

**ARTICLE VIII
WATER AND SEWERAGE SYSTEMS**

Section 8.1 Approval Procedure

The following process applies to the approval for the installation of water mains, water systems, sewer mains, sewerage systems, and appurtenances in residential and commercial developments to be operated and maintained by the City of Dawsonville. The process includes the following steps:

- (a) Application and Preliminary Approval;
- (b) Construction and Inspection; and
- (c) Final Acceptance.

Section 8.2 Application and Preliminary Approval

(a) The Developer must submit to the City five (5) copies of the preliminary plans showing the location and general plan for water and/or sewerage systems. If the subdivision is to be constructed in phases, the Developer should also include a general layout of the entire subdivision as well as the more detailed layout of the specific phase(s) to be approved at the time.

(b) The City will evaluate the site for water service as well as the potential need for looping easements by conducting flow and pressure tests, and/or computer modeling in the area of the proposed development. All cost incurred for the evaluation, will be paid by the developer.

(c) The Developer or a representative of the Developer must bring a formal request for water and/or sewer service to the City. The City will take action to commit to serve a specific number of lots in the subdivision as presented, modify the request, or reject the request entirely. The City will also determine the City's participation in water and sewerage system construction, as appropriate.

(d) If the City commits to serve the proposed development, the Developer must submit to the City a minimum of three (3) sets of plans prior to submission for design and construction approval by the Georgia Environmental Protection Division. The water and sewerage system improvements being submitted to the City must be in accord with the most current Design Criteria Standards adopted by the City Council.

(e) If the plans submitted to the City for review are approved, five (5) copies of the plans will be retained by the City and the remaining copies will be returned to the Developer.

(f) If changes are required, a checklist will be returned to the Developer.

(g) After the changes have been made, the Developer must submit five (5) copies of the revised construction plans to the City for review.

(h) After review and approval by the City, five (5) copies of the plans stamped "Approved for Design Concept" will be retained by the City and the remaining copies returned to the Developer.

(i) The City shall bill the Developer for all research and engineering time on the application and approval process.

(j) The plans shall be submitted by the Developer to the Georgia Environmental Protection Division (EPD) for review and approval prior to construction. Should any changes be made to the plans resulting from the EPD review and approval process, the Developer shall provide to the City one (1) set of plans as approved by EPD for construction.

Section 8.3 Construction and Inspection

(a) A representative of the Developer, the installation contractor, the County Fire Marshall and the city building and water and sewer representatives shall attend a pre-construction conference at the city at least ten (10) working days prior to the start of any construction. Please schedule the pre-construction conference to coordinate with all county and city representatives work schedule. The purpose of this conference will be to define roles and responsibilities for the correct execution of the proposed water and/or sewer line installations.

(b) All water and/or sewer line installations shall be inspected during construction. City personnel or the City Engineer shall inspect to verify that all work is installed in accordance with the Construction Standards of the City and design provided by the Developer. The City shall receive a set of as-built drawings, as prepared by the design engineer, at the completion of all work. Payment for the inspection services provided by the City will be billed by the City to the Developer within seven (7) days of final inspection.

(c) The contractor shall notify the City 24 hours in advance of starting construction.

(d) The contractor shall perform all required water and/or sewer line tests. The City representative shall be present during testing and shall be provided detailed records for the City.

(e) The contractor shall prepare the water lines for bacteriologic testing. It is the sole responsibility of the City to secure the samples and have them tested in an EPD approved water laboratory. The Developer will be notified of the results. Successful bacteriological testing must be completed prior to the acceptance by the City.

(f) The Developer must have an executed Change Order in hand before making any field changes that do not conform to the water and/or sewer line plans approved by EPD.

Section 8.4 Final Approval

(a) The Developer shall submit to the City three (3) copies of the as-built drawings stamped by a registered civil engineer.

(b) The City Council will make final acceptance for ownership of the water and/or sewer line installations based on the City's final inspection and the City Engineer's final inspection. The Developer shall submit to the City a copy of the final subdivision plat for certification, with respect to easements dedicated to the City.

Section 8.5 Design Criteria

GENERAL

(a) A horizontal separation of at least 10 feet must be maintained between the water main and any existing or proposed parallel sewer. When water mains cross sewers, a minimum vertical separation of 12 inches must be provided between the two pipes (measured edge to edge), and the water main must cross over the sewer line. At crossings, one full length of water pipe must be located so that both joints are as far from the sewer as possible.

