GEORGETOWN MUNICIPAL WATER & SEWER SERVICE

ENGINEERING

MANUAL

GMWSS

1000 West Main Street

Georgetown, KY 40324

January 2024

Approved by GMWSS Board of Commissioners ***Date: October 17, 2023***

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SECTION 1: INTRODUCTION

1.0 PURPOSE

This manual establishes a set of definitions, submittal requirements, design standards, approval procedures, and construction standards to be used in the planning, design, and construction of infrastructure projects within the Georgetown Municipal Water & Sewer Service (GMWSS) service areas. GMWSS reserves the right to periodically amend and update the Water Distribution System Manual without notice and to interpret the meaning of all statements made herein.

Due to the wide variety of situations that may present themselves, it is impossible to address all scenarios. Exceptional measures may be required to address project- specific conditions. Many criteria listed are minimums. GMWSS reserves the right to exercise judgment and will make the final determination as to the acceptability of each design. Final design decisions will be made, favoring the minimum life-cycle costs.

Where the designer believes that project-specific conditions warrant a variance to or waiver from the provisions of this Manual, they should forward a request for such consideration to GMWSS in writing.

1.1 DEFINITIONS

AMERICAN WATER WORKS ASSOCIATION (AWWA) - an organization which develops, adopts, and publishes standards for the construction, operation, and maintenance of improvements to water systems.

APPROVED - Material, equipment, workmanship, process, or method that has been accepted by Georgetown Municipal Water and Sewer Service as suitable for the proposed use.

AS-BUILT - A certification by the OWNER/DEVELOPER whose stamp appears on the plans that the measurements, depths, materials, and facilities that are shown on the plans are true and correct and are constructed in accordance with the Standard Specification – Water & Sewer of the Georgetown Municipal Water and Sewer Service Board.

CONTRACTOR - The person, firm or corporation which will perform the construction of GMWSS improvements. The CONTRACTOR may be the OWNER/DEVELOPER; an agent of the OWNER/DEVELOPER; or a person, firm, partnership, or corporation with whom the OWNER/DEVELOPER has executed an agreement to perform the construction of utility improvements. The CONTRACTOR may be a person, firm, partnership, or corporation with whom the GMWSS has executed an agreement to perform the construction of utility improvements.

ENGINEER - A Professional Engineer with a valid and current license, registered to practice in the Commonwealth of Kentucky as set out in KRS Chapter 322.

FULL-TIME RESIDENT INSPECTOR - The OWNER/DEVELOPER, or his representative, who is required to be on the job site during any construction of facilities that are to become part of the Georgetown Municipal Water and Sewer Service to ensure that the proposed improvements are constructed in accordance with approved plans and the Water System and Sewage System Improvement Specifications of the Georgetown Municipal Water and Sewer Service Board. OWNER/DEVELOPER shall submit to GMWSS for approval prior to construction a resume of inspector prior to construction commencing. Inspector shall have water and sewer experience and be familiar with GMWSS WATER, SANITARY SEWER AND PUMP STATION MANUAL.
IMPROVEMENTS - Construction work, including materials and workmanship, to the water and/or sewer utility systems which are part of, will become part of, or be connected to the Georgetown Municipal Water and Sewer Service. Water improvements include, but are not limited to, water mains, valves, fire hydrants, service lines, pumps, etc. Sewer improvements include, but are not limited to, sewer mains, manholes, pump stations, service laterals, etc.

OWNER / DEVELOPER - An individual, group of individuals, partnership, firm, association, or corporation that is constructing, or is having constructed, water and/or sewer improvements that are to become a part of, or be connected to, the Georgetown Municipal Water and Sewer Service.

SHALL - means a mandatory requirement.

1.2 GMWSS AUTHORITY

GMWSS shall decide questions which may arise as to the quality and acceptability of construction workmanship performed. GMWSS shall interpret the intent of the requirements contained in this Manual in a fair and unbiased manner.

Nothing contained in this Manual is intended to conflict with any State or Federal law or regulation, in such case the more stringent requirement shall be met. In no case shall the requirements of this Manual be less stringent than any existing State or Federal law or regulation.

Plans are approved by GMWSS subject to the condition of compliance with applicable Federal, State and local laws, rules, regulations and standards. Approval of plans does not constitute an assurance that the proposed improvements will properly function, operate or meet compliance with Federal, State or local laws and regulations.

GMWSS, at any time during design or construction, shall have the authority to modify any engineering or construction detail whenever required for the protection of the public interest.

This Manual shall be revised from time to time to ensure that the requirements contained herein keep abreast with current State and Federal laws and regulations, approved construction materials and recognized construction methods.

1.3 EXTENSION OF WATER DISTRIBUTION SYSTEM

The OWNER/DEVELOPER is the entity that is requesting the construction of facilities for their benefit on a development. The term OWNER/DEVELOPER shall also be understood to include engineers, employees, agents, contractors, subcontractors, and vendors providing support to the project's OWNER. It is the prime responsibility of the OWNER/DEVELOPER to make all necessary provisions for the construction, and to execute the project per the approved construction plans and specifications. The OWNER/DEVELOPER must ensure that all work is conducted in conformance with current guidelines and standards of federal, state, and local governing agencies.

OWNER/DEVELOPER desiring water service for specified areas shall make application to GMWSS for Water Availability and receive the applicable Construction Permit(s) before starting construction of any water facilities. Developments that have seven (7) or more lots/tracts must be approved by the GMWSS Board of Commissioners for water and sewer availability.

Appendix A includes all information related to the request to the GMWSS Board of Commissioners for Water Availability.

Developments in Georgetown and Scott County are regulated by Georgetown-Scott County Planning Commission (GSCPC). Developments are categorized as either a Cluster Residential Subdivision, Development Plan, Major Subdivision and Minor Agricultural Subdivision. The guidelines for each development shall be followed in accordance with all GSCPC & GMWSS regulations.

The following information shall be submitted for the entire proposed development:

A. Total acreage of the planned development.
B. Current and proposed Zoning.
C. Number of Townhomes,Apartment Units, Single Family Residences, Commercial or Retail and/or Farms.
D. Proposed water usage and sewer flow.
E. Site concept plan including the proposed water and sewer mains.
F. Include all information regarding planned phasing and proposed timelines.

In order to ensure that the design and construction of water and sewer IMPROVEMENTS meet generally accepted sanitary engineering design criteria and recognized construction methods for such facilities, the OWNER / DEVELOPER proposing IMPROVEMENTS that are to be connected to, and/or become a part of, the Georgetown Municipal Water and Sewer Service, must employ an ENGINEER licensed as a professional ENGINEER in the Commonwealth of Kentucky. The OWNER / DEVELOPER shall employ the ENGINEER to:

G. Prepare detailed construction drawings.
H. Provide full-time resident inspector during construction.
I. Certify to GMWSS that the facilities were constructed in accordance with the approved plans and the detailed specifications contained herein.

J. Provide a complete set of "As-Built" drawings to GMWSS.

Once plans have been approved by the GMWSS, it shall be the responsibility of the OWNER/DEVELOPER to submit the approved plans to the Kentucky Department of Natural Resources and Environmental Protection for their approval prior to commencing construction. The OWNER/DEVELOPER shall provide documentation of the Department of Natural Resources and Environmental Protection approval of the plans to GMWSS prior to beginning construction of the IMPROVEMENTS.

The cost of submitting plans to the Department of Natural Resources and Environmental Protection shall be paid for by the OWNER/DEVELOPER.

The specifications and criteria in this Manual are supplemented by GMWSS Standard Water and Sewer Detail Sheets which are available online at www.gmwss.com/specs.htm . These detail sheets are required to be included in all design plans for water and/or sewer extension projects.

1.4 OBLIGATIONS OF THE CONTRACTOR

The CONTRACTOR shall perform and complete the work to the satisfaction of GMWSS and in accordance with approved plans. The CONTRACTOR shall conduct his work so as to minimize interference with public and private business and traffic. He shall at his own expense, whenever necessary or required, provide barricades, flagmen, maintain lights, and take other precautions as may be necessary to protect life, property, adjacent buildings, and structures. The CONTRACTOR shall be liable for all damages and injuries received or sustained by any person, persons, or property in consequence of any neglect in safeguarding the work or by any act of neglect or misconduct by him or his agents, subcontractors, employees or workmen.

The CONTRACTOR shall pay for all over-time expenses for testing, inspection or "call outs" after normal business hours or holidays.

At least two (2) working days prior to the start of any construction, the CONTRACTOR shall notify GMWSS of his intent to commence work.

The CONTRACTOR shall cooperate with GMWSS during the construction of the proposed IMPROVEMENTS. The CONTRACTOR shall maintain on the construction site a copy of the approved plans and shall make them available to GMWSS as requested.

