APPENDIX B

(Cross Connection Design Standards)

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Definitions

As used in this article, the following terms shall have the meanings provided in this section unless the context clearly indicates otherwise.

Air-gap: an unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or any other device and the flood level rim of the receptacle. The vertical separation shall be at least twice the diameter of the supply pipe or fixture opening, but in no case shall the air-gap be less than one (1) inch.

Approved: Certified in writing by the Director of Public Utilities or his designee as an acceptable assembly or methodology for the purpose of backflow prevention. All approved backflow assemblies must meet or exceed standards set forth by the University of Southern California for Cross Connection Control and Hydraulic Research (USCFCCHR) and/or the American Society of Sanitary Engineering (ASSE) by being on the agency's approval list. Non in-line testable backflow assemblies must meet or exceed standards set forth by the ASSE. Backflow assemblies to be used on fire suppression systems must have the additional approval from Factory Mutual (FM) and comply with the National Fire Protection Association (NFPA) code.

ASSE: American Society of Sanitary Engineering

Atmospheric vacuum breaker: (AVB) a device designed to allow air to enter the downstream water line to prevent backsiphonage as described in AWWA Recommended Practice for Backflow Prevention and Cross-Connection Control Manual M-14. This device shall not be subject to continuous pressure or backpressure backflow.

Auxiliary intake: any piping connection or other device whereby water may be secured from a source other than the public water supply. (e.g.well)

Auxiliary water supply: any water other than the City of Raleigh public water supply as defined herein; including, but not limited to recycled water, grey water, rain water, well water, cistern water, reuse water and any other water supply from other water purveyors.

Backflow: any flow of water into the public water supply from any other source due to a cross-connection, auxiliary intake, interconnection, backpressure, backsiphonage, any combination thereof, or other cause.

Backflow assembly: an approved effective mechanical assembly or method used to prevent backflow from occurring in the potable water supply. The type of assembly required shall be based on degree of hazard, existing or potential. An assembly is testable in line to its utilization and is unaltered from the manufacturer's configuration and includes shutoffs.

Backflow device: an approved effective device or method used to prevent backflow from occurring in the potable water supply. The type of device required shall be based on degree of hazard, existing or potential. A device is not testable in line to its utilization.

Backpressure: any pressure on any source of water other than the public water supply which may be greater than the pressure on the public water supply and may result in a backflow.

Backsiphonage: any circumstance in which the pressure on the public water supply may be reduced to the point that the elevation and atmospheric pressure on a source of water other than the public water supply may result in a pressure to be greater than the pressure on the public water supply and may result in a backflow.

Building story: a building story is equal to 10' for the purpose of cross connection hazard determination.

Certified tester: a person who has proven his/her competency to test, repair, overhaul and make reports on backflow prevention devices as evidenced by certification of successful completion of a training program approved by the Director of Public Utilities.

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Consumer: any person, firm, or corporation responsible for any property at which water from the City of Raleigh public water supply is received. In the absence of other parties or the failure of other parties to accept the responsibilities herein set forth, the owner of record shall be ultimately responsible.

Containment assembly: a backflow prevention assembly, as approved and required, installed at the point of separation between the public water supply and a private service or private distribution system or at the point of metering.

Containment protection: backflow prevention provided at the property boundary to protect the public water supply from contamination. Containment includes special or existing conditions, which do not allow installation at the property boundary and where alternative locations have been approved by the Director of Public Utilities or his designee.

Continuous pressure: 12 or more hours of water usage in any 24-hour period.

Cross-connection: any physical or potential connection between the public water supply and any other piping system, any other water supply system, whether public or private, either inside or outside of any building or buildings, sewer fixture, container, or device arranged in such a manner whereby water or other liquids, mixtures or substances may flow into the public water supply either through the manipulation of valves or because of ineffective check or back-pressure valves, or because of any other arrangement or circumstance.

Cross-connection coordinator: the official position established and authorized by the City and designated by the Director of Public Utilities to administer, interpret this section and who shall be a certified tester and may serve as Operator in Responsible Charge as recognized by North Carolina Department of Environment and Natural Resources 15A NCAC 18D.0701.

Double check valve assembly: **(DCVA)** a backflow prevention assembly composed of two single, spring-loaded independently operating check valves, including tightly closing shut-off valves located at each end of the assembly, and having approved connections for testing the water tightness of each check valve. Assembly must be approved by USC and ASSE 1015.

Double check detector assembly: (DCDA) an assembly containing two single, spring-loaded independently operating check valves with tightly closing shut-off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve and a bypass containing a water meter (reading in cubic feet). Assembly must be approved by USC and ASSE 1048.

Dual check valve: a device containing two independently acting check valves in series. Not inline testable with no shut-offs.

Enclosure: ASSE 1060 approved Class 1.

Fire line: a system of pipes and equipment used to supply water in an emergency for extinguishing fire.

Interconnection: any system of piping or other arrangement whereby the public water supply is connected directly with a sewer, drain, conduit, pool, heat exchanger, storage reservoir, or other device which does or may contain sewage or other waste or substance which would be capable of imparting contamination to the public water supply.

Isolation assembly: a backflow prevention assembly, as approved and required, installed within a private plumbing or distribution system to isolate a localized hazard from the remainder of said system.

Isolation protection: the act of confining a localized hazard within a plumbing or distribution system by installing approved backflow prevention assemblies.

Moderate hazard: actual or potential threat of contamination or pollution that presents a potential long-term danger to public health with consequence of chronic illness or death. This may also include nuisance, aesthetically

objectionable or other undesirable alterations of the drinking water supply, as determined by the Director of Public Utilities.

Potable Water: water, which is approved for drinking and other household uses and provided by the City of Raleigh Public Utilities Department.

Non-potable water: water, which is unapproved and or unfit for drinking and other household uses.

Pressure vacuum breaker: (PVB) an approved assembly containing an independently operating spring loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly must be equipped with approved connections for testing the proper operation of the device and tightly closing shut-off valves located at each end of the assembly.

Public water supply: the water and waterworks system of the City of Raleigh and its customers outside the corporate limits, for general use as potable water and which is recognized by the North Carolina Department of Environment and Natural Resources as system number 03-92-010.

Reduced pressure zone principle backflow assembly: (RPZ): an approved assembly containing within its structure two spring loaded independently operating check valves, together with an automatically operating pressure differential relief valve located between the two (2) check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and at cessation of normal flow the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves less than the supply pressure. This assembly shall have approved connections for testing the proper operation of the assembly, including tightly closing shut-off valves located at each end of the assembly. Assembly must be approved by USC and ASSE 1013.

Reduced pressure detector assembly: (RPDA): an assembly containing two spring-loaded independently operating check valves, with an automatically operating pressure differential relief valve located between the two check valves, plus tightly closing shut off valves on each side of the check valves, and properly located test cocks for testing the check valves. Assembly must be approved by USC and ASSE 1047.

Severe hazard (Health Hazard): actual or potential threat of contamination as determined by the Director of Public Utilities that presents either an imminent danger to the public health with consequence of serious illness or a potential long term danger to public health with consequence of chronic illness or death.

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SECTION 1 - GENERAL INSTALLATION REQUIREMENTS

The City of Raleigh Public Utilities Department as the water purveyor for Raleigh, Garner, Rolesville, Wake Forest, Knightdale, Zebulon and Wendell has the primary responsibility of protecting the public water supply from potential sources of contamination and/or pollution. All commercial and residential connections to the public water supply are required to be protected with a backflow assembly as determined by Section D., Water Quality of the Raleigh City Code and the policies and design criteria identified within this document. This document may be appended by technical bulletin or as published by annual updates of this manual.

Any water fee only service, which is split from the primary domestic service (see detail W-#### and W-####) will be considered an "irrigation service" for the purposes of this cross connection policy. This water fee only service may not be used as domestic water and may not enter or cross under any existing or proposed structure. This also applies to water fee only meters, which are installed for irrigation or to serve a yard hydrant or other purpose.

For any application not specifically mentioned within this document level of hazard shall be determined by the Public Utilities Director or his designee.

No backflow assembly shall be installed in a manner as to allow the assembly to be looped around or by-passed either temporarily or permanently.

Upon identification of the potential for contamination or a hazard to the City of Raleigh's drinking water supply system, or a failure to comply with a requirement of this handbook, the Public Utilities Director or his designee shall notify, by first-class mail, the owner of record of the property at which the potential contamination or hazard exists, of the location and nature of the potential contamination or hazard, the number of the applicable section of the Public Utilities ordinance and handbook, and the order of the Public Utilities Director or his designee regarding actions to be taken. Notice shall be deemed received three days after mailing.

The Public Utilities Director or his designee shall, among other things, determine if an imminent danger to the drinking water supply or to public health exists, which determination shall impact deadlines for compliance as described in the City of Raleigh's Public Utilities ordinance or handbook. The Public Utilities Director or his designee may issue any follow-up orders he/she deems necessary, including order for testing and other actions related to compliance.

No person shall interfere with the staff of the Cross Connection Control Program in the performance of the duties and responsibilities established by this article.

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SECTION 2 – Irrigation Systems- Residential/Commercial (Severe Hazard)

A City of Raleigh commercial potable water only meter service connection serving irrigation, car washing, yard hydrant use, pool filling or similar outdoor use shall be protected with a Severe Hazard containment assembly in the form of a Reduced Pressure Zone Principle Backflow assembly (RPZ) that will be required to have an operational test upon installation and annually thereafter according to City of Raleigh Cross Connection Ordinance Sec. 8-2148(a).

2.1 ACCESSIBILITY:
All *containment* backflow assemblies must be installed where the Director of Public Utilities or his designee deems them readily accessible. Readily accessible is having direct access to a backflow assembly without the need of removing any panel, door or similar covering of the item described, and without requiring the use of portable ladders, chairs, etc. The proper installation of an approved insulated enclosure may be deemed readily accessible. Enclosure clearances shall comply with ASSE Standard 1060. Clearances shall allow adequate room for servicing and maintaining the backflow assembly in the enclosure.

2.2 ALTERATIONS/MODIFICATIONS:
No backflow assembly shall be altered or modified from its approved factory configuration unless such modifications are made with strict adherence to manufacturer's recommendations. All alterations or modifications must be inspected by the Public Utilities Director or his designee.

2.3 ALTERNATE APPROVAL:
When a special circumstance precludes the ability to comply with any portion of this code, the Director of Public Utilities or his designee when presented with a detailed description of the issue may consider other options for approval.

2.4 AUTHORIZED PLUMBERS: Any assembly required to be installed by the provisions of this article or by a corrective order issued by the City of Raleigh's Public Utilities Director or his designee shall be installed by a licensed North Carolina plumbing contractor.

2.5 AUXILIARY WATER SUPPLY-COMMERCIAL (RECYCLED WATER, GREY WATER, RAIN WATER, REUSE WATER, IRRIGATION WELL, CISTERN):
Interconnections between an auxiliary water supply and the public water supply are not permitted and considered unlawful. (Sec. 8-2143) Premises where an auxiliary water supply exists or is installed shall have an approved containment RPZ installed on the public water supply service line. (Sec. 8-2147) Make-up water connections to an auxiliary water supply including but not limited to cisterns, grey water, rain water, reuse water, recycled water, and irrigation well systems shall have a containment assembly in form of an approved RPZ and/or an air gap. Any unapproved interconnection between an auxiliary water supply and a public water supply shall be corrected according to City of Raleigh's Cross Connection Ordinance, Sect. 8.

2.6 BACKFLOW ASSEMBLY APPROVALS:
All *containment* testable RPZ backflow prevention assemblies must meet or exceed standards set forth by ASSE1013 (The American Society of Sanitary Engineering) and AWWA C511(American Water Works Association) as listed by the agency's current published list and adheres to applicable ANSI and ASTM standards. You can find the list of approved backflow assemblies on the City of Raleigh's website www.raleighnc.gov or contact the Raleigh Cross-Connection Control Office, at 919-996-2373 or email, cross.connection@raleighnc.gov.

2.7 DRAIN REQUIREMENTS:
RPZ backflow assemblies are not allowed to be installed below ground level. RPZ assemblies installed in above ground enclosures shall be installed so that the relief outlet of the assembly does not become submerged. A minimum clearance of 12" must be maintained from the most bottom part of the assembly to concrete pad or floor of the enclosure. Drain port is a minimum of 4" or two times the size of the backflow assembly whichever is greater and provide positive drainage with adequate gravity drainage to atmosphere.

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2.8 ENCLOSURES:
All backflow assemblies shall be centered and secured on a 4" concrete pad, fiberglass, or approved mounting pad is unionized for winterization. (Any backflow assembly installed on an irrigation system that is unionized for winterization is not required to have a concrete pad.) All enclosures must be a minimum Class II A.S.S.E. standard 1060 insulated weatherproof enclosure. Property owner is to ensure backflow assembly is drained during winter months and protected from freezing.

If multiple backflows assemblies are installed within one enclosure, all components of each backflow assembly must be accessible for testing, repair and or replacement without having to remove another backflow assembly or piping that serves another assembly. The test cocks to all backflow assemblies must be accessible. Enclosures that are damaged and do not provide adequate freeze protection may be required to be repaired or replaced.

2.9 FLOOD PRONE AREAS:
Backflow assemblies installed in a flood plain must be installed at least 1ft above regulatory flood plain level. Raleigh City Code 10-6037

2.10 IDENTIFICATION TAG:
No one shall remove any manufacturers tag or stamp that bears pertinent information about the unit. If a manufacturers tag or stamp is removed or damaged and rendered unreadable the backflow assembly must be replaced.

2.11 INSPECTIONS:
The local Plumbing Inspector having jurisdiction shall inspect every backflow assembly that is installed, relocated or removed (other than for winterization). It is the responsibility of the installer of a backflow assembly to secure the permit and inspection or re-inspection by the local Plumbing Inspector.

2.12 LOCATION:
Provided there are no unprotected taps before the backflow assembly, lawn irrigation backflow assemblies may be installed within 50' from the most downstream edge of the meter box in a landscaped area. The backflow assembly must remain accessible and visible after landscape maturity. Backflow assemblies may not be installed in a hazardous location, traffic site triangle or within the right-of-way (ROW). The Public Utilities Director or his designee may approve alternate locations.

2.13 MATERIALS:
Piping materials shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

2.14 METER CONNECTION:
Piping materials from the meter to the backflow shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

2.15 ORIENTATION:
All backflow assemblies shall be installed in an orientation as approved by the ASSE.

2.16 PERMITS (SEE SECTION 7):
A plumbing permit is required for all new and relocated backflow installations. Replaced backflow assemblies may require a plumbing permit. To determine if a plumbing permit is required, call the local Inspections Department or permitting agency for your area. Assemblies that have been winterized are not required to have a permit for installation but are required to have an operational test before they can be put into service.

OTHER IMPORTANT NUMBERS:
City of Raleigh Inspections Department-919-996-2495
Town of Garner Inspections Department- 919-773-4433
Town of Wake Forest inspections Department-919-435-9530
Town of Rolesville Permits- 919-856-6060 (Wake County Inspections Department)
Town of Knightdale Permits- 919-856-6060 (Wake County Inspections Department)

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Town of Zebulon Permits- 919-856-6060 (Wake County Inspections Department)
Town of Wendell Permits- 919-856-6060 (Wake County Inspections Department)

2.17 PRE-EXISITING NON-COMPLIANCE ISSUE:
Any location that currently has a backflow assembly that is not installed according to the City of Raleigh's installation requirements will be considered a pre-existing noncompliance issue. If the noncompliant assembly fails its operational test and cannot be repaired, the new replacement assembly will be installed according to the COR's installation requirements for irrigation systems. Any property with a noncompliant assembly that has a test due date of more than one year overdue will no longer be considered pre-existing. All non-repairable assemblies will not be considered pre-existing. It is the consumer's responsibility to ensure that all paperwork showing compliance is submitted to the Public Utilities Cross Connection Program within the required time limit.