(b) The minimum cover over water and sewer lines shall be three (3) feet.

(c) All elevation data shall be referenced to mean sea level (MSL).

(d) A project location map shall be provided on the drawings.

(e) The drawings shall bear the following notes:

(1) The City of Dawsonville shall be notified 24 hours prior to any water or sewer line construction or repair. Call City Hall at (706) 265-3256.

(2) All water main and sanitary sewer materials and workmanship shall be in accordance with the City of Dawsonville Design Criteria.

(3) The Contractor shall be responsible for maintaining a marked-up set of design drawings showing "as-built" conditions. These "record drawings" shall be made available to the City Engineer and/or the City Inspector upon request. The mark-ups shall be at the site at all times and shall be utilized to develop final record drawings.

(f) The following note shall appear on the final plat and/or as-built drawing:

Owners Dedication Certificate

City of Dawsonville

Dawson County, Georgia

The owner of the land shown on this plat and whose name is subscribed thereto, and in person or through a duly Authorized agent, acknowledges that this plat was made from an actual survey and Dedicated to the City of Dawsonville forever, all water mains, sanitary sewers, easements, And associated appurtenances thereon shown.

Owner _____

Date _____

(g) Contractors and subcontractors are required to possess a business license to work within the applicable jurisdiction. Proof of said license and all other applicable permits (Erosion Control, DOT, etc.) shall be on the job site. The Contractor shall have the state utility license. The Contractor shall submit proof of insurance to the City with a minimum general liability of \$1,000,000. The Contractor shall

purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's execution of the work, whether such execution be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts of them may be liable:

(1) Claims under workmen's compensation, disability benefit and other similar employee benefit acts.

(2) Claims for damages because of bodily injury, occupational sickness or disease or death of his employees.

(3) Claims for damages because of bodily injury, sickness or disease or death of any person other than his employees.

(4) Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person.

(5) Claims for damages because of injury to or destruction of tangible property including loss of use resulting therefrom.

(6) Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident and a limit of liability of not less than \$500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$200,000 aggregate for any such damage sustained by two or more persons in any one accident.

WATER LINES INSTALLED WITHIN SUBDIVISIONS

(a) Water lines shall have a minimum diameter of eight (8") inches unless approved by the City. The lines must be large enough to meet the residential demand of the proposed subdivision and fire flow requirements combined. Acceptable fire flow is a minimum of 500 gpm at 20 psi. The residential demand is determined as follows:

Total Units Served	GPM Per Unit
0-5	6
6-10	4
11-20	3
21-100	2.5
101-200	2.0
201 +	1.5

(b) Looping and Easements

(1) The overall distribution plan adhered to by the City requires looping of water lines. This looping provides adequate fire flow protection while eliminating dead ends and stagnated water.

(2) It is the City's policy to require 20 foot wide utility easements between lots in new subdivisions where a loop cannot be installed to connect to another subdivision or main line in the future. The design engineer should determine the location of possible future development around the proposed subdivision, consider the ease of construction of a loop to the future development, and discuss these with the City. All easements must

be shown on the plans and on the final recorded plat as 20 foot utility easements dedicated to the City of Dawsonville.

(3) The Developer must lay the water line along the entire length of each required easement to the adjoining property with a dead-end gate valve at the end. No dead-end lines allowed over 1,000 feet unless approved by the City Engineer.

(4) Water lines are to be installed only on dedicated rights-of-way and centered within the easement. In general, easements dedicated to the City will be recorded and used by City personnel for maintenance purposes only. Non-permanent structures such as fences, shrubs, and trees shall be allowed within the water line easement. All utilities crossing roadways shall be bored, including service laterals.

(c) Subdivision water lines shall have a minimum cover of 3 feet to the top of the pipe.

(d) Pipe and Fittings

(1) All water main piping shall be a minimum of 8 inches unless approved by the City and shall be ductile iron pipe (DIP) and shall conform to AWWA C 151 with a minimum pressure class 350 or thickness class 52 unless otherwise specified or shown on the drawings. Pipe and fittings shall be cement lined in accordance with AWWA C 104.

(2) Fittings shall be mechanical joint compact ductile iron and conform to AWWA C 153 with rated working pressure of 350 PSI or AWWA C 110 with rated working pressure of 250 PSI.

(e) A 3/4 inch service tap and corporation stop for chlorination shall be indicated on the plans within 3 to 5 feet from the beginning point of the water line installation.

