller Company H-862, or approved equal.

**2.3.14 Repair Sleeves**

(a) Repair sleeves used for repairing pipe may be either cast iron or ductile iron split type having appropriate pipe diameter range, mechanical joint ends, for 200 psi working pressure, furnished with two duck-tipped end gaskets. Split repair sleeves shall be Mueller Company, Catalog No. H-785, or approved equal.

(b) Full circumferential stainless steel band-type couplings having appropriate pipe diameter range may be used only for repairing circumferential breaks in ductile iron pipe. Stainless steel band-type repair couplings must be capable of withstanding test pressures of 300 psi at a torque of 70 foot pounds for 5/8-inch bolts and 90 foot pounds for 3/4-inch bolts; equipped with malleable iron lugs meeting ASTM A-47 Grade 32510, or ductile iron per ASTM A-536, Grade 60-40-18; with supporting side fingers, furnished with Grade 30 specially compounded rubber of new materials with ingredients to produce superior storage characteristics, performance and resistance to set after installation; bolts of high strength steel with

heavy hexagon nuts meeting the latest requirements of AWWA Standard C-111.

(c) Repair of 2-inch PVC pipe shall be accomplished by replacing damaged pipe using 2-inch PVC pipe and either PVC couplings meeting the requirements as set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-21, or compression couplings of iron having galvanized protection with rubber gaskets having 5-inch minimum length. The repair of 2-inch PVC pipe shall include the repair or replacement of the detection wire.

**2.3.15 Copper Tubing for Service Lines**

(a) Copper tubing shall be seamless, type K soft tempered.

(b) Copper tubing shall meet the requirements as set forth in ASTM Standard B-88 and AWWA Standard C-800 Appendix A for type K.

**2.3.16 Corporation Stops**

(a) Corporation stops shall meet the latest requirements of AWWA Standard C-800.

(b) Corporation stop inlets shall have AWWA threads, and the outlet shall have tapered threads conforming to ANSI B2.1. Outlets shall have male ends sufficient to accommodate copper flare coupling nuts.

(c) Coupling nuts for use with flared type K copper service tubing shall meet the latest requirements of AWWA Standard C-800.

(d) Corporation stops shall be limited to size 3/4-inch and 1-inch.

(e) Corporation stops shall be Mueller Company, Catalog No. H-15000; The Ford Meter Box Company, Catalog No. F600, or approved equal, or any succeeding Catalog numbers.

**2.3.17 Copper Service Unions**

(a) Unions for copper service tubing shall be the copper service thread, three-part type meeting the latest requirements of AWWA Standard C-800. The coupling nuts of the unions shall have copper service threads and shall meet the latest requirements of AWWA Standard C-800.

(b) Copper service unions shall be used when coupling copper service tubing.

**2.3.18 Tapped Saddles (For 2-inch PVC Pipe)**

(a) Saddles shall be used in connecting 3/4-inch and 1-inch service taps to 2-inch PVC Pipe.

(b) Saddles shall be of 85% copper and 5% each of tin, lead, and zinc.

(c) Saddles shall be double strap, two-part type. The upper and lower castings may be hinged together with a stainless steel pin. The screws connecting the upper and lower castings shall be of bronze. The lower casting shall be tapped to accept the screws. Saddles shall be designed to form a hydraulic seal between the pipe and a rubber gasket shall be furnished with each saddle. Outlets of saddles shall be tapped 3/4-inch or 1-inch AWWA thread for installation of a corporation stop.

(e) Saddles shall be designated to be satisfactory for use with water up to 145 psi in accordance to Section 3, General Design under the latest requirements of AWWA Standard C-800.

(f) Saddles shall be The Ford Meter Box Company, Inc., Catalog No. S70-203 for 3/4-inch AWWA thread; S70-204 for 1-inch AWWA thread; Mueller Co. for 3/4-inch or 1-inch AWWA thread; Hayes Pipe and Supply Co. for 3/4-inch or AWWA thread; or approved equal, or succeeding catalog numbers covering same.

**2.3.19 Service Fittings**

(a) Adapters:

1. Service fittings for use in 3/4-inch and 1-inch copper service tubing shall meet the latest requirements of AWWA Standard C-800.

2. Adapters for use in 3/4-inch and 1-inch copper service tubing may be straight, quarter bend, or eight bend.

3. Adapter inlets shall be flared copper except for corporation stop adapters.

4. Adapters having 3/4-inch inlets shall have either male or female iron pipe thread outlets of either 3/4-inch or 1-inch size.

5. Adapters having 1-inch inlets shall have either male or female iron pipe thread outlets of 1-inch.

6. Corporation stop adapters shall have inlet threads compatible with old type corporation stop

threads. Outlets of corporation stop adapters shall be copper flare with copper service threads. Gaskets used with corporation stop adapters shall be copper. Corporation stop adapters shall be used only for corporation stop sizes 5/8-inch, 3/4-inch, and 1-inch.

7. Threaded pipe nipples for use in setting 2-inch and greater meters shall be of nominally 85% copper and 5% each of tin, lead, and zinc. Pipe nipple threads shall be NPT.

(b) Tees for copper service pipe shall be flared copper to copper. Sizes shall be limited to 3/4-inch and 1-inch. Tees may have a combination of 3/4-inch and 1-inch branches and runs when deemed appropriate.

(c) Brass plugs of either 5/8-inch, 3/4-inch, or 1-inch size having AWWA threads shall be used to plug taps where corporation stops have been removed from service.

**2.3.20 Water Meters**

(a) Water meter sizes 5/8-inch and 1-inch:

1. Shall be the frost-proof type with cast iron bottom plate.

2. Casing shall be of copper alloy containing not less than 75 percent copper.

3. Register shall be the hermetically sealed magnetic type, straight reading, U.S. Gallons, with test hand.

4. Shall meet the latest requirements of AWWA Standard C-700.

5. 5/8-inch meters shall be Badger meter, Inc., Recordall, Model 25; Hersey 430 II; o r any succeeding model numbers, or approved equal.

6. One-inch meters shall be Badger Meter, Inc. Recordall, Model 40; Hersey 430 II; or any succeeding model numbers, or approved equal.

(b) Water Meter size 2-inch:

1. Shall be the compound, single register magnetic flanged type.

2. Casings shall be of copper alloy containing not less than 75 percent copper and shall be furnished with tapped boss for field-testing purposes.

3. Shall be furnished with oval companion flanges of copper alloy containing not less than 75 percent copper, gaskets, bolts, and nuts. Thickness of oval flanges shall be as required for Class 125 round flanges.

4. Register shall be the hermetically sealed type, straight reading U.S. Gallons, with test hand.

5. Shall meet the latest requirements of AWWA Standard C-702.

6. A bypass may be required at the discretion of the WQC Department.

7. Two-inch meters shall be Badger Meter, Inc., Recordall, Model 170; Rockwell International, Sensus; and any succeeding model numbers, or approved equal.

(c) Shop drawings and performance data for water meters 2inch size and larger shall be submitted to the WQC Department for approval. Flow demand, head loss, and range of user's expected flows will be considered by the WQC Department in making evaluation of such meters. All meters greater than 2-inch shall be installed with a bypass.

**2.3.21 Meter Yokes (For 5/8-inch and 1-inch meters)**

(a) Yokes shall be the riser type for flared copper both ends.

(b) The inlet shall have an all bronze inverted key angle valve close-coupled to the yoke piece.

(c) The outlet shall have an all bronze ell close-coupled to the yoke piece.

(d) The yoke piece shall be of cast iron, holding the inlet and outlet pipes, braced and correctly spaced.

(e) Yoke angle valves and ells shall be connected to the yoke piece such that they can be rotated to connect to piping below.

(f) A three-part expansion connection capable of being screwed on one end of the meter shall be furnished with each yoke. The expansion connection shall expand by turning a hand wheel to make watertight compression joints against rubber gaskets in the yoke ends.

(g) Yokes shall be used for all 5/8-inch and 1-inch meter settings.

(h) Yokes shall be The Ford Meter Box Company, Catalog No. 509, both ends flared copper for 5/8-inch meter settings and Catalog No. 512, both ends flared copper, for 1-inch meter settings, and Mueller Catalog No. H-5010 for 5/8inch and I-inch meter settings, or approved equal, and any succeeding catalog numbers.

**2.3.22 Meter Boxes**

(a) Meter boxes for 5/8-inch meter settings for non-traffic condition shall be either the two-part rectangular thermoplastic type or the two-part rectangular concrete type. The cover shall be rectangular or thermoplastic or concrete having minimum dimensions of 10-inches by 15inches furnished with a cast iron hinged reader lift having minimum dimensions of 4-inches by 7-inches provided with a keyhole for lifting.

(b) Meter boxes for 1-inch meter settings for non-traffic conditions shall be the rectangular thermoplastic type or two-part rectangular concrete type having minimum inside dimensions of 16 1/2-inches by 22-inches. The cover shall be rectangular furnished with a cast iron hinged reader lift having minimum dimensions of 4-inches by 7-inches provided with a keyhole for lifting.

(c) Meter boxes for 5/8-inch and 1-inch meter settings for traffic conditions shall be the two-part rectangular concrete type having minimum inside dimensions of 10-inches by 15-inches for 5/8-inch meter settings and 17-inches by 28-inches for 1-inch meter settings. The covers shall be of cast iron and shall be furnished with embossed tread markings and the word "WATER" on the top surface and shall be provided with a keyhole for lifting. Meter boxes and covers shall be capable of supporting minimum wheel loads of 16,000 pounds.

(d) The minimum depth of combined two-part meter box sections for setting 5/8-inch meters shall be 18-inches and 24inches for 1-inch meters.

(e) Meter box upper sections shall be designed with recesses for receiving covers. Covers and upper meter box sections shall be designed for easy cover removal and such that cover top surface when set will be flush with that of the upper meter box section rim.

(f) Meter boxes for a 2-inch meter setting shall be the three-part rectangular concrete type having a combined minimum depth of 36 inches and minimum inside dimensions of 17 inches by 28 inches. Covers shall be the two-part cast iron type and shall be furnished with embossed tread markings and the word "WATER" on the top surface and shall be provided with a keyhole

or other easy means for lifting cover sections. Meter boxes and covers shall be capable of supporting minimum wheel loads of 16,000 pounds. Alternate meter boxes for 2-inch meter setting shall be approved on an individual basis by the WQC Department.

(g) Meters greater than 2-inch size shall be set in vaults. Drawings of the proposed vaults shall be submitted to the WQC Department for approval. Vaults in general shall be of poured in place reinforced concrete or of masonry construction having a minimum depth of 36 inches. The cover may be of reinforced concrete provided with an easy means for reading and removal of the meter and or appurtenances. Factory type covers will be considered by the WQC Department.

(h) Meter boxes shall be as follows or approved equal:

1. For 5/8-inch meter non-traffic settings - Ametek, Inc., standard thermoplastic 12-inch with 6-inch extension effecting 18 inches combined depth, thermoplastic cover with cast iron reader lift, or Brooks Products, Inc., Catalog No. 36, two-section, effecting 18 inches combined depth, concrete cover with cast iron reader lift.

2. For 5/8-inch traffic settings - Brooks Products, Inc., Catalog No. 36T, (or any succeeding catalog numbers), two-section effecting 18 inches combined depth, with cast iron cover.

3. For I-inch meter non-traffic settings - Brooks Products, Inc., Catalog No. 65-H, (concrete) or 1914-18 (thermoplastic) (or any succeeding catalog numbers), two-section effecting 24 inches combined depth, concrete cover with cast iron reader lift.

4. For 1-inch meter traffic settings - Brooks Products, Inc., Catalog No. 65T, (or any succeeding catalog numbers), two-section effecting 24 inches combined depth, all cast iron cover.

5. For 2-inch meter settings - Brooks Products, Inc., Catalog No. 65T, (or any succeeding catalog numbers), three-section effecting 36 inches combined depth, two-part cast iron cover.

## 2.4 EXECUTION

(a) All construction on the City of Maryville's water distribution system that is not performed by the WQC Department shall be executed by a person, firm, or corporation licensed to engage in contracting as set forth in the Tennessee Contractors Licensing Act of 1976 (TCA 62-601). This requirement shall apply to all construction regardless of the amount of work involved.

(b) Contractors shall hold the appropriate license designation for the work they are to perform.

### 2.4.1 Preparation

(a) Precautions and permit to excavate:

1. Notify utility companies to locate existing facilities.

2. Abide by their requirements when repairing, replacing or disturbing existing facilities.

3. Prior to trench excavation being performed within any public right-of-way, including public alleys, a permit shall be obtained from the governing authority to perform such excavation. As a minimum, the trench backfill and street repair shall be made in accordance with the Maryville Land Development and Public Works Standards and Section 12, Chapter 3 of the Maryville municipal Code.

(b) Protect all vegetation and other features to remain.

(c) The engineer shall stake in the field the alignment of the water line and the location of all fire hydrants, valves, bends, crosses, and other appurtenances identified on the plans. All survey points shall be protected.

(d) Trench Excavation:

1. Perform in such a manner as to form a suitable trench in which to place the pipe and so as to cause the least inconvenience to the public.

2. To permit the proper installation of the pipe, allowing room for assembling joints and tamping backfill, the trench width at the crown of the pipe should be 2 feet plus the nominal diameter of the pipe. Unless approved by the Engineer, no trench less than 24-inches wide will be allowed.

3. Cut pavements along neat, straight lines with either a pavement breaker or pavement saw.

4. Trench depth shall be sufficient to provide a minimum cover in accordance with Section 2.2.4 of these Standards.

5. Align trench as shown on the plans and in accordance with Section 2.2.5 of the Standards.

6. Shape the bottom of the trench to provide uniform bearing of the pipe on undisturbed earth throughout its entire length. Dig bell holes to aid in securing uniform support of the pipe.

7. When unstable soil is encountered at the trench bottom, remove it to a depth required to assure support of the pipeline and backfill to the proper grade with AASHTO M-43, Size 3 or 4 course aggregate.

8. Remove rock encountered in the trench excavation to a depth of 6 inches below the bottom of the pipe barrel, backfill with suitable earth, and compact to uniformly support the pipe.

(e) Sheeting, shoring and bracing: when necessary or when directed by the engineer, put in place and maintain sheeting, bracing, etc., as may be required to support the sides of the excavation and to prevent movement. Remove all sheeting, shoring and bracing after backfill has been placed to a depth of 18 inches over the pipeline.

(f) Before placing pipe in the trench, field inspect for cracks or other defects. Remove defective pipe from the construction site.

(g) Swab the interior of the pipe to remove all undesirable material.

(h) Prepare the bell end and remove undesirable material from the gasket and gasket recess.

**2.4.2 Installing Distributor Pipes**

(a) Lay all pipe in accordance with Section 2.2.5 of these Standards.

(b) After applying gasket lubricant, extreme care should be taken to keep the spigot end from contacting the ground.

(c) As a minimum, the manufacturer's instructions for laying and joining pipe shall be followed.

(d) Cut pipe for installing valves, fittings, etc., in a neat and workmanlike manner without damaging the pipe so as to leave a smooth end at right angles to the axis of the pipe. Hone the pipe as needed with suitable tools or equipment.

(e) Locate water lines in relation to other piped utilities in accordance with Section 2.2.10 of these Standards.

**2.4.3 Installing Appurtenances**

(a) Securely plug open ends of pipe at the close of each workday and during temporary discontinuance of pipe laying.

(b) Set all valves, fittings, fire hydrants, and other specials in a neat workmanlike manner.

(c) Use thrust blocks, restrained joints, and tie rods in accordance with Section 2.3.11 of these Standards.

(d) Erect fire hydrants to stand plumb with the pumper nozzle facing the street or in a direction as may be directed by the City of Maryville Fire Chief.

(e) Effect drainage of fire hydrants by using a minimum of 6 cubic feet of Size No. 2 or No. 3 crushed stone.

**2.4.4 Installing Water Lines in Street, Highway, and Railroad Rights-of-Way**

(a) Permits as may be required for crossing streets, highways, and railroads and performing other work within their rights-of-way shall be obtained from the appropriate authorities.

(b) As a minimum, boring and jacking methods shall be in accordance with the Maryville Land Development and Public Works Standards.

**2.4.5 Water Line Pressure Tests**

(a) After the pipe has been laid, subject all newly laid pipe or any valved section thereof, to a hydrostatic pressure of at least 150 psi or 1.5 times the working pressure, whichever is greater.

(b) Test pressure shall:

1. Not exceed the pipe or thrust restraint design pressures.

2. Be of at least 2-hour duration.

3. Not vary by more than plus or minus 5 psi.

4. Not exceed twice the rated pressure of closed valves or fire hydrants included in the test section.

5. Not exceed the rated pressure of resilient seated butterfly valves.

(c) Pressurization:

1. Under the supervision of WQC personnel, slowly fill each valved section of pipe with water.

2. Apply the specified test pressure, by means of a pump connected to the pipe, based on the elevation of the lowest point of the line or section under test, and correct to the elevation of the test gauge.

(d) Air removal:

1. Before applying the specified test pressure, expel air completely from the pipe, valves, and hydrants.

2. Install air release valves at all points where entrapment of air occurs.

3. After all the air has been expelled, close corporation stops and apply the test pressure.

4. At the conclusion of the pressure test, remove the corporation stops and plug or leave in place at the discretion of the WQC Department.

(e) Examination:

1. Carefully examine all exposed pipe, fittings, valves, fire hydrants, and joints.

2. Repair or replace any damaged or defective pipe, fittings, valves or hydrants that are discovered with sound material and repeat the test until it is satisfactory to the Engineer.

**2.4.6 Water Line Leakage Tests**

(a) Concurrently conduct a leakage test with the pressure test.

(b) Leakage defined: The quantity of water that must be supplied into the newly laid pipe to maintain the specified test pressure after the air in the pipeline

has been expelled and the pipe has been filled with water.

(c) Allowable leakage:

1. Allowable leakage shall be determined in accordance with Section 2.2.6 of these Standards.

2. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/hr/in. of nominal size shall be allowed.

3. When hydrants are in the test section, test against the closed hydrant.

**2.4.7 Acceptance of Installation**

(a) If any test of pipe laid discloses leakage greater than that determined under Section 2.4.6 of these Standards, locate and repair the defective material until the leakage is equal to or less than the determined amount allowable.

(b) Repair all visible leaks regardless of the amount of leakage.

**2.4.8 Cleaning and Disinfection of Water Lines**

Thoroughly disinfect water lines in accordance with AWWA Standard C651 prior to placing in service.

1. Use chlorine disinfecting agent.

2. Allow water to escape from the ends of all lines to cause dispersion of the chlorine solution into all parts of the system.

3. Operate all valves and fire hydrants during the time disinfection is occurring.

4. Retain the chlorine solution in the lines for a period of 24 hours.

5. At the end of the 24-hour period, the residual chlorine must be a minimum of 25 ppm.; otherwise, repeat the disinfection procedure again.

6. Upon refilling the lines, collect a sample for bacteriological analysis. If the sample is acceptable, the lines may be connected to the system; otherwise, repeat the disinfection procedure until acceptable samples are obtained.

7. Dechlorinate all water discharged from disinfected lines until a chlorine residual of 2 parts per million or less is measured in the discharge water.

### 2.4.9 Water Service Line Connections

(a) Where practical, tap water mains in the upper half of the pipe.

(b) Maintain a distance of at least 24 inches between taps, measured along the axis of the water main.

(c) Use tapped saddles for all taps on PVC mains.

(d) Service line and meter setting sizes shall be at the discretion of the Director of the Water Quality Department.

(e) Service lines shall be installed by the WQC Department from the water mains to the edges of the street right-of-way lines or to the edges of easements provided for such water mains.

(f) Meter setting locations shall be at the discretion of the Director of the WQC Department. Meters 2-inch and larger shall be installed in a location free of vehicular traffic. Whenever possible, 5/8-inch and 1-inch meters should be set in a non-traffic area.

### 2.4.10 Annual inspection

Approximately twelve (12) months following acceptance of the utility line, a follow-up inspection will be made to determine if any failures or deficiencies have occurred as a result of Contractor's or Developer's work and/or materials. Present at this inspection will be a representative of the City of Maryville WQC Department and the Developer or other appropriate parties. In the event that a representative of the Developer is not present, the inspection shall be completed by the WQC Department representative, and a notice of the inspection and its findings shall be forwarded in writing to the Developer. The Developer will be responsible for correction of all failures or deficiencies of a mechanical nature and for failures or deficiencies caused by the work and/or materials of Developer and/or his agents which occur in the first year of operation. Any other failures or deficiencies which occur in the first year of operation will be the responsibility of the title owner of the affected property except that any failures or deficiencies on property dedicated to the City of Maryville by the Developer shall remain the responsibility of the Developer throughout the one year warranty period. The Developer and/or property owner as appropriate, is further responsible for any additional damages done in completing the required repairs. Within ninety (90) days of notification of the findings of the one-year inspection, it is the responsibility of the Developer and/or property owner as appropriate to ensure that any and all changes and/or repairs have been completed. If the Developer is in

compliance and no changes or repairs are needed either initially or within the ninety (90) day cure period, any bond posted shall be returned to the Developer within sixty (60) days of completion and acceptance of the work by the City following the one year inspection. If the Developer fails to complete any required repairs or changes and the ninety (90) day cure period passes after notice, any bond posted shall be paid immediately to the City of Maryville for the purpose of remedying any of the deficiencies and/or for completion of the project. Such funds shall remain the sole property of the City of Maryville, even to the extent that the actual costs of the work done are less than the amount of the bond forfeited to compensate the City of Maryville for the additional time and manpower needed to complete the work or to see that the work is completed. The WQC Department will oversee completion of the needed work at the expense of Developer and will charge Developer any overage incurred over the bond amount for the cost of the completed work. The Developer is responsible for such charges. If a bond has not been provided, the City may file suit or make other collection efforts against the Developer or any other appropriate parties immediately after the expiration of the ninety (90) day cure period for the cost of the work done or to be done to bring the property into compliance. The City shall receive from the Developer or any other appropriate party its reasonable litigation costs incurred as a result of Developer and/or other appropriate defendant failing to timely complete the required repairs identified in the one-year inspection. Such litigation costs include, but are not limited to, reasonable attorney's fees, court costs and deposition fees.

### 2.4.11 Bond Requirement

The WQC Department shall maintain a list of delinquent developers who are in default and have not in the past performed repairs required by the City of Maryville or the WQC Department after the ninety (90) day cure period following the inspection done at the one year warranty period. These developers shall be required to perform or pay for the required repair work and any and all prior projects for which the developer is responsible; otherwise, the developer will be required to post a performance bond acceptable to the City of Maryville to the WQC Department before commencement of any new projects involving the WQC Department. Such bond shall be in an amount equal to at least ten percent (10%) of the contracted cost of the water and sewer utility installation for the development. The performance bond shall be payable to the City of Maryville and shall be executed by a surety company duly authorized and qualified to do business in the State of Tennessee. This bond or cash deposit shall be conditioned upon the developer's completion of all requirements of the WQC Department as set forth in any contractual agreement with the City and in the Rules, Regulations, Rates and Policies for the City of Maryville, WQC Department pertaining to

warranty work and required repairs to the water, sewer, and wastewater utility systems for the project.