The CONTRACTOR shall be responsible for correcting and/or repairing defects found to exist or which may develop in the IMPROVEMENTS for a period of one year from date of final inspection by GMWSS.

1.5 DEFECTIVE MATERIAL

Materials not in accordance with the approved plans and/or specifications or defective work may be condemned by the ENGINEER or GMWSS at any time prior to the final approval and

acceptance by GMWSS. Failure by the ENGINEER or GMWSS to condemn defective work shall not be construed as an acceptance of same.

1.6 CONSTRUCTION INSPECTION

The ENGINEER shall provide full-time inspection services during construction and testing. The ENGINEER'S FIELD REPRESENTATIVE shall coordinate with GMWSS Inspectors on a daily basis. Daily inspection reports shall be submitted to GMWSS at the end of every work day.

A FINAL INSPECTION will be made prior to acceptance of any IMPROVEMENTS for maintenance by GMWSS and only after all IMPROVEMENTS are completed.

The FINAL INSPECTION will be made upon written request of the CONTRACTOR to GMWSS stating that all IMPROVEMENTS are complete, and all corrections have been made. Prior to the performance of the FINAL INSPECTION, GMWSS shall be given completed sets of "As-Built" plans to include 1 set of full-size paper copies and one set of plan files on disc. All sanitary manholes or access openings shall be opened, and all facilities shall be cleaned of all dirt, mud and other foreign matter.

The CONTRACTOR shall provide personnel as required to aid in the performance of the FINAL INSPECTION.

1.7 EXISTING UTILITIES

Precautions shall be taken by the CONTRACTOR to avoid damage to existing overhead and underground utilities owned and operated by public or private utility companies.

At least two (2) working days prior to the start of any construction, the CONTRACTOR shall notify all utility companies having utility systems in the area of the proposed improvements of his intent to commence work or call Kentucky 811.

Where existing underground or aboveground utilities or appurtenant structures are encountered, they shall not be displaced or molested unless necessary, and in such case shall be replaced in as good or better condition than found as quickly as possible.

1.8 LICENSES, PERMITS, & ENCROACHMENTS

Unless otherwise required by the agencies involved, the CONTRACTOR shall be responsible for obtaining and paying for all local business licenses and permits required for working and construction in Scott County, and to perform the work as shown on the approved plans. The CONTRACTOR shall be required to comply with all State and Municipal ordinances, laws, and/or codes which may apply to same.

The OWNER/DEVELOPERS's ENGINEER shall be responsible for obtaining all State level permits to construct or encroach on State right-of-way(s).

1.9 REFERENCES

The Kentucky Transportation Cabinet's Standard Specifications for Road and Bridge Construction, Latest Edition, hereinafter referred to as KYTC Standard Specifications, are adopted herein and made part of this Manual.

SECTION 2: APPLICATION FOR SERVICE

2.0 PURPOSE

GMWSS shall review the construction plans for all projects that will extend its water distribution and sanitary sewer systems. Conformance to the procedures and standards outlined in this specification will expedite the review process. This application and review process will ensure that projects are built in conformance with GMWSS's standards.

2.1 GEORGETOWN-SCOTT COUNTY PLANNING COMMISSION

GMWSS approvals will be contingent upon the OWNER/DEVELOPERS obtaining the required approvals and permits from the Georgetown-Scott County Planning Commission.

2.2 APPLICATION PROCEDURES

Prior to the development of detailed plans and specifications for the construction of proposed improvements, the OWNER / DEVELOPER shall provide complete information as requested by the GMWSS so that the impact of the proposed improvements can be evaluated and determined.

A. WATER-SANITARY SEWER AVAILABILITY REQUEST

Initial request is for OWNER/DEVELOPER to request approval of water and/or sanitary sewer availability of proposed development.

GMWSS evaluates and considers Water-Sanitary Sewer Availability Requests in the order in which they are received. The GMWSS Engineering Supervisor maintains an Availability Request Log that includes submittal, approval, and expiration dates for all Availability Requests. The GMWSS Board of Commissioners reserves the right to approve Availability Requests for flows of 2,000 GPD or less in a manner independent of the order in which they were received.

An applicant may request approval of an Availability Request (2,000 GPD or less) for one property only, independent of the order which it was received, once every 12 months. An applicant may not repeatedly request approval of multiple Availability Requests independent of the order in which it was received during the 12-month period.

Once approved by the GMWSS Board of Commissioners, Availability Requests are valid for 12 months from approval date as stated in the approval letter sent from GMWSS to the applicant.

GMWSS Availability Request approval is contingent upon the following:

1. Owner/developer obtaining all necessary approvals from the Georgetown - Scott County Planning Commission.

2. Owner/developer obtaining all necessary permits.
3. Owner/developer obtaining all necessary easements.
4. Owner/developer obtaining GMWSS approval of plans and specifications.
5. The design and construction of all GMWSS infrastructure meets all applicable standards specified in Section 3 of this manual, Ten States Standards, and Kentucky Division of Water regulations.
6. Owner developer, through GMWSS, incorporating proposed GMWSS infrastructure (on the project) into the respective GMWSS water or sanitary sewer hydraulic model, with modeling performed by GMWSS staff or GMWSS's third party consultant.
7. Owner/developer making necessary system improvements both on and off-site of the proposed development. On and off-site improvements may include but are not limited to gravity sanitary sewer, sanitary sewer force main and pump stations, water lines, elevated storage tanks, booster pump stations, and related appurtenances.

GMWSS staff will have sole discretion in determining if installation of GMWSS approved water and/or sanitary sewer infrastructure has begun within 12 months of approval. If GMWSS staff conclude that installation of GMWSS approved water and/or sanitary sewer infrastructure has not begun within 12 months of approval, the availability request will expire.

An applicant may request one 6-month extension for the original approved Availability Request. The extension request must be received in writing by GMWSS one month before the original Availability Request expires. GMWSS staff and the Board of Commissioners will evaluate the extension request on a case-by-case basis. The approval or denial of the extension request will be made solely at the discretion of the Board of Commissioners.

Expired Availability Requests must be re-submitted to GMWSS for approval and will be considered with all other Availability Requests in the order in which they were received.

When extenuating circumstances exist, the GMWSS Board of Commissioners may consider an expired Availability Request before new Availability Requests already received by GMWSS. Extenuating circumstances will be determined by GWMSS staff and the Board of Commissioners on a case-by-case basis.

The intent of Availability Request expiring after 12 months is to ensure water and sanitary sewer capacity is not reserved indefinitely.

B. REQUIRED ITEMS

The following items are required, and additional information may be requested:

1. Water and/or Sanitary Sewer Availability Application Form
   (a fill in version of the form in Adobe PDF format is available online at https://gmwss.com/specs.htm)
2. Concept/Design Site Plan

2.3 CAPACITY TRANSFERS

The Board of Commissioners may consider a transfer of approved, unused sanitary sewer capacity under the following conditions:

A. In addition to an expanded customer base, the transfer of sanitary sewer capacity must provide direct benefit to GMWSS.
B. The property transferring approved, unused capacity to another property is referred to as the “transferring property”.
C. The property receiving approved, unused capacity from another property is referred to as the “receiving property”.
D. The Applicant/Developer owns both properties in the same legal name, address, business license, etc. (transferring and receiving) involved in the transfer. Under no circumstances will a transfer be considered between different Applicants/Developers.
E. The transfer of sanitary sewer capacity cannot adversely impact any other Applicant/Developer that has submitted an Availability Request and is currently on the wait list. Determination of adverse impact will be determined by the Board of Commissioners.
F. The Applicant/Developer must have a current and approved Availability Request for the transferring property, and the project must have not yet commenced with construction activities.
G. A transfer of capacity will not be considered for a property that has a plat certified by GMWSS without an approved Availability Request.
H. The Applicant/Developer must submit an Availability Request for the receiving property. GMWSS must receive an Availability Request for both the transferring and receiving properties.
I. The capacity transfer must be less than or equal to the amount approved in the Availability Request for the transferring property. Under no circumstances will additional capacity be considered for the receiving property in excess of what was approved for the transferring property.
J. Both properties must discharge to the same sewer shed infrastructure within the collection and conveyance system (i.e., the same gravity sewers, pump stations, and force mains) and the receiving WWTP.
K. The transfer of sanitary sewer capacity between two properties cannot adversely impact the collection and conveyance system or the receiving WWTP. Determination of adverse impact will be determined by the Board of Commissioners.
L. If GMWSS has already approved and/or signed any legal documents, including but not limited to construction plans, permits, preliminary/final development plans, plats, etc., related to the transferring and receiving properties, the Applicant/Developer must acknowledge in writing to GMWSS that those documents are no longer valid and must re-submit any such documents before the transferring property is eligible to receive consideration of a new Availability request. The new Availability Request for the transferring property will be considered in the order in which it was received (per Section 2). The written acknowledgment must be received by GMWSS before the transfer is considered by the Board of Commissioners.