(f) All services crossing streets inside the subdivision shall be installed inside 1 1/2 inch or 2 inch Class 160 PVC conduit. Conduit shall extend to a minimum of 5 feet on each side of the curb/pavement.

(g) Developer shall be responsible for contacting the power company and determining where the transformers will be positioned so as to avoid conflict with meter set and fire hydrant locations.

WATER LINES INSTALLED OUTSIDE OF SUBDIVISION SITE

(a) All piping and fittings shall conform to the design criteria for water lines installed within subdivisions as a minimum. More stringent criteria may be required at the City's discretion.

(b) Water lines shall be located within 5 feet of the right-of-way limits with a minimum cover of 36 inches on county roads, state routes, and federal highways. All bores shall have steel casing with D.I. carrier pipe, with the casing length equal to the width of the pavement plus 10 feet on each side.

(c) If any portion of a project is within a Georgia DOT right-of-way, then a DOT permit application will be required. The Developer must prepare a complete application package and provide it to the City for submittal to the Georgia DOT.

(d) Crossings of large streams wider than 15 feet shall require restrained joint D.I. pipe.

FIRE HYDRANTS

(a) Fire hydrants are to be spaced a maximum distance of 500 feet apart inside a proposed subdivision and a maximum of 1,000 feet outside the subdivision, measured from hydrant to hydrant along the roadway.

(b) Hydrants are to be set within a foot of the right-of-way limits on any street or road and are to be set on property lines where possible.

(c) Fire hydrants shall be required at the end of all dead-end lines such as those installed in cul-de-sacs.

(d) Each fire hydrant shall have a 6 inch gate valve bolted directly to a hydrant tee.

(e) No fire hydrants shall be placed on water mains which are smaller than 8 inches in diameter unless the main is "looped" or the Developer can show the farthest hydrant can maintain a flow of 500 gpm at 20 psi.

(f) In commercial and industrial areas, fire hydrants shall be placed such that the maximum hose lay (as a truck travels) shall be no greater than 300 feet, unless the Fire Department requires closer spacing for specific reasons.

(g) As a minimum, fire hydrants shall be placed such that the maximum hose lay (as a truck travels) shall be no greater than 500 feet in single family residential areas and 350 feet in multi-family residential housing complexes. Note: The Fire Marshall should be contacted to determine if stricter requirements are in order for specific project types.

(h) Fire hydrants shall be three way hydrants with a 4 1/2 inch valve opening and shall be as manufactured by Mueller, M & H Valve, American-Darling, or approved equal. Locking mechanisms approved by the Fire Department and the City shall be provided on hydrants located in remote locations when determined by the City.

(i) Gate valves shall be installed on all hydrant leads.

(j) Valve location markers shall be installed for all valves (except hydrant lead valves). The markers shall be four feet long concrete posts with brass discs cast into one side. The marker posts shall extend from 1/2 to 18 inches above finished grade.

VALVES

(a) Gate Valves

(1) Gate valves size 3 inches and larger shall be resilient seat wedge type and shall conform with the specifications of the American Water Works Association, Designation C509 with a wall thickness that meets or exceeds AWWA C 153, latest edition rated for 200 psi minimum working pressure. Gate valves shall be

equipped with "O" ring stem seals above and below stem thrust collar. Gate valves for use on mechanical joint ductile iron pipe and slip joint ductile iron pipe shall have manufacturer's standardized mechanical joint ends. Gate valve body and bonnet shall be ductile or cast iron and shall be fusion bonded, interior and exterior, with epoxy coating which conforms to AWWA C 550, latest edition.

(2) Water mains in which the valves are installed shall be tested as specified and the valve must remain water tight under this pressure in each direction.

(3) Valves shall open counter clockwise, be designed for vertical installation, be the non-rising stem type, and shall have 2 inch square operating nut.

(4) Valves shall be equipped with valve boxes and 12" x 12" protective concrete pad unless installed in pavement. Provide extension stem where required to bring the operating nut to within 12 inches of ground surface. Extension connection shall be with wrench nut coupling; no set screw allowed.

(5) All gate valves shall be manufactured by Mueller, M & H Valve, American-Darling, or approved equal.