## 2.5 STANDARDS FLEXIBILITY

### 2.5.1 Interpretations of these Standards and Design Criteria

Interpretations of these Standards and Design Criteria or the determination of any other WQC Department standards and design criteria not covered under these Standards shall be at the discretion of the Director of the WQC Department. The decision of the Director of the WQC Department shall be based on past practices, traditional policies, widely accepted professional principles and practices of the industry.

### 2.5.2 Right of Appeal

Any disagreement with the interpretations or determinations made by the Director of the WQC Department with respect to these Standards or any other standards not covered herein may be appealed to the Development Standards Board of Appeals.

## 2.6 WATER RULES, REGULATIONS, POLICIES

### 2.6.1 Application For Water Service

Persons desiring water connections shall make application to the City, in writing, upon such forms as shall be provided by the City. The application shall state fully the use to which the water is to be applied and that the customer will abide by the Rules, Rates and Charges of the City then in force, or which thereafter is adopted. The application shall be signed by the owner or tenant of the premises and shall state the location of the premises to be served, including street, street number, and lot number. In the event the owner of the premises desires to be billed rather than the tenant for metered water used, the owner shall make application in accordance with the provisions of the Rules, Rates and Charges within the corporate limit of the City of Maryville, if the premises to be served is new construction, the applicant shall show that a building and/or plumbing permit has been issued by the Building and/or Plumbing official of the City.

### 2.6.2 Service Connection And meter Setting Charges

Water service lines will be installed and maintained from the main to the edge of the right-of-way or edge of easement. The meter setting will be installed and maintained by the City. The owner or tenant will install and maintain all pipes and fixtures of his premises.

The water meter setting shall be placed at a suitable location selected by the City. However, the City will strive

to place the meter setting where the customer desires. When making application, the tenant and/or property owner shall pay the charges required in the Water Rates and Charges Schedule included in this document as Customer Service Policy Manual, as may be amended from time to time.

The size of the service line from the main to the meter and meter size shall be determined by the City.

### 2.6.3 Customers Not To Supply Water To Others

Customers shall not supply water or allow water to be transported to other premises without the consent of the City.

### 2.6.4 Deposits

Before service is supplied, a deposit must be made by the customer in the amount indicated in the City's Customer Service Policy Manual. (Resolution No. 29)

### 2.6.5 Rates

The monthly rates and/or charges for metered water shall be in accordance with the Water and Sewer Rates and Charges Schedule as may be amended from time to time included in this document as Customer Service Policy Manual.

### 2.6.6 Meters

Each customer will be supplied water through a separate meter. Where a building under one ownership has a number of apartments (or offices) under one roof and the owner desires that the City deal directly with the tenants, the owner will make application for each unit to be served individually. Upon receiving application to serve multiple units, each tenant shall be subject to all applicable provisions of these Rules, Regulations, Rates and Charges.

For customers operating multiple units metered by a single meter, there shall be, in addition to the bill computed in accordance to the Rate Schedule, a charge per unit. (See the Customer Service Policy Manual.) This additional charge does not apply to recreational overnight rental facilities.

All meters and meter settings shall be furnished, owned, and maintained by the City. Meters and meter settings must be accessible at all times and not covered with rubbish or material of any kind.

The City will adjust the grade of the meter box one time only upon completion of new construction without charge. Any additional required adjustment caused by the regrading of the customer's property will be made by the City at the expense of the customer.

### 2.6.7 Meter Reading And Billing

Meter reading and billing policies will be in accordance with current City of Maryville policies as located in the Customer Service Policy Manual.

### 2.6.8 Relocation Of Meters

All meter locations the City considers to be unsatisfactory may be moved to a more suitable location at the expense of the city. The City may discontinue furnishing water to any customer who refuses permission to the City for removal of a meter in accordance with this regulation.

Should a customer consider their meter location unsatisfactory, a request for relocation may be made to the Customer Service office in the Maryville Municipal Building. If feasible, the City will relocate the meter as requested. The customer will be billed for actual cost of relocation.

### 2.6.9 Meter Testing

Should a customer question the accuracy of his meter registration, he may request that his meter be tested. The customer may make this request either in writing or orally to the City Customer Service Office. The customer has the option to be present while the meter is being tested. The charge for testing a meter is indicated in the Schedule of Fees and other Charges as shown under Customer Service Policy Manual.

If the meter tested is found to register in excess of any of the accuracy limits shown in Appendix IV to the Standards for the WQC Department of the City of Maryville, an allowance shall be made by the City, and the service charge will be retained by the City. (For Standards for Testing Water Meters, see Appendix IV of PART II of the Manual.

### 2.6.10 Meter Turn On/Off

Water shall not be turned on or shut of f at the meter by anyone except an authorized employee of the City. Customer should request this service through the City service connections. Corresponding fees will be in accordance with current City of Maryville fee schedule as located in the Customer Service Policy Manual.

### 2.6.11 Damage To Water Meter

If a City-owned water meter is damaged due to an act by the customer, through negligence or abuse, such customer shall be responsible for the repairs and/or replacement of same. The customer will be billed for the actual cost of repair or replacement, and such bills shall be paid within thirty (30) days from the date of mailing thereof. Otherwise, the amount

of the unpaid bill will be added to the customer's utility bill.

**2.6.12 Responsibility For Property Of Customer**

The City shall not assume responsibility for damages incurred by water delivered through the meter, such as broken water lines within the customer’s plumbing, spigots, valves, etc., left open at the time meter was installed.

In high-pressure areas in the City distribution system, it shall be the customer’s responsibility to install a pressure regulating valve on his service line and pressure and temperature pop-off valves on his water heater. Any damages sustained for water heater blow-off shall be the customer’s liability.

**2.6.13 Shut-off Valve**

A water shut-off valve must be installed within the plumbing system of each dwelling for use in case of an emergency.

**2.6.14 Discontinuance of Service**

The City’s personnel may shut off the water meter serving the customer for the following reasons:

(a) Non-payment of bills

(b) Unsafe apparatus

(c) Fraud and abuse

(d) Non-compliance with these Rules, Regulations, Rates, and Charges or any other Policy of the City.

**2.6.15 Private Fire Lines**

Private fire lines or sprinkler lines will be installed by and at the expense of the customer, such construction to be made in accordance with the City specifications, standards, and codes. Such lines shall be owned and maintained by the customer and shall be used solely for the supply of water for fire protection.

Authorized City personnel shall have access to the customer’s premises at all reasonable hours for the purpose of inspecting fire lines and/or sprinkler lines. The fire line and/or sprinkler line charges shall be as reflected in the Schedule of Water Rates and Charges as shown under Customer Service Policy Manual.

**2.6.16 Swimming Pools**

Fire hydrants are not permitted to be used in filling swimming pools.

### 2.6.17 No Guarantee Of Pressure And/Or Supply

The City does not guarantee any fixed pressure or a continuous supply of water. In the event of breaks in mains, service lines, pumping machinery, reservoirs, or other equipment of the City, the water may be shut off without notice, and the City shall not be liable for damages which may arise there from. When a planned water shut-off occurs, City personnel shall attempt to notify the affected customers.

### 2.6.18 Fire Hydrants inside Corporate Limit

All fire hydrants inside the corporate limit of the City of Maryville shall be maintained by the City's WQC Department, and the City of Maryville Fire Department shall be charged an annual amount per fire hydrant, as shown in the Schedule of Fees and other Charges. (See the Customer Service Policy Manual.)

It will be the responsibility of the Fire Department to maintain a flow schedule as well as routine painting and lubrication of all fire hydrants within the corporate limit. The Fire Department will notify the City before flow testing fire hydrants and shall furnish a monthly log of each fire hydrant flow tested, along with the appropriate data required by the City. Fire hydrants shall be installed within the system at such locations as approved by the Fire Chief and WQC.

### 2.6.19 Fire Hydrants outside Corporate Limit

The City of Maryville may install fire hydrants outside the corporate limit where lines exist that will provide adequate fire flow. The fire hydrants will be installed at the expense of the customer and shall become the property of the City of Maryville.

The location, size and type of fire hydrants outside the corporate limit will be determined by WQC.

No person, other than authorized agents of the City, fire departments, or fire companies, shall take water from fire hydrants outside the corporate limit without the consent of the City. Fire departments and/or other fire-fighting agencies shall, at the end of each month after the use of fire hydrants, submit a report to the City of the location of the fire hydrant used and the estimated gallons of water utilized. The City will bill the fire company for the estimated amount of water used.

No water shall be taken from fire hydrants outside the corporate limit for any use other than for fire fighting purposes, except by City personnel, fire departments or

other fire fighting agencies, unless prior permission has been granted by the City.

**2.6.20 Fire Hydrants - Private ownership Prohibited (Resolution Number 75)**

Effective February 26, 1987, installation of privately owned fire hydrants within the City limit is prohibited. Owners of fire hydrants installed prior to February 26, 1987 may elect to pay an annual inspection charge per hydrant as shown in the Schedule of Fees and Other Charges, or transfer ownership of fire hydrants and appurtenances along with the necessary dedicated easements to the City. (See the Customer Service Policy manual) However, this section shall not apply to any private fire system wherein all water usage is metered. (Resolution No. 88-30, adopted, 1988.)

**2.6.21 Fire Hydrant meters**

Fire hydrant meters are available for the following purposes:

1. Cleaning streets, parking lots;

2. Filling tanks or tank trucks (backflow preventer or air gap required);

3. Filling new water lines for testing (backflow preventer or air gap required);

4. Domestic water for special events where no other domestic water is available (backflow preventer or air gap required).

Fire hydrant meters are not available for the following purposes:

1. Building construction where there is an existing water main - in this case, customer should apply for a permanent tap;

2. Irrigation purposes;

3. Filling of swimming pools.

### 2.6.22 Cross-Connections

Approved Backflow Protection devices shall be installed by the plumbing contractor in accordance with Chapter 3, Title 8, of the Maryville Municipal Code, as may be amended from time to time.

Approved Backflow Protection Assemblies will be located a minimum of two (2′) feet plus the nominal diameter of the device above the finished floor surface. Maximum height above the finished floor level will not exceed six (6′) feet. Clearance of the device(s) from a wall surface or any other obstruction will be a minimum of six (6″) inches.

Devices will be positioned where discharge from relief port will not create undesirable conditions. An approved air-gap will separate the relief port from any drainage system. An approved strainer will be installed immediately upstream of the backflow device(s) shutoff valve.

Devices will be located in an area free from submergence or flood potential. Devices shall not be installed in a pit. Should devices be installed outside the facility, devices will be protected from freezing.

A gravity drainage system is required for relief port drainage on installation. Should drainage be connected to a sanitary sewer drain, provisions must be made to prevent any sewer gases from being released back through the drainage system.

### 2.6.23 Supply Of Steam Boilers

In no event shall a steam boiler be supplied directly from a water main of the City. There shall be a tank or other receptacle located between the boiler and the water main and such supply shall be taken directly from the water tank or receptacle.

### 2.6.24 Special Service

The City may issue permits for the use of water for building or construction purposes, or other temporary purposes, provided the applicant pays for tapping and installation and conforms to all other requirements of the City.

### 2.6.25 Extension Of Water Mains

The extensions of water mains shall be made in accordance with and subject to the conditions as set forth in PART II, Section 2.8, of this document.

### 2.6.26 Responsibility For Damages Incurred To Customer's Water Line (Resolution No. 116)

Effective March 8, 1988, the WQC Department of the City of Maryville, shall not assume liability for damages incurred by a water customer of the WQC Department when said damages have resulted from the following actions:

(a) damages caused by defective operation condition of customer’s plumbing system,

(b) damages caused by a defective condition in the water system, unless the WQC Department receives actual or constructive notice of a defective condition.

That all claims resulting from negligent operation, negligent installation, or negligent repairs, and all claims arising out of sudden and unexpected emergency repair work, will be handled on a case by case basis within the scope of the Tennessee Municipal League Risk Management Pool policies, and within the scope of general law, including the Tennessee Municipal Tort Liability Act.

## 2.7 WATER RATES AND CHARGES

Rates, fees and other charges for the water distribution system will be in accordance with current City of Maryville fee schedule as located in the Customer Service Policy Manual. Fees not included in the above policies will be charged based on actual costs.

## 2.8 WATER MAIN EXTENSIONS (Resolution Number 86)

In addition to the following regulations, each proposed water extension shall be evaluated for acceptance or rejection. The merits of which an extension is evaluated shall include, but not be limited to, the following:

1. Cost of operations and maintenance of equipment;

2. Projected revenues from utility sales generated as a direct result of the extension;

3. Concerns with respect to the environment and/or ecology; and

4. Overall budget considerations.

In general, and insofar as possible, each extension should be economically viable and self-sustaining on its own with minimal impact on the utility ratepayers as a whole.

### 2.8.1 Extensions within Existing Developed Areas Of The City

The City will extend water mains along accepted streets or easements in existing developed areas within the corporate limit of the City for applicants having property on such streets, rights-of-way, or easements. These extensions shall be made at the expense of the City.

### 2.8.2 Extensions Within New Subdivisions In The City

When requested and if funds are available, the City will extend a water main along an accepted street or right-of-way to the nearest property line of an owner of a parcel of land within the corporate limit of the City of Maryville on which there is a new subdivision which has been given preliminary approval by the Maryville Regional Planning Commission. In addition, the City will install fire hydrants along the extended main, if needed. However, such extensions will not be made at the expense of the City after an one-year period beyond the date of final plat approval of the new subdivision.

All water mains required to be extended along accepted streets and/or rights-of-way adjacent to the property line of the land parcels on which there are new subdivisions, and within the new subdivision, shall be installed by and at the expense of the developer. Also, should the City determine that the design capacity of the line should be increased to allow the service of areas other than the development; the City will pay the difference between the cost (including installation) of the line sized for the development versus the cost of the main to serve the expanded area. The size of such larger mains shall be at the discretion of the City. The developer is also required to install all fire hydrants within new subdivisions in accordance with City regulations.

The City may connect a main to, or extend a main from, any main previously installed without obligation to the developer or consumer who installed such main.

### 2.8.3 Extensions Outside City Limit

All proposed water main extensions outside the City of Maryville must be granted approval to proceed from the City prior to preparation of plans. The City reserves the right to reject any extension.

All water main extensions outside the City of Maryville shall be installed by and at the expense of the developer from the end of the existing water main whether it is inside or outside the City limit. However, if the City determines that it is in the best interest of the City, it may install or have installed said extensions and charge the developer a lump sum fee which shall include all applicable connection fees and line extension construction costs. Also, should the City determine that the design capacity of the line should

be increased to allow the service of areas other than the development; the City will pay the difference between the cost (including installation) of the line sized for the development versus the cost of the main to serve the expanded area. The size of such larger mains shall be at the discretion of the City.

The City may connect a main to, or extend a main from any main previously installed without obligation to the developer or consumer who installed such main.

### 2.8.4 Exception

The regulations governing the extension of water mains shall not limit the City from participating in the cost of water main extensions when the application warrants consideration due to high volume consumption or favorable return on investment.

## 2.9 CHAPTER 3 OF TITLE 8 OF THE MARYVILLE MUNICIPAL CODE REGARDING CROSS CONNECTIONS, AUXILIARY INTAKES, BYPASSES, INTERCONNECTIONS[1]



### 8.301 Definitions

The following definitions and terms shall apply in the interpretation and enforcement of this chapter:

1. Public water Supply

   The waterworks system furnishing water to the City of Maryville for general use and which supply is recognized as the public water supply by the Tennessee Department of Public Health.

2. Cross-Connections

   Any physical connection whereby the public water supply is connected with any other water supply system, whether public or private, either inside or outside of any building or buildings, in such manner that a flow of water into the public water supply is possible either through the manipulation of valves or because of ineffective check or back-pressure valves, or because of any other arrangement.

3. Auxiliary Intake

Any piping connection or other device whereby water may be secured from a source other than that normally used.

The regulations in this chapter are recommended by the Tennessee Department of Public Health for adoption by cities. See Title 4 In the Maryville Municipal Code for plumbing regulations.

4. Bypass

Any system of piping or other arrangement whereby the water may be diverted around any part or portion of a water purification plant.

5. Interconnection

Any system of piping or other arrangement whereby the public water supply is connected directly with a sewer drain, conduit, pool, storage reservoir, or other device which does not nor may contain sewage or other waste or liquid which would be capable of imparting contamination to the public water supply.

6. Person

Any and all persons, natural or artificial, including any individual, firm, or association, and any municipal or private corporation organized for existing under the laws of this or any other state or county. (Ordinance No. 1210)

**8.302 Compliance with Statutes, Rules, and Regulations**

The City of Maryville public water supply is to comply with §68-13-101 and §68-13-104 of the ***Tennessee Code Annotated***, as well as the Rules and Regulations for Public Water Supplies, legally adapted in accordance with this code, which pertain to cross-connections, auxiliary intakes, bypasses, and interconnections, and establish an effective, ongoing program to control these undesirable water uses. (Ordinance No. 1210)

**8.303 Regulated**

It shall be unlawful for any person to cause a cross-connection, auxiliary intake, bypass, or interconnection to be made; or allow one to exist for any purpose whatsoever, unless the construction and operation of same have been approved by the Tennessee Department of Public Health, and the operation of such cross-connection auxiliary intake, bypass or interconnection, is at all times under the direct supervision of the City Manager or his designated

representative. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.304 Statement Required**

Any person whose premises are supplied with water from the public water supply and who also has on the same premises a separate source of water supply, or stores water in an uncovered or unsanitary storage reservoir from which the water stored therein is circulated through a piping system, shall file with the City manager or his designated representative, a statement of the nonexistence of unapproved or unauthorized cross-connections, auxiliary intakes, bypasses, or interconnections. Such statement shall also contain an agreement that no cross-connection, auxiliary intake, bypass, or interconnection will be permitted upon the premises. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.305 Inspections**

It shall be the duty of WQC to cause inspections to be made of all properties served by the public water supply where cross-connections with the public water supply are deemed possible.

The frequency of inspections and re-inspections, based on potential health hazards involved, shall be as established by the City Manager or his designated representative and as approved by the Tennessee Department of Public Health. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.306 Right of Entry to Inspect**

The City Manager or his designated representative shall have the right to enter, at any reasonable time, any property served by a connection to the Maryville Public Water Supply for the purpose of inspecting the piping system or systems thereof for cross-connections, auxiliary intakes, bypasses, or interconnections. On request, the owner, lessee, or occupant of any property so served shall furnish to the inspection agency any pertinent information regarding the piping system or systems on such property. The refusal of such information or refusal of access, when requested, shall be deemed evidence of the presence of cross-connections. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.307 Time for Compliance**

Any person who now has cross-connections, auxiliary intakes, bypasses, or interconnections in violation of the provisions of this chapter, shall be allowed a reasonable time within which to comply with the provisions of this chapter. After a thorough investigation of existing conditions and an appraisal of the time required to complete the work, the amount of time shall be designated by the City Manager or

his designated representative. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.308 Backflow Protective Devices**

Where the nature of use of the water supplied an premises by the Maryville Public water Supply is such that it is deemed:

(a) Impractical to provide an effective air-gap separation;

(b) That the owner and/or occupant of the premises cannot, or is not willing to demonstrate to the official in charge of the water system, or his designated representative, that the water use and protective features of the plumbing are such as to propose no threat to the safety or potability of the water supply;

(c) That the nature and mode of operation within an premises are such that frequent alterations are made to the plumbing,

(d) There is an likelihood that protective measures may be subverted, altered or disconnected;

The City Manager or his designated representative shall require the use of an approved protective device on the service line serving the premises to assure that any contamination that may originate in the customer’s premises is contained therein. The protective device shall be a reduced pressure zone-type backflow preventer, approved by the Tennessee Department of Public Health as to manufacture, model, and size. The backflow protective device shall be installed at a height of no less than 2 feet but no more than 6 feet above a finished floor level of the premises. The protective device shall be protected from freezing and flooding. The method of installation of backflow protective devices shall be approved by the City Manager or his designated representative prior to installation and shall comply with the criteria set forth by the Tennessee Department of Public Health. The installation shall be at the expense of the owner or occupant of the premises. The Maryville Public Water Supply shall have the right to inspect and test the device, or devices, on an annual basis, or whenever deemed necessary by the City Manager or his designated representative. Water service shall not be disrupted to test the device without the knowledge of the occupant of the premises.

Where the use of water is critical to the continuance of normal operations or protection of life, property, or equipment, duplicate units shall be provided to avoid the necessity of discontinuing water service to test or repair the protective device or devices. Where only one unit has been installed and the continuance of service is critical,

the City manager or his designated representative shall notify, in writing, the occupant of the premises of plans to discontinue water service and arrange for a mutually acceptable time to test and/or repair the device. The water system shall require the occupant of the premises to make all repairs indicated promptly, and the expense of such repairs shall be made by qualified personnel acceptable to the City Manager or his designated representative. (Ordinance No. 1210, as amended by Ordinance No. 1359)

**8.309 Labeling Water Outlets**

The potable water supply made available on the properties served by the public water supply shall be protected from possible contamination as specified herein. Any water outlet which could be used for potable or domestic purposes and which is not supplied by the potable system must be labeled in a conspicuous manner as:

**W A T E R U N S A F E**

**F 0 R D R I N K I N G**

The minimum acceptable sign shall have black letters at least one-inch high located on a red background. (Ordinance No. 1210)

**8.310 Violations**

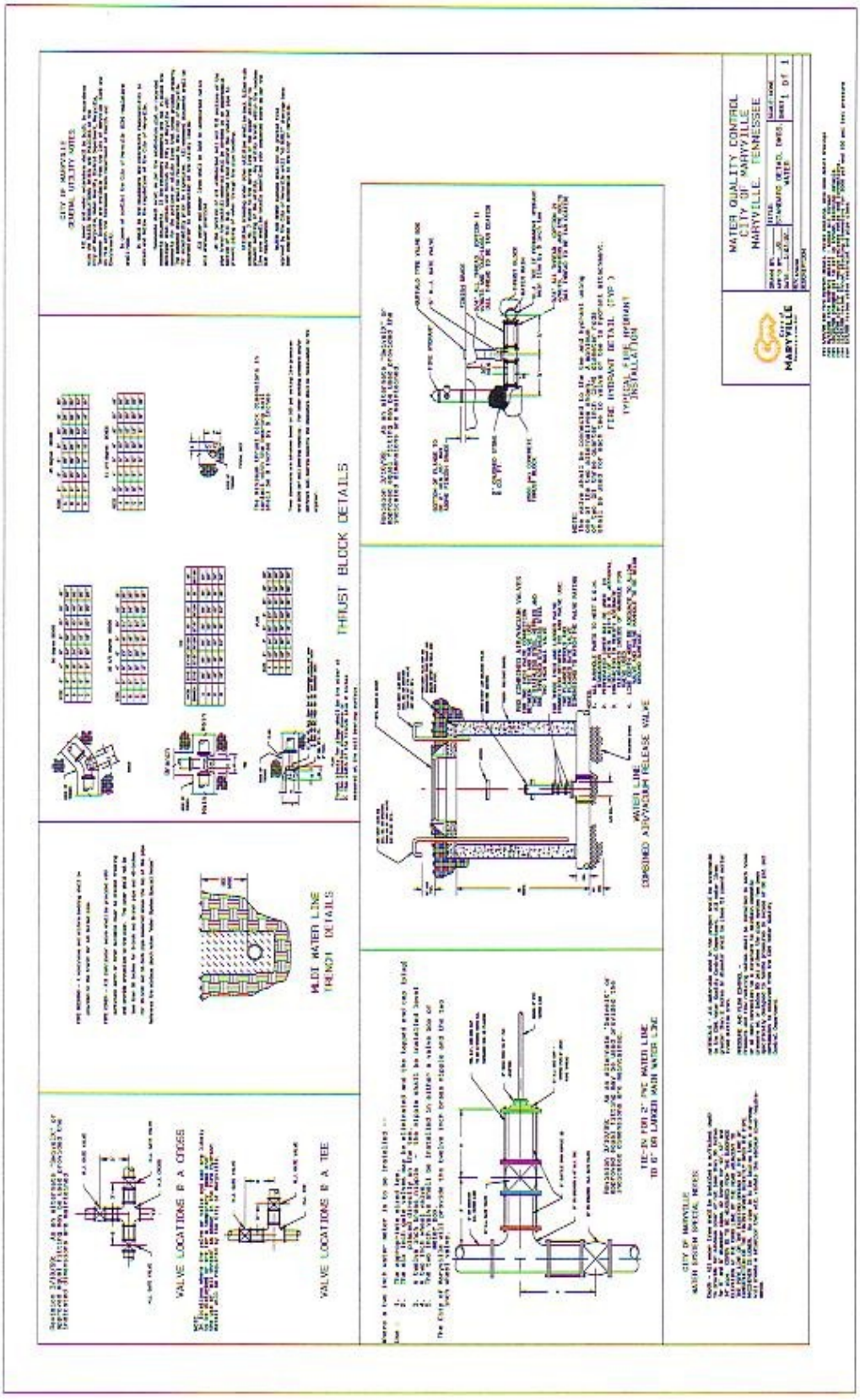
Any person who neglects or refuses to comply with any of the provisions of this chapter shall be deemed guilty of a misdemeanor punishable under the general penalty clause for this municipal code. In addition, the City Manager or his designated representative shall discontinue the public water supply service at any premises upon which there is found to be a cross-connection, auxiliary intake, bypass, or interconnection, and service shall not be restored until such cross-connection, auxiliary intake, bypass, or interconnection has been discontinued (Ordinance No. 1210, as amended by Ordinance No. 1359, modified).