2.18 RELIEF OUTLET PIPING AND VALVE:
In some applications, it is practical to install a drain line off of the relief port of the RPZ assembly so that in the event that there is some spillage from the device the water can be directed to a floor drain. When drains from the relief port of an approved containment RPZ are utilized, they shall meet the following conditions:

- They must include an approved pre-fabricated "air gap drain" as available from backflow prevention assembly manufacturers.
- All relief port drain lines shall be piped to an outside point of termination and when run horizontally, shall be installed with a fall conforming with the current North Carolina State Building Code, Volume II - Plumbing.
- The RPZ relief valve shall be a minimum of 12" above any material or ground.

2.19 RELOCATION AND REPLACEMENT:
A permit is required to relocate/replace an irrigation backflow assembly. Any backflow assembly that is relocated/replaced shall be installed according to City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. Upon relocation/replacement of the backflow assembly, an operational test shall be performed by an approved City of Raleigh tester. The make, model, permit number, serial number and new location of the relocated/replaced assembly shall be noted in comments on the test report for the new assembly. (See: Permits 2.17)

2.20 REPAIRS:
If an assembly fails its operational test, the property owner will have 15 days from the annual test due date to have all repairs made. If it cannot be repaired, the assembly will need to be replaced with an approved RPZ backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. The defective parts must be replaced with factory approved parts.

2.21 RIGHT OF ENTRY:
As a condition of water service, the City of Raleigh's Public Utilities Director or his designee shall have the right to enter any building or premises served by the City of Raleigh's water system for the purpose of performing the duties established by this handbook and ordinance.

2.22 SERVICE VALVE:
The #1 shut-off valve is part of the backflow assembly may not be used as a service valve. A service valve shall be installed after the meter and prior to every backflow assembly to allow testing, maintenance and replacement of the backflow without the use of a City of Raleigh Public Utilities operating valve.

2.23 SIZING:
In no case shall a backflow assembly be smaller in line size than its outlet piping.

2.24 SUPPORT:
Backflow assemblies shall be properly supported so that stress on surrounding piping does not occur. Adequate support must be provided for the assembly in the approved orientation either vertically or horizontally. The assembly may not be supported by other piping or unapproved methods of support. (See: NC Plumbing Code Section 308.5)

2.25 TESTING:

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After June 1, 2014, all newly installed containment irrigation backflow assemblies are to be tested after the meter is set and annually thereafter. Testing of backflow assemblies shall be conducted by an approved City of Raleigh Tester at the customer's expense. The meter will not be set until the backflow assembly is installed. Meter jumpers are not approved under any condition. All water use for construction purposes is to be metered. See "construction water" under the policies and procedures section of the Public Utilities handbook. Additional testing requirements may be requested or imposed as determined by the Director of Public Utilities or his designee. It is the consumer's responsibility to keep a complete, written record of any repairs and testing of the backflow prevention assembly for at least three years.

Any location that does not have a current passing operational test report on file with the Cross Connection Program will be considered noncompliant. Residents that are in noncompliance can bring their residence into compliance by:

- **Test:** Hire a City of Raleigh approved tester to perform an operational test and submit the report to the Cross Connection Program. All test and maintenance reports shall be submitted to Cross Connection Program within 15 days of testing. Fax: 919-996-1868 or cross.connection@raleighnc.gov
- **Inactivate:** If an irrigation meter is present, it may be removed by calling 919-890-3245 and the meter will be pulled and the irrigation account marked inactive. Upon notification from the consumer and verification of the CC program that the irrigation account is inactive, the resident's information will be removed from the current backflow records.
- **Terminate:** To permanently remove an irrigation backflow assembly, all controls and valves shall be removed with the piping capped or plugged below ground near the source of connection. The meter box, if existing shall be removed. A plumbing permit and inspection is required to cap or plug piping. **Note:** Irrigation systems that are re-activated must be done with a separate meter and all City of Raleigh and NC Plumbing code policies on new installations must be followed.

Failed Operational Test: If an assembly fails its operational test, the consumer will have 15 days to have all repairs made. If the assembly cannot be repaired, the assembly will need to be replaced with an approved RPZ backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code.

2.26 WINTERIZATION:

Irrigation backflow assemblies may be removed for the winter and shall be installed once the danger of frost has passed. The backflow assembly for a lawn irrigation system may be removed for winterization when installed with unions and an upstream shut off valve not subject to freezing.

Upon reinstallation of a winterized backflow assembly, an operational test must be conducted and the test report submitted to the Cross Connection Control Program.

2.27 WATER SERVICE:

To start a water service account with the City of Raleigh, please call Utility Billing at 919-890-3245. All commercial accounts and residential customers that have an irrigation and/or fire sprinkler system are required to have approved containment backflow assemblies. A *Certificate of Compliance* must be obtained before a water service account can be started. (See Section 7: Certificate of Compliance)

2.28 WYE STRAINER:

Irrigation assemblies shall have a wye strainer installed after the meter and before the #1 shutoff valve of the backflow assembly.

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SECTION 3 – Domestic Systems- (Moderate and Severe Hazard)

The following are the requirements for domestic service connections to the City of Raleigh Water System: There shall not be any unprotected interconnection between potable water and fire lines or auxiliary water supplies. All backflow assemblies installed on domestic systems shall be either a Double Check backflow assembly (DCVA) for moderate hazard installations or a Reduced Pressure Zone backflow assembly (RPZ) for severe hazard installations

3.1 ACCESSIBILITY:
All *containment* backflow assemblies must be installed where the Director of Public Utilities or his designee deems them readily accessible. Readily accessible is having direct access to a backflow assembly without the need of removing any panel, door or similar covering of the item described, and without requiring the use of portable ladders, chairs, etc. The proper installation of an insulated enclosure may be deemed readily accessible. Enclosure clearances shall comply with ASSE Standard 1060. Clearances shall allow adequate room for servicing and maintaining the backflow assembly in the enclosure.

3.2 ALTERATIONS/MODIFICATIONS:
No backflow assembly shall be altered or modified from its approved factory configuration unless such modifications are made with strict adherence to manufacturer's recommendations. All alterations or modifications must be approved by the Public Utilities Director or his designee.

3.3 ALTERNATE APPROVAL:
When a special circumstance precludes the ability to comply with any portion of this code, the Director of Public Utilities or his designee when presented with a detailed description of the issue may consider other options for approval.

3.4 AUTHORIZED PLUMBERS: Any assembly required to be installed by the provisions of this article or by a corrective order issued by the City of Raleigh's Public Utilities Director or his designee shall be installed by a licensed North Carolina plumbing contractor.

3.5 AUXILIARY WATER SUPPLY-RESIDENTIAL (RECYCLED WATER, GREY WATER, RAIN WATER, REUSE WATER, IRRIGATION WELL, CISTERN):
Interconnections between an auxiliary water supply and the public water supply are not permitted and considered unlawful. (Sec. 8-2143) Premises where an auxiliary water supply exists or is installed shall have an approved containment RPZ installed on the public water supply service line. (Sec. 8-2147) Make-up water connections to an auxiliary water supply including but not limited to cisterns, grey water, rain water, reuse water, recycled water, and irrigation well systems shall have a containment assembly in form of an approved RPZ and an air gap. Any unapproved interconnection between an auxiliary water supply and a public water supply shall be corrected according to City of Raleigh's Cross Connection Ordinance, Sect. 8.

3.6 BACKFLOW ASSEMBLY APPROVALS:
All *containment* RPZ backflow assemblies must meet or exceed standards set forth by ASSE 1013 (The American Society of Sanitary Engineering) and AWWA C511 (American Water Works Association) and DCVA backflow assemblies must meet or exceed standards set forth by ASSE 1015 and AWWA C511as listed by the agency's current published list and adhere to applicable ANSI and ASTM standards. You can find the list of approved backflow assemblies on the City of Raleigh's website www.raleighnc.gov or contact the Raleigh Cross-Connection Control Office, at 919-996-2373 or email, cross.connection@raleighnc.gov.

3.7 BYPASS /PARALLEL INSTALLATION:
Facilities that by the nature of their business cannot shut down their water systems to provide for backflow assembly testing, repairs, etc. shall be required to install a bypass backflow assembly of the same type and in some *cases* the same size as the main line unit. The rule to size the bypass/parallel unit is the assembly must have the square diameters equal to the square of the supply service "tap". For instance an 8" service would need at a minimum two six inch assemblies in parallel. This is a minimum; ultimately the total capacity of the assemblies should equal or exceed the required flow for the application.

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3.8 CULINARY USE:
Backflow assemblies used for culinary purposes such as canned food preparation or in dairies shall have a FDA (Food and Drug Administration) approved coating and shall be stamped with appropriate seal.

3.9 DEAD END:
A containment backflow assembly shall be installed on a private distribution system that dead ends.

3.10 DRAIN REQUIREMENTS:
DCVA DRAINAGE REQUIREMENTS:
DCVA backflow assemblies are not allowed to be installed below ground level. DCVA assemblies installed in an above ground enclosure shall be installed so that the assembly does not become submerged. A minimum of clearance of 12" must be maintained from the most bottom part of the assembly to the concrete pad or floor of the enclosure. Drain size shall be twice the diameter of the backflow assembly or 4" minimum whichever is greater and must provide a means of positive drainage with adequate gravity drainage to atmosphere.

Existing Installations:
All existing DCVAs installed below ground shall be considered a pre-existing noncompliance issue.
(See: Pre-existing noncompliance)

RPZ BACKFLOW DRAIN REQUIREMENTS**:**
All RPZ backflow assemblies are not allowed to be installed below ground level. RPZ assemblies installed in above ground enclosures shall be installed so that the relief outlet of the assembly does not become submerged. A minimum clearance of 12" must be maintained from the most bottom part of the assembly to concrete pad or floor of the enclosure. Drain size shall be twice the diameter of the backflow assembly or 4" minimum whichever is greater and must provide a means of positive drainage with adequate gravity drainage to atmosphere.
Existing Installation:
All existing RPZ assemblies installed below ground or at a location will be considered pre-existing noncompliance issue. (See: Pre-existing Noncompliance)

3.10 ENCLOSURES:
All backflow assemblies installed above ground shall be centered and secured on a 4" concrete, fiberglass, or approved mounting pad. All approved containment backflow assemblies must be protected from freezing. All enclosures must be an A.S.S.E. standard 1060 Class I- Freeze Protection Enclosure (Heated) or a Class II Freeze Retardant Enclosure (Non-Heated).

If multiple backflows assemblies are installed within one enclosure, all components of each backflow assembly must be accessible for testing, repair and or replacement without having to remove another backflow assembly or piping that serves another assembly. The test cocks to all backflow assemblies must be accessible. Enclosures that are damaged and do not provide adequate freeze protection may be required to be repaired or replaced.

3.11 FLOOD PRONE AREAS:
Backflow prevention assemblies installed in a flood plain must be installed at least 1ft above regulatory flood plain level. Raleigh City Code 10-6037

3.12 HAZARDOUS USES:
Hazards are divided into the following categories:

A) Residential Moderate Hazard- Dual Check Valves
Single family residential service ¾" and 1" without an auxiliary water supply or other high hazard application within the property boundaries shall have a dual check valve installed.

B) Moderate Hazard – DCVA:

1. All other connections not defined as high hazard, including but not limited to individual office buildings for Lawyers, Insurance Agents, Financial Advisors, Real Estate Agencies, Banks etc. (conditional upon the existence of a higher hazard within the building as listed below)
2. Fire sprinkler systems without chemicals

C) Severe Hazard- RPZ and/or Air Gap:

1. All lawn sprinkler systems or yard hydrants.
2. Wastewater treatment plants, pumps and tanks handling sewage, sewer waste lines.
3. Make-up water connections to a private non-potable auxiliary water system water supply including but not limited to cisterns, grey water, rain water collection and irrigation well systems. RPZ and AIR GAP required.
4. Connection to tanks, pumps, lines, boiler and steam connections and vessels that handles sewage, lethal substances toxic or radioactive substances. Coils or jackets used as heat exchangers, flush valve toilets without vacuum breaks, bacterial and viral materials, water systems or hose connections, with booster pumps, carbonation equipment or similar hazard.
5. Buildings with five or more stories above ground level.
6. Hospitals, dental offices and other medical facilities that may have x-ray equipment, laboratory, medical washing equipment, autoclaves etc., vacuum pumps.(Includes psychology and psychiatric offices that administer medications)
7. Morgues, mortuaries and autopsy facilities
8. Metal plating or fabrication facilities
9. Bottling plants
10. Canneries, Packing House, Poultry House
11. Battery manufacturers
12. Exterminators
13. Lawn care companies, Green house
14. Chemical processing plants
15. Dairies
16. Film laboratories
17. Car wash facilities
18. Dye works
19. Laundries
20. Swimming pools
21. Water front facilities
22. Restaurants
23. Flex space occupancies such as strip centers and mall buildings or spaces approved for multiple types of occupancy use.
24. Power plant, Nuclear Reactor
25. In any location where an approved containment RPZ is required for isolation of a contaminant an approved RPZ is required for containment.
26. Single family residential properties that have an auxiliary water supply or other high hazard application within the property boundaries shall install an approved containment RPZ on the public water supply service line or a meter designed to detect backpressure. A water fee only meter requires an approved containment RPZ regardless of proposed use.
27. Hazard level is unknown at the time of review.

Notes:

1) Under no circumstances will a potable water line be directly or indirectly connected to any piping or equipment that conveys sewage.
2) No person shall fill special use tanks or tankers containing pesticides, fertilizers, or other toxic chemicals or their residues from a public water system except at a location equipped with an approved air gap (2 times diameter of supply pipe with a 1” minimum) No supplier of water shall permit filling of such special use containers except at locations so equipped.
3) This is not an exhaustive list. Any other hazard not specifically listed shall be determined by the Public Utilities Director or his designee.

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3.13 IDENTIFICATION TAG:
No one shall remove any manufacturers tag or stamp that bears pertinent information about the unit. If a manufacturers tag or stamp is removed or damaged and rendered unreadable the assembly must be replaced.

3.14 INSPECTIONS:
The local Plumbing Inspector having jurisdiction shall inspect every assembly that is installed, relocated or removed. It is the responsibility of the installer of a backflow prevention assembly to secure the permit and inspection or re-inspection by the local Plumbing Inspector.

3.15 LOCATION:
Backflow assemblies may not be installed in a hazardous location, traffic site triangle or within the right-of-way (ROW). For example: the slope of a hill without a level work area. Containment backflow assemblies shall be installed within 50' of the downstream (private) side of the meter box. Provided there are no unprotected taps before the backflow assembly, backflows may be installed inside of buildings. Containment backflow assemblies installed inside a building may require an approved backflow assembly to contain the private distribution system that dead ends or loops. The backflow assembly must remain accessible and visible after landscape maturity. The Public Utilities Director or his designee may approve alternate locations for facilities with zero lot line limitations.