(b) Butterfly Valves

(1) Butterfly valves shall be resilient seated, short body design and shall conform to AWWA C 504 latest edition. Valves shall be Class 250 (250 psi bi-directional shut-off rating, 500 psi body hydrostatic shell test, fusion bonded epoxy coated interior and exterior, and maximum line velocity of 16 feet per second). Valves shall be Mueller, M & H Valve, Clow, Dezurik, or Pratt. Certified test results shall be furnished with each valve.

(c) Every tee shall have two valves away from the source, and every cross shall have three valves away from the source.

(d) An inline valve shall be installed every 1,000 feet of water line within a subdivision, and every 1,000 feet outside of subdivision.

(e) All connections to existing water mains shall be made with tapping sleeves and tapping valves. All back-taps should be shown on the drawings and labeled as such.

(f) Tapping valves shall be as manufactured by Mueller, M & H, American-Darling, or equal. Tapping sleeves shall be fabricated steel.

(g) All stub-out valves and dead-end valves shall be shown to have a mechanical joint cap on the plans.

SERVICES

(a) Meters and backflow preventers shall be installed by the City. The City will make all service connections and collect fees for each meter set.

(b) Water service lines on the City side of the meter shall be ¾" polyethylene CTSPE-340: SDR-9 with a pressure of 200 psi.

BACKFLOW PREVENTION

(a) Backflow prevention devices shall be required on all housing and all commercial, industrial, and institutional establishments' water service lines.

(b) As a minimum, commercial, industrial, and institutional establishments and multi-family housing shall install and maintain double check valve assemblies in a separate vault immediately downstream from the City's meter.

(c) Establishments determined to present a high hazard backflow potential shall be required to install and maintain reduced pressure zone (RPZ) backflow preventers.

(d) Double detector check valves shall be installed on all fire sprinkler mains. Valves shall be housed in a vault as close to the city main as possible. A double check valve and a detector check valve in combination may be provided in lieu of the double detector check.

SEWER LINES INSTALLED INSIDE AND OUTSIDE SUBDIVISIONS

(a) A 20'-0" permanent, recorded easement shall be required on all 8 inch diameter and larger sanitary sewers. The sewer shall be on the centerline of the easement. No permanent buildings or structures shall be built within easements.

(b) Minimum slope for 8 inch and larger gravity sanitary sewer pipe shall be 0.50% unless approved by the City, the maximum slope shall be 15.0%.

(c) Gravity sanitary sewer pipe material shall be ductile iron pipe or SDR 26 PVC unless depth of cover is 20 feet or greater, less than 4 feet, or the sewer is to be laid in fill area. In these cases, the pipe shall be ductile iron, Class 51.

(d) Bedding for sanitary sewers shall meet the following: Embedment materials shall be angular graded crushed stone, 1/4 inch to 3/4 inch in size with no more than 5 % passing a No. 8 standard sieve in accordance with Class I materials as defined in ASTM D2321 Section 5.1.1. -53-

(e) Sanitary sewer force mains shall be ductile iron pipe, Class 50 minimum.

(f) Service lateral pipe material shall be SDR 26 PVC sewer pipe six (6") inch minimum from the main to the property line.

(g) Cleanouts shall be placed on all building service laterals at the point at which City maintenance terminates. This point shall be the curb line, the property line, the right-of-way line, or the easement line as applicable. Cleanouts shall be 6 inch and have a brass cap.

(h) Manhole frames and covers shall be manufactured by Vulcan, U.S. Foundry or approved equal. The rings and cover shall have a minimum weight of 350 pounds.

(i) At the point of connection in manholes the invert of building service lines shall be placed, as a minimum, at the crown of the City sewer.

(j) The minimum diameter of gravity sanitary sewer pipe shall be 8 inches with the exception of sewer service line which may be a minimum of four (4") inches to the property line. A 4" x 6" adaptor shall be installed at the connection to the 6" service line of the City.

(k) Manholes shall be placed at all changes in direction and grade of sanitary sewers. Manholes shall be spaced such that the distance between manholes does not exceed 400 feet.

(l) Outside drop connections shall be constructed at manholes on all influent sewers where the invert elevation is greater than 2 feet over the invert elevation of the effluent sewer.