**APPENDIX III**
**DETAIL SHEETS -**
**"STANDARD DETAIL DRAWINGS WATER"**

Sheet 1 of 1

- General Utility Notes
- Water Special Notes
- Water Valve Locations
- MLDI Water Line Trench Details
- Thrust Block Details
- Fire Hydrant Detail
- Water Line Combined Air/Vacuum Release Valve
- Tie-in for 2" PVC Water Line to 61, or Larger Water Line

NOTE: 24 x 36 inch detail drawings available separately.


WATER QUALITY CONTROL
CITY OF MARYVILLE
MARYVILLE, TENNESSEE
THRUST BLOCK DETAILS
VALVE LOCATIONS @ A CROSS
VALVE LOCATIONS @ A TEE
PILOT WATER LINE
THRUST DETAILS
WATER LINE
COMBINED AIR/VACUUM RELEASE VALVE
TIE-IN FOR 2" PVC WATER LINE
TO 6" DR LARGER MAIN WATER LINE
CITY OF MARYVILLE
MAIN SYSTEM METAL MARKS

## APPENDIX IV - WATER METERS

Standard for Testing Water Meters

- Accuracy Limit Chart
- Test Tanks, Periodic Tests, Records

## APPENDIX IV - WATER METERS

Standard for Testing Water Meters

Reasons for Water Meter Tests -

To insure that the cost of water service is equitably distributed among all customers.

To prevent the loss of revenue to the Maryville WQC Department, which may occur if meters are not maintained at a reasonable level of efficiency.

Test Rates -

Three rates of flow are necessary under this Standard to properly test water meters of positive-displacement and compound types - maximum, intermediate, and minimum. The rates of flow for 5/8-inch and 1-inch displacement type meters and 2-inch compound meters are given in the table below.

Test Qualities -

The quantities of water necessary under this Standard to reduce testing errors to an acceptable minimum are given in the table below for 5/8-inch and 1-inch displacement type meters and 2-inch compound meters.

Accuracy Limits -

Accuracy limits are established under this Standard to ensure that water meters record as accurately as commercially feasible. Accuracy limits for 5/8-inch and 1-inch displacement type meters and 2-inch compound meters are given in the table below.

**STANDARD TEST FOR WATER METERS**

| Size (in.) | Rate of *Flow* (gpm) | Test Quantity (gal.) | Accuracy Limits* M | Rate of *Flow* (gpm) | Test Quantity (gal) | Accuracy Limits** M | Rate of *Flow* (gpm) | Test Quality (gal) | Accuracy Limits* (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | New Meters | Repaired Meters" |
| 5/8 | 15 | 100 | 98.5 - 101.5 | 2 | 10 | 98.5 - 101.5 | 1/4 | 10 | 95 - 101.5 | 90 - 101.5 |
| 1 | 40 | 100 | 98.5 - 101.5 | 4 | 10 | 98.5 - 101.5 | 3/4 | 10 | 95 - 101.5 | 90 - 101.5 |
| 2 | 120 | 1,000 | 97 - 103 | 15 | 100 | 97 - 103 | 1/4 | 10 | 95 - 103 | 90 - 103 |

* Accuracy limits for repaired, as well as new meter.

** The limits set for repaired meters are considered to represent those that require good meter shop procedures to achieve. Any meter, regardless of age, which cannot be repaired to test 80% or better on the minimum flow test shall not be placed in service.

**Test Tanks** -

Only commercial calibrated tanks providing an overall error of less than 0.3 percent shall be used when testing accuracy of water meters.

**Periodic Tests** -

To ensure reliable meter measurements, it is essential that all meters be subjected to periodic tests. Under average conditions the following intervals between tests should not be exceeded:

| Meter Size (Inches) | Years Between Test |
|---|---|
| 5/8 | 10 |
| 1 | 6 |
| 2 | 4 |

The simple rule to be applied once information on (1) sales value of water and wastewater charges, (2) the effect of City of Maryville water on meters, and (3) the net cost of meter removal, testing, repairing, and replacing is at hand can be stated as follows:

> **IN ANY PERIOD OF TIME, THE HIGHEST NET REVENUE FROM A METERED WATER SYSTEM IS RECEIVED WHEN THE COST OF METER REPAIR AND MAINTENANCE JUST EQUALS THE LOSS OF REVENUE IF SUCH WORK IS NOT DONE.**

**Records** -

Individual records shall be maintained and kept on file during the life of each water meter. Records shall include test data, including meter readings, test dates, purchase dates, Maryville WQC company numbers, location of previous settings, and a cross filing system of records.

## APPENDIX V - EASEMENTS

Dedication and Transfer of Utility Lines Easements, and Facilities

# DEDICATION AND TRANSFER OF UTILITY LINES AND PERTINENT FACILITIES

This indenture, made and entered into on this _____ day of _____, 2_____, by and between _____, of Blount County Tennessee, party of the first part, (hereinafter referred to as "Developer") and CITY OF MARYVILLE, TENNESSEE of Blount County, Tennessee, party of the second part, (hereinafter referred to as "City").

WITNESSETH that whereas, said Developer has caused to be constructed the following described utility facilities, to wit:

(City of Maryville Water Quality Control Department Work Order Numbers);

WHEREAS, said Developer desires that said utility facility be attached to and become a part of the City's existing water/sanitary sewer system and desires to dedicate, transfer and convey said facilities, including all easements and rights connected therewith, to the City and has requested that the City accept the same into its system.

NOW, THEREFORE, in consideration of the City accepting said utility facilities into the City's system, said Developer hereby dedicates, transfers and conveys unto the City, its successors and assigns, all of the afore described utility facilities together with all easements and rights connected therewith.

The Developer further warrants that all labor and materials in connection with the construction and installation of said facilities have been fully and completely paid and that there are no liens or other encumbrances existing against said facilities.

The Developer further warrants that said utility facilities are free and clear of all defects in material and workmanship, that said facilities were constructed and installed in strict compliance with all requirements of the City's rules, regulations, and orders, and does hereby agree to indemnify and save harmless the City from any and all loss, costs, expense or damage which the City may suffer as a result of any defect or defects which occur in said facilities within one (1) year from the acceptance of this instrument.

IN WITNESS WHEREOF, said Developer has caused these presents to be executed on the day and date first above written.

By:_____

Title:_____

STATE OF TENNESSEE }
}SS
COUNTY OF BLOUNT }

Personally appeared before me, the undersigned, a Notary Public in and for said County, the within named bargainor , with whom I am personally acquainted, and who acknowledged that he/she executed the within instrument for the purposes therein contained.

Witness my hand and official seal at office this ____ day of _____, 2_____.

Notary Public _____

My Commission Expires: _____

Accepted by City this _____ day of _____, 2_____.

By:_____

Signature Title_____

# PART III

# SEWER USE ORDINANCE

## PUBLIC AND PRIVATE SEWERS

Chapter 2 of Title 8 of the City of Maryville Municipal Code regarding the use of Public and Private Sewers and Drains, Private Sewage Disposal, the Installation and Connection of Building Sewers, and the Discharge of Wastes into the Public Sanitary Sewerage System.

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## SEWER USE ORDINANCE"
## MARYVILLE MUNICIPAL CODE - CHAPTER 2

## SEWAGE AND HUMAN EXCRETA DISPOSAL[1]

1 See Title 4 of this code for plumbing regulations.

# SEWER USE ORDINANCE

# CHAPTER 2
# SEWAGE AND HUMAN EXCRETA DISPOSAL

## 8-201 **GENERAL PROVISIONS**

### 8-201.1 Purpose and Policy

This Ordinance sets forth uniform requirements for direct and indirect contributors into the wastewater collection and treatment system for the City of Maryville, Tennessee, hereinafter known as the City and enables the City to comply with all applicable State and Federal laws required by the Clean Water Act of 1977, as amended, and the State of Tennessee's General Pretreatment Regulations, and the Federal Pretreatment Regulations (40 CFR, Part 403).

The objectives of this Ordinance are:

(a) To protect the public health;

(b) To prevent the introduction of pollutants into the municipal wastewater system which will interfere with the operation of the system or contaminate the resulting sludge or biosolids;

(c) To prevent the introduction of pollutants into the municipal wastewater system which will pass through the system, inadequately treated, into receiving water or the atmosphere or otherwise be incompatible with the system;

(d) To improve the opportunity to recycle and reclaim wastewaters, biosolids and sludges from the system; and

(e) To provide for equitable distribution of the cost of the municipal wastewater system.

This Ordinance provides for the regulation of direct and indirect contributors to the municipal wastewater system through the issuance of permits to certain non-domestic users and through enforcement of general requirements for the other users, authorizes monitoring and enforcement activities, requires user reporting, assumes that existing customer's capacity will not be preempted, and provides for the setting of fees for the equitable distribution of costs resulting from the program established herein.

This Ordinance shall apply to the City of Maryville and to persons outside the City who are, by contract or agreement with the City, users of the City of Maryville's Publicly Owned Treatment Works (POTW). Except as

otherwise provided herein, the City Manager or his representative shall administer, implement, and enforce the provisions of this Ordinance.

8-201.2 Definitions

Unless the context specifically indicates otherwise, the following terms and phrases, as used in this Ordinance, shall have the meanings hereinafter designated:

- Act or "the Act". The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et. seq.

- Absolve. To excuse; to free from an obligation or the consequences of guilt or liability.

- Administrative Action. An enforcement action (a fine or order) authorized by the control authority's legal authority which is taken without involvement of a court of law.

- Administrative Fine. A punitive monetary charge unrelated to actual treatment costs which is assessed by the control authority rather than a court of law.

- Administrative Order. A document which orders the violator to perform a specific act or refrain from an act. For example, an order may require users to attend a show cause hearing, cease and desist discharging or undertake activities pursuant to a compliance schedule.

- Administrator. The Administrator of the Environmental Protection Agency.

- Admissible Evidence. Circumstance(s) that would lead a common person to believe that a crime or violation has occurred, is occurring or is about to occur, and would be admissible in a court of law.

- Affidavit. A sworn written statement under oath before an authorized magistrate or officer.

- Appeal Authority. The local appeal authority shall consist of the current members of the City Council of the City of Maryville, whose chairman shall be the Mayor, or any member(s) of the City Council or any officer(s) or employee(s) of the City so designated as the Appeal Authority by the City Council. The Appeal authority shall conduct hearings

concerning appeals of the decisions of the Hearing Authority.

- Approval Authority. The Director of the Division of Water Pollution Control, Tennessee Department of Health and Environment. The approval authority is responsible for approval and oversight of the control authority pretreatment programs, including the evaluation of the effectiveness of local enforcement.

- Authorized Representative of Industrial User. An authorized representative of an Industrial User may be: (1) a principal executive officer of at least the level of vice-president, if the Industrial User is a corporation; (2) a general partner or proprietor if the Industrial User is a partnership or proprietorship, respectively; (3) a duly authorized representative of the individual designated above if such representative is responsible for the overall operation of the facilities from which the indirect discharge originates; and/or (4) A person who is directly responsible for environmental control and who has written authority to act as a representative from one of the previous three individuals. The written authority shall be submitted to the Control Authority prior to submission of the first monitoring report.

- Biochemical Oxygen Demand (BOD). The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure, five (5) days at 20° centigrade (68 degrees Fahrenheit) expressed in terms of weight [pounds per day (lb/day)] and concentration [milligrams per liter (mg/l)].

- Biosolids. Sludge which complies with the requirements of 40CFR Part 503 and is applied to the land in order to condition the soil or fertilize crops and/or vegetables.

- Burden of Proof. The duty of proving a disputed assertion or charge in a court of law.

- Building Drain. The part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning three (3) feet outside the inner face of the building wall.

- Building Sewer. That part of the horizontal piping of a drainage system which extends from the end of the building drain and which receives the discharge of the building drain and conveys it to a POTW, private sewer, individual sewage

disposal system or other point of disposal.

- Categorical Standards; Categorical Pretreatment Standards. National Categorical Pretreatment Standards or Pretreatment Standard.

- Categorical Industrial User. An industrial user subject to categorical pretreatment standards.

- Cease and Desist Order. An administrative order directing a user to immediately halt illegal or unauthorized discharges.

- Chain of Custody. A written record of sample possession for all persons who handle (collect, transport, analyze, dispose of) a sample, including names, dates, times and procedures followed.

- Chronic Violation. The term used to describe violations of a Wastewater Discharge Permit when the limit for any one parameter listed in the permit is exceeded by any magnitude for 66 percent or more of the total industrial self-monitoring plus Control Authority compliance monitoring measurements made in the six month period covered by the semi-annual report required by the Approval Authority.

- City. The City of Maryville, Tennessee.

- City Manager. The person designated by the City to supervise the operation of the POTW and who is charged with certain duties and responsibilities by this Section, or his duly authorized representative.

- Civil Litigation. A lawsuit filed in a civil court of law. If the court rules that the defendant user violated the law the court may impose civil penalties, injunctions or other equitable remedies and/or cost recovery.

- Civil Penalty. A punitive monetary award granted by a court of law to the control authority against a noncompliant user.

- Combined Sewer. A sewer receiving both sewage and surface runoff from downspouts, storm sewers and surface or groundwater.

- Compatible Pollutant. Biochemical oxygen demand, suspended solids, pH, and fecal coliform bacteria; plus any additional pollutants identified in the publicly owned treatment works

NPDES permit, where the publicly owned treatment works is designed to treat such pollutants and, in fact, does treat such pollutants to the degree required by the POTW's NPDES permit.

- Compliance Order. An administrative order directing a noncompliant user to achieve or restore compliance by a date specified in the order.

- Compliance Schedule. A schedule of required activities (also called milestones) necessary for a user to achieve compliance with all pretreatment program requirements with dates for achieving each milestone.

- Composite Sample. Twenty-Four Hour Flow Proportional Composite Sample. A sample consisting of several wastewater portions during a 24-hour period in which the portions are proportional to the flow and combine to form a representative sample.

- Consent Decree. A court supervised settlement agreement, the violation of which may be considered contempt of court.

- Consent Order. An administrative order embodying a legally enforceable agreement between the control authority and the noncompliant user designed to restore the user to compliance status.

- Control Authority. The City Manager of the City of Maryville or his designated representative.

- Cooling Water. The water discharge from any use such as air conditioning, cooling or refrigeration, or to which the only pollutant added is heat.
- Criminal Intent. A state of mind which is a necessary element of all crimes. Criminal intent may be general (intent to perform an act) or specific (intent to break a law).

- Criminal Negligence. Negligence of such a character, or occurring under such a circumstance, as to be punishable as a crime (such as a flagrant and reckless disregard of the safety of others or willful indifference to the injury likely to follow).

- Criminal Prosecution. A criminal charge brought by the control authority against an accused violator. The alleged criminal action may be a misdemeanor or a felony and is defined as willful, negligent, knowing and/or intentional violations. A

court trial-by-jury is generally required and, upon conviction, punishment may include a monetary penalty, imprisonment or both.

- Customer. Any individual, partnership, corporation, co-partnership, company, joint stock company, trust, estate, government entity, or any other legal entity or their legal agents or assigns who receives sewer service from the City under either an expressed or implied contract requiring payment to the City for such service. The masculine gender shall include the feminine, the singular shall include the plural where indicated by context.

- Daily Average Loading. The average over a three (3) month period of waste constituents found in a 24-hour period in the sewage entering the influent of the POTW treatment plant.

- Daily Maximum Limits. The maximum allowable discharge of a pollutant during a calendar day. Where daily maximum limits are expressed in units of mass, the daily discharge is the total mass discharge over the course of the day. Where daily maximum limits are expressed in units of concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

- Defendant. The party against whom relief or recovery is sought.

- Deposition. A discovery device by which one party addresses verbal questions to the other party or to a witness for the other party. Depositions are conducted under oath outside the courtroom, usually in the office of an attorney. A transcript is made of the deposition which may be used as evidence at trial.

- Deterrent Value. A threat of reprisal which is sufficient to discourage the user from future violations.

- Direct Discharge. The discharge of treated or untreated wastewater directly to the waters of the State of Tennessee.

- Discovery. A variety of pretrial devices used by one party to obtain relevant facts and information about the case from the other party.

- Domestic Waste(s). Liquid wastes (I) from the non-commercial preparation, cooking, and handling of food, or (ii) containing human excrement and similar matter from the sanitary conveniences of dwellings, commercial buildings, industrial facilities, and institutions.

- Environmental Protection Agency, or EPA. The U.S. Environmental Protection Agency, or, where appropriate, the term may also be used as a designation for the Administrator or other duly authorized official of said agency.

- Federal Categorical Pretreatment Standard or Pretreatment Standard. Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) and (c) of the Act (33 U.S.C. 1347) which applies to a specific category of Industrial Users.

- Felony. A crime punishable by imprisonment for greater than one year (depending on state law).

- Fees. A schedule of charges imposed to recover treatment and or administrative costs (not punitive in nature).

- Fine. A punitive monetary charge for a violation of the law. Often used synonymously with "penalty", although the term "fine" generally implies the use of administrative rather than civil (judicial) procedures.

- Garbage. Solid wastes from the domestic and commercial preparation, cooking, and dispensing of food and from the

handling, storage and sale of produce.

- Grab Sample. A sample which is taken from a waste stream on a one-time basis with no regard to the flow in the waste stream and without consideration of time.

- Hearing Authority. The administrative board responsible for the administration and enforcement of an approved pretreatment program and the provisions of TCA 69-3-123 through 69-3-129. The local hearing authority shall consist of the City Manager of the City of Maryville, and any member(s) of the City Council or any officer(s) or employee(s) of the City so designated as the Hearing Authority by the City Manager. The Hearing authority shall conduct hearings concerning the pretreatment program in accordance with TCA 69-3-123 through 69-9-129.

- Holding Tank Waste. Any waste from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks, and vacuum-pump tank trucks.

- Incompatible Pollutant. All pollutants other than compatible pollutants as defined herein.

- Indirect Discharge. The discharge or the introduction of nondomestic pollutants from any source regulated under Section 307(b) or (c) of the Act, (33 U.S.C. 1317), into the POTW (including holding tank waste discharged into the system).

- Industrial User. A source of Indirect Discharge which does not constitute a "discharge of pollutants" under regulations issued pursuant to Section 502 of the Act (33 U.S.C. 1342).

- Injunction, Injunctive Relief. A court order which restrains or compels action by the user.

- Instantaneous Maximum Limit. The maximum allowable concentration of a pollutant determined from the analysis of any discrete or composited sample collected, independent of the flow rate and the duration of the sampling event.

- Interference. The inhibition or disruption of the POTW treatment processes or operations which contributes to a violation of any requirement of the City's NPDES Permit. The term includes prevention of sewage sludge use or disposal by the POTW in accordance with Section 405 of the Act, (33 U.S.C. 1345) or any criteria, guidelines, or regulations developed pursuant to the Solid Waste Disposal Act (SWDA), the Clean Air

Act, the Toxic Substances Control Act, or more stringent state criteria (including those contained in any State sludge management plan prepared pursuant to Title IV of SWDA) applicable to the method of disposal or use by the POTW.

- Jurisdiction. The extent of authority of a governmental entity's power to make and enforce laws.

- Legal Authority. The source of a control authority's jurisdictional and regulatory powers.

- Litigation. An enforcement action brought in a judicial (court) forum.

- Misdemeanor. A crime punishable by imprisonment of less than one year (depending on state law).

- National Prohibitive Discharge Standard or Prohibitive Discharge Standard. Any regulation developed under the authority of Section 307(b) of the Act and 40 CFR, Section 403.5.

- Natural Outlet. Any outlet into a watercourse, pond, ditch, lake or other body of surface or groundwater.

- New Source. Any source, the construction of which is commenced after the publication of proposed regulations prescribing a Section 307(c) (33 U.S.C. 1317) Categorical Pretreatment Standard which will be applicable to such source, if such standard is thereafter promulgated within 120 days of proposal in the Federal Register. Where the standard is promulgated later than 120 days after proposal, a new source means any source, the construction of which is commenced after the date of promulgation of the standard. In order to be considered a new source, the following provisions must be met:

  (a) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(b) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(c) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(i) Construction on the site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of this section but otherwise alters, replaces or adds to existing process or production equipment.

(ii) Construction of a new source as defined under this section has commenced if the Owner or operator has:

1. Begun, or caused to begin as a part of a continuous on-site construction program:

a. Any placement, assembly or installation of facilities or equipment; or

b. Significant site preparation work including clearing, excavation or removal of existing buildings, structures or facilities which is necessary for the placement, assembly or installation of new source facilities or equipment; or

2. Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering and design

studies do not constitute a contractual obligation under this section.

- National Pollutant Discharge Elimination System or NPDES Permit. A permit issued pursuant to Section 402 of the Act (33 U.S.C. 1342).