3.16 LOOPED SYSTEMS:
Each individual service (fire, domestic or irrigation) on a private looped system shall be protected with a backflow assembly as well as each point of connection of the looped system to the main. When looping is not possible, a containment backflow assembly shall be installed on the dead end at the ROW. *See PUD Handbook WATER DESIGN PRIVATE for definition of Looped Systems.*

3.17 MATERIALS:
Piping materials shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

3.18 METER CONNECTION:
Piping materials from the meter to the backflow shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

3.19 ORIENTATION:
All backflow assemblies shall be installed in an orientation as approved by the ASSE.

3.20 PERMITS (SEE SECTION 7):
A plumbing permit is required for all new and relocated backflow installations. Replaced backflow assemblies may require a plumbing permit. To determine if a plumbing permit is required, call the local Inspections Department or permitting agency for your area. Assemblies that have been winterized are not required to have a permit for installation but are required to have an operational test before they can be put into service.

OTHER IMPORTANT NUMBERS:
City of Raleigh Inspections Department-919-996-2495
Town of Garner Inspections Department- 919-773-4433
Town of Wake Forest inspections Department-919-435-9530
Town of Rolesville Permits- 919-856-6060 (Wake County Inspections Department)
Town of Knightdale Permits- 919-856-6060 (Wake County Inspections Department)
Town of Zebulon Permits- 919-856-6060 (Wake County Inspections Department)
Town of Wendell Permits- 919-856-6060 (Wake County Inspections Department)

3.21 PRE-EXISITING NON-COMPLIANCE ISSUE:
Any location that currently has a backflow assembly that is not installed according to the City of Raleigh's installation requirements will be considered a pre-existing noncompliance issue. If the noncompliant assembly fails its operational test and cannot be repaired, the new replacement assembly will be installed according to the COR's installation requirements for commercial irrigation systems. Any property with a noncompliant assembly that has a

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test due date of more than one year overdue will no longer be considered pre-existing. All non-repairable assemblies will not be considered pre-existing. It is the consumer's responsibility to ensure that all paperwork showing compliance is submitted to the Public Utilities Cross Connection Program within the required time limit.

3.22 RELIEF OUTLET PIPING AND VALVE:

In some applications, it is practical to install a drain line off of the relief port of the RPZ assembly so that in the event that there is some spillage from the device the water can be directed to a floor drain. When drains from the relief port of an approved containment RPZ are utilized, they shall meet the following conditions:

- They must include an approved pre-fabricated "air gap drain" as available from backflow prevention assembly manufacturers.
- All relief port drain lines shall be piped to an outside point of termination and when run horizontally, shall be installed with a fall conforming with the current North Carolina State Building Code, Volume II - Plumbing.
- The RPZ relief valve shall be a minimum of 12" above any material or ground.

3.23 RELOCATION AND REPLACEMENT:

A permit is required to relocate/replace a backflow assembly. Any backflow assembly that is relocated/replaced shall be installed according to City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. Upon relocation/replacement of the backflow assembly, an operational test shall be performed by an approved City of Raleigh tester. The make, model, permit number, serial number and new location of the relocated/replaced assembly shall be noted in comments on the test report for the new assembly. (See: Permits 3.21)

3.24 REPAIRS:

If an assembly fails its operational test, the property owner will have 15 days to have all repairs made. If it cannot be repaired, the assembly will need to be replaced with an approved backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. The defective parts must be replaced with factory approved parts.

3.25 RIGHT OF ENTRY:

As a condition of water service, the City of Raleigh's Public Utilities Director or his designee shall have the right to enter any building or premises served by the City of Raleigh's water system for the purpose of performing the duties established by this handbook and ordinance.

3.26 SERVICE VALVE:

The #1 shut-off valve of the backflow assembly may not be used as a service valve. A service valve shall be installed after the meter and prior to every backflow assembly to allow testing, maintenance and replacement of the backflow without the use of a City of Raleigh Public Utilities operating valve. The service valve shall be installed underground and a minimum of 18" distance from meter.

3.27 SIZING:

In no case shall a backflow assembly be smaller in line size than its outlet piping.

3.28 SUPPORT:

Backflow assemblies shall be properly supported so that stress on surrounding piping does not occur. Adequate support must be provided for the assembly in the approved orientation either vertically or horizontally. The assembly may not be supported by other piping or unapproved methods of support. (See: NC Plumbing Code Section 308.5)

3.29 TESTING:

Testing of backflow assemblies shall be conducted by an approved City of Raleigh Tester at the customer's expense. All newly installed backflow assemblies are to be tested by an approved tester after the meter is set and annually thereafter. The meter will not be set until the backflow assembly is installed. Meter jumpers are not approved under any condition. All water use for construction purposes is to be metered. See "construction water" under the policies and procedures section of the Public Utilities handbook. Additional testing requirements may be requested or

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imposed as determined by the Director of Public Utilities or his designee. It is the consumer's responsibility to keep a complete, written record of any repairs and testing of the backflow assembly for at least three years.

Any location that does not have a current passing operational test report on file with the Cross Connection Program will be considered noncompliant. Consumers that are in noncompliance can bring their facility into compliance by:

- **Test:** hire a City of Raleigh approved tester to perform an operational test and submit the report to the Cross Connection Program. All test and maintenance reports shall be submitted to Cross Connection Program within 15 days of testing. Fax: 919-996-1868 or cross.connection@raleighnc.gov
- **Terminate:** To permanently remove a backflow assembly, all controls and valves shall be removed with the piping capped or plugged below ground near the source of connection. The meter box, if existing shall be removed. A plumbing permit and inspection is required to cap or plug piping.

Failed Operational Test: If an assembly fails its operational test, the approved tester shall submit the failing test and maintenance report within 15 days and the property owner will have 15 days to have all repairs made. If the assembly cannot be repaired, the assembly will need to be replaced with an approved RPZ backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code.

3.30 THERMAL EXPANSION:

Where a backflow assembly, check valve or other assembly/device is installed within private water supply system utilizing water storage heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.

3.31 WATER SERVICE

To start a water service account with the City of Raleigh, please call Utility Billing at 919-890-3245. All commercial accounts and residential customers that have an irrigation and/or fire sprinkler system are required to have approved containment backflow assemblies. A *Certificate of Compliance* must be obtained before a water service account can be started. (See Section 7: Certificate of Compliance)

3.32 WYE STRAINER:

Domestic backflow assemblies shall have a wye strainer installed after the meter and before the #1 shutoff valve of the backflow assembly.

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SECTION 4 – Fire (Moderate and Severe Hazard)

The following are the requirements for fire service connections to the City of Raleigh Water System:
There shall not be any unprotected interconnection between potable water and fire lines. All backflow prevention assemblies installed on fire suppression systems shall be either a Double Check Detector Assembly (DCDA) for moderate hazard installations or a Reduced Pressure Detector Assembly (RPDA) for severe hazard installations. All meters on the detector by-pass must read in cubic feet. All fire backflow prevention assemblies shall meet all installation requirements as applicable. All assemblies used in fire suppression systems must have USC and ASSE, FM or UL approvals as required by the Raleigh City Code and the North Carolina Building Code. (Fire and Plumbing)

4.1 ACCESSIBILITY:
All *containment* backflow assemblies must be installed where the Director of Public Utilities or his designee deems them readily accessible. Readily accessible is having direct access to a backflow assembly without the need of removing any panel, door or similar covering of the item described, and without requiring the use of portable ladders, chairs, etc. The proper installation of an insulated enclosure may be deemed readily accessible. Enclosure clearances shall comply with ASSE Standard 1060. Clearances shall allow adequate room for servicing and maintaining the backflow assembly in the enclosure.

4.2 ALTERATIONS/MODIFICATIONS:
No backflow assembly shall be altered or modified from its approved factory configuration unless such modifications are made with strict adherence to manufacturer's recommendations. All alterations or modifications must be inspected by the Public Utilities Director or his designee.

4.3 ALTERNATE APPROVAL:
When a special circumstance precludes the ability to comply with any portion of this code, the Director of Public Utilities or his designee when presented with a detailed description of the issue may consider other options for approval.

4.4 AUTHORIZED INSTALLERS: Any containment fire sprinkler backflow assembly required to be installed by the provisions of this article or by a corrective order issued by the City of Raleigh's Public Utilities Director or his designee shall be installed by a licensed North Carolina plumbing contractor or fire sprinkler contractor.

4.5 AUXILIARY WATER SUPPLY-RESIDENTIAL (RECYCLED WATER, GREY WATER, RAIN WATER, REUSE WATER, IRRIGATION WELL, CISTERN):
Interconnections between an auxiliary water supply and the public water supply are not permitted and considered unlawful. (Sec. 8-2143) Premises where an auxiliary water supply exists or is installed shall have an approved containment RPZ installed on the public water supply service line. (Sec. 8-2147) Make-up water connections to an auxiliary water supply including but not limited to cisterns, grey water, rain water, reuse water, recycled water, and irrigation well systems shall have a containment assembly in form of an approved RPZ and an air gap. Any unapproved interconnection between an auxiliary water supply and a public water supply shall be corrected according to City of Raleigh's Cross Connection Ordinance, Sect. 8.

4.6 BACKFLOW ASSEMBLY APPROVALS:
All *containment* RPZ backflow assemblies must meet or exceed standards set forth by ASSE 1013 (The American Society of Sanitary Engineering) and AWWA C511 (American Water Works Association) and DCVA backflow assemblies must meet or exceed standards set forth by ASSE 1015 and AWWA C511as listed by the agency's current published list and adhere to applicable ANSI and ASTM standards. All *containment* Reduced Pressure Detector (RPDA) backflow assemblies must meet or exceed standards set forth by ASSE 1047 and Double Check Detector (DCDA) backflow assemblies must meet or exceed standards set forth by ASSE 1048. You can find the list of approved backflow assemblies on the City of Raleigh's website www.raleighnc.gov or contact the Raleigh Cross-Connection Control Office, at 919-996-2373 or email, cross.connection@raleighnc.gov.

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4.7 BYPASS /PARALLEL INSTALLATION:

Facilities that by the nature of their business cannot shut down their water systems to provide for backflow assembly testing, repairs, etc. shall be required to install a bypass backflow assembly of the same type and in some cases the same size as the main line unit. The rule to size the bypass/parallel unit is the assembly must have the square diameters equal to the square of the supply service "tap". For instance an 8-in service would need at a minimum two six inch assemblies in parallel. This is a minimum; ultimately the total capacity of the assemblies should equal or exceed the required flow for the application.

4.8 DRAIN REQUIREMENTS:

DCVA/DCDA DRAINAGE REQUIREMENTS:

DCVA/DCDA backflow assemblies are not allowed to be installed below ground level. DCVA/DCDA assemblies installed in an above ground enclosure shall be installed so that the assembly does not become submerged. A minimum of clearance of 12" must be maintained from the most bottom part of the assembly to the concrete pad or floor of the enclosure. Drain size shall be twice the diameter of the backflow assembly or 4" minimum whichever is greater and must provide a means of positive drainage with adequate gravity drainage to atmosphere.

Existing Installations:

All existing DCVA/DCDA backflow assemblies installed below ground shall be considered a pre-existing noncompliance issue. (See: Pre-existing noncompliance)

RPZ/RPDA BACKFLOW DRAIN REQUIREMENTS**:**

All RPZ/RPDA backflow assemblies are not allowed to be installed below ground level. RPZ/RPDA backflow assemblies installed in above ground enclosures shall be installed so that the relief outlet of the assembly does not become submerged. A minimum clearance of 12" must be maintained from the most bottom part of the assembly to concrete pad or floor of the enclosure. Drain size shall be twice the diameter of the backflow assembly or 4" minimum whichever is greater and must provide a means of positive drainage with adequate gravity drainage to atmosphere.

Existing Installation:

All existing RPZ/RPDA backflow assemblies installed below ground or at a location will be considered pre-existing noncompliance issue. (See: Pre-existing Noncompliance)

4.9 ENCLOSURES:

All backflow assemblies installed above ground shall be centered and secured on a 4" concrete pad. All enclosures must be a Class 1 A.S.S.E. Standard 1060 certified. Installing a permanent hard piped electrical service according to NC Electrical code to a thermostatically controlled heater or heat trace is required to ensure that the unit does not freeze during prolonged periods of extreme cold weather conditions.

If multiple backflows assemblies are installed within one enclosure, all components of each backflow assembly must be accessible for testing, repair and or replacement without having to remove another backflow assembly or piping that serves another assembly. The test cocks to all backflow assemblies must be accessible. Enclosures that are damaged and do not provide adequate freeze protection may be required to be repaired or replaced.

4.10 FIRE DEPARTMENT CONNECTIONS:

If a FDC is installed on a heated enclosure, there is a minimum of 4' of empty pipe required between check valve and outside of box. (See Detail Drawing FP-17, FP-18) If the building has a fire pump, the FDC must be installed on the system side of the pump and not at the enclosure. The FDC cannot be installed on the supply at the street if the backflow assembly is inside the building.

4.11 FLOOD PRONE AREAS:

Backflow prevention assemblies installed in a flood plain must be installed at least 1ft above regulatory flood plain level. Raleigh City Code 10-6037

4.12 HAZARDOUS USES

HIGH HAZARD FIRE SPRINKLER SYSTEMS REQUIRING A CONTAINMENT RPDA:

- Systems with booster pump facilities (such as fire department connections [FDCs])
- Systems with transfer pumps

- Systems with storage tanks (plus air gap)
- Systems with antifreeze solutions
- Systems serving *5* or more stories above ground level of the backflow assembly
- Systems that are not behind a master meter (RPZ allowed on systems after a master meter)

LOW HAZARD FIRE SPRINKLER SYSTEMS REQUIRING A CONTAINMENT DCDA:

- Systems less than 5 stories above ground level with no pumps. storage tanks or chemical additives
- Dry pipe systems
- Systems that are not behind a master meter (DCVA allowed on systems after a master meter)

4.13 IDENTIFICATION TAG:

No one shall remove any manufacturers tag or stamp that bears pertinent information about the unit. If a manufacturers tag or stamp is removed or damaged and rendered unreadable the assembly must be replaced.

4.14 INSPECTIONS:

The local Plumbing Inspector and Fire Inspector having jurisdiction shall inspect every fire backflow prevention assembly that is installed, relocated or removed. It is the responsibility of the installer of a backflow prevention assembly to secure the permit and inspection or re-inspection by the local Plumbing Inspector.

4.15 LOCATION:

Backflow assemblies may not be installed in a hazardous location, traffic site triangle or within the right-of-way (ROW). For example: the slope of a hill without a level work area. Containment backflow assemblies shall be installed within 50' of the downstream (private) side of the meter or ROW (End of meter box or ROW line to end of backflow pad). Provided there are no unprotected taps before the backflow assembly, backflows may be installed inside of buildings. Containment backflow assemblies installed inside a building may require an approved backflow assembly to contain the private distribution or fire sprinkler system that dead ends or loops. The backflow assembly must remain accessible and visible after landscape maturity. The Public Utilities Director or his designee may approve alternate locations for facilities with zero lot line limitations.

4.16 LOOPED SYSTEMS

Each individual service, (fire, domestic or irrigation) to the private loop shall be protected with a backflow assembly. When looping is not possible, a containment backflow assembly shall be installed at the ROW. *See PUD Handbook WATER DESIGN PRIVATE for definition of Looped Systems*.

4.17 MATERIALS:

Piping materials shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

4.18 METER CONNECTION:

Piping materials from the meter to the backflow shall conform to one of the standards listed in table 605.3 for water service pipe and 605.4 for water distribution pipe.

4.19 MODIFICATION OF DCDA/RPDA UNITS:

When the DCDA/RPDA bypass is in need of replacement, the defective parts must be replaced with factory approved parts (i.e. the bypass backflow assembly or bypass meter must be replaced with a unit of the same size, brand and model number) since the detector assembly and main line unit are a matched set from the factory. All components of a backflow assembly shall be accessible without having to remove piping that serves the FDC connection.