(m) Sewage pumping stations will not be permitted unless the Developer can demonstrate extreme hardship would result if the station were denied. Pumping stations will be discouraged and therefore, only permitted on a case by case basis. The pump stations shall meet the following standards:

- (1) Dual submersible pump type
- (2) Separate valve pit with gate valve and check valve on each discharge line.
- (3) Three-phase power shall be provided. Manual transfer switch with adaptor for portable standby generator required. A permanent standby generator and automatic transfer switch shall be provided at all pump stations which serve an area with more than fifty (50) houses.
- (4) Site shall be properly graded, fenced with a turnaround. Minimum fenced area shall be 30 feet by 30 feet. Access road and turnaround shall have eight (8") inch compacted crusher run area.
- (5) Each pump shall be sized to pump peak design flow against both static and friction heads.
- (6) Minimum force main velocity shall be two (2') feet per second with minimum force main size of four (4") unless otherwise approved.
- (7) Pumps shall be as manufactured by Flygt Pump Company or approved equal.
- (8) Each station shall be provided with a remote telemetry system compatible with the City's system.

(n) No sewer line construction will be allowed within 25 feet of a stream without obtaining a stream variance.

(o) Plans and profiles showing all utility and pipeline crossings as well as existing and proposed grades shall be provided for all sanitary sewers. Building services are excepted.

(p) Sewer maintenance access shall be maintained on all sanitary sewer easements. Maintenance access is defined as grades, soil compaction and slopes which allow a sewer jet truck (weighing approximately 50,000 pounds) to navigate easily. Maximum slope shall not exceed 20%.

WASTEWATER PRETREATMENT

(a) Sand traps and oil separators with sample station manholes shall be installed in all sanitary sewer service lines from service stations, garages, and similar operations. Domestic sewage shall not pass through sand traps or oil separators.

(b) Grease traps and sample station manholes shall be installed in process waste lines of all sanitary service sewers for commercial, industrial, and institutional establishments with food preparation areas.

(c) If dumpster pad drains are to be tied onto the sanitary sewer, a grease trap and sample station manhole shall be placed between the pad and the City sewer. Domestic wastewater shall be excluded from the trap. Food process waste streams may utilize the same trap if sized appropriately.

(d) Rainwater shall be prevented from entering the sanitary sewer at all dumpster pad locations. Method must be detailed on drawings.

(e) Grease trap and oil separator details shall appear on the project drawings and shall be approved prior to installation.

(f) Oil separators shall be sized to handle two (2) times the expected flow rate.

(g) Grease traps shall be sized as necessary with the minimum allowable size being 1,000 gallons. If a dumpster pad is tied into the grease trap the minimum size is 1,500 gallons.

(h) Sample station manholes may be required on all commercial, industrial, and institutional sanitary service sewers.

PLANS FOR PROPOSED SUBDIVISION WATER AND SEWER SYSTEM

(a) Design engineer/Developer is to submit drawings on 24" x 36" paper stamped by a professional engineer registered in Georgia. City of Dawsonville standard water and sewer line details shall be a part of the plans and specifications.

(b) Scale is to be 1" = 100'

(c) Site plans shall include:

- (1) Streets and street names with lot layout and district;
- (2) Location of storm drains, drainage easements, and any retention ponds;
- (3) Location map and topography of subdivision;
- (4) Water line layout with all gate valves, air release valves, fitting, strapping, sleeves, hydrants, chlorination taps, and sampling station including materials and size labels for each;
- (5) Any rock outcroppings;
- (6) All easements with labels;
- (7) City road and DOT right-of-ways;
- (8) Existing water lines, hydrants, and valves in surrounding area including materials and size labels for each;
- (9) Service laterals;

- (10) Water line legend with symbols;
- (11) Details of special water line installations such as stream crossings, elevated lines on piers, bridges, etc.;
- (12) All pad mounted electrical transformers; and
- (13) Project name with specific phase(s) to be reviewed for approval clearly marked red on the plans.

(d) All proposed water lines and appurtenances shall have a line weight equivalent to a #3 pen. All other lines shall have a line weight equivalent to a #1 or #2 pen.

(e) If the subdivision consists of multiple phases or units, two copies of the overall subdivision plan shall be submitted with the phase(s) or unit(s) being requested for approval. Scales of the overall plans may vary.

AS-BUILT DRAWINGS

(a) As-builts must be submitted before a project can receive final approval by the City.

(b) Copies must be clear, clean, and legible.

(c) Drawings shall include a site plan of the water and sewer lines and appurtenances as they were installed with any shop drawings needed for clarification or as requested by the City.

(d) As-built drawings must be on mylar, 24" x 36" in size, and stamped by a Professional Engineer registered in the State of Georgia.