- Normal Sewage. Sewage shall be regarded as normal for the City, if analyses show a daily average loading of not more than 300 milligrams per liter of $BOD_5$; not more than 800 milligrams per liter of COD; not more than 300 milligrams of total suspended solids; not more than 30 milligrams per liter of ammonia-nitrogen; not more than 60 milligrams per liter of total Kjeldahl nitrogen; and not more than 100 milligrams per liter of ether soluble matter (oil and grease).

- Notice of Violation. A control authority document notifying a user that it has violated pretreatment standards and requirements. Generally used when the violation is relatively minor and the control authority expects the violation to be corrected within a short period of time.

- Pass-through. Violation of the State issued pass-through limits established for the discharge from the POTW treatment plant.

- Penalty. A monetary or other punitive measure usually associated with a court action. The term is synonymous with "fine".

- Person. Any individual, partnership, co-partnership, firm, company corporation, association, joint stock company, trust, estate, governmental entity or any other legal entity, or their legal representatives, agents
or assigns. The masculine gender shall include the feminine, the singular shall include the plural where indicted by the context.

- pH. The logarithm (base 10) of the reciprocal of the concentration of hydrogen ions expressed in grams per liter of solution.

- Plaintiff. A person or organization seeking remedy from a court. For the purposes of this ordinance, the plaintiff is the control authority.

- Pollution. The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of

water.

- Pollutant. Any dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

- Pretreatment or Treatment. The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration can be obtained by physical, chemical or biological processes, process changes or other means, except as prohibited by 40 CFR Section 403.6(d).

- Pretreatment Requirements or Standards. Any substantive or procedural requirement related to pretreatment, other than a National Pretreatment Standard imposed on an industrial user, including, but not limited to, discharge limits, sampling requirements, analytical requirements, reporting requirements and compliance schedules.

- Priority Pollutants. A list of 126 pollutants established by EPA and considered hazardous to the environment or to humans.

- Proprietary Information. Information about a commercial chemical, product or process which is considered to be confidential business information or a trade secret by an industrial user because, if divulged, the information could put the industrial user in an unfair competitive disadvantage with competitors in the same industry.

- Properly Shredded Garbage. The wastes from the preparation, cooking and dispensing of food that has been shredded to such a degree that all particles are carried freely under the flow conditions normally prevailing in public sewers with no particle greater than one-half (½) inch in any dimension.

- Public Sewer. A sewer in which all owners of abutting properties have equal rights and is controlled by public authority.

- Publicly Owned Treatment Works (POTW). A treatment works as defined by Section 212 of the Act, (33 U.S.C. 1292) which is owned in this instance by the City. This definition includes

any sewers that convey wastewater to the POTW treatment plant, but does not include pipes, sewers or other conveyances not connected to a facility providing treatment. For the purposes of this Ordinance, "POTW" shall also include any sewers that convey wastewaters to the POTW from persons inside and outside the City who are, by contract or agreement with the City, users of the City's POTW.

- POTW Treatment Plant. The portion of the POTW designed to provide treatment to wastewater.

- Sanitary Sewer. A sewer which carries sewage from dwellings (including apartment houses and hotels) office buildings, factories, or institutional buildings and into which storm, surface, and groundwaters are not intentionally admitted.

- Self Monitoring. Sampling and analysis of wastewater performed by the user.

- Sewer. A pipe or conduit for carrying sewage and other waste liquids.

- Shall is mandatory; May is permissive.

- Show Cause Hearing. A formal hearing requiring the user to appear before the local hearing authority and demonstrate why the control authority should not take a proposed enforcement action against the user.

- Significant Industrial User. Any industrial user of the City's wastewater disposal system who (I) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or (ii) has an average discharge flow of 25,000 gallons per day or more of process wastewater to the POTW; or (iii) contributes 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or (iv) is designated as such by the Control Authority, Approval Authority or EPA on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

- Significant Non-Compliance. Criteria used by the control and approval authorities to identify important violations and/or patterns of noncompliance. This criteria is used to establish enforcement priorities and comply with special reporting requirements. An industrial user is in significant noncompliance if its violation(s) meets one or more of the

following criteria:

(i) Chronic violations of wastewater discharge limits;

(ii) Technical Review Criteria (TRC) violations;

(iii) Any other violation of a pretreatment effluent limit (daily maximum or longer term average) that the City determines has caused, alone or in combination with other discharges, interference or pass-through at the POTW, including endangering the health of POTW personnel or the general public;

(iv) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority to halt or prevent such a discharge;

(v) Failure to meet, within 90 days after the scheduled date, a compliance schedule milestone contained in the discharge permit or an enforcement order for starting construction, completing construction, or attaining final compliance;

(vi) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;

(vii) Failure to accurately report non-compliance;

(viii) Any other violation or group of violations which the Control Authority determines will adversely affect the operation or implementation of the local pretreatment program.

- Significant Violation. A violation which remains uncorrected 45 days after notification of noncompliance; or which is part of a pattern of noncompliance over a twelve month period; or which involves a failure to accurately report noncompliance; or which results in the POTW exercising its emergency authority under 40 CFR 403.8(f) (2)(vi)(B) and 403.8(f)(2)(vii).

- Sludge or Sewage Sludge. The solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a POTW. Sludge includes, but is not limited to, scum or solids removed in primary, secondary or advanced wastewater treatment processes as well as any material derived from sewage sludge.

Sludge does not include grit and/or screenings generated during preliminary treatment.

- Slug Discharge. Any discharge of a non-routine, episodic nature, including, but not limited to an accidental spill or a non-customary batch discharge.

- Slug Control Plan. A plan to control slug discharges, which shall include, as a minimum, (I) description of discharge practices, including non-routine batch discharges; (ii) description of stored chemicals, (iii) procedures for immediately notifying the POTW of slug discharges, including any discharge that would violate a discharge prohibition under this Ordinance, or 40 CFR 403.5(b), with procedures for follow-up written notification within 5 days; (iv) if necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents) and/or measures and equipment for emergency response.

- State. The State of Tennessee Department of Environment and Conservation.

- Standard Industrial Classification (SIC). A classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972.

- Storm Sewer or Storm Drain. A pipe or conduit which carries storm and surface waters and drainage, but excludes sewage and industrial wastes; it may, however, carry cooling waters and unpolluted waters, upon approval of the Mayor or his representative.

- Storm Water. Any flow occurring during or following any form of natural precipitation and resulting there from.

- Surcharge. A fee charged to users in excess of the normal sewer use charge to cover the additional expenses incurred by the POTW for treatment of compatible pollutants of a higher concentration than the POTW treatment plant was designed to treat, but which do not cause an interference with the POTW.

- Suspended Solids. The total suspended matter that floats on

the surface of, or is suspended in, water, wastewater or other liquids, and which is removable by laboratory filtering.

- Technical Review Criteria (TRC) Violation. The term used to describe violations of a Wastewater Discharge Permit when:

  (a) The limit for BOD, total suspended solids, ammonia-nitrogen, or fats, oils and grease is exceeded by 140 percent for 33 percent or more of the total industrial self-monitoring plus Control Authority compliance monitoring measurements made in the six month period covered by the semi-annual report required by the Approval Authority; or

  (b) The limit for any other pollutant, except pH, is exceeded by 120 percent for 33 percent or more of the total industrial self-monitoring plus Control Authority compliance monitoring measurements made in the six-month period covered by the semi-annual report required by the Approval Authority.

- Termination of Service. A physical blockage of the sewer connection to a noncompliant user or issuance of a formal notice of termination to the user.

- Testimony. A solemn declaration made by a witness under oath in response to interrogation by a lawyer or public official which is used as evidence.

- Toxic Pollutant. Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the Administrator of the Environmental Protection Agency under the provision of CWA 307(a) or other Acts.

- Unpolluted Water or Waste. Any water or waste containing no free or emulsified grease or oil; acid or alkali; phenols or other substances imparting taste and odor in receiving water; toxic and poisonous substances in suspension, colloidal state or solution; and noxious or odorous gases and/or other polluting materials.

- User. Any customer who contributes, causes or permits the contribution of wastewater into the City's POTW.

- Wastewater. The liquid- and water-carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, and institutions, together with any groundwater, surface water and storm water that may be present, whether treated or untreated, which is contributed into or permitted to enter the POTW.

- Waters of the State. All streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the State or any portion thereof.

- Wastewater Discharge Permit. As set forth in Section 8-205.3 of this ordinance.

8-201.3 Abbreviations

The following abbreviations shall have the designated meanings:

. BOD5 - Five-day Biochemical Oxygen Demand.
. CFR - Code of Federal Regulations.
. COD - Chemical Oxygen Demand.
. CWA - Clean Water Act.
. EPA - Environmental Protection Agency.
. l - Liter.
. mg - Milligrams.
. mg/l - Milligrams per liter.

. NPDES - National Pollutant Discharge Elimination System.
. POTW - Publicly Owned Treatment Works.
. SIC - Standard Industrial Classification.
. SWDA - Solid Waste Disposal Act, 42 U.S.C. 6901, et. seq.
. TSS - Total Suspended Solids.
. USC - United States Code.

## 8-202 **DISCHARGE REGULATIONS**

### 8-202.1 General Discharge Prohibitions

No User shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the POTW. These general prohibitions apply to all such Users of a POTW whether or not the User is subject to National Categorical Pretreatment Standards or any other National, State or local Pretreatment Standards or Requirements. A User may not contribute the following substances to the POTW:

a) Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or by injurious in any other way to the POTW or to the operation of the POTW. No pollutant shall be discharged which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flash point of less than 140°F or 60°C using the test methods specified in 40 CFR 261.21. At no time shall two successive readings on an explosion hazard meter at the point of discharge into the system (or at any point in the system) be more than five percent (5%), nor any single reading over ten percent (10%) of the Lower Explosive Limit (LEL) of the meter.

b) Solid or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the wastewater treatment facilities such as, but not limited to, grease, garbage or improperly shredded garbage with particles greater than one-half inch (½") in any dimension.

c) Any wastewater having a pH less than 5.0 or greater than 9.5, or wastewater having any other corrosive property capable of causing damage or hazard to

structures, equipment, and/or personnel of the POTW.

d) Any wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of the POTW, or to exceed the limitation set forth in a Categorical Pretreatment Standard. A toxic pollutant shall include, but not be limited to, any pollutant identified pursuant to Section 307(a) of the Act.

e) Any noxious or malodorous liquids, gases, or solids which either singly or by interaction with other wastes are sufficient to create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for maintenance and repair.

f) Any substance which may cause the POTW's effluent or any other product of the POTW such as residues, biosolids, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance discharged to the POTW cause the POTW to be in non-compliance with the sludge use or disposal criteria, guidelines or regulations developed under Section 405 of the Act; any criteria, guidelines or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act, the Clean Water Act, or Federal or State criteria applicable to the sludge management method being used.

g) Any substance which will cause the POTW to violate its NPDES and/or State Disposal System Permit, the receiving water quality standards, or cause a pass-through violation.

h) Any wastewater with objectionable color not removed in the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions.

i) Any wastewater having a temperature which will inhibit biological activity in the POTW treatment plant resulting in interference, but in no case wastewater with a temperature at the introduction

into the POTW which exceeds 65°C (150°F) or cause the influent of the wastewater treatment plant to exceed 40°C (104°F) unless the POTW treatment plant is designed to accommodate such temperature.

j) Any pollutants, including oxygen demanding pollutants (BOD, etc.) released at a flow rate and/or pollutant concentration which will cause interference to the POTW. In no case shall a slug discharge have a flow rate or contain concentration or quantities of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation.

k) Any wastewater containing any radioactive wastes or isotopes of such half life or concentration as may exceed limits established by the Control Authority in compliance with applicable State or Federal regulations.

l) Any wastewater which causes a hazard to human life or creates a public nuisance.

m) Any stormwater (flow occurring during or following any form of natural precipitation and resulting therefrom), surface water, groundwater, roof runoff, subsurface drainage, to any sanitary sewer. Stormwater drainage shall be discharged to such sewers as are specifically designated as storm sewers or to a natural outlet approved by the State. Uncontaminated industrial cooling water or unpolluted process waters may be discharged on approval of the State to a storm sewer or natural outlet. Landfill leachate and discharge from temporary groundwater remediation projects may be discharged to the sewer system in accordance with this Chapter upon approval by the Control Authority.

n) Any wastewater containing fats, wax, grease, petroleum oil, nonbiodegradeable cutting oil or products of mineral oil origin, or other substances which may solidify or become viscous at temperatures between 0°C(32°F) and 40°C(104°F) and/or cause interference or pass-through at the POTW treatment plant.

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

p) Any tucked or hauled pollutants, except at discharge points designated by the POTW and in accordance with the requirements of this Ordinance.

When the Control Authority determines that a User(s) is contributing to the POTW any of the above enumerated substances in such amounts as to interfere with the operation of the POTW, the Control Authority shall 1) Advise the User(s) of the impact of the contribution on the POTW and 2) Develop effluent limitations for such User(s) to correct the interference with the POTW.

8-202.2 Federal Categorical Pretreatment Standards

Upon the promulgation of the Federal Categorical Pretreatment Standards for a particular industrial subcategory, the Federal Standard, if more stringent than limitations imposed under this Ordinance for sources in that sub-category, shall immediately supersede the limitations imposed under this Ordinance. The affected users shall come into compliance with said limitations by the date specified by the Federal regulation.

8-202.3 Modification of Federal Categorical Pretreatment Standards

Where the City's wastewater treatment system achieves consistent removal of pollutants limited by Federal Pretreatment Standards, the Control Authority may apply to the Approval Authority for modification of specific limits in the Federal Pretreatment Standards. "Consistent Removal" shall mean reduction in the amount of a pollutant or alteration of the nature of the pollutant by the wastewater treatment system to a less toxic or harmless state in the effluent which is achieved by the system in 95 percent of the samples taken when measured according to the procedures set forth in Section 403.7(c)(2) of (Title 40 of the Code of Federal Regulations, Part 403)- "General Pretreatment Regulations for Existing and New Sources of Pollution" promulgated pursuant to the Act. The Control Authority may then modify pollutant discharge limits in the Federal Pretreatment Standards if the requirements contained in 40 CFR, Part 403, Section 403.7, are fulfilled and prior approval from the Approval Authority is obtained.

8-202.4 Limitations on Wastewater Strength

No person or User shall discharge wastewater to the POTW in excess of the concentration set forth in Table 8-202.4 (next page) unless: (1) an exception has been granted the User by the Control Authority; or (2) the wastewater discharge permit of the User provides as a special permit condition a higher interim concentration level in conjunction with a requirement that the User construct a pretreatment facility or institute changes in operation and maintenance procedures to reduce the concentration of pollutants to levels not exceeding the standards set forth in Table 8-202.4 within a fixed period of time.

TABLE 8-202.4
Limits on Wastewater Discharged by Users

| **Parameter** | **Maximum Allowable Concentration 24-Hour Flow Proportional Composite Sample (mg/l)** | **Maximum Allowable Instantaneous Concentration in Grab Sample (mg/l)** |
|---|---|---|
| Aluminum | 50.0 | 75.0 |
| Arsenic | 1.00 | 2.00 |
| Cadmium | 0.4241 | 0.6362 |
| Chromium, Total | 3.5400 | 5.3100 |
| Copper | 3.6100 | 5.4150 |
| Cyanide | 5.000 | 7.5000 |
| Iron | 10.0 | 15.0 |
| Lead | 1.4000 | 2.1000 |
| Mercury | 0.0010 | 0.0015 |
| Nickel | 2.6939 | 4.0409 |
| Silver | 0.2714 | 0.4071 |
| Zinc | 3.6100 | 5.4150 |
| Benzene | 0.1800 | 0.2700 |
| Carbon Tetrachloride | 0.2100 | 0.3150 |

| | | |
|---|---|---|
| Chloroform | 3.1900 | 4.7850 |
| Ethyl Benzene | 0.5800 | 0.8700 |
| Methylene Chloride | 1.4100 | 2.1150 |
| Naphthalene | 0.1476 | 0.2214 |
| Phenols, Total | 6.6900 | 10.0350 |
| Phthalates, Total | 5.8900 | 8.8350 |
| Tetrachloroethylene | 2.0400 | 3.0600 |
| Trichloroethylene | 1.4700 | 2.2050 |
| Toluene | 1.8005 | 2.7008 |
| 1,1,1-Trichloroethane | 3.6700 | 5.5050 |
| 1,2-Transdichloroethylene | 0.1000 | 0.1500 |

Any User discharging wastewater having pollutants in excess of the concentrations listed above may be subject to fines and/or other enforcement actions as outlined in Section 8-208 hereinafter.

8-202.5 Criteria to Protect the Treatment Plant Influent

No person or user shall discharge any waters or wastes which cause the wastewater arriving at the treatment facility to exceed any of the concentration limits shown in Table 8-202.5 hereinafter. Users may be subject to reporting and monitoring requirements for all or a part of these parameters.

The Control Authority shall monitor the treatment works influent for the parameters in Table 8-202.5. In the event that the influent at the treatment works reaches or exceeds the levels established by said table, the Control Authority shall initiate technical studies to determine the cause of the influent violation, and shall recommend to the City Council such remedial measures as are necessary, included, but not limited to, recommending the establishment of new or revised pretreatment levels for these parameters. The Control Authority shall also recommend changes to any of these criteria in the event the POTW effluent standards are changed or in the event that there are changes in any applicable law or regulation affecting same or in the event changes are needed for more effective operation of the POTW.

TABLE 8-202.5
Protection Limits at Treatment Works Influent

| Parameter | Maximum Allowable Concentration 24-Hour Flow Proportional Composite Sample (mg/l) | Maximum Allowable Instantaneous Concentration in Grab Sample (mg/l) |
|---|---|---|
| Aluminum | 5.00 | 7.50 |
| Arsenic | 0.2000 | 0.3000 |
| Cadmium | 0.0121 | 0.0182 |
| Chromium, Total | 0.2500 | 0.3750 |
| Copper | 0.2500 | 0.3750 |
| Cyanide | 0.3400 | 0.5100 |
| Iron | 5.00 | 7.50 |

| | | |
|---|---|---|
| Lead | 0.1000 | 0.1500 |
| Mercury | 0.0010 | 0.0015 |
| Nickel | 0.0935 | 0.1403 |
| Silver | 0.0075 | 0.0113 |
| Zinc | 0.1096 | 0.1644 |
| Benzene | 0.0130 | 0.0195 |
| Carbon Tetrachloride | 0.0150 | 0.0225 |
| Chloroform | 0.2237 | 0.3356 |
| Ethyl Benzene | 0.0286 | 0.0429 |
| Methylene Chloride | 0.0962 | 0.1443 |
| Naphthalene | 0.0045 | 0.0068 |
| Phenols, Total | 0.2174 | 0.3261 |
| Phthalates, Total | 0.2625 | 0.3938 |
| Tetrachloroethylene | 0.0926 | 0.1389 |
| Trichloroethylene | 0.0909 | 0.1364 |
| Toluene | 0.0500 | 0.0750 |
| 1,1,1-Trichloroethane | 0.2000 | 0.3000 |
| 1,2-Transdichloroethylene | 0.0045 | 0.0068 |

8-202.6 Compatible Pollutants

The POTW treatment plant was designed to treat specific waste load concentrations and mass loading of certain compatible pollutants, which include five day biochemical oxygen demand ($BOD_5$), chemical oxygen demand (COD), total suspended solids (TSS), settleable solids (SS), total dissolved solids (TDS) and ammonia-nitrogen ($NH_3$-N). If a User discharges concentrations or mass loadings of compatible pollutants which exceed the limits set forth in the Wastewater Discharge Permit, added operation and maintenance costs will be incurred by the POTW, and this additional cost may be passed on to the user through surcharges for excess compatible pollutants. Surcharges shall be established by the Control Authority based on

the cost to treat the excess compatible pollutants. The Control Authority reserves the right to establish maximum allowable discharge limits for compatible pollutants in order to protect the POTW treatment plant and to revise surcharges based on changes in operating costs.

8-202.7 State Requirements

State requirements and limitation on discharges shall apply in any case where they are more stringent than Federal requirements and limitations or those in this Ordinance.

8-202.8 Control Authority's Right of Revision

The Control Authority reserves the right to establish by Ordinance more stringent limitations or requirements on discharges to the wastewater disposal system if deemed necessary to comply with the objectives presented in Section 8-201 of this Ordinance.

8-202.9 Dilution of Discharge

No User shall ever increase the use of process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the Federal Categorical Pretreatment Standards, or in any other pollutant-specific limitation developed by the City or State. The combination of process wastes and domestic wastes prior to discharge is not considered dilution.

8-202.10 Slug Discharges

8-202.10.A. Protection from Slug Discharges

Each User shall provide protection from slug discharge of prohibited materials or other substances regulated by this Ordinance. Facilities to prevent slug discharge of prohibited material shall be provided and maintained at the Owner or User's own cost and expense. Detailed plans showing facilities and operating procedures to provide this protection shall be submitted to the Control Authority for review, and shall be approved by the Control Authority before construction of the facility. All existing Users shall complete such a plan within 180 days from the effective date of this ordinance. No User who commences contribution to the POTW after the effective date of this Ordinance shall be permitted to introduce pollutants into the system until a slug discharge control plan has been approved by the Control Authority.

Review and approval of such plans and operating pro-

cedures shall not relieve the Industrial User from the responsibility to modify the User's facility as necessary to meet the requirements of this Ordinance. In the case of a slug discharge, it is the responsibility of the User to immediately telephone and notify the POTW of the incident. The notification shall include location of discharge, type of waste, concentration and volume, and corrective actions.

8-202.10.B. Written Notice of Slug Discharges

Within five (5) days following a slug discharge the User shall submit to the Control Authority a detailed written report describing the cause of the discharge and the measures to be taken by the User to prevent similar future occurrences. Such notification shall not relieve the User of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, fish kills, or any other damage to person or property; nor shall such notification relieve the User of any fines, civil penalties, or other liability which may be imposed by this article or other applicable law.

8-202.10.C. Notice to Employees

A notice shall be permanently posted on the User's bulletin board or other prominent place advising employees whom to call in the event of a slug discharge. Employers shall insure that all employees who may cause or suffer such a slug discharge to occur are advised of the emergency notification procedure. In lieu of placing notices on bulletin boards, the User may submit an approved Slug Control Plan.

8-202.11 Discharge of Hazardous Wastes

All industrial users shall notify the Control Authority, the EPA Region IV Waste Management Division Director, and the Tennessee Department of Environment and Conservation Division of Solid Waste Management in writing of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. The notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch or other).

If the Industrial User discharges more than 100 kilograms of such wastes per calendar month to the POTW, the notification shall also contain the following information to the extent such information is known and readily available to the Industrial User: An identification of the hazardous constituents contained in the wastes, an

estimate of the mass and concentration of such constituents discharged during that calendar month, and an estimate of the mass and concentration of such constituents expected to be discharged during the following 12 months.

Notification shall be provided within 180 days of the discharge. Notification need be submitted only once for each hazardous waste discharged; however, advance notification of substantial change is required.

Industrial Users are exempt from notification requirements if (i) the pollutants are already monitored and reported under the User's permit requirements; or (ii) less than 15 kilograms of non-acute hazardous wastes are discharged within a calendar month.

If new regulations identify additional characteristics of hazardous wastes or list new hazardous wastes, notification of the appropriate authorities by the industrial user is required within 90 days of the effective date of such regulations.