M. All parties possessing a stake in the transferring and receiving properties, development(s), and Availability Request(s), including but not limited to property owner(s) and investor(s), must be informed of the request for transfer of capacity. Proof of notification of the parties must be provided to GMWSS before the transfer is considered by the Board of Commissioners.
N. Transfer of approved, unused capacity will be considered by the Board of Commissioners on a case-by-case basis.
O. Transfer of capacity from an approved Availability Request will be considered only one (1) time.
P. All other GMWSS policy requirements apply to both properties.
Q. This policy shall be reviewed by the Board of Commissioners upon completion of the WWTP No. 1 Upgrade and Expansion.

2.4 PLAN REVIEW

Once the OWNER/DEVELOPER has received GMWSS Board of Commissioners approval on a water and/or sanitary sewer Availability Request, the OWNER/DEVELOPER shall provide the following items as required to GMWSS:

A. Updated water and/or sanitary sewer Availability Request Application Form
B. Construction Plans & Specifications.
C. Hydraulic Model of existing and proposed water and/or sanitary sewer infrastructure required for system analysis.

Applicable fees are as follows:

D. Plan Review

1. Construction Plan and Specification Review (5 Lots/Units or more 2,000 GPD) - $750.00.
2. Final Development Plan (5 Lots/Units or more 2,000 GPD) - $250.00.
3. Final Plat (5 Lots/Units or more 2,000 GPD) - $250.00.
4. Resubmittal Review - $500.00 per occurrence.

E. Water Distribution Hydraulic Modeling

1. Hydraulic Modeling Request Processing Fee and Model Update (5 Lots/Units or more 2,000 GPD) - $1,000.00.
2. Hourly rate of GMWSS staff and/or third-party engineering consultant required for analysis (5 Lots/Units or more 2,000 GPD).
3. Hydrant Flow Test - $300.00.

F. Sanitary Sewer Hydraulic Modeling

1. Hydraulic Modeling Request Processing Fee and Model Update (5 Lots/Units or more 2,000 GPD) - $2,500.00.

2. Hourly rate of GMWSS staff and/or third-party engineering consultant required for analysis.

G. Commercial and Industrial User Permit Pre-Treatment Application

1. Hourly rate of GMWSS staff and/or third-party engineering/professional consultant required for analysis.

Fees are due at the time of plan and specification submission to GMWSS. Documents submitted for review without payment of the applicable fees will not be reviewed. Any additional fees required must be submitted to GMWSS prior to plan approval and plat certification. The GMWSS Board of Commissioners reserves the right to waive water and/or sanitary sewer hydraulic modeling fees for flows of 2,000 GPD or less. Fees may be waived at the discretion of the Board of Commissioners based on the type and size of the development and required resources expended by GMWSS on behalf of the OWNER/DEVELOPER.

2.5 CONSTRUCTION PLAN REQUIREMENTS

A. CONSTRUCTION PLANS

Construction Plans are to be prepared and sealed by the ENGINEER. Plans shall be 24inch x 36-inch sheet. Construction Plan set shall include the following items:

1. Cover Sheet – Cover sheet shall include the project name; name, address, and phone number for all of the following: GMWSS, OWNER/DEVELOPER, ENGINEER, and other utilities; vicinity map; sheet index and revision block.

2. Plan Sheet – Plan Sheets shall include either aerial images or topographic mapping of the proposed development; scale (maximum of 1’ = 100’); shall be in Kentucky North Zone Coordinate System NAD83 and NAVD88; lots or property lines with owner information; easement boundaries that will become GMWSS; natural features (wetlands, waters of the Commonwealth of Kentucky, intermittent streams, ponds, etc.); manmade features (building, below and above ground structures, roads, bridges, etc.); existing utilities (overhead and underground, associated facilities, etc.); and proposed site work/utilities.

3. Standard Details – GMWSS general notes and standard details shall be included in all construction plan sets. The ENGINEER may need to use additional standard details other than those provided by GMWSS. In case of conflict between details, GMWSS standard details shall govern over all ENGINEER provided details. Substitutions and deviations shall be permitted only when written approval has been issued by GMWSS. GMWSS Standard Details for Water and Sewer can be found at www.gmwss.com/specs.htm.

4. Digital Copy – OWNER/DEVELOPER’s ENGINEER shall provide a digital file in Adobe PDF format to GMWSS for use in their GIS system. GMWSS agrees to protect PDF files as intellectual property and will not distribute the drawings to third party’s use other than to be utilized through a contract with GMWSS to review said plans.

2.6 PLAT VERBIAGE

Plat Certification of sanitary sewer service dated before February 17, 2021, will no longer be honored without a current Availability Request approved by the GMWSS Board of Commissioners in accordance with Section 2 of the GMWSS Engineering Manual. The following adopted verbiage shall be placed on all final plats and/or development plans presented to GMWSS for signature:

CERTIFICATION OF GMWSS INFRASTRUCTURE

The Ownership of water and/or sanitary sewer infrastructure thereto existing or installed and located within easements and right of ways, shown hereon are hereby dedicated to the City of Georgetown, by and through Georgetown Municipal Water and Sewer Service (GMWSS), for operation. For a period of one (1) year from the first paid and installed Residential, Commercial, or Industrial water and sewer connection, any and all maintenance costs incurred by GMWSS as a result of faulty equipment or installation will be invoiced to the developer for reimbursement to GMWSS.

_____Date _____ OWNER/DEVELOPER

Where projects include both water and sewer services provided by GMWSS, the following adopted verbiage shall be placed on all final plats and/or development plans presented to GMWSS for signature.

CERTIFICATION FOR WATER & SEWER SERVICE

I hereby certify that Georgetown Municipal Water & Sewer Service (GMWSS), by and through the City of Georgetown, KY, has facilities within the water distribution and sanitary sewer collection and conveyance system to supply the property located at _____ with water and sanitary sewer service. Certification for water service outside the city limits of Georgetown, KY is limited to domestic service only. Fire flow protection is not guaranteed. Provision of development, construction, and service is contingent upon the developer obtaining a current approved Availability of Capacity Request from the GMWSS Board of Commissioners; and GMWSS review and approval of all plans and specifications for required on-site and off-site improvements including but not limited to water lines, elevated storage tanks, booster pump stations, gravity and force main sanitary sewer lines, pump stations, and related appurtenances for the proposed system. Construction of the proposed water distribution and sanitary sewer collection and conveyance system shall be at the cost of the developer without reimbursement by GMWSS and constructed according to GMWSS and Kentucky Division of Water approved plans and specifications. Easements required for the proposed water distribution and sanitary sewer collection and conveyance system shall be acquired by the developer and dedicated to GMWSS.

_____Date _____ GENERAL MANAGER

Where projects include only water services provided by GMWSS, the following adopted verbiage shall be placed on all final plats and/or development plans presented to GMWSS for signature.

CERTIFICATION FOR WATER ONLY SERVICE

I hereby certify that Georgetown Municipal Water & Sewer Service (GMWSS), by and through the City of Georgetown, KY, has facilities within the water distribution system to supply the property located at _____ with water service. Certification for water service outside the city limits of Georgetown, KY is limited to domestic service only. Fire flow protection is not guaranteed. Provision of development, construction, and service is contingent upon the developer obtaining a current approved Availability of Capacity Request from the GMWSS Board of Commissioners; and GMWSS review and approval of all plans and specifications for required on-site and off-site improvements including but not limited to water lines, elevated storage tanks, booster pump stations, and related appurtenances for the proposed system. Construction of the proposed water distribution system shall be at the cost of the developer without reimbursement by GMWSS and constructed according to GMWSS and Kentucky Division of Water approved plans and specifications. Easements required for the proposed water distribution system shall be acquired by the developer and dedicated to GMWSS.

_____Date _____ OWNER/DEVELOPER

CERTIFICATION FOR SEWER ONLY SERVICE

I hereby certify that Georgetown Municipal Water & Sewer Service (GMWSS), by and through the City of Georgetown, KY, has facilities within the sanitary sewer distribution system to supply the property located at _____ with sanitary sewer service. Provision of development, construction, and service is contingent upon the developer obtaining a current approved Availability of Capacity Request from the GMWSS Board of Commissioners; and GMWSS review and approval of all plans and specifications for required on-site and off-site improvements including but not limited to gravity and force main sanitary sewer lines, pump stations, and related appurtenances for the proposed system. Construction of the proposed sanitary sewer collection and conveyance system shall be at the cost of the developer without reimbursement by GMWSS and constructed according to GMWSS and Kentucky Division of Water approved plans and specifications. Easements required for the proposed sanitary sewer collection and conveyance system shall be acquired by the developer and dedicated to GMWSS.