4.20 ORIENTATION:

All backflow assemblies shall be installed in an orientation as approved by the USC Foundation for Cross Connection Control.

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4.21 PERMITS (SEE SECTION 7):
A plumbing permit is required for all new and relocated backflow installations. Replaced backflow assemblies may require a plumbing permit. To determine if a plumbing permit is required, call the local Inspections Department or permitting agency for your area. Assemblies that have been winterized are not required to have a permit for installation but are required to have an operational test before they can be put into service.

OTHER IMPORTANT NUMBERS:
City of Raleigh Inspections Department-919-996-2495
Town of Garner Inspections Department- 919-773-4433
Town of Wake Forest inspections Department-919-435-9530
Town of Rolesville Permits- 919-856-6060 (Wake County Inspections Department)
Town of Knightdale Permits- 919-856-6060 (Wake County Inspections Department)
Town of Zebulon Permits- 919-856-6060 (Wake County Inspections Department)
Town of Wendell Permits- 919-856-6060 (Wake County Inspections Department)

4.22 PRE-EXISITING NON-COMPLIANCE ISSUE:
Any location that currently has a backflow assembly that is not installed according to the City of Raleigh's installation requirements will be considered a pre-existing noncompliance issue. If the noncompliant assembly fails its operational test and cannot be repaired, the new replacement assembly shall be installed according to the COR's installation requirements for fire systems. Any property with a noncompliant assembly that has a test due date of more than one year overdue will no longer be considered pre-existing. All non-repairable assemblies will not be considered pre-existing. It is the consumer's responsibility to ensure that all paperwork showing compliance is submitted to the Public Utilities Cross Connection Program within the required time limit.

4.23 PRIVATE FIRE HYDRANTS AND DEAD END MAIN LINES:
All fire systems, fire hydrant lines and dead end mains extending more than 75 feet from the Right of Way (ROW) are considered to be dead end systems. To avoid accumulation of stagnant water in the city main an approved backflow prevention assembly shall be installed within 10 feet of the ROW/Private Property line. Backflows may not be installed in the ROW or in within a traffic sight triangle.

4.24 RELIEF OUTLET PIPING:
In some applications, it is practical to install a drain line off of the relief port of the RPZ assembly so that in the event that there is some spillage from the device the water can be directed to a floor drain. When drains from the relief port of an approved containment RPZ are utilized, they shall meet the following conditions:

- They must include an approved pre-fabricated "air gap drain" as available from backflow prevention assembly manufacturers.
- All relief port drain lines shall be piped to an outside point of termination and when run horizontally, shall be installed with a fall conforming with the current North Carolina State Building Code, Volume II - Plumbing.
- The RPZ relief valve shall be a minimum of 12" above any material or ground.

4.25 RELOCATION AND REPLACEMENT:
A plumbing and fire permit is required to relocate/replace a backflow assembly. Any backflow assembly that is relocated/replaced shall be installed according to City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. Upon relocation/replacement of the backflow assembly, an operational test shall be performed by an approved City of Raleigh tester. The make, model, permit number, serial number and new location of the relocated/replaced assembly shall be noted in comments on the test report for the new assembly.

When the DCDA/RPDA bypass is in need of replacement, the defective parts must be replaced with factory approved parts (i.e. the bypass backflow assembly or bypass meter must be replaced with a unit of the same size, brand and model number) since the detector assembly and main line unit are a matched set from the factory. All components of a backflow assembly shall be accessible without having to remove piping that serves the FDC connection.
(See: Permits 4.21)

4.26 REPAIRS:
If an assembly fails its operational test, the property owner will have 15 days to have all repairs made. If it cannot be repaired, the assembly will need to be replaced with an approved RPZ backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code. The defective parts must be replaced with factory approved parts.

4.27 RIGHT OF ENTRY:
As a condition of water service, the City of Raleigh's Public Utilities Director or his designee shall have the right to enter any building or premises served by the City of Raleigh's water system for the purpose of performing the duties established by this handbook and ordinance.

4.28 SERVICE VALVE:
The #1 shut-off valve of the backflow assembly may not be used as a service valve. A service valve shall be installed after the meter and prior to every backflow assembly to allow testing, maintenance and replacement of the backflow without the use of a City of Raleigh Public Utilities operating valve. The service valve shall be brass or ductile iron, installed underground, a minimum of 18" distance from meter.

4.29 SIZING:
In no case shall a backflow assembly be smaller in line size than its outlet piping.

4.30 SUPPORT:
Backflow assemblies shall be properly supported so that stress on surrounding piping does not occur. Adequate support must be provided for the assembly in the approved orientation either vertically or horizontally. The assembly may not be supported by other piping or unapproved methods of support. (See: NC Plumbing Code Section 308.5)

4.31 TESTING:
Testing of backflow assemblies shall be conducted by an approved City of Raleigh Tester at the customer's expense. All newly installed backflow assemblies are to be tested after the meter is set and annually thereafter. The meter will not be set until the backflow assembly is installed. Meter jumpers are not approved under any condition. A Fire service water line may not be used to provide water for any purpose other than fire sprinkler systems. All water use for construction purposes is to be metered. See "construction water" under the policies and procedures section of the Public Utilities handbook. Additional testing requirements may be requested or imposed as determined by the Director of Public Utilities or his designee. It is the consumer's responsibility to keep a complete, written record of any repairs and testing of the backflow assembly for at least three years.

Any location that does not have a current passing operational test report on file with the Cross Connection Program will be considered noncompliant. Consumers that are in noncompliance can bring their facility into compliance by:

- **Test:** hire a City of Raleigh approved tester to perform an operational test and submit the report to the Cross Connection Program
- **Terminate:** To permanently remove a backflow assembly, all controls and valves shall be removed with the piping capped or plugged below ground near the source of connection. The meter box, if existing shall be removed. A plumbing permit and inspection is required to cap or plug piping.

Failed Operational Test: If an assembly fails its operational test, the property owner must immediately notify the ***Fire Marshal's*** office. The property owner will have 15 days to have all repairs made and the passing operational test turned into the Cross Connection Control Program. If the assembly cannot be repaired, the assembly will need to be replaced with an approved backflow assembly according to the City of Raleigh's Cross Connection ordinances, handbook, and NC State Plumbing Code.

4.31 WATER SERVICE
To start a water service account with the City of Raleigh, please call Utility Billing at 919-890-3245. All commercial accounts and residential customers that have an irrigation and/or fire sprinkler system are required to have approved containment backflow assemblies. A *Certificate of Compliance* must be obtained before a water service account can be started. (See Section 7: Certificate of Compliance)

4.32 WYE STRAINER:
No strainer shall be allowed on a fire suppression system.

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SECTION 5 – Auxiliary Water Systems- (Severe Hazard)

5.1 AUXILIARY WATER SUPPLY (RECYCLED, GREY WATER, RAIN WATER, IRRIGATION WELL, and CISTERN):

Interconnections between an auxiliary water supply and the public potable water supply are not approved. The minimum system separation shall be an air gap and/or a RPZ installed for containment protection of the public water service supply at locations where an auxiliary water system is proposed or exists.

5.2 RESIDENTIAL/COMMERCIAL AUXILIARY WATER SYSTEMS:

Interconnections between an auxiliary water supply and the public water supply are not permitted and considered unlawful. (Sec. 8-2143) Premises where an auxiliary water supply exists or is installed shall have an approved containment RPZ installed on the public water supply service line or a water meter designed to detect backpressure and/or backsiphonage. (Sec. 8-2147) Make-up water connections to an auxiliary water supply including but not limited to cisterns, grey water, rain water, reuse water, recycled water, and irrigation well systems shall have a containment assembly in form of an approved containment RPZ and an air gap. Any unapproved interconnection between an auxiliary water supply and a public water supply shall be corrected according to City of Raleigh's Cross Connection Ordinance, Sect. 8.

When a reservoir or elevated tank is filled from a supply other than a public water supply and the public water supply is used as a supplemental supply, the pipeline from the public water supply shall be installed in such a manner that the water will be discharged over the top or rim of the reservoir or elevated tank. There shall be a complete physical break between the outlet end of the fill pip and the top or overflow rim of the tank or reservoir of at least twice the inside diameter of the inlet pipe.

No public water supply shall be connected by any means whatever to another source of water supply or to a storage facility. No physical connection shall be made between an approved public water supply and unapproved public water supply.

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Section 6 - Authorized Testers and Repair Technicians

The City of Raleigh requires that a certified tester perform all testing. A certified tester is a person who has proven their competency to perform an operational test using a nationally accepted process, repair, overhaul and accurately complete reports on backflow assemblies as evidenced by the successful completion of an approved Cross-Connection Control School and compliance with all rules, regulations and policies associated with the City of Raleigh Public Utilities, State of North Carolina DENR rules, The North Carolina Plumbing Code and the applicable Contractors licensing board. All contractors who wish to test within the Raleigh Water System must be registered with the City of Raleigh's Cross Connection Control Program and attend an annual orientation.

Information regarding training programs recognized by the City of Raleigh's Cross Connection Control Program, tester's lists and test kit information is available by contacting the City of Raleigh's Cross Connection Program Staff at 919-996-2373 or cross.connection@raleighnc.gov. Additional requirements may be implemented at the request of the Director of Public Utilities or his designee or to comply with the rules regulations and policies of the State of NC Public Water Supply, the City of Raleigh Public Utilities, the NC Plumbing Code and the associated NC Contractors licensing rules.

A current copy of the following information is required to be on file with the Cross Connection Control Program office in order to be eligible to test within the City of Raleigh's water service area:

- Testers Certificate of training and subsequent recertification training
- Annual Test kit calibration
- Completed Orientation packet

The certified tester is responsible for correctly completing and submitting all test forms to the City's Cross-Connection Control Program within 15 days of testing. Reports received from testers not registered with the City of Raleigh Cross Connection program will not be accepted. The owner will be notified to provide an operational test performed by a Tester approved to test within the Raleigh water system. It is the owner's responsibility to keep a complete, written record of any repairs and testing of the backflow assembly for at least three years.

The Director of Public Utilities or his designee may suspend, revoke or impose probationary provisions for a tester found guilty of fraud or deceit or who fails to comply with any provision or requirement of the Raleigh City Code, or rule, or policy and for gross negligence, incompetency, or misconduct, in the practice of backflow installation, testing, repair or replacement. The City of Raleigh will recognize and comply with any action taken by another agency to suspend, impose probationary provisions or revoke authorization to test or repair, associated with the business of backflow installation, testing or repair. The Public Utilities Director or his designee may provide an opportunity for an approved tester who has been suspended from testing to obtain reconsideration of said action upon receipt of a written request received no later than 10 days following the effective date of suspension.

The City of Raleigh may disqualify an Approved Certified Tester for failure to meet the qualification established by the Department. The Department shall provide written notice to the Certified Tester, mailed to the address the Tester has provided to the Cross Connection Program, setting forth the reasons for disqualification. Disqualification shall be effective three days after such mailing. The City shall also give either fax or email notification of enforcement to the Tester if the tester has provided a fax or email address. The City shall provide an opportunity for the Tester who has been disqualified to obtain reconsideration by the Public Utilities Director or his designee upon written request received no later than 10 days following the effective date of disqualification.

Any assembly required to be installed by the provision of this article or by a corrective order issued by the Public Utilities Director or his designee or as required by the NC Plumbing Code or NC Fire Code shall be installed by a properly licensed North Carolina State Contractor.

City of Raleigh Approved Testers may only test backflows. Licensed plumbers may install, repair, and replace domestic, irrigation, and fire backflow assemblies. Licensed fire sprinkler contractors can install, repair, and replace backflows on fire sprinkler systems only.

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Section 7 – Certificate of Compliance

In order for a water customer to be considered in compliance, all domestic, irrigation, and fire services to a facility or residence are required to be contained with an approved backflow assembly. This is achieved by a dual check device on the meter yoke for residential customers who **do not** have an irrigation and/or fire sprinkler system. For those customers who have a commercial water account or residential irrigation and/or fire sprinkler system, an approved backflow assembly is required according to the hazard.

If you wish to start a commercial water service account or you are a residential water customer that has an irrigation and/or fire sprinkler system, please submit a *Certificate of Compliance Application* to the Cross Connection office. Upon receipt of a completed application and verification that your facility is contained with the proper backflows, you will receive a *Certificate of Compliance*.

If you find that your facility or residence is properly contained, but does not have current test reports on file with the Cross Connection Program, you will be given a *Temporary Certificate of Compliance*. This temporary certificate will allow you 15 days to have all containment backflows tested and paperwork submitted to our office. If you fail to submit the proper paperwork to our office within 15 days, water service to your facility or residence will be terminated.

Facilities that do not have approved containment backflow assemblies installed will not be given water service. Upon installation of all approved containment backflow assemblies, a *Temporary Certificate of Compliance* will be given allowing the water customer to have all backflows tested and the paperwork submitted to our office. Once a *Temporary Certificate of Compliance* is given and you fail to submit the proper paperwork to our office within 15 days, water service to your facility or residence will be terminated.

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Section 8: Exemption for backflow installation-commercial domestic services only

Commercial customers who wish to apply for exemption to install a backflow assembly must submit a completed City of Raleigh *Backflow Assembly Installation Exemption Application*. Exemption is only for domestic services where the facility does not nor ever will contain any of the following:

Bidets	Poultry Processing	Chemically Treated Boilers	Beauty Salon and/or Barber Shop
Car Wash	Restaurant/Bakery	Wells (private/groundwater)	Dedicated Fire Protection System
Hotels/Motels	Swimming Pools	Sewage Treatment or Handling	Commercial Kitchen
Nail Salon/Spa	Veterinary Offices	In-ground Sprinkler or Irrigation	Greenhouses
Pharmacy	Embalming Equipment	Water (Recycle or Storage Tanks)	Dairies
Funeral Parlors	Water Cooled Equipment	Delicatessen/Food Preparation	Lawn Care Companies
Distilled Breweries	Automotive Repair/Body Shop	Roof Water Tanks	Building with 5 or more stories
Dye Works	Bottling Plants	Canneries	Packing House
Chemical Processing Plant	Make-up Water Connection	Flex Space/ Strip Centers	
Gas Stations and Mini Marts (Soda Machines/Coffee)		Chemicals used in processing i.e. Photo Laboratories	
Dry Cleaning Equipment/Commercial Laundry Facility		Three or more dwelling units	
Boilers/Booster Pumps/Pressure Tanks		Warehouse (Toxic Chemical Storage)	
Dental Facilities/Laboratory Facilities		Butchers (includes Fish & Livestock)	
Air Conditioning/ Cooling Towers		Warehouse (Toxic Chemical Storage)	
Medical Facilities (includes psychology & psychiatric offices that administer medications)			

After receiving a completed application, the Cross Connection Coordinator and/or his/her designee will decide if a facility will be granted an exemption. Upon acceptance of exemption, a letter of approval as well as a *Certificate of Compliance* will be sent to the facility owner. If a facility is denied exemption, a letter of compliance requesting that approved backflow assemblies be installed will be sent to the facility owner. Failure to comply with a letter of non-compliance could result in enforcement action.

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Section 9: Enforcement-User Responsibilities

9.1 COMPLIANCE DEADLINES:
A consumer that has received notice shall comply with the order of the Cross Connection Program. If the order is to install an approved backflow assembly or remove a cross connection, and an imminent danger to the drinking water supply or to public health does not exist, the consumer shall take such action within 90 days from the date notification is deemed received as described in Section????. If the Public Utilities Director or his designee has determined that an imminent danger to the drinking water supply or to public health exists, the Director or his designee may order a shorter time for action. In cases that do not present an imminent danger or danger to public health, the Public Utilities Director or his designee may extend the time for compliance for up to an additional 90 days if compliance efforts are underway and continuing, and the existence of a hardship or special circumstances can be demonstrated. The extension shall only be valid if in writing and signed by the Public Utilities Director or his designee.