If notification is required, the Industrial User shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

8-202.12 Limitations on the Use of Garbage Grinders

Garbage grinders shall discharge only properly shredded garbage into the POTW. Such grinders must shred the waste to a degree that all particles will be carried freely under normal flow conditions prevailing in the POTW sewers. Garbage grinders shall not be used for the grinding of plastic, paper products, inert materials, or garden refuse.

8-202.13 Limitations on Point of Discharge

No person shall discharge any substance directly into a manhole or other opening in a POTW sewer other than through an approved building sewer unless he shall have been issued a temporary permit by the Control Authority. The Control Authority shall incorporate in such temporary permit such conditions as it deems reasonably necessary to insure compliance with the provisions of this article and the User shall be required to pay applicable charges and fees therefore.

8-203 **PRIVATE SEWAGE DISPOSAL AND HOLDING TANK WASTE DISPOSAL**

8-203.1 Private Sewage Disposal Systems

Where any residence, office, recreational facility or other establishment used for human occupancy is not accessible to the POTW, the User shall provide a private sewage disposal system. Where any residence, office, recreational facility or other establishment used for human occupancy has the building drain located below the elevation necessary to obtain a sufficient grade in the building sewer, but is otherwise accessible to the POTW, the Owner shall provide a private on-site sewage pumping station subject to review and approval by the Control Authority.

A private sewage disposal system may not be constructed within the City limits unless a certificate is obtained from the Control Authority stating that the POTW is not accessible to the property and no POTW extension is proposed for construction in the immediate future. No certificate shall be issued for any private sewage disposal system employing subsurface soil absorption facilities where the area of the lot is less than that specified by the City of Maryville and the Blount County Environmental Health Department.

Any private sewage disposal system must be constructed in accordance with the requirements of the State of Tennessee, the Blount County Environmental Health Department and the City of Maryville, and must be inspected and approved by an authorized representative of the City Manager. The Owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times. When access to the POTW becomes available, the building sewer shall be connected to the POTW within 60 days of the date of availability, and the private sewage disposal system shall be cleaned of solids and filled with suitable material. No statement contained in this article shall be construed to interfere with any additional requirements that may be imposed by the Blount County Health Department.

8-203.2 Septic Tank Pumping, Hauling and Discharge

No person owning vacuum, septic tank or "cess pool" pump trucks or other liquid waste transport trucks shall discharge directly or indirectly such sewage into the POTW, unless such person shall first have applied for and received a Truck Discharge Operation Permit from the Control Authority. All applicants for a Truck Discharge Operation Permit shall complete such forms as required by the Control Authority, pay appropriate fees, and agree in

writing to abide by the provisions of this article and any special conditions or regulations established by the Control Authority. The owners of such vehicles shall affix and display the permit number on the side of each vehicle used for such purposes. Such permits shall be valid for a period of one (1) year from date of issuance provided that such permit shall be subject to revocation by the Control Authority for violation of any provision of this article or reasonable regulation established by the Control Authority. Such permits shall be limited to the discharge of domestic sewage waste containing no industrial waste collected from septic tanks located in Blount County, Tennessee.

8-203.3 Other Holding Tank Waste

No person shall discharge any other holding tank waste into the POTW unless he shall have applied for and have been issued a permit by the Control Authority. Unless otherwise allowed under the terms and conditions of the permit, a separate permit must be secured for each separate discharge. The permit shall state the specific location of discharge, the time of day the discharge is to occur, the volume of the discharge, and shall limit the wastewater constituents and characteristics of the discharge. Such User shall pay any applicable charges or fees therefore, and shall comply with the conditions of the permit issued by the Control Authority and the Solids Waste Disposal Act (42 USC 6901, et. seq.). Provided, however, no permit will be required to discharge domestic waste from a recreational vehicle holding tank, provided such discharge is made into an approved facility designed to receive such waste.

8-203.4 Fees

For each permit issued under the provisions of this ordinance, an annual service charge set as specified in Section 8-204 shall be paid to the City. Any such permit granted shall be for one full fiscal year or fraction of the fiscal year, and shall continue in full force and effect from the time issued until the ending of the fiscal year unless sooner revoked, and shall be non-transferable. The number of the permit granted under the provisions of this ordinance shall be plainly painted on each side of the motor vehicle used when conducting the business permitted hereunder. All users discharging septic tank or holding tank wastes to the POTW shall pay appropriate fees to be established as specified under Section 8-204.

8.203.5 Designated Disposal Locations

The Control Authority shall designate approved locations for the emptying and cleansing of all equipment used in the performance of the services rendered under the permit herein provided for, and it shall be a violation hereof for any person, firm association or corporation to empty or clean such equipment at any place other than a place so designated. The Control Authority may refuse to accept any truckload of waste at his absolute discretion where it appears that the waste could interfere with the effective operation of the POTW.

8-203.6 Revocation of Permit

Failure to comply with all the provisions of this Ordinance shall be sufficient cause for the revocation of the disposal permit by the Control Authority. The possession within the service area by any person of any motor vehicle equipped with a body type and accessories of a nature and design capable of serving as a septic tank or wastewater or excreta disposal system cleaning unit shall be prima facie evidence that such person is engaged in the business of cleaning, draining or flushing septic tanks or other wastewater or excreta disposal systems within the service area of the POTW.

## 8-204 CHARGES AND FEES

8-204.1 Purpose

It is the purpose of this Section to provide for the recovery of costs from users of the POTW for the implementation of the program established herein and to provide a schedule of charges and fees which will enable the City to comply with the revenue requirements of Section 204 of the Clean Water Act. Specific charges and fees shall be adopted by a separate Ordinance; this Section describes the procedure to be used in calculating the charges and fees. Additional charges and fees to recover funds for capital outlay, bond service costs and capital improvements may be assessed by the City. These charges and fees shall be recovered through the user classification established hereinafter. The applicable charges or fees shall be set forth in the City's schedule of charges and fees.

8-204.2 Types of Charges and Fees

The City may adopt charges and fees which may include, but are not limited to:

a) User classification charges;

b) Fees for monitoring requested by a user;

c) Fees for permit application;

d) Appeal fees;

e) Charges and fees based on wastewater constituents and characteristics;

f) Fee for use of garbage grinders;

g) Fees for holding tank wastes;

h) Fees for reimbursement of administrative costs related to the Pretreatment Program;

i) Fees for monitoring, inspection and surveillance procedures;

j) Fees for reviewing slug discharge prevention procedures and construction;

k) Fees for allowing connection of building sewers to the POTW;

l) Fees for consistent removal by the City of pollutants otherwise subject to Federal Pretreatment Standards;

m) Other fees as the Control Authority may deem necessary to carry out the requirements of this ordinance.

These fees relate solely to the matters covered by this Ordinance and are separate from all other fees chargeable by the City.

## 8-205 **ADMINISTRATION**

### 8-205.1 Use of Public Sewers Required

(a) It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the City of Maryville or in any area under the jurisdiction of said City, any human or animal excrement, garbage, or other objectionable waste.

(b) It shall be unlawful to discharge to any natural outlet within the City of Maryville or in any area

under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of this Ordinance.

(c) Except as herein provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool or other facility intended or used for the disposal of sewage.

(d) The owner of all houses, buildings or properties used for human occupancy, employment, recreation or other purposes situated within the City and abutting on any street, alley or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the City, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within 60 days after date of official notice to do so, provided that said public sewer is within 300 feet of the building drain as defined herein.

8-205.2 Wastewater Dischargers Require Permit

It shall be unlawful to discharge to the POTW any wastewater except as authorized by the Control Authority in accordance with the provisions of this Chapter.

8-205.3 Wastewater Discharge Permits

8-205.3.A. General Permits

All Significant Industrial Users proposing to connect to or to contribute to the POTW shall obtain a Wastewater Discharge Permit before connecting to or contributing to the POTW. All existing Significant Industrial Users connected to or contributing to the POTW shall obtain a Wastewater Discharge Permit within 180 days after the effective date of this Ordinance.

8-205.3.B. Permit Application

Users required to obtain a Wastewater Discharge Permit shall complete and file with the Control Authority an application in the form prescribed by the Control Authority accompanied by any application fee that may be required. Existing Significant Industrial Users shall apply for a Wastewater Discharge Permit within 60 days after the effective date of this Ordinance, and proposed new Users shall apply at least 90 days prior to connecting to or contributing to the POTW. In support of

the application, the Significant Industrial User shall submit, in units and terms appropriate for evaluation, the following information:

1) Name, address, and location (if different from the address);

2) SIC number according to the Standard Industrial Classification Manual, Bureau of the Budget, 1972, as amended;

3) Wastewater constituents and characteristics including, but not limited to, those mentioned in Section 8-202 as determined by a reliable analytical laboratory; sampling and analysis shall be performed in accordance with procedures established by the EPA pursuant to Section 304(g) of the Act and contained in 40 CFR, Part 136, as amended;

4) Time and duration of contribution;

5) Average daily and 30-minute peak wastewater flow rates, including daily, monthly and seasonal variations, if any;

6) Site plans, floor plans, mechanical and plumbing plans and details to show all sewers, sewer connections and appurtenances by the size, location and elevation;

7) Description of activities, facilities and plant processes on the premises including all materials which are or could be discharged;

8) Where known, the nature and concentration of any pollutants in the discharge which are limited by any City, State, or Federal Pretreatment Standards, and a statement regarding whether or not the pretreatment standards are being met on a consistent basis and, if not, whether additional Operation and Maintenance (O & M) and/or additional pretreatment is required for the Significant Industrial User to meet applicable Pretreatment Standards;

9) If additional pretreatment and/or O & M will be required to meet the Pretreatment Standards, the shortest schedule by which the Significant Industrial User will provide such additional pretreatment. The completion date in this schedule shall not be later than the compliance date established for the applicable Pretreatment Standard. The following conditions shall apply to this schedule:

   (a) The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of

additional pretreatment required for the User to meet the applicable Pretreatment Standards (e.g. hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.)

(b) No increment referred to in paragraph (1) shall exceed 9 months.

(c) Not later than 14 days following each date in the schedule and the final date for compliance, the User shall submit a progress report to the Control Authority including, as a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the User to return the construction to the schedule established. In no event shall more than 9 months elapse between such progress reports to the Control Authority.

10) Each product produced by type, amount, process or processes and rate of production;

11) Type and amount of raw materials processed (average and maximum per day);

12) Number and type of employees, and hours of operation of plant and proposed or actual hours of operation of pretreatment system;

13) Any other information as may be deemed by the Control Authority to be necessary to evaluate the permit application.

The Control Authority will evaluate the data furnished by the Significant Industrial User and may require additional information. After evaluation and acceptance of the data furnished, the Control Authority may issue a Wastewater Discharge Permit subject to terms and conditions provided herein.

8-205.3.C. Permit Modifications

Within nine months of the promulgation of a National Categorical Pretreatment Standard, the Wastewater Discharge Permit of Users subject to such standards shall be revised to require compliance with such standard within the time frame prescribed by such standard. Where a Significant Industrial User, subject to a National Categorical Pretreatment Standard, has not previously submitted an application for a Wastewater Discharge Permit as required by 8-205.3, the Significant Industrial User shall apply for a Wastewater Discharge Permit within 180 days after the promulgation of the Applicable National Categorical Pretreatment Standard. In addition, the Significant Industrial User with an existing Wastewater Discharge Permit shall submit to the Control Authority within 180 days after the promulgation of an applicable Federal Categorical Pretreatment Standard the information required by paragraph (8) and (9) of Section 8-205.3.B.

8-205.3.D. Permit Conditions

Wastewater Discharge Permits shall be expressly subject to all provision of this Ordinance, EPA's pretreatment Standards and Regulations promulgated under the authority of Section 307(b) and (c) of the Federal Water Pollution Control Act (as provided for in 40 CFR 403.8(f)(1)(iii), and all other applicable regulations, User charges and fees established by the City. Permits may contain the following:

1) Statement of duration (5 years or less);

2) Statement of non-transferability;

3) Statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements;

4) The unit charge or schedule of user charges and fees for the wastewater to be discharged to the POTW;

5) Limits on the average and maximum wastewater constituents and characteristics;

6) Limits on average and maximum rate and time of discharge or requirements for flow regulations and equalization;

7) Requirements for installation and maintenance of

inspection and sampling facilities;

8) Specifications for monitoring programs which may include sampling locations, frequency of sampling, number, types and standards for tests and reporting schedule;

9) Compliance schedule;

10) Requirements for maintaining and retaining plant records relating to wastewater discharge as specified by the Control Authority, and affording the Control Authority access thereto;

11) Requirements for submission of technical reports or discharge reports (see 8-206.4);

12) Requirements for notification of the Control Authority of any new introduction of wastewater constituents or any substantial change in the volume or character of the wastewater constituents being introduced into the wastewater treatment system;

13) Requirements for notification of slug discharges; and

14) Other conditions as deemed appropriate by the Control Authority to ensure compliance with this Ordinance.

8-205.3.E. Permits Duration

Permits shall be issued for a specified time period, not to exceed five (5) years. A permit may be issued for a period less than a year or may be stated to expire on a specific date.

The User shall apply for permit reissuance a minimum of 180 days prior to the expiration of the User's existing permit. The terms and conditions of the permit may be subject to modification of the Control Authority during the term of the permit as limitations or requirements as identified in 8-202 are modified or other just cause exists. The User shall be informed of any proposed changes in his permit at least 30 days prior to the effective date of any change. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance.

8-205.3.F Permit Transfer

Wastewater Discharge Permits are issued to a specific User for a specific operation. A Wastewater Discharge Permit shall not be reassigned or transferred or sold to a new owner, new User, different premises, or a new or changed operation without the approval of the Control Authority. Any succeeding Owner or User shall also comply with the terms and conditions of the existing permit.

8-205.4 Reporting Requirements for Permittee

8-205.4.A. Compliance Date Report

Within 90 days following the date for final compliance with applicable Pretreatment Standards or, in the case of a new source, following commencement of the introduction of wastewater into the POTW, any User subject to Pretreatment Standards and Requirements shall submit to the Control Authority a report indicating the nature and concentration of all pollutants in the discharge from the regulated processes which are limited by Pretreatment Standards and Requirements and the average and maximum daily flow for these process units in the User facility which are limited by such Pretreatment Standards or Requirements. The report shall state whether the applicable Pretreatment Standards or Requirements are being met on a consistent basis and, if not, what additional O & M and/or pretreatment is necessary to bring the User into compliance with the applicable Pretreatment Standards or Requirements. This statement shall be signed by an authorized representative of the User, and certified by a qualified professional engineer registered in the State of Tennessee.

8-205.4.B. Periodic Compliance Reports

1) Any User subject to a Pretreatment Standard, after the compliance date of such Pretreatment Standard, or in the case of a New Source, after commencement of the discharge into the POTW, shall submit to the Control Authority during the months of June and December, unless required more frequently in the Pretreatment Standard or by the Control Authority, a report indicating the nature and concentration of pollutants in the effluent which are limited by such Pretreatment Standards. In addition, this report shall include a record of all daily flows which, during the reporting period, exceeded the average daily flow reported in the permit application. At the discretion of the Control Authority and in consideration of such factors as

local high or low flow rates, holidays, budget cycles, etc., the Control Authority may agree to alter the months during which the above reports are to be submitted.

2) The Control Authority may impose mass limitation on Users which the Control Authority has reason to believe are using dilution to meet applicable Pretreatment Standards or Requirements, or in other cases where the imposition of mass limitations are appropriate. In such cases, the Periodic Compliance Report required by sub-paragraph (1) of this paragraph shall indicate the mass of pollutants regulated by Pretreatment Standards in the effluent of the Significant Industrial User. These reports shall contain the results of sampling and analysis of the discharge, including the flow and the nature and concentration, or production and mass where requested by the Control Authority, of pollutants contained therein which are limited by the applicable Pretreatment Standards. The frequency of monitoring shall be prescribed in the Wastewater Discharge Permit. All analyses shall be performed in accordance with procedures established by the Administrator pursuant to Section 304(g) of the Act and contained in 40 CFR, Part 136 and amendments thereto or with any other test procedures approved by the Administrator. Sampling shall be performed in accordance with the techniques approved by the Administrator. Where 40 CFR Part 136 does not include a sampling or analytical technique for the pollutant in question, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication "Sampling and Analytical Procedures for Screening of Industrial Effluents for Priority Pollutants", dated April, 1977 and amended thereto, or with any other sampling and analytical procedures approved by the Administrator.

8-205.4.C. Permit Limit Violations

If sampling performed by a User indicates a violation, the User shall notify the Control Authority within 24 hours of becoming aware of the violation. The User shall also repeat the sampling and analysis for the parameter(s) violated and submit the results of the repeat analysis to the Control Authority within 30 days after becoming aware of the violation. The User shall also provide written notice of the violation within 5 days of becoming aware of the violation.

8-205.5 Monitoring Facilities

The Control Authority shall require to be provided and operation at the User's own expense, monitoring facilities to allow inspection, sampling and flow measurement of the building sewer and/or internal drainage systems. The monitoring facility should normally be situated on the User's premises, but the Control Authority may, when such location would be impractical or cause undue hardship on the User, allow the facility to be constructed in the public street or sidewalk area and located so that it will not be obstructed by landscaping or parked vehicles.

There shall be ample room in or near such sampling manhole or facility to allow accurate sampling and preparation of samples for analysis. The facility, sampling, and measuring equipment shall be maintained at all times in a safe and proper operating condition at the expense of the User.

Whether constructed on public or private property, the sampling and monitoring facilities shall be provided in accordance with the Control Authority's requirements and all applicable local construction standards and specifications. Construction shall be completed within 90 days following written notification by the Control Authority.

8-205.6 Inspection and Sampling

The Control Authority shall inspect the facilities of any User to ascertain whether the purpose of this Ordinance is being met and all requirements are being complied with. Persons or occupants of premises where wastewater is created or discharged shall allow the Control Authority or their representative ready access at all reasonable times to all parts of the premises for the purposes of inspection, sampling, records examination or in the performance of any of their duties. The Control Authority, State, and EPA shall have the right to set up on the User's property such devices as are necessary for them to conduct sampling inspections, compliance monitoring and/or metering operations.

The Control Authority will establish those pollutants to be sampled, at the Users expense, at the prescribed minimum frequency shown in the User's permit. All analysis shall be performed in accordance with procedures established by the Administrator pursuant to Section

304(g) of the Act and contained in 40 CFR Part 136 as amended. Where 40 CFR Part 136 does not include a sampling or analytical technique for the pollutant in question, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication "Sampling and Analytical Procedures for Screening of Industrial Effluents for Priority Pollutants", dated April, 1977 and amended thereto, or with any other sampling and analytical procedures approved by the Administrator. The User shall submit monitoring reports to the Control Authority of those priority pollutants to be sampled at the frequency prescribed in the Wastewater Contribution permit. The results of any and all sampling of the User's discharge shall be reported, including sampling which exceeds the required minimum frequency. Failure to comply with these requirements may result in enforcement action as set forth in 8-207.

Where a User has security measures in force which would require proper identification and clearance before entry into their premises, the User shall make necessary arrangements with their security guards so that, upon presentation of suitable identification, personnel from the City, State, and EPA will be permitted to enter, without delay, for the purposes of performing their specific responsibilities.

8-205.7 Pretreatment

Users shall provide necessary wastewater treatment as required to comply with this Ordinance and shall achieve compliance with all Federal Categorical Pretreatment Standards within the time limitations as specified by the Federal Pretreatment Regulations. Any facilities required to pretreat wastewater to a level acceptable to the Control Authority shall be provided, operated and maintained at the User's expense. Detailed plans prepared by a Professional Engineer registered in the State of Tennessee showing the pretreatment facilities and operating procedures shall be submitted to the Control Authority for review, and shall be acceptable to the Control Authority before construction of the facility. The review of such plans and operating procedures will in no way relieve the User from the responsibility of modifying the facility as necessary to produce an effluent acceptable to the Control Authority under the provisions of this Ordinance. Any subsequent changes in the pretreatment facilities or method of operation shall be reported to and be acceptable to the Control Authority prior to the User's initiation of the

changes.

All records relating to compliance with Pretreatment Standards shall be made available to officials of the City, EPA or State upon request.

8-205.8 Confidential Information

Information and data on a User obtained from reports, questionnaires, permit applications, permits and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the User specifically requests and is able to demonstrate to the satisfaction of the Control Authority that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets of the User.

When requested by the person furnishing a report, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available upon request to the State and/or EPA for uses related to this Ordinance, the National Pollutant Discharge Elimination System (NPDES) Permit, State Disposal System Permit and/or the Pretreatment Programs; provided, however, that such portions of a report shall be available for use by the State, any state agency, or the EPA in judicial review or enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics will not be recognized as confidential information.

8-205.9 Public Notification

In compliance with 40 CFR Part 403.8, the Control Authority shall annually publish in the local newspaper a list of industrial users which, during the previous twelve months, were in significant non-compliance with the pretreatment program requirements.

## 8-206 BUILDING SEWERS AND CONNECTIONS

8-206.1 Building Sewer Permit

No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any POTW or appurtenances thereof. Authorization may be obtained from the Control Authority upon review of pertinent plans and payment of the appropriate fees.

There shall be two (2) classes of building sewer permit:

(1) for residential customers and (2) for non residential customers. In either case, the customer or his/her agent shall make application on a special form furnished by the Control Authority. The Permit Application shall be supplemented by any plans, specifications or other information such as grease traps needed by restaurants, dining halls or other types of eating establishments, considered pertinent in the judgment of the Control Authority. A fee schedule is in effect for residential and non residential connections, said fees shall be paid to the Control Authority at the time the application is filed. Applicant for non residential sewer permits shall provide a description of the constituents of the waste and may be required to provide a laboratory analysis of the waste, or of a similar waste stream if there are other facilities in operation.

8-206.2 Connections

All costs and expense incident to the installation and connection of the building sewer shall be borne by the Customer. The Customer shall indemnify the City from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer. The connection to the POTW shall be inspected by the Control Authority before the underground portion is buried.

8-206.3 Installation and Maintenance

The new building sewer may be brought into the building below the basement floor when gravity flow from the building to the POTW at a minimum grade consistent with the requirements of the Control Authority is possible. Where basement or floor elevations to be served are lower than the ground overflow elevation of the upstream manhole of the POTW line servicing the property, adequate precautions by the installation of check valves or other approved backflow prevention devices to help protect against flooding shall be provided by the Owner. The Control Authority shall have the right to review and approve all check valves and backflow prevention devices. Said check valves or backflow prevention devices shall be located such as to provide access for maintenance and shall be installed in a valve pit to allow access without excavation for normal maintenance operations. In all buildings in which a building drain is too low to permit gravity flow to the POTW, wastes carried by said building drain shall be lifted by an approved means and discharged to the building sewer at the expense of the Customer. Pumps or other devices shall be reviewed and approved by the Control Authority.

No person shall make connection of roof down spouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a build sewer or building drain which in turn is connected directly or indirectly to the POTW. If, during periodic system inspections, the City locates a point of entry of infiltration/inflow in an Owner's building sewer, the Owner shall repair the defect(s) at his/her own expense and furthermore notify the City upon completion so that an inspection of the repair can be made prior to covering of the repair.