_____Date _____ OWNER/DEVELOPER

2.7 EASEMENTS

All easements for new water and sewer lines shall be clearly shown and labeled on the construction plans as well as all Final Plats and Development Plans. If offsite easements are required for water and sewer facilities to the development, they must be recorded in the Scott County Clerk's Office prior to approval of construction plans. A copy of the recorded easement documents must be furnished to GMWSS prior to plan approval.

A. Water easement widths shall be minimum 20 feet wide for standard depth water lines. Water lines shall be a minimum of 10 feet from all building foundations. In cases requiring water line depths in excess of 5 feet, GMWSS shall determine the minimum easement width necessary.

B. Sewer easement widths shall be sized based on the following criteria:

   0' to 8' ≤ depth – minimum 20 feet wide easement (Min 10 feet from Building Foundation)
   < 8' to 15' depth – minimum 30 feet wide easement (Min 15 feet from Building Foundation)
   Depths greater than 15 feet shall only be allowed with GMWSS approval and will require a wider easement to be determined by GMWSS.

2.8 PROJECT CLOSEOUT

After facility has been constructed, tested, approved, and accepted by GMWSS the following items are required to finalize the development:

A. Record Drawings (highlighting any variance from approved Construction Plans).

SECTION 3: DESIGN OF WATER FACILITIES

3.0 PURPOSE

The intent of this section describes the minimum requirements for design of water facilities. These requirements are listed to ensure that any development/extensions have adequate capacity to supply the average day demand (ADD), maximum day demand (MDD) and peak hour demands (PHD) while maintaining a pressure of 30 psi at each meter. GMWSS desires to maintain a static pressure of not less than 45 psi or better for all customers.

3.1 SYSTEM DEMANDS

A. CUSTOMER DEMAND UNITS

GMWSS has established the following tables to be utilized to determine the customer demand of proposed developments. These tables shall be considered the minimum demands. Consideration of alternative demand calculations may be presented to GMWSS for consideration. GMWSS determination is final on alternative demand calculations.

TABLE 3-1
RESIDENTIAL WATER DEMAND UNITS

Types of Dwelling	**Demand (gallons per day)**
Apartment – 1 Bedroom	250
Apartment – 2 Bedroom	300
Apartment – 3 Bedroom	350
Condo	350
Mobile Homes	300
Single Family Residence	400
Duplex	800

TABLE 3-2
COMMERCIAL WATER DEMAND UNITS

Commercial Description Demand	**Demand (gallons per day)**
Bars (w/ Food Service)	20 per seat[1]
Bars (w/o Food Service)	2 per seat[1]
Bowling Alleys (w/ Food Service)	75 per lane[1]
Bowling Alleys (w/o Food Service)	25 per lane[1]
Motels	100 per unit
Factory (w/ Showers)	35 per person[1]

Factory (w/o Showers)	25 per person[1]
Industrial (manufacturing, industrial parks, etc.)	2,000 per acre[1]
Industrial – Light (distribution Centers, etc.)	1,000 per acre[1]
Shopping Centers (w/o Food Service or Laundries)	0.1 per square feet of space[1] 0.2 per square feet of space[1]
General Commercial	5,000 per acre[1]
Coin Laundries	400 per machine[1]
Service Station	1,000 per 1st Bay[1] 500 per each add bay[1]

TABLE 3-3
INSTITUTIONAL WATER DEMAND UNITS

Institutional Description Demand	**Demand (gallons per day)**
Hospital	200 per bed
Institutions	100 per person
Nursing Home & Rest Homes	100 per person
Youth & Recreational Camps	50 per camper
RV Camps	100 per site
Schools (elementary & middle schools)	15 per person
Schools (high school)	20 per person
Church	7 per seat[2]

Note: 1 Demand based upon an 8-hour shift or period.
2 Demand based upon a 2-hour shift or period.

B. CUSTOMER DEMAND FACTORS

Average Day Demand (ADD) will be determined by the above tables, summed together for all planned development types. For any development containing commercial and/or institutional demands shall calculate an equivalent residential unit(s) (ERU) for the development.

Maximum Day Demand (MDD) is to be calculated by using a peaking factor of 1.8 to ADD. MDD (gpd) = 1.8 x ADD

Peak Hour Demand (PHD) will be calculated by using a peaking factor of 3.6 to ADD. PHD (gph) = (3.6 x ADD) ÷ 24

C. FIRE FLOWS

Fire flows are determined by the fire department providing fire protection to the proposed development. These flows will be set by the corresponding fire department. The DEVELOPER/OWNER shall contact the corresponding fire department that is providing protection for the proposed development. The DEVELOPER/OWNER shall submit written documentation from the fire department that states what the Insurance Services Office (ISO) class rating requirement is for the proposed development.

GMWSS will consult the ISO manual and from the required ISO rating, determine what the required fire flow is.

3.2 HYDRAULIC MODEL

GMWSS requires a hydraulic model to be presented with submittal of plans for review. The hydraulic model shall be based upon a hydrant flow test at the nearest available fire hydrant to the development/extension or model shall include all associated connections and include storage facility. GMWSS will provide OWNER/DEVELOPER the necessary information regarding a hydrant flow test, conducted by GMWSS or assigned representatives.

Hydraulic Model shall follow guidelines set forth by Kentucky Division of Water (KDOW) in Construction Permit Application for Drinking Water (DW-1). OWNER/DEVELOPER shall submit the Hydraulic Model Information Sheet in Appendix C.

A. KDOW MODEL REQUIREMENTS

KDOW DW-1 requires at a minimum the following hydraulic information to be provided with the hydraulic model:

1. Provide pump sizing calculations and the proposed pump's characteristics curve along with the efficiency, horsepower and NPSHR data, if applicable.
2. Provide an Extended Period Simulation (EPS) for the addition of a storage tank to demonstrate a complete fill and drain cycle every 72 hours, if applicable.
    a. Model must demonstrate the availability of 30 psi under peak demand conditions.
    b. Model must demonstrate that the proposed water lines are capable of 2.5 ft per second while maintaining a minimum of 20 psi.

B. GMWSS MODEL REQUIREMENTS

GMWSS requires the following information to be included in addition to KDOW requirements:

1. Provide an exported ArcGIS shape file or AutoCAD drawing of just the water lines for inclusion into the GMWSS base model. Identify the coordinate system that the water lines are drawn in (KY Singel Zone of KY Dual Zone-North).

2. A written hydraulic model summary and area map of the model for review. *Do not submit an electronic copy of your hydraulic model*.
3. Provide a node map showing the modeled pipe network. Label all pipes, nodes, road names, north arrow, scale, number of units, unit type, demands, elevation contours and outline of the phasing, if applicable.
4. Save files such that each file demonstrates that the development meets KDOW criteria separately. This ensures that during the review by GMWSS it is an accurate representation of the model prepared by ENGINEER.
5. Model must represent the entire development, including all known future phases.
6. All existing demands shall be represented in the model to accurately represent system flows and pressures.
7. Identify the source of water (i.e., pressure zone) and type of pressure source being modeled (tank or two-point flow test).
8. Provide a node report to display name, elevation, corresponding connected pipes, demand, hydraulic grade line (HGL) and pressure.
9. Provide a pipe report to display name, diameter, flow, velocity, length, and head loss.
10. Provide a conclusion of results, table listing nodes with maximum and minimum pressures for all situations modeled. Table of Max/Min shall include 10% of the number of nodes within development, minimum of 5 for each.

SECTION 4: CONSTRUCTION OF WATER FACILITIES

4.0 PURPOSE

The intent of this SECTION is to outline requirements for construction, inspection, and final acceptance of potable water mains and appurtenances, water service connections, and public fire protections systems.

4.1 REQUIREMENTS

Water system improvements shall be installed in public right-of-way(s) or, upon GMWSS approval, in a utility easement granted to GMWSS. All easement information must be submitted as outlined in Section 2.7. Water mains shall not be closer than ten feet (10) to building foundations.

Dead end water mains shall be minimized by looping of water mains with multiple feed points. Where dead ends occur, they shall terminate with a fire hydrant, flushing hydrant, automatic flush valve (as approved by GMWSS) or unless other methods are approved.

The CONTRACTOR shall install a waterline marker post at the ends of all water lines, including water service connections, to identify the termination point of the line. The location posts shall be painted blue and marked to identify the line as a water pipe.

A. SYSTEM PRESSURES

A minimum pressure of 30 psi, under peak hour demand (PHD) conditions (defined in Section 3.1), shall be provided at each service meter, Also, a minimum system pressure of 20 psi shall be provided in all water lines (including high points) for all operating and flow conditions. Water lines shall be hydraulically capable of producing a flushing flow velocity of 2.5 ft/s for maintenance and cleaning purposes, while maintaining a system pressure of at least 20 psi.