9.2 FAILURE TO COMPLY:
A consumer that fails to comply with an order issued by the Public Utilities Director, his designee or with the deadlines described in 8.1 shall be in violation of this handbook and subject to enforcement.

9.3 DISCONTINUANCE OF SERVICE FOR VIOLATIONS:
The City of Raleigh may discontinue water service to any structure or parcel for a violation of this article. Prior to discontinuing water service, the Public Utilities Director or his designee will give written notice of enforcement to the consumer as shown on the revenue billing roll and to the owner, occupant, or other person in apparent control of the structure or parcel. (?)The Public Utilities Director or his designee is not required to provide written notice of enforcement prior to discontinuing irrigation water service.

When service is discontinued as described above, it shall not be reinstituted until the Public Utilities Director or his designee determines that appropriate steps have been taken to comply with the City of Raleigh's Public Utilities ordinances and handbook and alleviate any risk to the drinking water system. Prior to restoration, all fees required by the City of Raleigh for restoration of water service shall be paid, in addition to any final civil penalties assessed as described in Section ???/

The City of Raleigh shall bear no liability for damage resulting from the discontinuance of service, pursuant to Section 8.

9.4. VIOLATION OF HANDBOOK:
A person who fails to comply with this handbook, or with any order, certificate, permit issued hereunder, or who installs or alters a plumbing system in nonconformance with approved specifications or plans that address cross connections or backflow assemblies regulated under this handbook, shall be in violation of this handbook.

The City of Raleigh may inspect and test any backflow assembly where an approved inspection or testing has not been performed as required under this article, written notice has been given to the consumer, and the consumer has not provided the approved inspection or testing within the deadline provided in the notice. The fee for a City inspection and testing, plus an administrative fee set by the Public Utilities Director or his designee may be charged to the customer.

A person in violation of the handbook is subject enforcement actions by a civil penalty which may be recovered by the city in a civil action in the nature of the debt if the violator does not pay the penalty with 30 days after the assessment has become final by exhaustion of the appeal process established by the section, or by failure to appeal the assessment. The civil penalty for a non-willful violation shall not exceed $250.00 per day for each day of violation, or a cumulative penalty of $5,000.00. The civil penalty for a willful violation shall not exceed $500.00 per day for each day of a violation, or accumulative penalty of $10,000.00.

The Public Utilities Director or his designee shall send a violator written notice of enforcement action by certified mail, return receipt requested and/or by first class mail. Such enforcement notifications shall be deemed received three days from the time it is mailed.

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A violator may appeal a violation by mailing a written appeal to the Public Utilities Director or his designee including all arguments that support reducing or eliminating the penalty. The appeal must be received within 18 days of the date the enforcement notification of the penalty is deemed received. An appeal mailed by first-class mail shall be deemed received three days from the time it is mailed. The Public Utilities Director or his designee shall review the written appeal and penalty and make a final determination which shall be sent to the violator.

A civil penalty that has become final may be added to a consumer's utility bill, and water service may be terminated for nonpayment.

The provisions of the handbook shall not create any liability for the City of Raleigh for failure to detect any cross connection, mal-performing backflow assembly, hazard, or contamination of the drinking water supply.

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APPENDIX C

(Water, Sewer and Reuse Permit Applications)

Public Water Application and Engineers Report

Public Utilities Department

For all development projects within Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 304, Raleigh, NC 27601 phone 919-516-2155 fax 919-516-2681

For all development projects outside of Raleigh's ETJ, please submit to:
The appropriate municipality for routing to the Raleigh Public Utilities Department

Fee $200 Check made payable to: City of Raleigh

This application for a **Water Extension**
is being made under the approved **City of Raleigh Water System Management Plan and Engineers Report**.

Applicant Information		
Applicant		
Organization		
Mailing Address		
Phone		
Project Information		
Project Name		
Project Location		
Description		
Number of Units Served		
Pressure Zone	**Site Static Pressure**	
Estimated Completion Date		
Engineering Firm Information		
Engineering Firm	**Contact**	
Mailing Address	**Phone**	**Email**

Pursuant: City of Raleigh Code Ordinance Chapter 800 N.C. General Statutes Chapter 130 A-317

Applicant's Signature	**Title**	**Date**

SEAL

Engineer's Certification I _____, as a duly registered **Professional Engineer** in the State of North Carolina, hereby certify that the plans and specifications attached hereto are consistent with the above summary.

Engineer's Signature _____ Registration # _____

Private Water Application and Engineers Report

Public Utilities Department

For all development projects within Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 304, Raleigh, NC 27601 phone 919-516-2155 fax 919-516-2681

For all development projects outside of Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 620, Raleigh, NC 27601 phone 919-847-4540 fax 919-857-4545

Fee $200 Check made payable to: City of Raleigh

This application for a **Water Extension**
is being made under the approved **City of Raleigh Water System Management Plan and Engineers Report**.

Applicant Information	
Applicant	
Organization	
Mailing Address	
Phone	
Project Information	
Project Name	
Project Location	
Description	
Number of Units Served	
Information about pressure for extension	
Estimated Completion Date	

Engineering Firm Information	
Engineering Firm	**Contact**
Mailing Address	**Phone**

Pursuant: City of Raleigh Code Ordinance Chapter 800 N.C. General Statutes Chapter 130 A-317

Signature	**Title**	**Date**

SEAL

Engineer's Certification I _____ , as a duly registered **Professional Engineer** in the State of North Carolina, hereby certify that the plans and specifications attached hereto are constant with the above summary.

Signature _____ Registration # _____

Public Gravity Sewer Application

Public Utilities Department

For all development projects within Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 304, Raleigh, NC 27601 phone 919-516-2155 fax 919-516-2681

For all development projects outside of Raleigh's ETJ, please submit to:
The appropriate municipality for routing to the Raleigh Public Utilities Department

Fee $200 Check made payable to: City of Raleigh		
Applicant Information		
Applicant		
Organization		
Mailing Address		
Phone		
Project Information		
Project Name		
Project Location		
Project Description		
Number of Units Served		
Wastewater Information		
Type of Wastewater ❑ **Domestic** ❑ **Industrial**	**Average Daily Flow** (gallons)	
Tributary to Wastewater Plant ❑ **Little River** ❑ **Neuse River** ❑ **Smith Creek**		
Contractor Information		
Contractor Installing Sewer		
Company Name	**Contact**	
Company Address	**Mailing Address**	
Phone	**Estimated Completion Date**	
Engineering Firm Information		
Engineering Firm	**Contact**	
Mailing Address	**Phone**	**Email**
Pursuant: City of Raleigh Code Ordinance Chapter 800 N.C. General Statutes Chapter 130 A-317		**SEAL**
Applicant's Signature	**Title**	**Date**
Engineer's Certification I _____, as a duly registered Professional Engineer in the State of North Carolina, hereby certify that the plans and specifications attached hereto are consistent with the above summary. Engineer's Signature _____ Registration # _____		

Non-Discharge Application Form Attachment for Gravity Sewers

1	**Owner/Project Name** (as shown on application)
2	**Total length of sewer pipe** (by diameter size)

Diameter (inches)	Length (linear feet)	Material	Minimum Cover	Slope Maximum	Slope Minimum

3	**Maximum sewer reach length between manholes**	**Linear Feet**	
	Does Owner/Operator have the ability to clean this?	**Yes**	**No**
4	**Sewer subject to traffic bearing loads?**	**Yes**	**No**
5	**Maximum allowable infiltration/exfiltration test rate in GPM/in/mile**	**100 GPM/in/Mile**	
6	**Minimum separation distances as shown on the plans or addressed in the specifications**		
	100 feet horizontal separation from wells or other water supplies	**Yes**	**No**
	24 inch vertical separation from storm sewers,	**Yes**	**No**
	or Ferrous pipe sanitary sewer specified with concrete cradle	**Yes**	**No**
	10 feet horizontal separation from water mains,	**Yes**	**No**
	or 18 inch vertical separation,	**Yes**	**No**
	or Ferrous pipe sanitary sewer specified	**Yes**	**No**
7	**100 year-flood elevation**		
	Are manholes subject to flooding?	**Yes**	**No**
	If yes, are manhole rim elevations two (2) feet above 100-year flood level?	**Yes**	**No**

Engineer's Certification I _____, as a duly registered Professional Engineer in the State of North Carolina, hereby certify that the plans and specifications attached hereto are consistent with the above summary.

Signature _____ Registration # _____

Amended North Carolina Department of Natural Resources and Community Development Division of Environmental Management Non-discharge Application Form Attachment Gravity Sewers PA-1(7-1-87)

Development Services

City of Raleigh

Private Gravity Sewer Application

Public Utilities Department

For all development projects within Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 304, Raleigh, NC 27601 phone 919-516-2155 fax 919-516-2681

For all development projects outside of Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 620, Raleigh, NC 27601 phone 919-847-4540 fax 919-857-4545

Fee $200 Check made payable to: City of Raleigh

Applicant Information	
Applicant	
Organization	
Mailing Address	
Phone	
Project Information	
Project Name	
Project Location	
Project Description	
Number of Units Served	
Wastewater Information	
Type of Wastewater ❑ Domestic ❑ Industrial	Average Daily Flow (gallons)
Tributary to Wastewater Plant ❑ Neuse River	
Contractor Information	
Contractor Installing Sewer	
Company Name	Contact
Company Address	Mailing Address
Phone	Estimated Completion Date
Engineering Firm Information	
Engineering Firm	Contact
Mailing Address	Phone

Pursuant: City of Raleigh Code Ordinance Chapter 800 N.C. General Statutes Chapter 130 A-317

Signature	Title	Date

SEAL

Engineer's Certification I _____, as a duly registered Professional Engineer in the State of North Carolina, hereby certify that the plans and specifications attached hereto are constant with the above summary.

Signature _____ Registration # _____

Non-Discharge Application Form Attachment for Gravity Sewers

1	**Owner/Project Name** (as shown on application)
2	**Total length of sewer pipe** (by diameter size)

Diameter (inches)	Length (linear feet)	Material	Minimum	Slope Maximum	Slope Minimum

3	Maximum sewer reach length between manholes	Linear Feet	
	Does owner/Operator have the ability to clean this?	Yes	No
4	Sewer subject to traffic bearing loads?	Yes	No
5	Maximum Allowable infiltration/exfiltration test rate in GPM/in/mile	GPM/in/Mile	
6	Minimum separation distances as shown on the plans or addressed in the specifications		
	100 feet horizontal separation from wells or other water supplies	Yes	No
	24" inch vertical separation,	Yes	No
	or Ferrous pipe sanitary sewer specified	Yes	No
	10 feet horizontal separation from water mains,	Yes	No
	or 24 inch vertical separation,	Yes	No
	or Ferrous pipe sanitary sewer specified	Yes	No
7	100 year-flood elevation		
	Are manholes subject to flooding?	Yes	No
	If yes, are manhole rim elevations 2 feet above 100-year flood level?	Yes	No

Engineer's Certification I _____, as a duly registered Professional Engineer in the State of North Carolina, hereby certify that the plans and specifications attached hereto are constant with the above summary.

Signature _____ Registration # _____

Amended North Carolina Department of Natural Resources and Community Development Division of Environmental Management Non-discharge Application Form Attachment Gravity Sewers PA-1(7-1-87)

Public Sewer Pump Station and Force Main Application

Public Utilities Department

For all development projects within Raleigh's ETJ, please submit to:
One Exchange Plaza Suite 304, Raleigh, NC 27601 phone 919-516-2155 fax 919-516-2681

For all development projects outside of Raleigh's ETJ, please submit to:
The appropriate municipality for routing to the Raleigh Public Utilities Department

Fee $300 Check made payable to: City of Raleigh		
Applicant Information		
Applicant		
Organization		
Mailing Address		
Phone		
Project Information		
Project Name		
Project Location		
Project Description		
Number of Units Served	**Estimated Completion Date**	
Wastewater Information		
Type of Wastewater ❑ **Domestic** ❑ **Industrial**	**Average Daily Flow** (gallons)	
Tributary to Wastewater Plant ❑ **Little River** ❑ **Neuse River** ❑ **Smith Creek**		
Contractor Information		
Contractor		
Company Name	**Contact**	
Company Address	**Mailing Address**	
Phone	**Estimated Completion Date**	
Engineering Firm Information		
Engineering Firm	**Contact**	
Mailing Address	**Phone**	**Email**

Pursuant: City of Raleigh Code Ordinance Chapter 800 N.C. General Statutes Chapter 130 A-317			**SEAL**
Applicant's Signature	**Title**	**Date**	
Engineer's Certification I _____, as a duly registered **Professional Engineer** in the State of North Carolina, hereby certify that the plans and specifications attached hereto are consistent with the above summary. Engineer's Signature _____ Registration # _____			

Non-Discharge Application Form Attachment Pump Station and Force Main

1	**Owner/Operator Name** (as shown on application)		
2	**Pump Station #** _____ (Please submit a separate sheet for each pump station and a project location map showing this pump station and closest creek, river, lake, etc.)		
3	**Number and size of pumps**	**GPD**	**each**
	Maximum Capacity of Station	**GPD**	

4	**Pump Station Requirements**				
Generator		**Area Light**			
Wet Well Vented with Screen		**110V Convenience Outlet at Control Panel**			
Fillets in Wet Well		**Flood/Buoyancy Protection**			
Air Release Valve (number)		**High Water Alarms**	**audible**	**visual**	
Check and Gate Valves		**CORPUD SCADA**			
Security Fencing		**Odor Control**			
Lockable Wet Well Cover		**All weather driveway with vehicle turnaround**			
5	**Pumping cycles**	**per hour**			

6	**Ductile Iron Force Main**				
Length	**Diameter**	**Minimum Cover**	**High Point**	**Low Point**	**Total Dynamic Head** (design)

7	**Is pump station subject to flooding?**	**Yes**	**No**
8	**100 year-flood elevation**	**Feet MSL**	

Engineer's Certification I _____, as a duly registered **Professional Engineer** in the State of North Carolina, hereby certify that the plans and specifications attached hereto are consistent with the above summary.

Signature _____

Registration # _____ Date _____

SEAL

Amended North Carolina Department of Natural Resources and Community Development Division of Environmental Management Non-discharge Application Form Attachment Pump Station and Force Main PA-2(7-1-8)

Development SERVICES

FIRE • INSPECTIONS • PLANNING
PUBLIC UTILITIES • PUBLIC WORKS

Customer Service Center
One Exchange Plaza, Suite 400, Raleigh, NC 27601
Phone 919-516-2495 Fax 919-516-2685

Inspections Department Satellite Location
8320-10 Litchford Road, Raleigh, NC 27615
Phone 919-713-4200 Fax 919-713-4221

Reclaimed Water Distribution System Application Form: CORRWDS 11-07

(This form may be photocopied for use as an original) **Application Number** _____ (to be completed by COR)

General Information

1. Applicant's Name

Applicant Type

	Individual		**Corporation**		**General Partnership**		**Privately Owned Public Utility**
	Federal		**State**		**Municipal**		**County**

Signature Authority's Name	**Title**

Applicant's Mailing Address

City	**State**	**Zip**

Phone	**Fax**	**Email**

2. Project type (Business, subdivision, shopping center, etc.)

Project County	**USGS Map Name**
3. Consulting Engineer's name	**License Number**

Engineer's mailing address	**Firm**

City	**State**	**Zip Code**

Phone	**Fax #**	**Email**

Permit Information

1. Project is: ❑ **New** ❑ **Modification** (Existing Permit # _____ Date Issued _____)

2. Fee Submitted

3. Does the project comply with all setbacks found in the river basin rules (15A NCAC 2B .0200)? ❑ **Yes or** ❑ **No**

If no, list non-compliant setbacks

Information on Reclaimed Water

1. Provide a description specifying the destination of the reclaimed water (e.g., residential lawns, golf courses, parks, landscape areas, industrial process/cooling water, etc.)