All excavation for building sewer installation shall be adequately guarded with barricades and lights or other means so as to protect the public from hazard. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Control Authority.

All building connections and maintenance shall be subject to the currently adopted version of the Standard Plumbing Code by the Southern Building Code Congress International, Inc. as amended by the City of Maryville and the Rules, Regulations, Rates and Policies of the City of Maryville Water Quality Control Department. The Rules, Regulations, Rates and Policies of the City of Maryville Water Quality Control Department are available through the Water Quality Control Department and on file with the State of Tennessee. In cases of conflict the stricter requirements shall rule.

## 8-207 **GREASE, OIL AND SAND TRAPS AND SEPARATORS**

### 8-207.1 General Requirements

Gravity-type separators, interceptors or other such devices for the removal of oil, grease, sand, grit, glass, entrails or other such material likely to create or contribute to a blockage of the wastewater collection system or otherwise interfere with the operation of the POTW are required at commercial sources as described in Resolution No. 92-19 of the Maryville Municipal Code, where required by the Southern Standard Plumbing Code or where required by other Ordinance or Regulation of the City of Maryville. Such devices shall be of a type and capacity approved by the City's inspector and shall be located as to be readily and easily accessible for cleaning, pumping and inspection.

### 8-207.2 Design, Review and Approval of Traps and Separators

During the site plan review conducted by the City of Maryville personnel of proposed commercial and industrial developments, the need for traps or separators will be determined. If a trap or separator is required, detailed plumbing plans shall be submitted to the Environmental

Compliance Inspector prior to commencement of construction.

Grease traps shall be sized by the following formula:

Grease trap size (gallons) = F.U. X 0.5 X 5 gpm X 20 minutes

where:F.U. = fixture units plumbed into grease trap (as listed in Southern Standard Plumbing Code)

gpm = gallons per minute

0.5 = factor to account for low probability of all fixture units operating simultaneously

Minimum grease trap size shall be 1000 gallons.

All grease traps shall meet design criteria as described in Part II - Section 3 of the Rules, Regulations, Rates and Policies Manual. Persons wishing to install precast concrete septic tanks or concrete tanks shall submit to the Environmental Compliance Inspector design drawings. A field inspection shall be required to ensure that the installation complies with the approved drawings and that adequate baffling has been installed.

8-207.3 Exemptions

Commercial sources in operation prior to January 19, 1993 are excluded from the minimum requirements of this Section, but shall be required to install and maintain a gravity-type separator, interceptor or other such device at the kitchen sink for removal of oil and grease. Such devices shall be the largest type available that will fit under the sink and shall not be connected to any dishwashers. Such devices will be allowed to remain in service until such time as the Environmental Compliance Inspector determines that the device is not preventing prohibited substances from entering the POTW or the device is not being maintained with adequate frequency. If the Environmental Compliance Inspector makes such a determination, the establishment shall install a device in full compliance with this Section.

8-207.4 Maintenance of Traps and Separators

It shall be the duty of every establishment required to have traps or separators to maintain the devices, have the devices pumped whenever the level of grease or other substance has reached the top of the effluent pipe from the device, or when it appears to the inspector or his representative that prohibited substances are leaving the device and are being discharged into the POTW.

Each establishment is required to maintain a maintenance log on all traps and separators. The log shall show the date of all cleanings, the name of the person and organization performing the cleaning and the disposition of the removed substances. The maintenance log shall be available during business hours for examination by the Environmental Compliance Inspector or his representative and a copy of the log shall be submitted to the inspector annually between May 1 and May 31 of each year. Failure to comply with the reporting requirements shall be deemed a violation of this Chapter of the Maryville Municipal Code.

8-207.5 Disposal of Trap and Separator Wastes

Acceptable disposal options for the wastes removed from traps and separators include recycling collectors and trash disposal or commercial collectors. Disposal methods shall comply with all State all local regulations.

8-207.6 Periodic Inspection of Traps and Separators

Personnel from the City of Maryville shall be permitted ready access to inspect all traps and separators for compliance with the Municipal Code. If found in violation, the User shall be issued a seven (7) day notice to come into compliance. Failure to correct noncompliance within the seven day period will result in termination of water service. If termination of water service will possibly result in a threat to public health, the trap or separator will be pumped and cleaned by City of Maryville personnel. The User shall be reimburse the City of Maryville for all labor, equipment, supplies and disposal costs incurred by the City to pump and clean the trap or separator. The charges will be added to the User’s utility bill.

8-207.7 Charges and Fees

Users required to install and maintain a gravity-type

separator, interceptor or other such device shall be subject to an annual fee as required by Resolution No.

92-19, as amended, of the Maryville Municipal Code. All fees will appear on the User's utility bill. In the event that the User fails to pay the fee, water service shall be terminated until such time as all fees and any other charges, including late charges, have been paid.

8-207.8 Violations

Any person who willfully or negligently violates any provision of this Section or any Orders or permits issued hereunder shall be subject to enforcement action as set forth in Section 8-208 herein.

8-208 **ENFORCEMENT**

8-208.1 Enforcement Policy

All enforcement actions taken by the Control Authority against Users that are in violation of this Ordinance shall be in accordance with the City of Maryville's Pretreatment Enforcement Response Plan, as adopted and amended by the Maryville City Council, and with TCA 69-3-123 through 39-3-129, from which the authority for such action is derived.

8-208.2 Administrative Enforcement Remedies

8-208.2.A Notification of Violation

Whenever the Control Authority finds that any User has violated an Order of the Control Authority or willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, the Control Authority may serve upon such person a written notice by registered mail stating the nature of the violation. Within 10 days of the date of the Notification of Violation, a plan for the satisfactory correction thereof, to include specific required actions, shall be submitted to the Control Authority by the User. Submission of this plan in no way relieves the User of liability for any violation occurring before or after the receipt of the Notice of Violation.

8-208.2.B Consent Orders

The Control Authority is hereby empowered to enter into Consent Orders, assurances of voluntary compliance, or other similar documents establishing an agreement with the User responsible for the noncompliance. Such Orders will include specific action to be taken by the User to correct the noncompliance within a time period also specified by the Order. Consent Orders shall have the same force and effect as Administrative Orders issued pursuant to Section 8-207.2.D and E, below.

8-208.2.C. Show Cause Hearing

The Control Authority may order any User who causes or allows an unauthorized discharge to enter the POTW or contributes to violation of this Ordinance or wastewater permit or Order issued hereunder, to show cause before the Hearing Authority why the proposed enforcement action should not be taken. Notice shall be served on the User specifying the time and place for the meeting to be held by the Hearing Authority regarding the violation, the proposed enforcement action and the reasons for such action, and directing the User to show cause before the Hearing Authority why this proposed enforcement action should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least 10 days prior to the hearing. Such notice may be served on any principal executive, general partner or corporate officer. Whether or not a duly notified User appears as noticed, immediate enforcement action may be pursued.

The Hearing Authority may itself conduct the hearing and take the evidence, or may designate any of its members or any officer or employee of the City to:

a) Issue in the name of the Hearing Authority notices of hearings requesting the attendance and testimony of witnesses and the production of evidence relevant to any matter involved in such hearings;

b) Take the evidence;

c) Transmit a report of the evidence and hearing, including transcripts and other evidence, together with recommendations to the Hearing Authority for action thereon.

At any hearing held pursuant to this Ordinance, testimony taken shall be under oath and may, at the request of either party, be recorded stenographically. The

transcript, so recorded, will be made available to any member of the public or any party to the hearing upon payment of the usual charges thereof.

After the Hearing Authority has reviewed the evidence, it may issue an order to the User responsible for the discharge directing that, following a specified time period, the sewer service be discontinued unless adequate treatment facilities, devices or other related appurtenances shall have been installed on existing treatment facilities, and/or these devices or other related appurtenances are properly operated. Further orders and directives as are necessary and appropriate may be issued, including the installation of pretreatment technology, additional self-monitoring and management practices.

Decisions of the Hearing Authority may be appealed to the Appeal Authority within 30 days. If an appeal is not made to the local appeal authority within 30 days of notification of such decision, User shall be deemed to have consented to such decision and it shall become final.

8-208.2.D. Compliance Order

In accordance with TCA 69-3-123, when the Control Authority finds that a User has violated an Order of the Control Authority or willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, an order may be issued to the User responsible for the discharge directing that, following a specific time period, sewer service shall be discontinued unless adequate treatment facilities, devices or other related appurtenances have been installed and are properly operated. Orders may also contain such other requirements as might be reasonably necessary and appropriate to address the noncompliance, including the installation of pretreatment technology, additional self-monitoring and management practices.

8-208.2.E. Cease and Desist Order

In accordance with TCA 69-3-123, when the Control Authority finds that a User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, the Control Authority may issue an order to cease and desist all such violations and direct those persons in noncompliance to: (1) comply forthwith; (2) take such appropriate remedial or preventative action as may be needed to properly address a continuing or threatened violation, including halting operations and terminating the discharge.

8-208.2.F. Administrative Fines

Any User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder shall be fined not more than Ten Thousand Dollars ($10,000.00) per day as authorized by TCA 69-3-115 for each offense. Each day on which noncompliance shall occur or continue shall be deemed a separate and distinct violation. In addition to the fines provided herein, the Control Authority may recover reasonable attorney's fees, court costs, court reporter's fees and other expenses of litigation by appropriate suit at law against the person found to have violated this Ordinance or the Orders, rules regulations and permits issued hereunder. Such assessments may be added to the User's next scheduled sewer service charge, and the Control Authority shall have the same collection remedies that the City has to collect service charges.

8-208.2.G. Emergency Suspension

The Control Authority may, without notice, suspend the wastewater treatment service and/or a Wastewater Discharge Permit of a User when such suspension is necessary, in the opinion of the Control Authority, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons, to the environment, causes interference to the POTW or causes the City to violate any condition of its NPDES Permit.

Any User notified of a suspension of the wastewater treatment service and/or the Wastewater Discharge Permit shall immediately stop or eliminate the contribution. In the event of a User's failure to immediately comply

voluntarily with the suspension order, the Control Authority shall take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream or endangerment to any individuals. The Control Authority shall reinstate the Wastewater Discharge Permit and/or the wastewater treatment service upon proof of the elimination of the noncomplying discharge, unless the termination proceedings set forth in Section 8-207.2.H. are initiated against the User.

Any User whose wastewater treatment service and/or Wastewater Discharge Permit is suspended shall submit a detailed written statement describing the cause of the harmful contribution and the measures taken to prevent any future occurrence to the Control Authority within 5 days of the occurrence.

8-208.2.H. Revocation of Permit

Any User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder or any applicable State and Federal regulations, is subject to having his permit revoked in accordance with the procedures of this Section of this Ordinance:

a) Violation of conditions of the permit;

b) Failure of a User to accurately report the wastewater constituents and characteristics of his discharge;

c) Failure of the User to report significant changes in operations, or wastewater constituents and characteristics; or

d) Refusal of reasonable access to the User's premises for the purpose of inspection or monitoring.

## 8-208.3 Judicial Remedies

### 8-208.3.A. Legal Action

If any person discharges sewage, industrial wastes or other wastes into the City's wastewater disposal system, in any other way violates this Sewer Use Ordinance or its Industrial Wastewater Discharge Permit, contrary to the provisions of this Ordinance, Federal or State Pretreatment Requirements, or any order of the Control Authority, the Control Authority, through the City Attorney, may commence an action for appropriate legal and/or equitable relief in the Chancery Court for the County in which the violation occurred.

### 8-208.3.B. Injunctive Relief

Whenever a User is found to have violated an Order of the Control Authority or willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, the Control Authority, through counsel, may initiate proceedings in the Chancery Court of the County in which the activities occurred for the issuance of injunctive relief or any other relief available in law or equity.

### 8-208.3.C. Civil Penalties

(1) Any User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, shall be fined not more than Ten Thousand ($10,000) Dollars for each offense. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense. In addition to the penalties provided herein, the City may recover reasonable attorneys' fees, court costs, court reporters' fees and other expenses of litigation by appropriate suit at law against the person found to have violated this Ordinance or the orders, rules, regulations and permits issued hereunder.

(2) (i) The Control Authority may assess any person or User for damages to the POTW resulting from that person’s or User’s pollution, violation, or failure or neglect in complying with any permit(s) or Order(s) issued pursuant to the provisions of the pretreatment program, this Ordinance, or TCA 69-3-123, 69-3-124, or 69-3-125.

(ii) If any appeal from such assessment is not made to the local appeal authority within 30 days of notification of such assessment, the person or User shall be deemed to have consented to such assessment and it shall become final.

(iii) Damages may include any expenses incurred in investigating and enforcing the pretreatment program, this Ordinance or TCA 69-3-123 through 69-3-129; in removing, correcting, and/or terminating any pollution; and also compensation for any actual damages caused by the pollution or violation.

(iv) Whenever any assessment has become final because of a person's or User's failure to appeal within the time provided, the Control Authority may apply to the appropriate Court for judgment, and seek execution of such judgment. The Court, in such proceedings, shall treat failure to appeal such an assessment as a confession of judgment in the amount of the assessment.

(3) The Control Authority may petition the court to impose, assess, and recover such sums. In determining amount of liability, the Court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefits gained through the User's violation, corrective actions taken by the User, the compliance history of the User, and any other factors as justice requires.

8-208.3.D Criminal Prosecution

Any User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder shall, upon conviction, be guilty of a misdemeanor, punishable by a fine not to exceed $500.00 per violation per day.

8-208.4 Supplemental Enforcement Remedies

8-208.4.A. Annual Publication of Significant Violations

The Control Authority shall publish, at least annually a description of those Users which are found to be in significant violation in accordance with Section 8-205.9

of this Ordinance.

8-208.4.B. Performance Bonds

The Control Authority may decline to reissue a permit to any User who is found to have violated an Order of the Control Authority or who willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder unless such User first files with the Control Authority a satisfactory bond, payable to the City, in a sum not to exceed a value determined by the Hearing Authority to be necessary to achieve consistent compliance.

8-208.4.C. Liability Insurance

The Control Authority may decline to reissue a permit to any User who has failed to comply with the provisions of this Ordinance or any Order or previous permit issued hereunder unless such User first submits proof that it has obtained financial assurances sufficient to restore or repair any POTW damage caused by its discharge.

8-208.4.D. Water Supply Severance

Whenever a User is found to have violated an Order of the Control Authority or willfully or negligently failed to comply with any provision of this Ordinance, and the orders, rules, regulations and permits issued hereunder, water service to the User may be severed and service will only recommence, at the User's expense, after the User has satisfactorily demonstrated its ability to comply.

8-208.4.E. Public Nuisances

Any violation of the prohibitions or effluent limitations of this Ordinance or any permit or Order issued hereunder is hereby declared a public nuisance and shall be corrected or abated as directed by the Control Authority. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code governing such nuisances as well as all provisions of this Ordinance, including reimbursing the City for any costs incurred in removing, abating or remedying said nuisance.

8-208.4.F. Informant Rewards

The Control Authority is hereby authorized to pay for information leading to the discovery of noncompliance by a User. In the event that the information provided results in an Administrative Fine or Civil Penalty levied against the User, the Control Authority is authorized to disperse up to 10 percent of the collected fine or penalty to the informant up to a maximum of $10,000 per reward payment.

8-208.5 Affirmative Defenses

8-208.5.A. Treatment Upsets

(1) Any User which experiences an upset in operations that places it in a temporary state of noncompliance, which is not the result of operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance or careless and improper operation, shall inform the Control Authority thereof immediately upon becoming aware of the upset. Where such information is given orally, a written report shall be filed by the User within 5 days. The report shall contain:

(i) A description of the upset, its cause(s), and impact on the discharger's compliance status;

(ii) The duration or expected duration of noncompliance, including exact dates and times of noncompliance, and, if the noncompliance is continuing, the time by which compliance is reasonably expected to be restored;

(iii) All steps taken or planned to reduce, eliminate and prevent recurrence of such an upset.

(2) A User which complies with the notification provisions of this Section in a timely manner shall have an affirmative defense to any enforcement action brought by the Control Authority for any noncompliance with this Ordinance, or any Order or permit issued hereunder to the User, which arises out of violations attributable to and alleged to have occurred during the period of the documented and verified upset.

8-208.5.B. Treatment Bypasses

(1) A bypass of the treatment system or any portion thereof is prohibited unless all of the following conditions are met:

(i) The bypass was unavoidable in order to prevent loss of life, personal injury or severe property damage;

(ii) There was no feasible alternative to the bypass, including the use of auxiliary

treatment or retention of the wastewater; and

(iii) The User properly notified the Control Authority as described in 8-207.5.B.(2) below.

(2) Users must provide immediate notice to the Control Authority upon discovery of an unanticipated bypass. The Control Authority may require the User to submit a written report explaining the cause(s), nature, and duration of the bypass, and the steps being taken to prevent its recurrence.

(3) A User may request approval of the Control Authority for a bypass which does not cause pretreatment standards or requirements to be violated, but only if it is for essential maintenance to ensure efficient operation of the treatment system. Users anticipating such a bypass must submit notice to the Control Authority at least 10 days in advance. The Control Authority may only approve the anticipated bypass if the circumstances satisfy those set forth in 8-207.5.B.(1) above.

8-209 **SEVERABILITY**

If any provision, paragraph, word, section or article of this Ordinance is invalidated by any court of competent jurisdiction, the remaining provisions, paragraphs, words, sections and chapters shall not be affected and shall continue in full force and effect.

8-210 **CONFLICT**

All other ordinances and parts of other ordinances inconsistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflict.

8-211 **EFFECTIVE DATE**

This Ordinance shall be in full force and effect from and after its passage, approval and publication, as provided by law.

# PART IV –
# Septic Tank Effluent Pump Installation Guidelines
# and
# Specifications

## RULES, REGULATIONS, RATES, AND POLICIES
## FOR THE GOVERNING OF THE WATER QUALITY CONTROL DEPARTMENT
## OF THE CITY OF MARYVILLE, TENNESSEE

## 4.0 DEFINITIONS

**1. CITY**
The City of Maryville, Tennessee

**2. PERSON OR TENANT**
Firms and corporations, as well as individuals.

**3. CUSTOMER**
Any person who receives water and/or wastewater services from the City either under an express or implied contract requiring such person to pay the City for such service.

**4. DEVELOPER**
Any person, firm or corporation, both public and private, engaged in the development of land, such as subdivisions and other land improvements.

**5. DWELLING**
Any single structure occupied by one or more persons for residential purposes.

**6. PREMISES**
Any structure or group of structures, including land, operated as a single business or enterprise.

**7. UNIT**
An individual part of a multiple unit development.

**8. MULTIPLE UNIT DEVELOPMENT**

Any multi-unit complex, such as: apartments, small business, etc. on one single parcel.

**9. CROSS-CONNECTIONS**

Any physical construction whereby the City's water supply is connected with any other water supply systems, whether public or private, or either inside or outside any building in such a manner that a flow of water into the City's water supply is possible, either through the manipulation of valves or because of ineffective check or back pressure valves, or any other arrangement.

**10. ACCEPTED STREET**

A street or avenue located within the City of Maryville which has been accepted by the City for maintenance, or a road or highway located outside the City of Maryville which has been accepted by Blount County.

**11. EASEMENT**

A legally dedicated right-of-way for the City to install water and/or sewer lines within specified boundaries.

**12. EXISTING DEVELOPED AREA**

A developed area within the corporate limit having streets, water and/or sewer lines and appurtenances which have been accepted for operation and maintenance by the City.

**13. NEW SUBDIVISION**

A development of a tract or parcel of land having two or more lots and having dedicated streets which have not been accepted by the appropriate governing agency.

**14. STEP COLLECTION LINE**

A system of interconnected pipes for the purposes of collection of sanitary sewer wastes from individual lots and residences for delivery to a Publicly Operated Treatment Works (POTW).

**15. STEP RESIDENTIAL SERVICE**

The system of pump, pump vault, control panel, piping, and related appurtenances that provide transport of sanitary sewer from the STEP tank to the connection to the City of Maryville STEP collection line.

NOTE:

Whenever the context shall admit or require words used herein in the singular shall include the plural; words used in the plural shall include the singular; words used in the masculine shall include the feminine; and words used in the feminine shall include the masculine. Whenever a specific product name or trademark is used, it is to be understood that an equal, approved by the City of Maryville WQC Department and the Engineer, may be substituted.

# PART IV -
# SEPTIC TANK EFFLUENT PUMP
# INSTALLATION GUIDELINES AND SPECIFICATIONS

## 4.1 SPECIFICATIONS - SEPTIC TANKS

### 4.1.1 Onsite Septic Tanks and STEP Pumping Assemblies Compatibility

All septic tanks shall be constructed to allow for the installation of a Septic Tank Effluent Pump (STEP) without field modification of the tank openings and be compatible with STEP pump systems

### 4.1.2 Septic Tank Specifications material, Construction and Installation

This specification outlines requirements for concrete septic tanks for used with Septic Tank Effluent Pump (STEP) systems. When used for septic systems, the septic tank shall meet the Tennessee Department of Environment and Conservation, Division of Ground Water Protection Standard 1200-1-6.08 for septic tanks.

### 4.1.3 Material

(a) Concrete will be ready mixed with cement conforming to TYPE II standards. It will have cement content not less than six sacks per cubic yard with an aggregate size of 3/4". It will have a minimum compressive strength of 5,000 psi (28) days.

(b) Reinforcing will be 6"x 6" x 10 gauge wire mesh centered in top, bottom, sides, ends and lids, with one inch of concrete cover. Additional top reinforcing shall be #3 rebar with 12" center length and 1" center width.

(c) Sealant shall be 1" x 1" Butyl Rubber Mastic Sealant between lid and tank at the joint-line and shall run continuously.

### 4.1.4 Septic Tank

(a) The septic tank shall be 1500 gallons in capacity with 12" freeboard. It will have the capability for 3 inlets with maximum pipe size of 4". The lid shall have a 16" round opening with grooves to accept the pump riser on the outlet end and the inspection riser on the inlet end.

(b) The septic tank shall have 3" thick walls with a 4" thick bottom and top. The walls and bottom shall be poured monolithically. The septic tank baffle wall

shall have five 4” holes 24” from the bottom of the tank and a 2” vent slot at top of the baffle.

(c) The inlet tee will be for the contractor to furnish and install.

(d) The tank inlet shall be furnished with a pipe entrance coupling using a flexible molded neoprene compound boot meeting the latest requirements of ASTM Standard C443 or a rubber boot meeting the latest requirements of ASTM Standard C923.

(e) The pipe entrance couples shall be a Kor-N-Seal, Press Boot, or approved equal.

(f) The septic tank shall have the manufacturer's initials and size on the outlet end.

(g) The septic tank shall be tested at the manufacturer's facility prior to leaving the plant and certification of water tightness shall be provided to the owner and the servicing utility.

### 4.1.5 Installation, Bedding and Backfill

(a) The septic tank hole shall not be more than 2 feet longer and wider than the tank with a maximum backfill cover of 30” and a minimum backfill of 6”. There shall be a minimum of 6” of ½” or ¾” stone bedding when no rock outcroppings are found within the limits of the excavation. When rock outcroppings are present within the excavated hole, a minimum of 12 inches of stone bedding shall be required. City of Maryville inspectors shall be called and will inspect the septic tank hole excavation prior to placement of stone bedding. The stone bedding will be level.