The normal working pressure in the distribution system during average day demands (ADD) should be approximately 60 to 80 psi and at a minimum not less than 35 psi.

When static pressure exceeds 95 psi, pressure reducing devices shall be provided on mains or as part of the meter setting on individual service lines in the distribution system.

B. WATER MAINS

Water mains shall be owned or under the control of the GMWSS and are those pipes used to distribute water to service connections and public fire hydrants. Water mains must be sized to meet present water consumption and projected average and maximum daily demands, including fire flow demand. All water mains, including those not designed to provide fire protection, shall be sized utilizing a hydraulic model analysis which is based on flow demands and pressure requirements.

The minimum size water main within the city limits of Georgetown shall be 8-inch diameter. Mains serving fire hydrants shall be minimum 6-inch diameter.

Mains without hydrants shall be minimum 3-inch diameter. Any departure from minimum requirements shall be justified by hydraulic analysis and future water use and can be considered only in special circumstances.

All water mains shall be covered with a minimum of 30 inches of backfill material, measured from the top of the water main to the final finished ground level.

C. WATER SERVICE LINES

Water service lines are those water lines that tap off the water main and provide water service to a specific property, utility customer or water user.

Water service lines for single residences shall be at least 3/4 inch in diameter. When two residences are served by one service line a minimum of a 1" line shall be installed.

All water service lines shall be covered with a minimum of 30 inches of backfill material, measured from the top of the water service pipe to the final finished ground level.

Whenever a water service line crosses a concrete street curb, the CONTRACTOR shall clearly mark the location of the water service line with a "W" cut or imprinted into the concrete curb near the top.

Construction plans shall show individual meter locations.

1. Single meter service lines shall be 3/4” Endot Endopure PE Tubing.
2. Double water service lines shall be 1” Endot Endopure PE Tubing
3. Service lines crossing the street under pavement shall be encased in a 2” PVC pipe in gravel bedding. The service line must have a valve on the customer side and corporation stop turned on at the water main. Coated copper 12-gauge tracer wire shall be taped to the 2” casing pipes for all street crossings.
4. GMWSS will set tub and meter when customer applies for service.

D. FIRE PROTECTION

The ENGINEER shall follow the Insurance Services Office of Kentucky's suggested minimum fire protection requirements when determining the fire flow demands and placement of fire hydrants. Placement of fire hydrants within the City of Georgetown shall be approved by the Georgetown Fire Department. Placement of fire hydrants outside of Georgetown, but connected to the GMWSS distribution system, shall be approved by the Scott County Fire Department, or be placed at the discretion of GMWSS.

E. WATER LINE LOCATION

Water mains and water service lines shall be separated from sanitary sewer mains. When a water line running parallel to or crossing a sanitary sewer is unable to obtain a vertical separation of 18” or a horizontal separation of 10-feet, the sanitary sewer shall be encased in flowable fill (per KYTC Standard Specifications). The flowable fill shall extend 10 feet beyond the point of interference in both directions.

A plan for a water line that would propose a section of line be laid within a 200foot radius of an underground storage tank as defined in KRS 224.60-100 or a petroleum storage tank as defined in KRS 224.60-115, shall provide that all water lines within the 200-foot radius shall be ductile iron pipe or other nonpermeable pipe approved by the cabinet. Any future replacement of an existing water line within a 200-foot radius of a storage tank shall also meet this requirement.

Water mains installed within a 200-foot radius of an area of known soil contamination by organic compounds shall utilize be ductile iron pipe or other nonpermeable pipe and joint materials which do not allow permeation of the organic compound, including hydrant leads and service connections.

4.2 PIPE MATERIAL

Water mains 12” and less in diameter shall be constructed of ductile iron or polyvinyl chloride (PVC) pipe unless otherwise approved by GMWSS. Water mains larger than 12” in diameter shall be constructed of ductile iron unless otherwise approved by GMWSS.

A. DUCTILE IRON PIPE & JOINTS

Ductile iron pipe shall conform to the latest version of AWWA Specifications C151 (ANSI A21-51). Pipe shall be pressure class 350 with push-on joints per AWWA C111.

The interior of the pipe shall be standard thickness cement-mortar lined and seal coated in accordance with AWWA C104 (ANSI A21.40). The exterior of the pipe shall be bituminous coated in accordance with AWWA C151 (ANSI A21.51).

Where required by GMWSS, ductile iron pipe shall be restrained-joint pipe. Restrained-joint pipe shall meet the same requirements above for push-on joint pipe. Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. Restrained-joint pipe and fittings shall be FLEX-RING Restrained Joint by American Ductile Iron Pipe, TR-FLEX Restrained Joint by U.S. Pipe, TRFLEX Restrained Joint by McWane Ductile, or GMWSS approved equal.

Where the spigot end of restrained-joint pipe connects with valves or fittings that have mechanical-joints, the connection shall be made with a restrained mechanical-joint gland. Restrained mechanical-joint connection shall be Series 1100 MEGALUG by EBAA Iron, ONE-

LOK by Sigma, Stargrip Series 3000 by Star Pipe, Romagrip by Romac Industries, or GMWSS approved equal. Continuous grip rings will not be approved.

Where ductile iron pipe is to be installed in corrosive soil conditions, the pipe shall be protected by an 8-mil thick polyethylene encasement meeting the requirements of ANSI A21.5. Such corrosive soils include, but are not limited to, salt marshes, saturated alkaline soils, cinder fills, areas of decaying vegetation, and waste dumps.

B. POLYVINYL CHLORIDE PIPE (PVC), FITTINGS AND JOINTS

PVC water pipe shall conform to ASTM D2241 and have a minimum thickness of SDR 21 pressure Class 200 with push-on joints and rubber gaskets. Elastomeric gasket shall conform with the requirements of ASTM F477. The seal of the National Sanitation Foundation Testing Laboratory must appear on each pipe.

C. FITTINGS

Fittings for both ductile iron pipe and PVC pipe shall be pressure class 350 compact ductile iron mechanical-joint conforming to AWWA C153, C104, and C111.

D. TRACER WIRE

All buried ductile iron and PVC pipe (including PVC service casing described in Section 4.1.C.3) shall have 12-gauge solid copper tracer wire taped to the line for the purpose of pipe location. Locator wire stations (posts or flush mount) shall be installed on water lines as shown in the GMWSS details. There shall be locator wire stations (post or flush mount) placed at each hydrant valve or placed in locations as directed in the field by GMWSS personnel. Shop Drawings for locator wire stations must be approved prior to installation.

E. STEEL ENCASEMENT PIPE

Steel Encasement pipe shall be plain end, uncoated and unwrapped, have minimum yield point strength of 35,000 PSI and conform to ASTM A252 Grade 2 or ASTM A139 Grade B without hydrostatic tests. The steel pipe shall have welded joints and be in at least 18-foot lengths.

The diameter of the pipe shall conform to the requirements of American Railway Engineering Association for railroad crossings, and the requirements of the Kentucky Department of Transportation, Bureau of Highways for highway crossings. Minimum thicknesses shall be 0.250 inches (1/4”) for 6”-12” casings, 0.312 inches (5/16”) for 14”-22” casings, 0.375 inches (3/8”) for 24”-28” casings, 0.50 inches (1/2”) for 30”-32” casings, 0.625 inches (5/8”) for 34”-42” casings.

4.3 WATER LINE APPURTENANCES

A. GATE VALVES

Gate valves shall be in conformance with AWWA C509 or AWWA C515 and shall be of the resilient seat type, iron body, fully bronze mounted, non-rising stem and have a design working pressure of 250 psi. All assembly bolts shall be stainless steel.

All gate valves shall have the name or monogram of the manufacture, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.

Buried gate valves shall be provided with mechanical-joint ends and a 2” square operating nut which shall be opened by turning to the left (counter-clockwise). All operating nuts shall be set within a cast iron valve box. There shall be a maximum 48" from grade to top of operating nut. Contractor must use extension stems, if necessary, to raise operator nut within 48" of final grade. Gate valves 12” and smaller shall be installed in a vertical position. Gate valves greater than 12” shall have the bonnet mounted in the horizontal position and have a bevel gear actuator.

Gate valves for installation in meter vaults shall be flanged conforming to ANSI B16.1 Class 125 and AWWA C115 and be equipped with a hand wheel operator.

B. TAPPING SLEEVES AND VALVES

Tapping sleeves for connection of existing water mains shall be in accordance with the GMWSS approved manufacturers list as shown on the GMWSS Notes for Water & Sewer Construction drawing available at www.gmwss.com/specs.htm.