2. Has a utilization permit been applied for? ❑ **Yes or** ❑ **No**

3. Volume of reclaimed water utilized by this project _____ gallons per day (GPD)

4. Explanation of how reclaimed water flow was determined

Distribution Line Information

1. Summary of distribution line to be permitted, by diameter and length:

Diameter (inches)	Length (linear feet)	High Elevation (feet)	Discharge Elevation (feet)	Pump-Off Elevation (feet)

2. Station location of air-release valves (15A NCAC 2T.0305(h)(5)

3. Are there any additional lines, pumps, or equipment needed for this project)? ❑ **Yes** **or** ❑ **No**
If yes, list equipment here:

Professional Engineer's Certification

I, _____, attest that this application for _____ has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge, the proposed design has been prepared in accordance with this application package as well as all applicable regulations and statutes. Although other professionals may have developed certain portions of this submittal package, inclusion of these materials under my signature and seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. **Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application package shall be guilty of a Class 2 misdemeanor, which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.**

North Carolina Professional Engineer's seal, signature and date:

_____ **Date** _____

Applicant's Certification (signing authority must be in compliance with 15A NCAC 2T .0106(b):

I, _____ (signing authority name) _____ (title) attest that this application for _____ (facility name) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that any discharge of wastewater from this non-discharge system to surface waters or the land will result in an immediate enforcement action that may include civil penalties, injunctive relief, and/or criminal prosecution. I will make no claim against the City of Raleigh should a condition of this permit be violated. I also understand that if all required parts of this application package are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete. I further certify that the applicant or any affiliate has not been convicted of an environmental crime, has not abandoned a wastewater facility without proper closure, does not have an outstanding civil penalty where all appeals have been exhausted or abandoned, are compliant with any active compliance schedule, and do not have any overdue annual fees under Rule 2T .0105. **Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application package shall be guilty of a Class 2 misdemeanor, which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.**

Signature _____ **Date** _____

Development SERVICES

FIRE • INSPECTIONS • PLANNING
PUBLIC UTILITIES • PUBLIC WORKS

Customer Service Center
One Exchange Plaza, Suite 400, Raleigh, NC 27601
Phone 919-516-2495 Fax 919-516-2685

Inspections Department Satellite Location
8320-10 Litchford Road, Raleigh, NC 27615
Phone 919-713-4200 Fax 919-713-4221

Reclaimed Water Utilization Permit Application Form: CORRWCS 11-07

(This form may be photocopied for use as an original) **Application Number** _____ (to be completed by COR)

General Information

1. Applicant's Name

Applicant Type

	Individual		**Corporation**		**General Partnership**		**Privately Owned Public Utility**
	Federal		**State**		**Municipal**		**County**

	Renewal (if no changes to Ownership or system components, complete parts 1 and 2 of this Section only. The City of Raleigh reserves the right to request additional information.)

Signature Authority's Name	**Title**

Applicant's Mailing Address

City	**State**	**Zip**

Phone	**Fax**	**Email**

2. Facility type (Residence, subdivision, shopping center, etc.)

Facility's Physical Address

City	**State**	**Zip**	**County**

3. Consulting Soil Scientist's name	**License Number**
Soil Scientist's mailing address	**Firm**

City	**State**	**Zip**

Phone	**Fax #**	**Email**

Permit Information

Project is: ❑ **New** ❑ **Modification** (Existing Permit # _____ Date Issued _____)

1. Facility Status: ❑ **Proposed** ❑ **Existing** (If Existing, complete the next line.)

Was this system approved for reclaimed disposal under 15A NCAC 2H .0219(k)? ❑ **Yes** **or** ❑ **No**

2. List the intended uses for the reclaimed water

3. Does the project comply with all setbacks found in the river basin rules (15A NCAC 2B .0200)? ❑ **Yes** **or** ❑ **No**
If no, list non-compliant setbacks:

Information on Wastewater Generation				
1. Volume of wastewater flow for this project: _____ gallons per day (GPD)				
2. Explanation of how wastewater flow was determined (15A NCAC 2T .0114(c):				
Type of Establishment	**Basis of Flow**	**Flow Per Unit**	**Number of Units**	**Total**
	Gallons/ _____			
	Gallons/ _____			
	Gallons/ _____			
	Gallons/ _____			
	Gallons/ _____			
	Gallons/ _____			
	Gallons/ _____			
			Total	
General Project Information				
1. Brief project description				
2. In accordance with 15A NCAC 2T .0901 and .0910, what is the intended beneficial utilization of this reclaimed water?				
3. In accordance with 15A NCAC 2T .0912, provide the minimum distance in feet from the facility's utilization system to each parameter (distances greater than 500 feet may be left blank):				

Setback Parameter	Utilization System
Any habitable residence or place of assembly under separate ownership or not to be maintained as part of the project site	
Any private or public water supply source	
Any well with exception of monitoring wells	
Any property line	

4. Briefly describe the measures being taken to restrict unauthorized access to controls	
5. What is the 100-year flood elevation? _____ feet mean sea level	**Source**
Are any utilization areas located within the 100-year flood plain? ❑ **Yes or** ❑ **No**	
If yes, briefly describe which utilization areas are affected and the measures being taken to protect them against flooding	
If yes, does the Applicant have documentation of compliance with State Statute 143 Article 21 Part 6? ❑ **Yes or** ❑ **No**	

Design Information for Utilization System

1. The utilization system is: ❑ **Solid set** (e.g. buried installation) ❑ **House mounted** ❑ **Manual/Automatic**

If automatic, describe equipment used to control operation during rain fall events

2. Utilization system is: ❑ **Proposed** ❑ **Existing**

3. Will there be onsite storage? ❑ **Yes** **or** ❑ **No** If yes, state storage capacity: _____ gallons

4. Have you reviewed current DMR data to verify water quality? ❑ **Yes** **or** ❑ **No**

5. Is the water quality sufficient for the intended use of this project? ❑ **Yes** **or** ❑ **No**

6. Will there be any chemicals applied to the reclaimed water before usage? ❑ **Yes** **or** ❑ **No**

If yes, what chemicals will be applied?

If chemicals are applied, water quality monitoring shall be performed prior to chemical addition.

7. List any equipment not specifically mentioned above (pumps, controls, etc.)

8. Loading rates recommended by the Soil Scientist Evaluation:

Soil Series	Fields within Soil Area	Recommended Loading Rate (in/hr)	Recommended Loading Rate (in/yr)	Loading Recommended	If Seasonal, list appropriate months
				❑ **Annual** ❑ **Seasonal**	
				❑ **Annual** ❑ **Seasonal**	
				❑ **Annual** ❑ **Seasonal**	
				❑ **Annual** ❑ **Seasonal**	
				❑ **Annual** ❑ **Seasonal**	

***Note:** For lots 1 acre or less, Applicant may use the _____ agronomist report supplied by the City of Raleigh.
The City of Raleigh reserves the right to require a site specific agronomist report.

9. Design loading rates are equal or less than the loading rates recommended by Soil Scientist? ❑ **Yes** **or** ❑ **No**

If No, explain why 15A NCAC 2T .0907(g) is not met

10. In accordance with 15A NCAC 2T .0910(a)(1) and (b)(1), how will the public and /or employees be notified of the use of reclaimed water?

11. Utilization Design (Information to be supplied by Certified System Installer)**:**

a. Spray Utilization:

Field/Zone	Design Area (ft^2)	Number of Nozzles	Maximum Precipitation Rate (in/hr)	Design Annual Loading Rate (in/yr)
Total				

Spray Utilization Design Element	
Wetted diameter of nozzles	_____ ft
Wetted area of nozzles	_____ ft^2
Nozzle capacity	_____ gpm
Nozzle manufacturer / model	_____ / _____

Applicant's Certification (signing authority must be in compliance with 15A NCAC 2T .0106(b):

I, _____ (signing authority name) _____ (title) attest that this application for _____ (facility name) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that any discharge of wastewater from this non-discharge system to surface waters or the land will result in an immediate enforcement action that may include civil penalties, injunctive relief, and/or criminal prosecution. I will make no claim against the City of Raleigh should a condition of this permit be violated. I also understand that if all required parts of this application package are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete. I further certify that the applicant or any affiliate has not been convicted of an environmental crime, has not abandoned a wastewater facility without proper closure, does not have an outstanding civil penalty where all appeals have been exhausted or abandoned, are compliant with any active compliance schedule, and do not have any overdue annual fees under Rule 2T .0105. **Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application package shall be guilty of a Class 2 misdemeanor, which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.**

Signature _____ **Date** _____

APPENDIX D

(Standard Notes and Signature Blocks)

Use this note on all construction plans in Raleigh:

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Works Department*** at ***(919) 996-2409***, and the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Use this note for all construction plans in merger areas:

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Private
Water Distribution / Extension System

The City of Raleigh consents to the connection to its public water system and extension of the private water distribution system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Private
Sewer Collection / Extension System

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Reuse Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public reuse system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

STANDARD UTILITY NOTES (as applicable):

1. All materials & construction methods shall be in accordance with City of Raleigh design standards, details & specifications (reference: CORPUD Handbook, current edition)
2. Utility separation requirements:
    a) A distance of 100' shall be maintained between sanitary sewer & any private or public water supply source such as an impounded reservoir used as a source of drinking water. If adequate lateral separation cannot be achieved, ferrous sanitary sewer pipe shall be specified & installed to waterline specifications. However, the minimum separation shall not be less than 25' from a private well or 50' from a public well
    b) When installing water &/or sewer mains, the horizontal separation between utilities shall be 10'. If this separation cannot be maintained due to existing conditions, the variation allowed is the water main in a separate trench with the elevation of the water main at least 18" above the top of the sewer & must be approved by the Public Utilities Director. All distances are measured from outside diameter to outside diameter
    c) Where it is impossible to obtain proper separation, or anytime a sanitary sewer passes over a watermain, DIP materials or steel encasement extended 10' on each side of crossing must be specified & installed to waterline specifications
    d) 5.0' minimum horizontal separation is required between all sanitary sewer & storm sewer facilities, unless DIP material is specified for sanitary sewer
    e) Maintain 18" min. vertical separation at all watermain & RCP storm drain crossings; maintain 24" min. vertical separation at all sanitary sewer & RCP storm drain crossings. Where adequate separations cannot be achieved, specify DIP materials & a concrete cradle having 6" min. clearance (per CORPUD details W-41 & S-49)
    f) All other underground utilities shall cross water & sewer facilities with 18" min. vertical separation required
3. Any necessary field revisions are subject to review & approval of an amended plan &/or profile by the City of Raleigh Public Utilities Department prior to construction
4. Contractor shall maintain continuous water & sewer service to existing residences & businesses throughout construction of project. Any necessary service interruptions shall be preceded by a 24 hour advance notice to the City of Raleigh Public Utilities Department
5. 3.0' minimum cover is required on all water mains & sewer forcemains. 4.0' minimum cover is required on all reuse mains
6. It is the developer's responsibility to abandon or remove existing water & sewer services not being used in redevelopment of a site unless otherwise directed by the City of Raleigh Public Utilities Department. This includes abandoning tap at main & removal of service from ROW or easement per CORPUD Handbook procedure
7. Install ¾" copper* water services with meters located at ROW or within a 2'x2' Waterline Easement immediately adjacent. *NOTE: it is the applicant's responsibility to properly size the water service for each connection to provide adequate flow & pressure*
8. Install 4" PVC* sewer services @ 1.0% minimum grade with cleanouts located at ROW or easement line & spaced every 75 linear feet maximum
9. Pressure reducing valves are required on all water services exceeding 80 psi; backwater valves are required on all sanitary sewer services having building drains lower than 1.0' above the next upstream manhole
10. All environmental permits applicable to the project must be obtained from NCDWQ, USACE &/or FEMA for any riparian buffer, wetland &/or floodplain impacts (respectively) prior to construction.
11. NCDOT / Railroad Encroachment Agreements are required for any utility work (including main extensions & service taps) within state or railroad ROW prior to construction
12. Grease Interceptor / Oil Water Separator sizing calculations & installation specifications shall be approved by the CORPUD FOG Program Coordinator prior to issuance of a Building Permit. Contact Tim Beasley at (919) 996-2334 or timothy.beasley@raleighnc.gov for more information
13. Cross-connection control protection devices are required based on degree of health hazard involved as listed in Appendix-B of the Rules Governing Public Water Systems in North Carolina. These guidelines are the minimum requirements. The devices shall meet American Society of Sanitary Engineering (ASSE) standards or be on the University of Southern California approval list. The devices shall be installed and tested (both initial and periodic testing thereafter) in

accordance with the manufacturer's recommendations or the local cross-connection control program, whichever is more stringent. Contact Joanie Hartley at (919) 996-5923 or joanie.hartley@raleighnc.gov for more information

* Edit typical service size & material as appropriate

Bypass Pumping Operations

Sewer Bypass Pumping:

A bypass plan sealed by a NC Professional Engineer must be submitted to Public Utilities prior to pumping operations to coordinate with administration engineering staff. Pumps should be sized to handle the peak daily flow (2.5 times the average daily flow with a minimum of 50 gpm) for the line or area of work. The contractor shall secure pumps from a pump supplier according to the provided flow information. Pumping operations must be monitored 24 hours a day for each day of the pumping operation by qualified personnel in order to respond to problems or failures. 100% redundancy is required for pumping operations. In addition, back up pumps are to be connected to the bypass force main to facilitate immediate use upon failure of the primary pumps.

APPENDIX E

(CORPUD Standard Operating Procedures)

ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL				
SUBJECT	NUMBER	REV	EFFECTIVE DATE	PAGE	OF
	602-4	2		1	2
	SUPERSEDES	PREPARED BY		APPROVED BY	
Recording of Utility Easements Outside of a Subdivision		Assistant Public Utilities Director		City Manager	

1.0 PURPOSE:

To establish a procedure for approving and recording utility easements outside of a subdivision.

2.0 ORGANIZATIONS AFFECTED:

Public Utilities Department, Public Works Department, Planning Department, City Clerk, Right-of-Way, City Council, Private Developers, City Attorney's Office and Development Services Division.

3.0 REFERENCES:

City Code, Section 8-2063 and 8-2066

4.0. POLICY:

4.1 It shall be the policy of the City of Raleigh to require that all easements for water and sewer mains dedicated to the City are properly recorded by the Wake County Register of Deeds

4.2 It shall be the policy of the City of Raleigh to assure that all water and sewer mains shall be constructed to conform to the plans and policies approved by the Raleigh City Council and the Director of Public Utilities.

5.0 PROCEDURE:

5.1 The Public utilities Department will review and approve those applications for extensions of utility mains within the City limits.

5.1.1 At the recommendation of the Director of Public Utilities Department, the City Council will grant a conditional approval of those applications for extensions of utility mains outside of the City limits. The City Council may indicate to the developers any requirements which must be met as a prerequisite for approving the application.

5.2 Once approval has been granted, the developer may prepare construction plans and easement maps and may negotiate to purchase the necessary easements.

5.2.1 A map showing all negotiated easements must be returned to the Planning Department for certification. The developer must then record the certified map with the Wake County Register of Deeds.