(b) After setting the septic tank in the hole it shall be filled with water to check for leakage, then backfilled after passage of leak test. The backfill must contain no rocks or stones larger than 2” in diameter, and the tank should be backfilled immediately after testing. Initially, a 12" layer of selected soil should be placed and compacted along the tank.

(c) Do not install septic tank across path of vehicles or heavy equipment.

(d) Tank shall be by C.R. Barger & Sons, Harriman, TN or City of Maryville approved equal.

### 4.1.6 Inlet Risers & Lids

Inlet risers (required on all two compartment tanks and all tanks with 1500 gallon or greater capacity) shall be ribbed PVC as manufactured by ORENCO SYSTEMS, Inc. (OSI), or City of Maryville approved equal. Risers shall extend to the ground surface and shall have a minimum nominal diameter of 21 inches.

### 4.1.7 Outlet Risers

Shall be ribbed PVC as manufactured by OSI, or City of Maryville approved equal. Risers shall be at least 181, high, and shall have a minimum nominal diameter of 24" when used in a simplex vault or 30” when used in a duplex application and shall be factory-equipped with the following:

(a) Rubber Grommets. Two 1" diameter grommets, one for the splice box and one for the pump discharge, installed as shown on the drawing.

(b) Adhesive shall be two-part epoxy, one pint per riser, for bonding riser to tank. One quart for 30-inch diameter.

### 4.1.8 Lids

(a) One lid shall be furnished with each riser. Lids shall be OSI Model FL-21g, FL-24g, or FL-30g, or City of Maryville approved equal, as appropriate.

Lids shall be fiberglass with green non skid finish, and provided with urethane gasket, stainless steel bolts, and wrench. The riser and lid combination shall be able to support a 2500 lb. wheel load. (NOTE: This is not to imply that PVC risers are intended for traffic areas.)

(b) Rigid closed-cell foam insulation of 2” thickness shall be bonded to the underside of the lid. The R value shall be no less than 10 per 2” increment.

### 4.1.9 Riser installation

Riser installation shall be accomplished according to the manufacturer's instructions.

## 4.2 STEP PUMPING ASSEMBLIES FOR SINGLE-FANILY DWELLINGS

### 4.2.1 Step Pump Systems

All pumping systems shall be ORENCO SYSTEMS (OSI) High-Head Pumping or City of Maryville approved equal.

### 4.2.2 Step Pump Assemblies

The pump assembly or City of Maryville approved equal, shall be composed of:

(a) Risers & Lids. As per section 4.1 above.

(b) Screened pump vault shall be OSI Model x4S1254-24 Simplex Biotube screened pump vault or City of Maryville approved equal. The filter shall have a minimum effective screen area of no less than 22.5 square feet. The screened pump vault shall consist of a 12” diameter, 54” deep PVC vault with eight (8) 1⅛ diameter holes evenly spaced around the perimeter, located approximately 70% of minimum liquid level to allow for maximum sludge and scum accumulation before requiring pumping. Housed inside the PVC vault shall be the Biotube filter cartridge assembly consisting of ⅛” mesh polypropylene tubes. One 4” diameter flow inducer to accept the high-head effluent pump shall be mounted externally to the Biotube vault assembly. The external flow inducer shall be epoxied and riveted to the sidewall of the vault. The whole assembly shall have an encapsulated base with flow thru port at the bottom of the filter cartridge for the screened effluent to have access to the effluent pumps and corresponding external flow inducer.

(c) Discharge hose and valve assemblies shall be OSI Model HV100BCX, 1" diameter, 150 psi PVC ball valve, PVC flex hose with working pressure rating of 100 psi, Schedule 40 PVC pipe, and a 12” length of PVC flex hose with fittings to be installed outside the riser or City of Maryville approved equal.

(d) Mercury switch float assembly shall be OSI model MF3A or City of Maryville approved equal, with three mercury switch floats mounted on a PVC stem attached to the effluent screen. The floats must be adjustable without removing screened pump vault. The high alarm functions shall be preset as shown on the drawing. Each mercury switch float shall be secured with a nylon strain relief bushing. The "A" floats shall be UL or CSA-listed and shall be rated for 4.5 A @ 120V.

(e) High-Head effluent pumps shall be OSI Model P100511-10 or City of Maryville approved equal, ½ Hp, 115V, single phase, 60 Hz, 2-wire motor, with a 10 foot long extra heavy duty (SO) electrical cord with ground to motor plug. Pump shall be UL and/or CSA listed as an effluent pump. Pump shall be provided with a non-prorated five (5) year warranty.

(f) Electrical splice box shall be OSI model SB4 or City of Maryville approved equal, UL approved for wet locations, equipped with four (4) electrical cord

grips and a 3/4-inch outlet fitting. Also included shall be UL-listed butt splice connectors.

(g) Controls and alarms shall be OSI model Simplex S-1 or City of Maryville approved equal, and be listed per UL 508. Panels shall be field repairable without use of soldering irons or substantial disassembly. Control panels shall meet the following at a minimum:

1. Audible Alarm: Panel mount with a minimum of 80 db sound pressure at 24 inches as a warble tone.

2. Visual Alarm: NEMA 4, 7/8-inch diameter, oil tight, with push-to-silence feature.

3. Audio-Alarm Reset Relay: 115 V, automatic, with DIN rail mount socket base.

4. Toggle Switch: 15 amp motor rated, single pole, double-throw with three positions: Manual (MAN), (OFF) and Automatic (AUTO).

5. Circuit Breaker Control Voltage Disconnect: Rated for 10 amps, OFF/ON switch, DIN rail mounting with thermal magnetic tripping characteristics.

6. Current-Limiting Circuit Breaker: Rated for 20 amps, OFF/ON switch, DIN rail mounting with thermal magnetic tripping characteristics.

7. Enclosure: NEMA 4X, fiberglass with stainless steel or non-metallic hinges, stainless steel screws and padlockable latch. 10” high x 8” wide x 5 1/8" deep.

8. Alarm Circuit: Wired separately from the pump circuit so that, if the pump internal overload switch or current-limiting circuit breaker is tripped, the alarm system remains functional.

9. Motor Start Contactor: rated for 24 FLA, single-phase, 60 Hz.

10. Elapsed Time Meter: 115VAC, 7-digit, nonresettable.

11. Pump Run Light.

### 4.2.3 Installation

(a) All pumping systems shall be installed in accordance with the manufacturer’s recommendations and the standard plans.

1. Wiring shall be installed in accordance with the codes adopted by the City of Maryville or the local electric service provider.

2. Wiring coding shall be as follows:

   Red - Pump Off
   Blue - Pump On
   Yellow - High Level Alarm
   Orange - Power alarm/control circuits - 10A circuit
   Black - Power pump circuit
   White - Power pump circuit
   Green - Ground

(b) The STEP installation shall be installed on a separate dedicated 30 amp house circuit.

(c) All wiring shall be installed in buried conduit between the structure and the pump vault.

(d) All wiring and plumbing installations including tank shall be inspected prior to burial.

(e) Tank excavation shall be inspected prior to installation of bedding stone.

(f) Force mains from the pump vault to the City of Maryville force main shall be installed in a manner to minimize local high spots in the line that might accumulate air. In the event that such high spots cannot be avoided air relief valve(s) may be required by the City of Maryville inspector.

(g) Tank, tank risers and tank covers shall be installed so that access to the tank for inspection or repair is not blocked by structures or plantings.

(h) STEP system installation shall be by individuals approved by the City of Maryville. Approval shall be based on successful completion of an STEP installation course conducted by the City of Maryville and demonstration of continued ability to perform installations in accordance with the Rules, Regulations, Rates and Polices of the City of Maryville.

(i) Un-inspected sewer connections for STEP systems shall be treated as an illegal tap subject to fine and court citation.

(j) WQC inspectors shall be present at initial pump start up and test.

(k) Discharge piping from the pump vault to the connection with the City of Maryville force main shall be

schedule 40 solid wall PVC pipe (200 PSI minimum pressure rating). NO CELLULAR CORE PIPE WILL BE ALLOWED.

(l) A 12 gauge toning wire shall be taped to the discharge piping from the pump vault to the connection with the City of Maryville force main. Wire shall be visible in the pump vault and the City of Maryville connection vault with sufficient length present to allow for connections for location of the residential line.

### 4.2.4 Location

(a) The pump control panel shall be mounted on the side of the house nearest the tank and pump. National Electric Code (NEC) requires that the control panel be located within 50 feet of and within sight of the pump.

(b) The overflow of the access risers and STEP pump vault shall be located on the lot such that in the event of power outage or pump failure a high water condition will not back up water into the structure(s) served.

### 4.2.5 Commercial

Commercial installations of STEP systems shall be evaluated on a case by case basis by the City of Maryville WQC Department. STEP systems are primarily for the residential use. Commercial use shall be only with permission of the City of Maryville WQC Department.

## 4.3 ACCESS

The property owner shall furnish a signed, recorded, agreement running with the property, allowing the City of Maryville WQC Department or their delegated representative access to the STEP tank, pump vault, control panel and force main for inspection and operational evaluation.

## 4.4 REPAIR AND MAINTENANCE

The property owner shall be responsible for the maintenance and operation of the pump and force main from the property owner's pump to the City of Maryville connection to the force main. The City of Maryville shall make inspections as it deems necessary for the reliable operation of the force main and shall notify the property owner of any needed repairs or maintenance noted. Said inspections are supplemental in nature and are not intended to replace the normal responsibilities of the property owner to maintain and operate the pump and STEP system in accordance with the manufacturer’s recommendations.

# PART V -
# Septic Tank Effluent Systems
# and Force Mains

## RULES, REGULATIONS, RATES, AND POLICIES FOR THE GOVERNING OF THE WATER QUALITY CONTROL DEPARTMENT OF THE CITY OF MARYVILLE, TENNESSEE

## 5.0 DEFINITIONS

**1. CITY**

The City of Maryville, Tennessee

**2. PERSON OR TENANT**

Firms and corporations, as well as individuals.

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either through the manipulation of valves or because of ineffective check or backpressure valves, or any other arrangement.

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**12. EXISTING DEVELOPED AREA**

A developed area within the corporate limit having streets, water and/or sewer lines and appurtenances, which have been accepted for operation and maintenance by the City.

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A development of a tract or parcel of land having two or more lots and having dedicated streets which have not been accepted by the appropriate governing agency.

**14. STEP COLLECTION LINE**

A system of interconnected pipes for the purposes of collection of sanitary sewer wastes from individual lots and residences for delivery to a Publicly Operated Treatment Works (POTW).

**15. STEP RESIDENTIAL SERVICE**

The system of pump, pump vault, control panel, piping, and related appurtenances that provide transport of sanitary sewer from the STEP tank to the connection to the City of Maryville STEP collection line.

NOTE:

Whenever the context shall admit or require words used herein in the singular shall include the plural; words used in the plural shall include the singular; words used in the masculine shall include the feminine; and words used in the feminine shall include the masculine. Whenever a specific product name or trademark is used, it is to be understood that an equal, approved by the City of Maryville Water Quality Control Department and the Engineer, may be substituted.

# PART V -
# SEPTIC TANK EFFLUENT SYSTEMS AND FORCE MAINS

## 5.1 SEPTIC TANK EFFLUENT PUMP SYSTEM APPLICABILITY

(a) The use of Septic Tank Effluent Pump (STEP) systems shall be confined to areas where:

1. In the opinion of the City of Maryville Water Quality Control (WQC) Department the extension of gravity sewers is not economically feasible.

2. There is an existing danger to public health due to failed or failing septic fields or other existing sanitary sewer treatment options.

3. The development is within the growth limits of the City of Maryville, or approval for service has been granted by Maryville City Council.

4. The use of STEP systems shall be primarily for residential sanitary sewer collection.

5. Isolated commercial establishments may be connected to STEP collection lines provided there is adequate capacity for the waste, taking into consideration the ultimate load from residential customers, nature of the commercial waste, and growth of the area.

(b) Septic Tank Effluent Pump systems are not for use in: New residential or commercial developments. New developments shall be served by conventional gravity systems and pump stations.

1. Commercial developments, unless advance plans have been made to provide for adequate capacity and chemical resistance within the collection systems lines and pumps.

2. Individual residential STEP connections shall not be allowed to connect to existing force mains designed for use with grinder or solids handling pumps except as per section 5.7.10.

## 5.2 STEP COLLECTION DESIGN

### 5.2.1 Description of System Layout

The layout of extensions of the Maryville WQC System STEP collection force mains for STEP shall be by a branched system.

### 5.2.2 Pre-design Conference

Before beginning a STEP system extension design, the design engineer should first confer with the City of Maryville in regard to the growth potential and density that may be expected in the general area of the extension being planned. A conference with the Maryville WQC Department's staff should follow to discuss the system standards and requirements as well as any problems related to the mains being extended.

### 5.2.3 Plans and Specifications Approval

(a) Detailed plans and specifications for a proposed extension must be submitted to the Maryville WQC Department for approval. Once approval has been obtained, the detailed plans and specifications must be submitted to the Tennessee Department of Environment & Conservation, Division of Water Pollution Control, for approval.

(b) Each plan sheet shall bear an appropriate title block showing the name of the project, location, owner, engineer, date, scale in feet, true north where applicable, sheet number, revision date, and other information as may be required.

Each sheet shall contain a blank area at least 4 inches by 6 inches near the title block for imprinting the official "Approved for Construction" stamps of the Tennessee Department of Environment and Conservation and the Maryville WQC Department.

Plans shall be clear and shall conform to the requirements of the Maryville WQC Department Standards. Plans should be on sheets 24 inches x 36 inches.

(c) Upon completion of the project, the **design engineer** shall revise the detailed plans to reflect "As-Built" information and submit the revisions for review to the Maryville WQC Department. Upon acceptance of the "As-Builts" the **design engineer** shall furnish WQC with one Mylar copy and one paper copy of the "As-Built" drawings. DRAWINGS TO BE FURNISHED in Engineering format no larger than 24 inches x 36 inches. An electronic copy of the "As-Builts" shall be submitted on a compact disc (CD) in a format that can be edited into AutoCAD.

(d) Plans of STEP Mains:

A plan of existing and proposed STEP mains shall be submitted for projects involving additions to the existing STEP collection system. The plan shall show the location and size of all proposed STEP mains. A

vicinity map must accompany all STEP main extension plans. A project layout map showing the entire project may also be required.

(e) Detailed Plans:

Plans should have a scale of not more than 100 feet to the inch and must show:

1. Locations of streets and STEP mains, size of mains, location and size of service lines, material and type of pipe.

2. All known existing structures both above and below ground which might interfere with the proposed construction, particularly water lines and gravity sewer lines, gas mains, storm drains, etc.

3. Stationing of the STEP line at 100-foot intervals and locations of all appurtenances by stationing.

4. No other utilities shall be drawn except for clarification or reference.

5. Sufficient detail shall be shown on the plans to allow for materials take off and location of lines in the field by a third party.

6. Profiles shall be drawn for all STEP force mains. Existing utility lines shall be field located whenever reasonable and the source of the utility locations noted on the plans. For all new construction of STEP lines, the relevant elevations of all pipelines and conflicting structures at utility crossings shall be shown.

(f) The Following Note(s) Must Be Included In The Plan Sets:

THE CONTRACTOR SHALL NOTIFY TENNESSEE ONE CALL AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION FOR UTILITY LINE LOCATES. ANY DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND THE ACTUAL FIELD LOCATIONS SHALL BE IMMEDIATELY COMMUNICATED TO THE DESIGN ENGINEER AND THE CITY OF MARYVILLE, WATER QUALITY CONTROL.

### 5.2.4 Minimum STEP Force Main Pipe Size

(a) The minimum size pipe shall be 2-inch diameter.

STEP force main extensions shall be SDR 17 Class 250 PVC pipe conforming to ASTM D-2241 PVC.

(b) The size of pipe shall be justified by hydraulic analysis performed by an engineer who holds a valid

license to practice in the State of Tennessee. STEP force mains shall be sized to accept the anticipated flow from the drainage area. Design shall be based on the use of the standard City of Maryville STEP pump for residential use.

(c) All assumptions and any flow data used by the design engineer must be clearly documented and submitted with the hydraulic calculations. Hazen and Williams friction factor shall be applied for the type pipe being used, but in no case shall such friction factor be greater than 100.

**5.2.5 Connections to Existing System**

(a) STEP lines within residential, commercial, and industrial developments shall be extended to the exterior property line(s) where it has been determined by the Maryville WQC Department that there will be a future need for their extension.

(b) STEP lines within residential, commercial, and industrial developments shall be extended and connected to lines within the existing STEP collection system when required by the Maryville WQC Department.

(c) Where dead end STEP collection lines occur they shall be provided with a flushing connection for use in flushing operations.

**5.2.6 Ball and Gate Valves**

(a) Unless otherwise specified by the Director of the Maryville WQC Department, PVC gate valves or PVC ball valves shall be placed at all intersections of STEP collection system pipes. Valves shall be placed to allow for shut down of collection lines for repairs. Two valves shall be placed at each tee; valves shall be installed to allow for shut down of the collection lines with the minimum disruption of service when maintenance is required. Three valves shall be placed at each cross. Valves should be positioned in the pipeline approximately 3 feet distance from the tee or cross. In mainlines greater than 2 inches in diameter, a valve approved by the Maryville WQC Department shall be used. (Please reference section II for standard water gate valves with epoxy linings, resilient seats, and mechanical joints with transition gaskets.) The use of glued connections and valves shall be allowed only in the customer service lines and connections.

(b) Valves at no time shall be placed greater than 3,000 feet apart unless otherwise specified by the Director of the WQC Department. Additional valves may be required by the Maryville WQC Department for system operation and maintenance.

### 5.2.7 Bends

Bends in pipe shall be minimized. They should be placed in STEP collection pipes only in making necessary vertical or horizontal changes in pipe direction. All bends shall be thrust blocked in accordance with the standard details sheets.

## 5.3 DETAILS OF DESIGN AND CONSTRUCTION OF STEP COLLECTION SYSTEM MAINS

### 5.3.1 Pipe Support

Adequate support shall be provided for all pipes.

### 5.3.2 Pipe Bedding

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Bedding shall be in accordance with manufacturers recommendations. For PVC pipe a two-inch (211) layer of sand bedding shall be required below the pipe and above the crown of the pipe.

### 5.3.3 Rock Excavation

Stones found in the trench shall be removed to a depth of at least six inches below the bottom of the pipe.

### 5.3.4 Pipe Cover

(a) All STEP collection mains shall be provided with sufficient earth or other suitable cover to prevent freezing and to provide protection to the pipe. The cover shall not be less than 36 inches for all step lines. The cover depth shall be measured from the top of the pipe to either the existing or proposed ground elevation or from the subgrade of the adjoining street whichever is lower. The listed cover depths shall be maintained throughout the construction project.

(b) STEP collection mains constructed parallel to roadways shall be installed at a depth that will ensure sufficient cover over the STEP line for future driveway cuts or road widening.

### 5.3.5 Pipe Alignment

Alignment of pipe shall be installed as true as practical. When it becomes necessary to deflect pipe alignment, such deflection shall be limited to the deflection recommended by the manufacturer or to 5 degrees per pipe joint when using PVC force main, whichever is less.

### 5.3.6 Hydrostatic Tests

Pressure and leakage tests for PVC pipe shall be performed in accordance with the manufacturer’s recommendations and the following tables and provisions or similar procedures which will insure equal or better results.

Pipelines of PVC material shall be tested at the pressures shown in the following table and the allowable leakage shall not exceed the requirements shown.

| Pipe Size (inches) | Test Pressure (psig @ low point) | Allowable leakage per 1000 feet-gals per hour |
|---|---|---|
| 2 | 150 | 0.18 |
| 4 | 150 | 0.37 |
| 6 | 150 | 0.55 |
| 8 | 150 | 0.72 |
| 10 | 150 | 0.90 |
| 12 | 150 | 1.08 |

Pressure shall be measured at the low point on each section of pipeline. The contractor shall furnish all gauges, meters, pumps and other equipment required and shall maintain said equipment in good condition for accurate testing.

Where leaks are visible at exposed joints and/or evident on the surface when joints are covered the leak shall be repaired regardless of the leakage rate shown by the leakage test.

Duration of the test shall be no less than two hours.

Lines which fail to meet leakage requirements shall be repaired and re-tested until the test requirements are met.

All pipe, fittings, and other material found to be defective under test shall be removed and replaced at the Contractor's expense.

### 5.3.7 Means of Detecting PVC Pipe

When existing PVC pipe is repaired, the existing 12 gauge copper wire and warning tape shall be maintained along the entire length of the pipe. The ends of the wire shall terminate in a valve box or other acceptable location whereby detection equipment may be attached. New PVC pipe shall have 12 gauge toning wiring installed along the entire length of the pipe. The ends of the wire shall terminate in a valve box or other acceptable location whereby detection equipment may be attached. PVC or other GREEN plastic warning tape labeled "SEWER" shall be installed in the trench on top of the sand cover prior to backfilling with soil.

### 5.3.8 Separation of Water Mains and STEP Sewers

(a) General:

The following factors should be considered in providing adequate separation:

1. Materials and type of joints for water and sewer pipes.

2. Soil conditions.

3. Service and branch connections into the water main and STEP collection line.

4. Compensating variations in the horizontal and vertical separations.

5. Space for repair and alterations of water and sewer pipes.

6. Offsetting of pipes around manholes.

7. Water mains and sanitary or storm sewers shall not be laid in the same trench.

(b) Parallel Installation:

1. Normal conditions - STEP collection lines shall be laid at least 10 feet horizontally from any water main; the distance shall be measured edge-to-edge.

2. Unusual conditions - When local conditions prevent a horizontal separation of 10 feet, a STEP collection main may be laid closer to a water main such that:

   i. The bottom of the water main is at least 18 inches above the top of the STEP collection line;

   ii. Where this vertical separation at crossings cannot be obtained, the STEP collection lines shall be constructed such that the crossing is centered in a full joint of pipe. STEP collection lines shall be pressure tested to assure water tightness prior to backfilling.

   iii. At no time shall STEP collection system lines and water lines be installed in the same ditch.

(c) Crossings:

1. Normal conditions - STEP collection lines shall cross under water mains and will be laid to

provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer, whenever possible.

2. Unusual conditions - When local conditions prevent a vertical separation as described under 1 above, the following shall be used:

STEP force mains passing over water mains shall, in addition, be protected by providing a vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main. Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking the water mains and the STEP collection systems lines. The lengths of water pipe and STEP collection pipe shall be centered at the point of crossing so that the joints will be equidistant on both sides of the crossing for both the water and sewer lines. Both the sewer and the water main shall be constructed and tested in accordance with the pressure testing requirements of the applicable section of these standards. (Note: adequate structural support shall be a minimum or compacted sand backfill to fully support both the water main and STEP force main at the point of crossing.)

(d) Sewer Manholes and STEP System Valve Boxes:

No water pipe shall pass through or come into contact with any part of a sewer line or sewer manhole.