C. VALVE BOXES

Valve boxes shall be of 5.25” standard cast iron, two pieces, and screw type valve box with drop cover marked "WATER". Valve boxes shall be accurately centered over valve operating nut and backfill thoroughly tamped about them. Valve box bases shall not rest on the valves but shall be supported on crushed stone fill. They shall be set vertically and properly cut and/or adjusted so that the tops of boxes will be at grade in any paving, walk or road surface. In non-paved areas an 18” round corrugated pipe section filled with concrete shall be used to form a pad around the valve box.

D. FIRE HYDRANTS

Fire hydrants which are to be installed within the City of Georgetown shall comply with the latest published specifications of the Georgetown Fire Department as to performance and placement. These specifications are available from the Georgetown Fire Department and are included in the GMWSS Notes for Water & Sewer Construction drawing available at www.gmwss.com/specs.htm.

Fire hydrants which are to be installed outside of the City of Georgetown, but connected to the GMWSS, shall comply with the requirements specified herein.

The CONTRACTOR shall furnish and install fire hydrants where shown on the plans. Hydrants shall conform in all respects to the requirements of AWWA C502 and be designed with a safety breakage feature above the ground line. Hydrants shall have a 5.25" main valve opening and be of the compression type opening against water pressure so that the valve remains closed should the barrel be broken off. All hydrants shall have 6" mechanical-joint shoe connection, two (2) 2.5” discharge nozzles and one (1) 4.5" pumper nozzle or two (2) 4.5" nozzles with caps fitted with cap chains. Connection threads and operation nuts shall conform to National Standard Specifications as adopted by National Board of Fire underwriters.

Hydrants shall be Super Centurion by Mueller or K81D by Kennedy. Hydrants shall be designed for 250 psi working pressure and shop tested to 500 psi with the main valve both open and closed. The valve shall not leak when the test pressure is applied.

Operation nut shall be pentagonal in shape, conform to current standard in use, and shall open by turning to the left (counterclockwise).

Hydrant shall be fully bronze mounted. Main valve shall have a threaded bronze set ring assembly of such design that it is easily removable by unscrewing from a threaded bronze drain ring. Bronze drain ring shall have multiple ports providing positive automatic drainage as the main valve is opened or closed. Drainage waterway shall be completely bronze to prevent rust or corrosion.

Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stop shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir protected from weather and the waterway with O-ring seals.

Fire hydrants shall be located not more than 6-feet nor less than 2.5-feet from the edge of existing or proposed edge of pavement unless otherwise approved by GMWSS or the Georgetown Fire Department. Hydrants shall be installed with a vertical distance from the center of the pumper nozzle to the ground 18”. All fire hydrants shall be provided with a shut-off valve on the hydrant lateral. In residential areas fire hydrant spacing shall not exceed 600 feet.

Fire hydrants shall be secured to the shut off valve by restrained mechanical-joint glands described in Section 4.2.A hereinbefore.

E. GEORGETOWN FIRE DEPARTMENT REQUIREMENTS:

Pursuant to NFPA and Georgetown Fire Department requirements, latest edition, the following SHALL be completed, checked, and confirmed by the Georgetown Fire Department before the Georgetown Fire Department will sign off on final plats:

1. The fire hydrants shall be installed in the correct placement per Georgetown Fire Department specifications:
   a. In residential areas placement shall not exceed 600' apart.
   b. In commercial areas placement shall not exceed 300' apart.
   c. Hydrants shall be installed in all cul-de-sacs and/or dead ends at the locations chosen by the Georgetown Fire Department.
   d. The fire department can require more fire hydrants if needed due to the fire load.
   e. Fire hydrants shall be no more than 50' from a fire department connection (sprinkler connection).
   f. Fire department connections shall be located away from the building a minimum distance of 1 ½ times the height of the building. (i.e. If the building is 30' tall the fire department connection will be a minimum of 45' away from the building.)
   g. Hydrant types: 2-2 ½'' and 1-4 ½" for residential use
      2-4 ½" for commercial use
   h. The operation nut shall be pentagon in shape, conform with current standards, and shall open by turning to the left (counterclockwise).

2. Hydrants shall be initially tested by the Georgetown Fire Department to determine the correct flow rate before any construction begins on a project.

3. The fire hydrants shall have the NFPA identification color on the bonnet that signifies the correct flow rate for that hydrant.
   a. Red – 0 – 499 gpm
   b. Orange – 500 – 999 gpm
   c. Green – 1000 – 1499 gpm
   d. Blue – 1500 and up gpm

4. Fire hydrants shall have a 3' unobstructed circumferential path around the fire hydrant.

5. Fire lanes and/or curbs in front of fire hydrants shall be painted yellow (10' center on each side of fire hydrant).

6. "No Parking" signs shall be installed by the developer, at the developer's cost, per the Georgetown Fire Department's specifications as to style and location.

7. All hydrants that have not been tested and or need maintenance shall have an "out of service" tag on the 4 ½'' outlet.

8. Any exceptions to these guidelines will be at the Georgetown Fire Departments discretion as the Authority Having Jurisdiction.

F. AIR RELEASE VALVES AND BOXES

Air release valves shall be installed at the high points on the water main as shown on the approved plans. They shall be connected to the main by a corporation stop with inside I.P.S. threaded outlet. The inlet pipe to the air release valve shall be ASTM B43 extra strong seamless red brass or stainless-steel pipe with I.P.S. male threaded ends and isolation 1/4 turn ball valve.

Air Release Valves for water shall be A.R.I. Model S-050. Valve shall have a male threaded inlet and be constructed of high strength composite reinforced nylon. Valve shall have a working pressure of 250 psi. The air release valve shall be installed as shown in GMWSS Standard Water Details.

G. FIRE PROTECTION LINES

Installation of water service lines to be used for private fire protection systems (i.g. sprinkler systems) shall have a GMWSS approved backflow preventer installed at the property line. Backflow Preventer shall be installed in the Fire Vault or other GMWSS approved location where the owner can have it tested regularly.

4.4 TRENCH EXCAVATION

Unless specifically directed otherwise by GMWSS, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew.

All backfilled ditches shall be maintained in such a manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and property OWNERs abutting shall be taken into consideration. All public or private drives shall be taken into consideration and shall be promptly backfilled or bridged. Excavated materials shall be disposed of to cause the least interference.

Trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the approved plans. The minimum allowable trench width shall not be less than the outside diameter of the pipe plus twelve (12) inches. Where rock is encountered, it shall be removed to a minimum depth of six inches below the pipe bell and twelve (12) inches on either side.

Unless specifically authorized by GMWSS, trenches shall in no case be excavated or permitted to become wider than two feet six inches (2'-6"), plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than two feet six inches (2'-6") at the level of or below the top of the compacted granular fill up to the top of the pipe or providing pipe with additional crushing strength as determined by GMWSS. This determination shall consider the actual trench loads that may result, and the strength of the pipe being used.

All excavated materials shall be placed a minimum of two feet back from the edge of the trench.

Where conditions exist that may be conducive to slides or cave-ins, proper and adequate sheeting, shoring, and bracing shall be installed to provide safe working conditions and prevent damage to the work.

Trenches shall be kept free of water during the laying of the pipe and until the pipeline has been backfilled. Backfilling shall be as specified herein.

A. OBSTRUCTIONS

In cases where storm sewers, sanitary sewers, gas lines, water lines, telephone lines, and other utilities, or other underground structures are encountered, they shall not be displaced or molested unless necessary, in which case they shall be replaced in as good condition as found as quickly as possible.

The CONTRACTOR shall notify GMWSS companies 48 hours prior to beginning construction work.

B. SHORING SHEETING AND BRACING

The shoring, sheeting, and bracing of excavation shall be performed by the CONTRACTOR in compliance with applicable codes and OSHA requirements.

4.5 PIPE BEDDING

In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of this pipe will be carried on the barrel of the pipe and, insofar as possible, where bell and spigot pipe are involved so that none of the load will be carried on the bells.

When undercutting and granular bedding are involved, the depth at the bottom of the bells of the pipe will be at least four inches above the bottom of the trench as excavated. Supporting of the pipe shall be as set out hereinafter, and in no case shall the supporting of pipe on blocks be permitted.

A. EARTH FOUNDATION

If the foundation is good firm earth and the excavation has been accomplished as set out hereinbefore, then the earth pared or molded to give full support to the lower quadrant of the barrel of each pipe. Where bell and spigot are involved, bell holes shall be excavated during this latter operation to prevent the bells from being supported on undisturbed earth.

B. ROCK FOUNDATION

If the trench bottom is in rock or has chunks of floating rock, the excavation shall be undercut to a minimum depth of six inches below the bottom of the pipe. The pipe shall be laid on a bed of gradation size No. 9-M crushed stone (as defined by KYTC Standard

Specification) to provide continuous support for the lower section of the pipe. In no case shall pipe be supported directly on rock.