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5.2.2 When easements have been procured, the deeds of easement must be recorded with the Wake County Register of Deeds.

5.2.3 Copies of the recorded deeds of easement and a record of the recorded easement maps and deeds of easement (book and page numbers) must be delivered to the City Clerk.

5.3 The developer must then present to the Public Utilities Department a properly prepared engineering p1an, profile map bearing the seal and signature of a registered engineer and showing the proposed utility extension and stating references (book and page numbers) of all recorded easement maps and deeds of easement through the Development Services Division

5.3.1 The original of the engineering plan-profile will be approved and signed by the Public Utilities Department and the Public Works Department and prepared for duplication.

5.4 After the plan-profile drawings are approved and signed, the developer may begin the actual construction of the project.

5.4.1 The Public Utilities Department must be notified of any changes in the construction plan. All changes in easement must be properly recorded and the City Clerk notified.

5.5 The Public Works Department will inspect all projects to assure conformity to City standards and the approved engineering plan-profile drawings.

5.6 Upon completion of construction work, the developer's engineer is required to provide a certificate that the project was completed within the easements as recorded. This certificate should be sent to the Department of Public Works.

5.7 The City Engineer of the City will check the project engineer's certificate against the easement references filed in the City Clerk's office and the project inspection record. .

5.7.1 The City will not accept any utility extensions for maintenance unless the certificate of conformance submitted by the project engineer agrees with the record of utility easements filed in the City Clerk's office.

5.7.2 If conforming, the City Engineer may prepare a letter of acceptance for maintenance of the completed utility extension and easements.

5.8 A copy of the letter of acceptance must be signed by the City Engineer before maintenance of the utility line by the City begins. A copy of the signed letter of acceptance will be forwarded to the developer, The Public Utilities Director, the engineer, and to the City Clerk.

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ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL			
SUBJECT	NUMBER 602-6	REV 2	EFFECTIVE DATE	PAGE 1 OF 4
Fee-In-Lieu-of Assessment for Water and Sewer Mains	SUPERSEDES 602-6	PREPARED BY Assistant Public Utilities Director		APPROVED BY City Manager

1.0 PURPOSE: To establish a procedure for tracking "fee-in-lieu-of assessment" water and sewer mains after they have been installed by City forces, or by contractor paid with City funds, and for collection of these fees.

2.0 ORGANIZATIONS AFFECTED:

Public Works Department
Finance Department
Development Services Division
Public Utilities Department

3.0 REFERENCE:

3.1 Chapter 8 of the City Code

4.0 POLICY:

4.1 Chapter 8 of the City Code states that when the City installs a utility main outside of the City Limits that a fee-in-lieu-of assessment will be collected for this main at the time of connection. The fee-in-lieu-of will be equal to the assessment that would be made against the property if it were within the City corporate limits for the year of that main installation.

5.0 GENERAL:

5.1 This procedure will outline a method so that fee-in-lieu of assessment mains are properly identified in order that City departments as well as citizens of the City are aware of their existence and so that the Development Services Division can collect the fees at the time of connection to the utility system.

5.2 Fee-in-lieu of assessment mains fall into two categories:
(1) Those that were installed prior to 1978 and (2) those installed during and after the year of 1978. In the first category, the City may collect a fee-in-lieu-of assessment at time of connection provided the property is still outside of the City. If there is no connection to the main and the property is annexed, the City will send a notice of assessment to the owner at time of annexation of the outstanding fee due for his property.

5.3 Fee-in-lieu of assessment will be paid in full at the time of connection to the system, unless it is assessed at the time of annexation. If assessed during annexation, the owner will have the option to pay in full or finance it over 10 years.

5.4 A payment form (see Appendix) with payment must be presented to the Development Services

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Division for providing an accurate payment collection process.

6.0 DEFINITION:

6.1 Fee-In-Lieu-Of Assessment -This fee is for any water and sewer main installed by City forces, or by a contractor working for the City, for any main installed outside of the City Limits of Raleigh. The fee is based on the assessment rate for a 6-inch water or 8-inch sanitary sewer main for the year the project has been approved by the City Council.

7.0 RESPONSIBILITIES:

7.1 The Development Services Division is responsible for collecting the payment of fee-in-lieu-of assessment if it is outside the City limits as well as maintaining the fee record~ (once paid) in the Raleigh Property Data System (R.P.D.S.) "Fee File".

7.2 The Collection Division of the Finance Department is responsible for collecting and maintaining the assessment rolls if the property is inside or annexed into City limits.

7.3 The Public Works Department is responsible for identifying and adding the assessment records in the R.P.D.S. " Fee File" as pending records and maintaining them upon confirmation by the City Council

8.0 PROCEDURE FOR MAINS INSTALLED PRIOR TO 1978 (SUBDIVISIONS):

8.1 The Public Works Department identifies and establishes fee records in the R.P.D.S. "Fee File" for all existing locations of fee-in-lieu-of assessment mains.

8.2 In the case of a subdivision for a tract of land abutting a fee-in-lieu-of assessment main, the Public Utilities Department will note on the preliminary subdivision plan that there is an outstanding fee-in-lieu-of assessment due for this tract. The Subdivision Administrator will incorporate this note as part of the conditions on utilities when preparing his certified recommendation. During the preliminary subdivision approval process, the developer will be advised via the note on the preliminary plan that the fee-in-lieu-of assessment must be paid for the total frontage inclusive of all street rights-of-way and greenways prior to the Public Utilities Department's approval of final construction plans.

8.3 Public Utilities Department before, Construction Approval, will assess fee maintenance file to check for fee-in-lieu of assessment payment.

8.4 Upon receipt of the payment notice and the issuance of state construction permits, the Public Utilities Director will sign the plans for construction approval which will enable the developer to record his subdivision plan.

9.0 PROCEDURE FOR MAINS INSTALLED DURING AND AFTER 1978 (SUBDIVISION)

9.1 All water and sewer extensions outside of the City Limits will be treated as if they were an actual assessment project inside the City. When the Public Utilities work order form is completed, it will note the main or a portion of the main which will be a fee-in-lieu-of main. All of the affected property owners will be advised of the project installation and a public hearing will be held prior to the installation.

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9.2 The Public Works Department will prepare an assessment roll for the properties abutting these mains outside of the City Limits. The Public Works Department will add the assessment rolls into the fee file in the Raleigh Property Data System as pending records.

9.3 In terms of subdivision review and provided the property is still outside of the City Limits, the Public utilities Department will note on the preliminary plan if a fee-in lieu of assessment payment is applicable. If so, it will be indicated on the plans. The Subdivision Administrator will include the fee-in-lieu-of assessment note as part of the conditions on utilities when preparing his certified recommendation.

9.4 After Council approval, the Public Works Department will maintain pending records to signify the confirmation of the fee-in-lieu-of assessment mains.

9.5 After payment of the fees and the issuance of state construction permits, the Public Utilities Director will approve the engineering drawings for construction of the proposed subdivision.

10.0 INDIVIDUAL LOT. CONNECTIONS:

10.1 In case of individual lot connections to a fee-in-lieu-of main, the Development Services Division will collect the outstanding fee at the time the utility connection permit is issued.

11.0 PROCESSING THE FEES COLLECTED:

Private Reimbursement Contract

Water A

Sewer B

Paving C

Sidewalk D

Fee-In-Lieu-Of Codes

01 Pre 1978 Projects
02 Post 1978 Projects

11.4 During the subdivision and permit issuance stage, Public Utilities and Development Services will check the Geo file to determine if any fee-in-lieu-of assessments are due. The property will be advised of the amount due. Development Services will collect all fees.

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Please fill in completely before presenting the payment to the permit office.

Name of Payer/Owner _____

Address of Payer/Owner _____

Type of Payment			Account Code	Amount
A.	Water and Sewer Mains			
	Fee-In-Lieu-Of	{ }	Lieu	$_____
B.	Fee-In-Lieu Of Assessment (2-Acre Rule)			
	Water			$_____
	Sewer			$_____
C.	Paving Fee	{ }	Paving	$_____
D.	Sidewalk Fee	{ }	Sidewalk	$_____
E.	Fee-In-Lieu-Improvement			
	Street	{ }	Street Fee	$_____
	Sidewalks	{ }	Side Fee	$_____

Property Information: Map & Parcel No. _____

Assessment Roll & Lot No. _____

Project/Subdivision Name _____

Address of Improvement _____

Originator _____ Date:_____

- - - -

ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL: Public Utilities			
SUBJECT: Utility Tap Fees	NUMBER: 602-7	REV: 2	EFFECTIVE DATE:	PAGE 1 OF 2
	SUPERSEDES:	PREPARED BY: Assistant Public Utilities Director		APPROVED BY: City Manager

1.0 PURPOSE:

The purpose of this Standard Procedure is to develop a procedure for locating, dating and collecting of fees for the water and sewer service stubs installed either by City forces or by contract.

2.0 ORGANIZATIONS AFFECTED:

Public Utilities Department
Development Services Division

3.0 REFERENCE:

Code Section 8-2039

4.0 POLICY:

The City Council has adopted a policy which provides that tap fees shall be fixed for one year after availability when installed by City forces or by contract as a part of any utility main extension project. The tap fee will be based on the prevailing rate at time of installation and that fee will be held firm for a period of 1 year after installation.

5.0 DEFINITION:

5.1 Taps may be either, water, sewer or both service laterals extending from the main in a public right of way to the right of way line to serve a particular piece of property.

5.2 Prevailing rate shall be the rate in effect and as established in the City Code on the date of approval of the project by the City Council or in the case of contracted service on the date of award of the contract by the City Council.

5.3 Tap fee shall be that fee established in Code Section 8-2039 adopted annually by the City Council for the various tap sizes installed.

6.0 PROCEDURE:

6.1 All main extension requests will be processed by the Public Utilities Department and must be approved by the City Council after holding the necessary public hearings, prior to any installation

6.2 The Public Utilities Department will be responsible for the plans for all public main extensions. These plans will show the abutting lots and include property owner's name and address along with PIN (Parcel Identification Number) and the proposed service stub locations.

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6.3 On main extensions where taps have been installed by City forces or contract. The Public utilities Department will advise the Development Services Division of the date, type, and size of the service stub installed.

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ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL: Public Utilities			
SUBJECT: Water and/or Sewer Services Renewal	NUMBER: 604-1	REV: 2	EFFECTIVE DATE:	PAGE: 1 OF: 3
	SUPERSEDES:	PREPARED BY: Assistant Public Utilities Director		APPROVED BY: City Manager

1.0 PURPOSE:

To establish a policy for the renewal of water services other than copper or ductile iron and sewer services other than ductile iron and PVC.

2.0 ORGANIZATIONS AFFECTED:

Public Utilities Department and Inspections Division

3.0 REFERENCES:

Code of Ordinances of the City of Raleigh, North Carolina Sec. 8-2039; Sec. 10-6082

Departmental Operating Instructions 601-4, Revised.

4.0 DEFINITIONS:

4.1 Water service: The lateral water line which extends from the water main to the right of way line for conveyance of potable water to an individual parcel of property. It shall include the corporation stop, meter yoke, meter and meter box.

4.2 Sewer service: The lateral sewer line which extends from the sewer main to the property line for the conveyance of sanitary sewer from an individual parcel of property to the sewer system. It shall include the saddle or wye and the lateral clean-out.

5.0 GENERAL:

5.1 All water services other than copper or ductile iron services that leak, are broken or perform unsatisfactorily shall be renewed with type “K” soft copper or ductile iron pipe and a City of Raleigh approved coppersetter.

5.2 All sewer services other than ductile or PVC that leak, break, settle or perform unsatisfactorily, shall be renewed with ductile iron or PVC sewer services pipe and clean-out plug.

5.3 All water services other than copper or ductile and sewer services other than ductile iron or PVC that are within a street right of way scheduled for paving shall be renewed prior to such paving.

5.4 Should discrepancies arise concerning water and/or sanitary sewer service materials or installation standards, the most recent edition of the City of Raleigh Public Utilities handbook

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shall govern. This handbook shall supersede all documents regarding standards for water and sewer service renewals within the public right of way.

6.0 PROCEDURE:

6.1 The replacement and/or repair of water and sewer services may be initiated by the Public Utilities Director; by request from the property owner; occupants or tenants of the property served; by direction of the Plumbing Inspector; or by prescription of Sec. 10-6082 of the City Code of Ordinances.

6.2 Requests by owners, occupants or tenants of the property served shall be considered only in the event the service is leaking, or is delivering and insufficient quantity of water

6.2.1 In the case of a request due to insufficient quantity of water, only a service delivering less than 10 GPM (gallons per minute) will be considered.

6.3 There shall be no charge for replacement or repair except when the existing service is enlarged. If an existing galvanized water service or terra cotta sewer service is increased in diameter, a fee shall be charged equal to the differential cost between the existing size and the proposed size as set forth in Sec. 8-2039. If a copper water service is enlarged, a fee shall be charged for the proposed service size as set forth in Sec. 8-2039.

6.4 Replacement of water and/or sewer services shall extend from the main to the property line and shall conform to the provisions of the City Code and the Public Utilities handbook. Water meters shall be relocated as necessary.

6.5 Replacement of sanitary sewer service clean-outs that connect to a City sewer main located in a public right of way, shall be replaced at no cost to the customer if damaged by a “third party” or has deteriorated due to age, materials, or root intrusion. When damage is caused due to neglect, or abuse, such as vehicular or lawn maintenance equipment, the property owner shall be held financially liable for the necessary repairs. When the damage cannot be clearly determined, the repairs shall be made at the City’s expense.

6.5.1 The property owner shall the bear the cost of replacement of a damaged clean-out when it is located within a City of Raleigh sanitary sewer easement. CORPUD (**C**ity of **R**aleigh **P**ublic **U**tilities **D**epartment) Code Enforcement officers shall contact the affected property owner to establish a schedule for repair in order to ensure the integrity of the sanitary sewer system.

6.5.2 Sanitary sewer services located within a City of Raleigh sanitary sewer easement, but outside a public right of way, that is connected to a City of Raleigh sanitary sewer main, shall be the responsibility of the property owner. The City of Raleigh bears no responsibility for the deterioration, corrosion, root intrusion or any other damage which results in interrupted service. All responsibility and associated cost for repair to a sewer service connection is the responsibility of the property owner.