**5.3.9 Surface Water Crossings**

Surface crossings, both under and over water, present special problems which should be discussed with the Maryville WQC Department; the Tennessee Department of Environment and Conservation, Division of Water Pollution Control; and the U.S. Army Corps of Engineers before plans are prepared.

(a) Above Water Crossings - The pipe shall be:

1. Adequately supported;

2. Protected from damage and freezing;

3. Accessible for repairs and replacement;

4. Sleeved in ductile iron pipe with an approved interior coating that is resistant to corrosive chemicals present in STEP systems.

(b) When Crossing Water Courses which are Greater than 15 Feet in Width:

1. The pipe shall be of special construction, having flexible, watertight joints;

2. valves shall be provided at both ends of the water crossing so that the section can be isolated for test or repair, the valves shall be easily accessible and not subject to flooding;

3. Permanent taps should be made for testing and locating leaks.

4. Sleeved in ductile iron pipe with an approved interior coating that is resistant to corrosive chemicals present in STEP systems.

**5.3.10 Cross Connections**

There shall be no physical connection between the STEP collection system and any potable water system by means of any pipes, pumps, hydrants, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the potable water system.

**5.3.11 Customer STEP Pump Units and Connection to the STEP Collection System**

Customer STEP pump installations and tie ins to the STEP collection systems shall conform to the International Plumbing Code, 2003 Edition and Related Amendments as may be revised and adopted from time to time by the City of Maryville and the Rules, Regulations, Rates and Policies of the Maryville WQC Department, Section IV.

**5.3.12 Relations to Other Utilities**

In no instance shall any other utility occupy the same trench with STEP collection line.

**5.3.13 Threaded Joints**

Teflon tape or pipe joint compound shall be used for all threaded PVC joints.

## 5.4 PRODUCTS

### 5.4.1 General - Pipe

(a) PVC pipe meeting the requirements of ASTM D-2241 (SDR 17) ASTM D 3139 for joints, and ASTM D 1784 for materials shall be used for all STEP collection lines. All plastic pipe shall be made from Type 1, Grade 1, Polyvinyl Chloride Plastic. Manufacturing tests shall conform with the industry standards for PVC water line. **PVC PIPE SHALL BE WHITE IN COLOR OR OTHER WQC APPROVED COLOR. NO BLUE PVC PIPE SHALL BE USED IN STEP COLLECTION LINES.**

(b) Either mechanical joints or slip-on joints with rubber gaskets are required for pipe. Glued joints meeting the recommendations and requirements of the manufacturer may be used for STEP collection lines less than 2 inches in diameter and for all residential lot connections.

(c) Pipe and all accessory fittings, **boxes,** etc., shall be made in America where possible unless approval is obtained from the Maryville WQC Department for the use of a product that is not made in America. This requirement shall be construed in a manner which does not violate the North American Free Trade Agreement, any amendments thereto, or any other free trade or other laws.

(d) When repairing existing PVC pipe two inches in diameter, the pipe shall be SDR-17, Class 250 pressure rated. The pipe must meet the requirements set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-17. The pipe must bear the National Sanitation Foundation Testing Laboratories, Inc. seal of approval for potable water or an approved equal.

(e) Pipe shall be bell-end type.

(f) Gaskets and lubricants intended for use during repair of existing PVC pipe shall be made from materials that are compatible with the plastic material and with each other when used together, but will not support the growth of bacteria. Gaskets shall be the elastomeric type and shall be manufactured to conform with the requirements of ASTM F-477 and ASTM D 3139.

(g) Solvent cemented joints in the field are not permitted for repair of existing mainline PVC pipe. Solvent cemented joints are allowed in customer service lines (laterals).

(h) Pipe lengths shall be no greater than 20 feet.

### 5.4.2 Tees, Crosses and Bends

(a) Tees, crosses, and bends shall be PVC fittings of the same dimension ratio and pressure rating as the STEP collection line on which they are installed.

(b) Bends for use in construction or repairing existing 2-inch and larger PVC pipe shall be bell-type, factory welded and shall meet the requirements for bells of pipe as set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-17.

(c) Customer's service tees shall be bell type for the main line with a two-inch female threaded connection for customer's connection lines.

### 5.4.3 Reducers

Reducers for use in construction or repairing existing 2inch and larger PVC pipe shall be bell-type, factory welded and shall meet the requirements for bells of pipe as set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-17.

### 5.4.4 Caps and Plugs

Caps and plugs for use with PVC pipe shall be slip on type glued caps.

### 5.4.5 Sleeves

Sleeves shall meet the requirements of ASTM D 2241.

### 5.4.6 Valves

(a) 4” and larger gate valves shall be mechanical joint, epoxy lined, resilient-seat type, iron body, non-rising stem, "O"-ring stem seal type, 2-inch square operating nut, open counter-clockwise.

(b) Gate valves shall meet the latest requirements of AWWA Standard C-509.

(c) Gate valve pressure ratings shall be 200 psig.

(d) Gate valves meeting the latest requirement of AWWA Standard C-509 shall be either Mueller Company, Model A-2370; U.S. Pipe & Foundry Company, Model No. 5460; McWane Pipe and Foundry, Model F-6100; Clow Company, Model Number 5065; Waterous Company, Series 500; M & H Company, Model 3067-01; and American Cast Iron Company, American Darling, or any succeeding Model numbers, or approved equal.

(e) Air release valves for use on STEP mains shall be Vent-O-Mat TM. Series RBX or approved equal. Each

valve shall be designed/sized for its particular application. Reference the standard detail drawing. Valves are to be located outside of paved areas whenever possible and graded to assure positive drainage away from the valve installation. Rodent screens are required on all vent lines. Perforated lids may be substituted for the vent lines with the Maryville WQC Department's approval. At the discretion of the City of Maryville OSI air release assemblies may also be used.

(f) Ball valves shall be used on lines less than 4" diameter. Ball valves shall be as manufactured by Spears 150 psi water service valves or approved equal.

(g) Check valves for service laterals shall be 1¼" check valves as manufactured by E-One corporation or approved equal.

**5.4.7 Valve Boxes**

(a) Valve boxes shall be the two-piece Buffalo screw type, 5¼" diameter shaft, capable of extending from valve stuffing box to ground surface, constructed of cast iron.

(b) Valve box lids shall be provided with the word "SEWER" embossed in the lid surface. Lids shall be compatible with the box lid receptacle.

(c) The assembled valve box weight shall be approximately 60 pounds for 18-inch to 24-inch extension; 80 pounds for 24-inch to 36-inch extension; 90 pounds for 36-inch to 48-inch extension.

(d) Shop drawings of valve boxes shall be submitted to the Maryville WQC Department for approval.

**5.4.8 Flushing Connections**

Flushing connections shall be installed as per the standard detail sheets, see Appendix 6, for STEP.

**5.4.9 Thrust Blocking**

(a) Thrust forces are created in a pipeline at changes in direction, tees, dead-ends or where changes in pipe size occur at reducers. Acceptable restraint measures include concrete thrust blocks, restrained joints, and tie rods. The details and dimensional data for concrete thrust blocks for 100-psi working pressure and soil bearings of 2000 pounds per square foot are given in the Maryville WQC Department Standard Drawings. For greater pressures or less soil bearing capacity, the quantities required should be calculated by the engineer.

(b) When iron tie rods are being used, all parts of such tie rods exposed to soil or weather shall be given a final coating of bituminous material for protection. Tie rods shall not be less than nominal ¾″ in diameter.

**5.4.10 Tapping Sleeves and Valves**

(a) Tapping sleeves shall be designed for use on PVC piping and approved by the Maryville WQC Department.

(b) Tapping valves shall be designed for use on PVC piping and approved by the Maryville WQC Department.

**5.4.11 Repair Fittings**

Repair fittings shall be designed for use on pressure PVC force mains and approved by the Maryville WQC Department.

**5.4.12 Repair Sleeves**

(a) Repair of PVC pipe shall be accomplished by replacement of the damaged pipe or the installation stainless steel repair band and couplings. The repair of PVC pipe shall include the repair or replacement of the detection wire and warning tape.

(b) Repair of 2-inch PVC pipe shall be accomplished by replacing damaged pipe using 2-inch PVC pipe and either PVC couplings meeting the requirements as set forth in ASTM Standard D-2241 for 2-inch through 12-inch pipe designated SDR-17 or stainless steel repair bands and couplings. The repair of 2-inch PVC pipe shall include the repair or replacement of the detection wire and warning tape.

**5.4.13 Service Connections**

Service connections shall be in conformance with the standard drawings for STEP collection

**5.4.14 Customer Service Connection Boxes**

Customer service connection boxes shall be in conformance with the STEP collection system standard drawings.

**5.4.15 Pipe Locating "Toning" Wire**

Pipe locating "toning" wire shall be solid 12 gauge insulated copper wire.

**5.4.16 Pipe Location "Warning Tape"**

Pipe location “warning tape" shall be 2″ minimum width green plastic warning tape reading "Sewer".

## 5.5 EXECECUTION

(a) All construction on the City of Maryville's STEP collection system that is not performed by the Maryville WQC Department shall be executed by a person, firm, or corporation licensed to engage in contracting as set forth in the Tennessee Contractors Licensing Act of 1976 (TCA §62-601). This requirement shall apply to all construction regardless of the amount of work involved.

(b) Contractors shall hold the appropriate license designation for the work they are to perform.

(c) Prior to commencement of work, the contractor or developer may be required to provide a cash deposit, bond, certified check, or other acceptable form of security for the amount of the work to be completed or a portion thereof pursuant to the approved construction plans. The amount of the security shall be determined by and at the discretion of the Maryville WQC Director. Should the work not be performed according to these Standards and/or other applicable requirements, the City may execute the security for the purpose of remediation of any deficiencies and/or for the completion of the project. within sixty (60) days of the completion and acceptance of all provisions of the approved plans, cash deposits or other legal arrangements, or unexpended or unobligated funds thereof, shall be refunded or terminated.

### 5.5.1 Preparation

(a) Precautions and permit to excavate:

1. Notify utility companies to locate existing facilities.

2. Abide by their requirements when repairing, replacing or disturbing existing facilities.

3. Prior to trench excavation being performed within any public right-of-way, including public alleys, a permit shall be obtained from the governing authority to perform such excavation. As a minimum, the trench backfill and street repair shall be made in accordance with the Maryville Land Development and Public Works Standards and Section 12, Chapter 3 of the Maryville Municipal Code.

(b) Protect all vegetation and other features to remain.

The engineer shall stake in the field the alignment of the STEP line and the location of all valves, bends, crosses, and other appurtenances identified on the plans. All survey points shall be protected.

(d) Trench Excavation:

1. Perform in such a manner as to form a suitable trench in which to place the pipe and so as to cause the least inconvenience to the public.

2. Trench width shall be sufficient to permit the proper installation of the pipe, allowing room for assembling joints and tamping backfill, and thrust block installation.

3. Cut pavements along neat, straight lines with a pavement saw.

4. Trench depth shall be sufficient to provide a minimum cover in accordance with these Standards.

5. Align trench as shown on the plans and in accordance with the Standards.

6. Shape the crushed stone in the trench to provide uniform bearing of the pipe on the gravel bedding throughout its entire length. Dig bell holes to aid in securing uniform support of the pipe.

7. When unstable soil is encountered at the trench bottom, remove it to a depth required to assure support of the pipeline and backfill to the proper grade with sand.

8. Remove rock encountered in the trench excavation to a depth of 6 inches below the bottom of the pipe barrel, backfill with sand and compact to uniformly support the pipe.

(e) Sheeting, shoring and bracing: When necessary or when directed by the engineer, put in place and maintain sheeting, bracing, etc., as may be required to support the sides of the excavation and to prevent movement. Remove all sheeting, shoring, and bracing after backfill has been placed to a depth of 18 inches over the pipeline.

(f) Before placing pipe in the trench, field inspect for cracks or other defects. Remove defective pipe from the construction site.

(g) Swab the interior of the pipe to remove all undesirable material.

(h) Prepare the bell end and remove undesirable material from the gasket and gasket recess.

### 5.5.2 Installing STEP Collection Pipes

(a) Lay all pipe in a straight line on a general upward or downward grade and in accordance with these standards.

(b) After applying gasket lubricant, extreme care should be taken to keep the spigot end from contacting the ground.

(c) Bevel the pipe with suitable tools or equipment.

(d) As a minimum, the manufacturer's instructions for laying and joining pipe shall be followed.

(e) Cut pipe for installing valves, fittings, etc., in a neat and workmanlike manner without damaging the pipe so as to leave a smooth end at right angles to the axis of the pipe.

(f) Locate STEP collection lines in relation to other piped utilities in accordance with these Standards.

### 5.5.3 Installing Appurtenances

(a) Securely plug open ends of pipe at the close of each workday and during temporary discontinuance of pipe laying.

(b) Set all valves, fittings, and other specials in a neat workmanlike manner.

(c) Use thrust blocks, restrained joints, and tie rods in accordance with these Standards.

(d) Close dead ends with caps or plugs meeting the requirements of these Standards.

(e) Install air release valves as indicated on the plans and at other high points as directed by the Maryville WQC Department.

(f) Install a concrete support pad under all valves. Pad to be 3,000 psi concrete minimum 28-day strength and poured against undisturbed soil.

### 5.5.4 Installing STEP Collection Lines in Street, Highway, and Railroad Rights-of-Way

(a) Permits as may be required for crossing streets, highways, and railroads and performing other work within their rights-of-way shall be obtained from the appropriate authorities.

(b) As a minimum, boring and jacking methods shall be in accordance with the Maryville Land Development and Public Works Standards.

### 5.5.5 STEP Collection System Pressure Tests

(a) After the pipe has been laid, subject all newly laid pipe or any valved section thereof, to a hydrostatic pressure test as per these standards.

(b) Air removal:

1. Before applying the specified test pressure, expel air completely from the pipe and valves.

2. Install air release valves at all points where entrapment of air occurs.

(c) Examination:

1. Carefully examine all exposed pipe, fittings, valves, and joints.

2. Repair or replace any damaged or defective pipe, fittings, or valves that are discovered with sound material and repeat the test until it is satisfactory to the Maryville WQC Department.

### 5.5.6 STEP Collection System Leakage Tests

(a) Concurrently conduct a leakage test with the pressure test as per the allowable leakage rates under these standards.

(b) Leakage defined: The quantity of water that must be supplied into the newly laid pipe to maintain the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

### 5.5.7 Acceptance of Installation

(a) If any test of pipe laid discloses leakage greater than that determined under these Standards, locate and repair the defective material until the leakage is equal to or less than the determined amount allowable.

(b) Repair all visible leaks regardless of the amount of leakage.

### 5.5.8 Cleaning of STEP Collection Lines

All STEP collection lines shall be flushed as necessary to remove any material that may have been deposited in the pipe during construction.

### 5.5.9 STEP Residential/Commercial Connections

(a) Service connections shall be made by the installation of a tee. The tee shall have gaskets along the mainline and a 2 inch threaded connection for the service connection line.

(b) Maintain a distance of at least 24 inches between taps, measured along the axis of the sewer force main.

(c) Use tapped saddles for all taps on PVC mains when connections are added after the construction of the main. Tees and connections shall be left for each platted lot or proposed platted lot at the time of collection line construction.

### 5.5.10 Annual Inspection

Approximately twelve (12) months following acceptance of the utility line, a follow-up inspection will be made to determine if any failures or deficiencies have occurred as a result of Contractor's or Developer's work and/or materials. Present at this inspection will be a representative of the Maryville WQC Department and the Developer or other appropriate parties. In the event that a representative of the Developer is not present, the inspection shall be completed by the Maryville WQC Department representative, and a notice of the inspection and its findings shall be forwarded in writing to the Developer. The Developer will be responsible for correction of all failures or deficiencies of a mechanical nature and for failures or deficiencies caused by the work and/or materials of Developer and/or his agents which occur in the first year of operation. Any other failures or deficiencies which occur in the first year of operation will be the responsibility of the title owner of the affected property except that any failures or deficiencies on property dedicated to the City of Maryville by the Developer shall remain the responsibility of the Developer throughout the one year warranty period. The Developer and/or property owner as appropriate, is further responsible for any additional damages done in completing the required repairs. Within ninety (90) days of notification of the findings of the one-year inspection, it is the responsibility of the Developer and/or property owner as appropriate to ensure that any and all changes and/or repairs have been completed. If the Developer is in compliance and no changes or repairs are needed either initially or within the ninety (90) day cure period, any bond posted shall be returned to the Developer within sixty

(60) days of completion and acceptance of the work by the City following the one year inspection. If the Developer fails to complete any required repairs or changes and the ninety (90) day cure period passes after notice, any bond posted shall be paid immediately to the City of Maryville for the purpose of remedying any of the deficiencies and/or for completion of the project. Such funds shall remain the sole property of the City of Maryville, even to the extent that the actual costs of the work done are less than the amount of the bond forfeited to compensate the City of Maryville for the additional time and manpower needed to complete the work or to see that the work is completed. The Maryville WQC Department will oversee completion of the needed work at the expense of Developer and will charge Developer any overage incurred over the bond amount for the cost of the completed work. The Developer is responsible for such charges. If a bond has not been provided, the City may file suit or make other collection efforts against the Developer or any other appropriate parties immediately after the expiration of the ninety (90) day cure period for the cost of the work done or to be done to bring the property into compliance. The City shall receive from the Developer or any other appropriate party its reasonable litigation costs incurred as a result of Developer and/or other appropriate defendant failing to timely complete the required repairs identified in the one-year inspection. Such litigation costs include, but are not limited to, reasonable attorney's fees, court costs and deposition fees.

## 5.6 STANDARDS FLEXIBILITY

### 5.6.1 Interpretations of Standards and Design Criteria

Interpretations of these Standards and Design Criteria or the determination of any other Maryville WQC Department standards and design criteria not covered under these Standards shall be at the discretion of the Director of the Maryville WQC Department. The decision of the Director of the Maryville WQC Department shall be based on past practices, traditional policies, widely accepted professional principles and practices of the industry.

### 5.6.2 Right of Appeal

Any disagreement with the interpretations or determinations made by the Director of the WQC Department with respect to these Standards or any other standards not covered herein may be appealed to the Development Standards Board of Appeals.

## 5.7 SEPTIC TANK EFFLUENT PUMP RULES, REGULATIONS, POLICIES

### 5.7.1 Application for STEP Service

Persons desiring STEP connections shall make application to the City, in writing, upon such forms as shall be provided by the City. The application shall state fully the nature of the wastes to be collected that the customer will abide by the Rules, Rates and Charges of the City then in force, or which thereafter is adopted. The application shall be signed by the owner for new service and the owner or tenant of the premises for continuing service. The application shall state the location of the premises to be served, including street, street number, and lot number. In the event the owner of the premises desires to be billed rather than the tenant for metered sewer used, the owner shall make application in accordance with the provisions of the Rules, Rates and Charges.

Within the corporate limit of the City of Maryville, if the premises to be served is new construction, the applicant shall show that a building and/or plumbing permit has been issued by the Building and/or Plumbing official of the City.

### 5.7.2 Service Connection Charges

STEP collection system lines will be installed and maintained from the main to the customer connection at or near the right-of -way or edge of easement. The owner will install and maintain all pipes and fixtures for her/his premises. When making application, the appropriate tenant and/or property owner shall pay the charges required in the Sewer Rates and Charges Schedule listed in the Customer Service Policy Manual, as may be amended from time to time.

### 5.7.3 Customers Not to Sewer to Others

Customers shall not supply sewer service or allow other connections to their STEP collection system by or from other premises without the consent of the City.

### 5.7.5 Rates

The monthly rates and/or charges shall be in accordance with the Water and Sewer Rates and Charges Schedule as may be amended from time to time as shown in the Customer Service Policy Manual.

### 5.7.6 Billing

Billing shall be as per the Customer Service Policy Manual.

**5.7.7 Responsibility for Property of Customer**

The City shall not assume responsibility for damages incurred due to failure of the customers pump unit or check valve, or on lot plumbing.

**5.7.8 Discontinuance of service**

The City's personnel or authorized agents may shut off the water meter to the property that is connected to a STEP collection line serving the customer for the following reasons:

(a) Non-payment of bills

(b) Unsafe apparatus

(c) Fraud and abuse

(d) Non-compliance with these Rules, Regulations, Rates, and Charges or any other Policy of the City.

(e) Any operating condition that is spilling sanitary sewer.

**5.7.9 Extension of STEP Collection Mains**

The extensions of sewer mains shall be made in accordance with and subject to the conditions as set forth in PART I of this document.

**5.7.10 Force Main Usage Policy**

(a) GRAVITY SEWER LINES ARE REQUIRED WHEN FEASIBLE FOR SANITARY SEWER COLLECTION. THE USE OF PUMP STATIONS OR SMALL PUMPS SYSTEMS SIGNIFICANTLY INCREASES THE PERSONNEL, MAINTENANCE AND OPERATIONS REQUIREMENTS.

Sewer collection shall be evaluated and designed based on the following hierarchy of collection.

The first economically viable system shall be used.

1. Conventional Gravity Sewer collection systems.

2. Conventional Gravity Sewer collection systems with pump stations meeting the Maryville WQC Department requirements serving the entire subdivision or area.

3. Alternate sewer collection systems (STEP) using small force mains and septic tank effluent pump systems. STEP systems shall only be used when all of the conditions of 5.1 are met.

(b) Use of Existing Force mains Inside City

Single pump stations shall be evaluated first for economic viability. If a single pump station is economically feasible then the STEP connections will not be allowed. If STEP systems are approved then, existing force mains inside the City of Maryville may be tapped for STEP pump connections after evaluation and approval by the Maryville WQC Department provided the following conditions are met:

1. Alternate means of providing gravity sewer have been evaluated and are not feasible.

2. The tap shall be for a STEP system tap using City of Maryville approved PUMPS and installation.

3. The existing force main shall have the capacity to allow the tap.

4. Taps shall be for a single lot or residence.

5. The residence to be served shall be a residence within the Corporate Limits of the City of Maryville.

6. All taps shall be made with a redundant check valve and ball valve at the property line as per the City of Maryville detail drawings. The property owner shall be responsible for all force lines from the residence to the redundant check valve at the City of Maryville connection.

7. The pump unit for the residence shall be able to exceed the hydraulic grade line of the existing force main with all large pump stations assumed to be pumping and or with the pump station pumping in a "high water" condition (both pumps on).

(c) Use of Existing Force Mains Outside City

Existing force mains outside the City of Maryville have been designed for the use of large sewer pumping stations only. One-lot connections to force mains that are designed to service existing large pump stations will not be allowed.

Where sufficient capacity exists or where pump stations can be sequenced to maintain capacity and not overload the force main, multiple large pump stations may be connected to the same force main. Such determination shall be made by the Maryville WQC Department. Input from the developer's engineer is encouraged but the decision to allow additional connections rests with the Maryville WQC Department.

**APPENDIX VI**
**DETAIL SHEETS -**
**"STANDARD S.T.E.P. SEWER DETAILS”**

Sheet 1 of I

- S.T.E.P. Sewer Service Connection
- 2" Terminal Flushing Connection
- Air Release Assembly
- S.T.E.P. Dual Compartment
- S.T.E.P. Single Compartment
- Sizing and Testing

NOTE: 24 x 36 inch detail drawings available separately.