C. SPECIAL BEDDING

In wet, yielding, mucky locations, where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective. When ordered by GMWSS, yielding and mucky material in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe. Gradation size No. 9-M crushed stone (as defined by KYTC Standard Specification) or approved equal shall be used to replace poor sub grade material.

4.6 LAYING PIPE

All pipes shall be laid with ends abutting a true to line and grade as shown on the plans. Supporting of pipe shall be as specified under "Pipe Bedding" specified herein and in no case, shall be supported on blocks.

Fittings for the water mains shall be provided and placed as shown on the plans. All open ends of pipes and of branches shall be sealed or plugged.

Before each piece of pipe is lowered into the trench, it shall be thoroughly cleaned and inspected for defects. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth and at right angles to the horizontal axis of the pipe.

Granular bedding material as specified herein, shall be used to correct irregularities in the earth trench sub grade.

The interior of the pipe shall be maintained clean. Pipe shall be stored in a location where dirt, mud and debris cannot easily enter and contaminate the pipe. When laying of any pipe is stopped for any reason, the exposed end of such pipe shall be closed with a proper plug fitted into the pipe bell, so as to exclude earth or other material.

No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER or his representative has inspected the joints, alignment and grade in the section laid, but such inspection shall not relieve the CONTRACTOR of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are identified later.

4.7 PREVENTATIVE MEASURES AGAINST CONTAMINATION

Precautions shall be taken to protect the interiors of pipes, fittings, and valves against contamination. Pipe delivered for construction shall be stored so as to minimize entrance of

foreign material. All openings in the pipeline shall be closed with a watertight plug when laying is stopped at the close of day's work or other reasons such as rest breaks and meal periods.

Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the less likelihood of contamination.

The contractor shall follow the procedures for contamination prevention below for all material delivered to the construction site.

CONTAMINATION PREVENTION REQUIREMENTS

1. All piping, valves, fittings, etc. delivered to the job site shall be stored elevated above the ground and shall be covered with plastic, tarps or similar means to protect from exposure to dust and debris.
2. All piping, fittings and valves shall be thoroughly cleaned of dust, dirt, and deposits by swabbing or other means acceptable to GMWSS. Each component shall be cleaned on the same day it is to be installed.
3. All openings in the pipeline shall be closed with an approved watertight plug at the end of each day when pipe laying has stopped, or for other reasons such as rest or meal breaks.

4.8 BACKFILLING PIPELINE TRENCHES

All backfilling shall be accomplished in accordance with the pipe manufacturer's published recommended installation and backfilling method for the pipe being buried and with the requirements of this SECTION. Any variances must be approved in writing by GMWSS.

When directed by the ENGINEER, the CONTRACTOR shall add water to the backfill material or dry out the material when needed to attain a condition near optimum moisture content for a maximum density of the material when it is tamped. The CONTRACTOR shall obtain a compaction of the backfill of at least 95 percent of standard Proctor density ASTM D698) where mechanical tamping of backfill is required.

In all cases walking or working on the completed pipelines except as may be necessary in tamping or backfilling will not be permitted until the trench has been backfilled to a point one foot above the top of the pipe. The filling of the trench and the tamping of the backfill shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur.

A. METHOD "A" BACKFILLING IN OPEN TERRAIN

Backfilling of pipeline trenches in open terrain shall be accomplished as specified herein.

The lower portion of the trench, from the pipe bedding to a point 12" above the top of the pipe shall be backfilled with gradation size No.9-M crushed stone (as defined by KYTC Standard Specification).

The portion of the trench above the crushed stone backfill to a point 8” below finished grade shall be backfilled with an earth material. The earth backfill shall not be allowed to incorporate rocks with a volume greater than 1/2-cubic foot. (example: 8"x9"x12" or 6"x12"x12"). Incorporation of rock having a volume exceeding one-half cubic foot is prohibited. This material shall be placed in six-inch layers and mechanically tamped.

The final 8” of trench shall be backfilled with earth material which is free from rock.

B. METHOD "B" BACKFILLING UNDER PAVED AREAS

Backfilling pipeline trenches under sidewalks, streets, proposed streets, and driveways shall be as specified herein.

The lower portion of the trench, from the pipe bedding to a point 12” above the top of the pipe shall be backfilled with gradation size No.9-M crushed stone (as defined by KYTC Standard Specification).

The portion of the trench above the crushed stone backfill to a point 8” below finished grade shall be backfilled with shall be backfilled with dense granular aggregate (DGA) or No. 610 aggregate.

The final 8” of trench shall be backfilled with dense granular aggregate (DGA).

C. SETTLEMENT OF TRENCHES

Wherever water lines are in, or cross, driveways and streets, the CONTRACTOR shall be responsible for any trench settlement which occurs within these rights-of- way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the CONTRACTOR.

4.9 PLACEMENT OF TRACING WIRE

Detectable underground copper tracing wire shall be installed with all utility lines. Insulated copper trace wire shall be attached to the top of the pipe with adhesive tape or other suitable devices. At each hydrant, valve, customer meter services and end of new pipe installation, the trace wire shall be daylighted and the ends connected together with split bolt connectors covered with waterproof connectors. For long runs of pipe, the maximum unbroken length of the trace wire shall be 2,500 feet. Underground splicing shall be made using brass split bolt electrical connectors and covered with waterproof tape or wrap.

Tracer wire shall be a #12 AWG (0.0808” diameter) high strength solid copper, insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Conductor must be at 21% conductivity for locate purposes. Insulation color shall meet the APWA color code standard for identification of buried utilities.

Manufacturers supplying solid copper tracer wire must have available detailed performance data.

* = Color: B=Blue Water, G=Green Sewer, P=Purple Reclaim Water R=Red Electric, N=Orange Communications, K=Black

** = Spool Size: 500', 1000', 2500'

4.10 CONCRETE CRADLE, ANCHORS OR ENCASEMENT

Concrete cradle, anchors or encasement of water mains and fitting shall be placed where shown on the plans. Concrete shall be 3000 PSI and shall be mixed sufficiently wet to permit it to flow under the pipe to form a continuous bed. In tamping concrete, care shall be taken not to disturb the grade or line of pipe or insure the joints.

Water mains constructed under creeks or drainage waterways shall be constructed of ductile iron pipe to a point at least ten feet (10') beyond the edge of the creek of drainage waterway and shall be encased in concrete.

In places where concrete will be poured at a mechanical joint fitting, a polyethylene (plastic) sheet having a minimum thickness of 3 mil, shall be wrapped around the fitting to prevent the concrete from coming in contact with the fitting's bolts and nuts.

4.11 HIGHWAY AND RAILROAD CROSSINGS

Steel encasement pipe for road and railroad crossings shall be bored and/or jacked in place to the elevations shown on the plans. All joints between lengths shall be solidly welded with a smooth non-obstructing joint inside. The encasement pipe shall be installed without bends. The water line pipe shall be installed after the encasement pipe is in place.

Installation of the water pipe in the encasement pipe shall be as per GMWSS's recommendations. After the water main has been installed, inspected, and tested as specified, both ends of the cover pipe shall be closed with proper fitting plug or cap in a manner acceptable to GMWSS.

All street cutting, street boring, highway boring, or railroad boring permits will be the responsibility of the CONTRACTOR. All necessary permits must be approved by KDOH and/or Railroad companies prior to construction commencing.

4.12 PIPELINE CLEANING (PIGGING) PROCEDURES

After installation and prior to testing, the complete water system (including all mains, services, hydrants, blow-offs, air release valves and all other appurtenances) shall be thoroughly cleaned to remove all foreign matter. GMWSS shall be notified at least 48 hours prior to cleaning activities. The cleaning of the piping system shall be accomplished by the controlled and pressurized passage through the system with a cylindrical 1-2 lbs per cu.ft. non-coated polyurethane plugs (light duty swab). A pigging plan shall be approved by GMWSS, and all pigging of lines must be witnessed by GMWSS inspector. The poly pigs shall be removed and

discharged from the system at a point near to the end of the system. The contractor must demonstrate to GMWSS that this work will be performed by experienced supervisors and personnel who have provided the cleaning service of comparable systems.

4.13 TESTING OF WATER MAINS

Upon completion of the construction of water mains but prior to FINAL INSPECTION, all water mains and appurtenances shall be tested for leaks as specified herein. GMWSS shall be notified at least 48 hours in advanced of the scheduled test time and, at its own discretion, have an inspector present during the performance of the test.

Where practicable, pipelines shall be tested between line valves, temporary valves or temporary plugs in lengths of not more than 1,500 feet or between isolation valves. The CONTRACTOR may request, in writing, the testing of a section of line greater than 1,500 feet with GMWSS's approval. Testing shall proceed from the source of water toward the termination of the line. The line shall be tested upon the completion of the first 1,500 feet or the first isolation valve.