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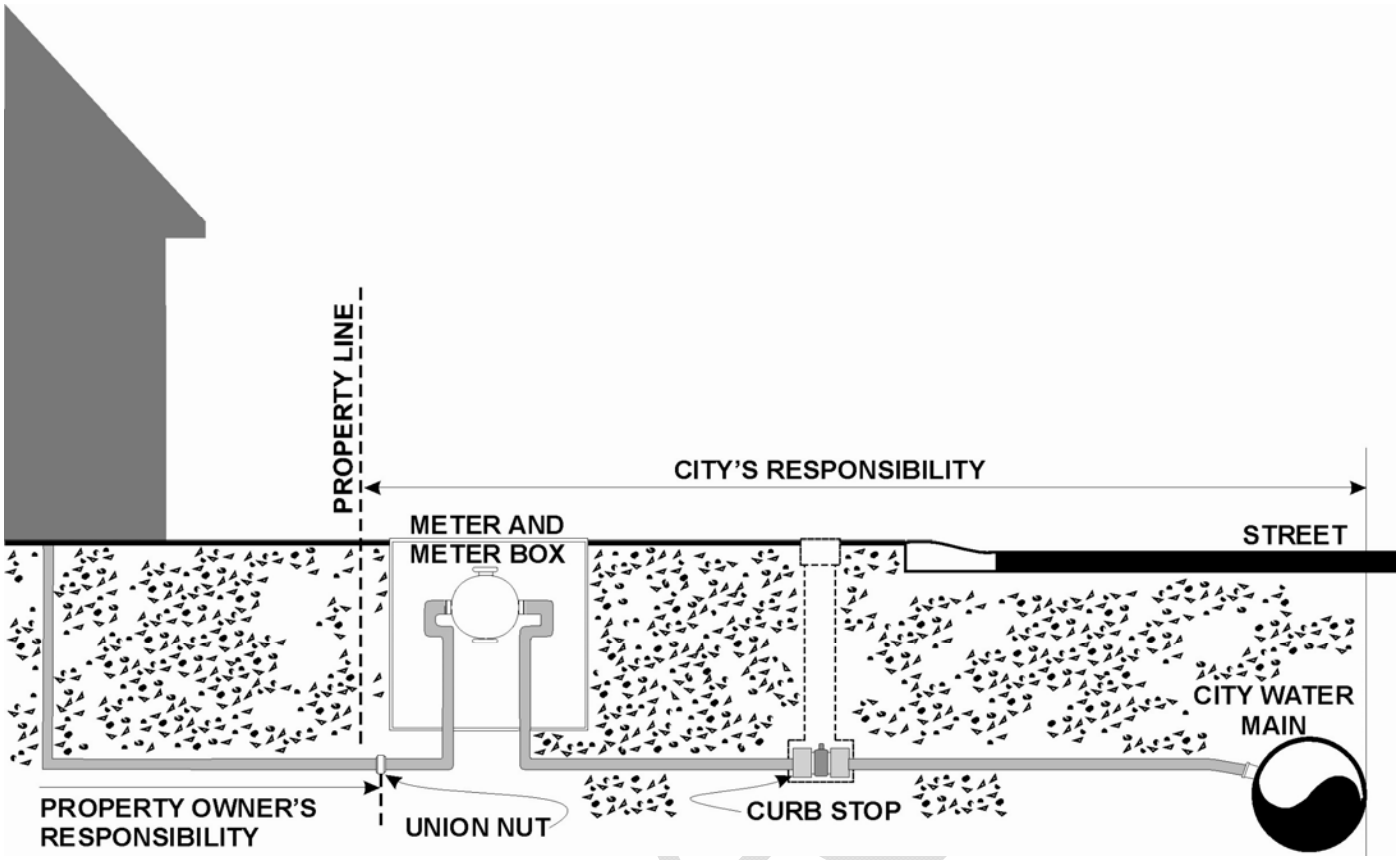
PROPERTY LINE
CITY'S RESPONSIBILITY
METER AND
METER BOX
STREET
CITY WATER
MAIN
PROPERTY OWNER'S
RESPONSIBILITY
UNION NUT
CURB STOP

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ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL: Public Utilities			
SUBJECT	NUMBER	REV	EFFECTIVE DATE	PAGE / OF
Fire Hydrant Meter - Uses and Installation	604-3	2		1 / 5
	SUPERSEDES	PREPARED BY		APPROVED BY
		Assistant Public Utilities Director		City Manager

1.0 PURPOSE:

To establish procedures and regulations regarding the usage and metering of water from fire hydrants for the purchase of bulk water by any person(s), firm, or corporation.

2.0 ORGANIZATIONS AFFECTED:

Public Utilities Department
Finance Department

3.0 DEFINITIONS:

Fire Hydrant Meter: A water meter specifically designed, fabricated and leased from the City of Raleigh Public Utilities Department for consumers to purchase water from the City from fire hydrants in accordance with the City's Hydrant Meter Program.

4.0 REFERENCES:

5.0 GENERAL:

All customers will be required to complete a **Hydrant Meter Application** (attached) in person at the City of Raleigh Public Utilities Meters Division Office, 3304 Lake Woodard Drive, for the use of fire hydrant metering devices. The application must be accompanied by a deposit of $500.00 per hydrant meter that will be applied to the final bill, paid by check, Visa or MasterCard – no cash will be accepted by the City for hydrant meter deposits.

5.1 Hydrant meter assemblies are subject to availability.

5.2 Customers will be billed on a monthly cycle by Utility Billing for all water usage at the current applicable outside City retail rate per CCF (748 gallons)

5.3 Upon return of the hydrant meter assembly (and associated equipment) deposits shall be refunded to the customer within thirty (30) days, providing the following has occurred:

5.3.1 Hydrant meter assembly (and associated equipment) have been returned in good working condition, with no excessive wear or damage

5.3.2 Customer has paid for any damaged and/or missing equipment

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5.3.3 All outstanding water usage and rental charges for the hydrant meter assembly have been paid in full by the customer

6.0 PROCEDURES:

6.1 Customers may apply for temporary bulk water sales through the City's hydrant meter program. The City also offers bulk reuse water. For more information concerning bulk reuse water contact the Neuse River Waste Water Treatment Plant at (919) 996-3700.

6.2 Customers will be allowed to rent the hydrant metering devices by the day, month, or year. Non-refundable rental rates for the hydrant meter and backflow preventer assembly are listed in the table below, no pro-rating will be allowed on monthly and yearly accounts. In addition to the rental charge, the customer is responsible for paying for the actual amount water used (consumed) and will be billed by the City based on the meter readings for the rental period. Rental and consumption charges shall be billed monthly or at the end of the applicable rental period, whichever comes first.

Daily Hydrant Meter Rental Rate	♦ $10.00 / day
Monthly Hydrant Meter Rental Rate	♦ $280.00 / Month
Yearly Hydrant Meter Rental Rate	♦ $1,500.00 IF paid in advance when account is first established, otherwise customer is charged monthly rental
Consumption Rate	♦ $5.90/ccf (1 ccf = 748 gallons)

Rental rates are for the actual time customer has the meter, regardless of usage, and will be billed monthly unless an annual rental fee is paid in advance.

6.3 No meter shall be issued unless temperature is 35 degrees Fahrenheit or above and rising. City staff will provide training and written instructions to all applicants on the proper operation of fire hydrants, and the proper techniques for the connecting and removing of the hydrant meter assembly.

BILLING

Customer Billing:

All customers will be billed monthly, for water usage and rental fees. The customer will send their readings to the Meters Division by the 7th day of each month. Readings can be sent by fax @ 919-996-2750, by e-mail to hydrant.meter@ci.raleigh.nc.us , by mail to the City of Raleigh, Meters Division, 3304 Lake Woodard Dr, Raleigh NC 27604, or bring the hydrant meter to the Meters Division at 3304 Lake Woodard Dr to be read.

NOTE: If readings are not received by the 7th day of each month, accounts with 5/8" hydrants meters will be charged for 25 CCF and larger hydrant meter accounts will be billed for 100 CCF. When accurate readings are acquired, and if the usage is under, there will be a credit adjustment; if the usage is over, the customer will be billed for the difference. Failure to report readings for two consecutive months will result in a $50.00 per month penalty to be deducted from the $500.00 deposit at the end of the rental period. Continued failure to report meter readings in a timely manner for billing or accounts

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that are not paid in full will result in the loss hydrant meter privileges, forfeiture of hydrant meter deposits and the permanent closing of the hydrant meter account with the City.

DEPOSIT:

Deposit refunds will be processed at the end of the rental period, once all water charges and rental fees accrued by the customer have been satisfied. The cost of repairs or replacement for the hydrant meter and/or back flow prevention device will be deducted from the deposit prior to any refund being processed. Deposits will be forfeited in their entirety if all charges and fees are not paid within 30 days of completion of the rental.

6.4 PENALTIES

Only City of Raleigh hydrant meters with approved back flow prevention devices provided by the City may be used to obtain bulk water from a fire hydrant in the City of Raleigh service area. The City of Raleigh service area includes Raleigh, Garner, Rolesville, Knightdale, Wendell, Zebulon and Wake Forest.

The use of any hydrant meter assembly other than those provided by the City of Raleigh will be subject to the issuance of Civil Penalties as outlined in the Raleigh City Code Section 8-2002 and 8-2014.

Continued use of a hydrant meter, when usage readings are not being registered will be considered a violation of the Raleigh City Code Section 8-2002 and will be subject to civil penalties in the amount of $500.00 per day, per violation. It is the responsibility of the customer to notify the Meters Division at 919-996-2797 when the meter is not registering / recording the water usage.

All hydrant meters assemblies are the property of the City of Raleigh Public Utilities Department. Failure to return the hydrant meter assembly at the end of the rental period will be considered theft of City property and will be prosecuted to the fullest extent of the law.

Individuals using City water that is unmetered and unauthorized by the Public Utilities Director are subject to a civil penalty of $500.00 per day, and applicable water consumption charges.

Hydrant Meter Usage

A. Customers shall be trained in proper usage prior to issuance of a hydrant meter assembly.

B. The customer must notify the Meters Division @ (919)996-2797 prior to relocating the hydrant meter to a new location. Customer must specify the fire hydrant location where the unit is being relocated to.

C. 3” hydrant meter assemblies shall not be used in any residential neighborhood, with the exception of filling a swimming pool directly from a fire hydrant.

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D. At not time shall any hydrant meter/backflow assembly be disassembled by anyone other than City of Raleigh staff.

E. At not time shall any hose be left connected to a fire hydrant that is not connected to a hydrant meter assembly.

F. Hydrant meter assemblies may be securely mounted to water truck/tankers. Truck mounted hydrant meter assemblies must clearly display the provided placard at all times.

Note: Failure to comply with the above conditions will result in the immediate suspension of hydrant meter privileges and forfeiture of the hydrant meter deposit.

6.5 Water Restrictions

All hydrant meters may be subject to immediate recall/return in the event of the implementation of Water Restrictions due to severe drought conditions.

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CITY OF RALEIGH
HYDRANT METER APPLICATION

Date Requested _____ Service Date_____

Name of Company_____

Federal I.D #_____ or Social Security #_____

Requested by _____

Email Address _____

Billing Address: _____
(street)
_____
(city) (state) (zip)

Service Address: _____
(street)
_____
(city) (state) (zip)

Office Telephone # _____ Cell Telephone # _____

Will you be working in Garner /Rolesville/Wake Forest/Knightdale/Wendell/Zebulon? Yes or No

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I have received, read, and understood the City of Raleigh Hydrant Meter Policy

Print Name: _____

Signature: _____

Date: _____

(office use only)

Received Hose: Yes or No
Received Wrench Yes or No
Received Hot box Yes or No
Received NT/RT Adapter Yes or No

Complete Meter Assembly: Yes or No
Other:_____

Meter Number _____
Meter Reading _____
Meter Size _____

Rental Period Day Month Yearly

Customer Number _____ Premise Number _____

Sequence Number _____ Deposit Number _____

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close out information

Date Closed _____ Meter Reading _____ Days _____

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(office use only)

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ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL				
SUBJECT	NUMBER	REV	EFFECTIVE DATE	PAGE	OF
Reporting fire hydrants that are out of service	604-6	2		1	1
	SUPERSEDES	PREPARED BY		APPROVED BY	
	604-6	Assistant Public Utilities Director		City Manager	

1.0 PURPOSE:

To establish a procedure for reporting fire hydrants which are inoperative or out of service.

2.0 ORGANIZATIONS AFFECTED:

Public Utilities Department
Fire Department including Raleigh Merger Areas
Emergency Communications Center

3.0 GENERAL:

3.1 All fire hydrant interruptions shall be reported immediately by the person causing the interruption or by the person finding an inoperative hydrant.

3.2 Fire hydrant interruptions shall be held to the minimum amount of time possible.

4.0 PROCEDURE:

4.1 Fire hydrants found inoperative or placed out of-service shall be reported by telephone directly to the Emergency Communications Center at 829-1911.

4.2 As soon as an inoperative or out-of-service fire hydrant is returned to service, it shall be reported by telephone using the same reporting schedule as for out of service reports.

4.3 Fire hydrants found by the Fire Department to be inoperative or having other problems will be reported by the Fire Department to the Public Utilities Field Operations Center, Water Distribution Division. An electronic mail response on repair activities and the reason a hydrant could not be repaired, if appropriate, will be returned to the Fire Department.

4.4 Fire hydrants that are out-of-service shall be marked by putting an out of service ring on the steamer nozzle.

4.5 Private fire hydrants that are out-of-service will be the responsibility of the Fire Department.

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4.5.1 The Fire Department will send a notice to the Public Utilities Code Enforcement staff who will then contact the property owner about the out-of-service hydrant. The Public Utilities Department will then send a second notice to the property owner if the hydrant is not repaired. If the property owner does not fix the hydrant within 90 days, The Public Utilities Department will fix the hydrant and send the bill for the repairs to the property owner.

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ADMINISTRATIVE REGULATION

CITY OF RALEIGH, N.C.	MANUAL Public Utilities			
SUBJECT	NUMBER	REV 2	EFFECTIVE DATE	PAGE 1 OF 2
Water Valve Operation	SUPERSEDES 604-7	PREPARED BY Assistant Public Utilities Director		APPROVED BY City Manager

1.0 PURPOSE:

To establish a formal procedure for operation of water valves within this existing city water system.

2.0 ORGANIZATIONS AFFECTED:
Public Utilities
Public Works
Fire Department
Emergency Communications Center

3.0 REFERENCES:

3.1 The Code of the City of Raleigh; Section 8-2013

3.2 Standard Procedure 604-6 (Reporting Hydrants out of Service)

3.3 Departmental Operating Instruction 601-5

4. 0 GENERAL:

4.1 No valves in the existing water system shall be operated without following the procedures outlined below.

4.2 The City of Raleigh Public Utilities Department is the primary agency to operate any existing system hydrants valves.

5.0 DEFINITIONS:

5.1 System valves shall be defined as any valve which has main pressure against either gate face. Newly installed tapping valves and control valves to main extensions not yet accepted for service are considered as system valves. Valves with a main extension still under construction are not considered as system valves.

5.1.1 During installation of a water main, connection to the existing system valve is not allowed since the valve may not be able to hold hydrostatic pressure. A new valve must be installed to limit this concern

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5.2 Contractor shall be defined as any person or firm making repairs, attachments or extensions to the existing City water' system; including, but not limited to Public Utilities, Public Works, and

Fire Department personnel and their assignees.

6.0 PROCEDURE

6.1 A contractor requiring closing of valves must provide the Public Utilities Department with a 72-hour notice and at least 24-hour written notice to residents affected by the shut-down. The Public Utilities Department may be contacted at 919-996-2737 of after hour communication at 919-829-1930 for emergencies

6.1.1 Shut-down requests must be submitted by authorized personnel from the Public Utilities, Public Works, and Fire Departments.

6.1.2 Shutdown & valve request form shall be submitted to the Public Utilities Water Distribution Division through authorized personnel via e-mail, and/or fax at (919) 212-5939
No exceptions to this rule

6.3 Anytime a contractor or City personnel are flowing fire hydrants for any reason between 7:30 a.m. and 4:00 p.m. they shall notify Public Utilities Operations Center by telephone (831-6900) or radio between 7:30 a.m. to 4:00 p.m. Between 4:00 p.m. and 7:30 a.m. they shall notify Emergency Communications Center at (919-996-2737).

6.4 Anytime City personnel or contractors find a valve closed in the City water system they shall contact the City Valve Crew Supervisor or Water Operations Superintendent at (996-5921) before opening.

7.0 EMERGENCIES

7.1 In the case of an emergency, the contractor shall be allowed to take such steps with valves and hydrants as are necessary for the protection of life and property. Notification must be made after the first valve operations are completed as outlined in 6.5. An Emergency shall be defined as a break in an eight inch or larger water main, or where ruptured smaller lines are causing property damage.

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