A. PRESSURIZATION

After the pipe has been laid, each valved section of pipe shall be slowly filled with water to the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to GMWSS.

Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the Contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed, and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of GMWSS.

Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to GMWSS.

Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the joints shall be repaired, bolts retightened or re-laid, and leakage eliminated, regardless of total pressure drop shown by the test.

When hydrants are in the test section, the test shall be made against closed hydrant valves. Valves and hydrants connected to GMWSS' system cannot be operated without GMWSS personnel present.

B. AIR REMOVAL

Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed, and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of GMWSS.

C. PRESSURE TESTING

Water mains shall be tested at a minimum of 150 psi (at the lowest point), or higher as directed by GMWSS personell, for 24 hours. Loss of pressure during the test shall not exceed 0 psi in the first 4-hour period and not more than 5 psi in the 24-hour test period.

No water leakage in the water mains will be allowed during the hydrostatic pressure test.

The CONTRACTOR shall furnish a recording pressure gauge which shall be used for the continuous measurement and recording of test pressures and test time.

D. PRESSURE GAGES

Pressure gages shall be sized accordingly to normal operating pressures (average pressures). Gage ranges shall be no more than twice the operating pressure. Gage assemblies shall be furnished with shutoff cocks, diaphragm seals and pulsation dampers, which shall be constructed of brass or stainless steel. Gages shall be 4-½ inch in diameter. Gages shall have the following graduations:

Pressure Gauges (psi)			
Maximum Indications	Figure Intervals	Intermediate Graduations	Minor Graduations
15	1	0.5	.1
30	5	1	.2
60	5	1	.5
100	10	5	1
160	20	5	1
200	20	10	2
300	30	10	2

4.14 DISINFECTION OF WATER MAINS

New potable water mains shall not be placed into service, either temporarily or permanently, until they have been thoroughly disinfected in accordance with the following requirements and to the satisfaction of GMWSS and in accordance with AWWA 651 (latest revision).

After pressure testing, a solution of hypochlorite using HTH or equal shall be introduced into the section of the line being disinfected sufficient to insure a chlorine dosage of at least 50 parts per million (PPM) in the entire water main. While the solution is being applied, the water should be allowed to escape at the ends of the line until tests indicate that a chlorine concentration of at least 50 PPM has been obtained throughout the complete water main. Open and close all valves and cocks while chlorinating agent is in the piping system. The chlorinated water shall remain in the pipe for 24 hours. Disinfection shall be repeated until a minimum chlorine residual of 25 PPM is measured after 24 hours. Once a chlorine residual of 25 PPM is obtained after 24 hours, the water main shall be thoroughly flushed until the residual chlorine content is not greater than 1.0 PPM.

The CONTRACTOR shall slowly fill the water main being disinfected to allow for full contact of the pipe with the chlorinated water to ensure full contact and proper disinfection per AWWA C-651 and 401 KAR section for Disinfection of Waterlines.

Following disinfection of the line, bacteriological samples shall be collected and analyzed in accordance with the requirements of Kentucky Department of Natural Resources and Environmental Protection. When the samples have been tested and reported safe from contamination, the water line may be connected to the system. The Contractor shall provide GMWSS written documentation that the water sample passed the bacteriological test and is safe.

Bacteriological samples shall be taken in the following manner:

1. Two samples for the first one-half mile of water main and then one sample per mile thereafter.
2. Two samples when disconnecting or reconnecting a branch line or service line when two or more customers are affected.

All bacteriological sampling and testing shall be paid for by the Contractor and included in the unit price for the bid item "water main".

The CONTRACTOR shall provide its own chlorine residual analyzer test kit for sampling the chlorine concentration during the disinfection test period.

4.15 DECHLORINATION OF HEAVILY CHLORINATED WATER

Dechlorination of heavily chlorinated water shall be in accordance with AWWA C651 and shall be accomplished using sodium bisulfite, sodium thiosulfate, sodium sulfite, or calcium thiosulfate solution of a concentration sufficient to remove all chlorine to a level not to exceed 0.019 mg/l. The solution shall be applied by a metering pump directly into the chlorinated water flow stream by injection into a discharge line or into the free discharge from a hydrant. The treated water may then be conveyed to the nearest sanitary sewer, storm sewer, or local stream.

The feed rate (gpm) of solution shall be governed by the chlorine (ppm) concentration of the water to be dechlorinated and the rate (gpm) at which it can be discharged. Constant monitoring

of the chlorine residual concentration shall be made using the colorimetric method to ensure the optimum solution feed rate.

Feed System: The dechlorinating agent shall be fed from prepared carboys utilizing a metering pump equipped with a suitable meter and valve to adjust/monitor the feed rate.

4.16 CONNECTING TO THE WATER SYSTEM

Unless otherwise directed by GMWSS, the CONTRACTOR shall connect the new water main to the existing water system. The CONTRACTOR shall notify GMWSS when the connection is to be made so that representatives of GMWSS will operate existing valves and witness the connection. A minimum notice of at least 48 hours in advance of the connection shall be given to GMWSS.

In cases where a wet tap must be made to connect to the existing system the tapping sleeve, valve and box, and all other necessary material and labor shall be provided by the CONTRACTOR.

4.17 CUSTOMER SERVICE CONNECTIONS

GMWSS shall install the service connection tap on the water main, service connection pipe from the water main to the customer's property line, a curb stop, and curb box at the property line upon application for water service and payment of the appropriate tap fee. GMWSS may require the CONTRACTOR to install the service lines to the property line.

4.18 RESPONSIBILITY FOR MAINTENANCE

After formal acceptance of the IMPROVEMENTS by GMWSS, GMWSS will maintain the water mains and appurtenances. GMWSS will maintain the water main to the water meter setting or water service valve provided they are inside or within three feet (3') of the right- of-way or easement limits. Otherwise, GMWSS maintenance responsibility for water service lines shall terminate at the right-of-way or easement limits.

APPENDIX A
WATER and/or SANITARY SEWER AVAILABILITY APPLICATION

APPENDIX B
CHECKLIST FOR CONSTRUCTION PLANS

APPENDIX C
HYDRAULIC MODEL RESULTS TABULATION

APPENDIX D
HYDRANT FLOW TEST REQUEST FORM

APPENDIX E
NEW SERVICE – SANITARY SEWER CONNECTIONS AND PLAT CERTIFICATIONS

ENGINEERING MANUAL

WATER-SEWER AVAILABILITY APPLICATION

Concept/Design Plan must be submitted with documentation

Check applicatble:

Date: _____
Project Id #

☐ First Submission
☐ Re-Submission
☐ Revision to Approved Plan

Water Only ☐
Sewer Only ☐
Water & Sewer ☐

Project Name: _____

Description of Proposed Work: _____

Project Location: _____

Parcel Identification: _____

Total Acreage: _____

Owner/Developer

Company: _____

Contact Person: _____

Telephone: _____ Fax: _____ Email: _____

City, State, Zip Code: _____

Engineer

Company: _____

Contact Person: _____

Telephone: _____ Fax: _____ Email: _____

City, State, Zip Code: _____

Development

Type of Devlopment ☐ Residential ☐ Commercial ☐ Institutional

Water - Sewer

Water Only ☐ Water & Sewer ☐

Sewer Only ☐

Residential

Type of Residential Development

Apartment - 1 BR	_____	x	250	= 0
Apartment - 2 BR	_____	x	300	= 0
Apartment - 3 BR	_____	x	350	= 0
Single Family	_____	x	400	= 0
Duplex	_____	x	800	= 0
Condo	_____	x	350	= 0
Mobile Homes	_____	x	300	= 0
Total Demand - Residential				0.00

Commercial							
Description							
Bars (w. Food Service)		seats	x	20	=	0	per 8 hours
Bars (no Food Service)		seats	x	2	=	0	per 8 hours
Bowling Alleys (Food)		lanes	x	75	=	0	per 8 hours
Bowling Alleys (no Food)		lanes	x	25	=	0	per 8 hours
Motels		rooms	x	400	=	0	per day
Factory (w Showers)		person	x	35	=	0	per 8 hours
Factory		person	x	25	=	0	per 8 hours
Industrial		acres	x	2,000	=	0	per 8 hours
Industrial - Light		acres	x	1,000	=	0	per 8 hours
Shopping Center		SF	x	0.1	=	0.00	per 8 hours
Shopping Center (Grocery)		SF	x	0.2	=	0.00	per 8 hours
General Commercial		acres	x	5,000	=	0	per 8 hours
Coin Laundries		machines	x	400	=	0	per 8 hours
Service Station		bays	x	500	=	0	per 8 hours
Total Demand - Commercial						0.00	

Institutional							
Hospital		beds	x	200	=	0	
Institutions		person	x	400	=	0	
Nursing Homes		person	x	400	=	0	
Youth Camps		camper	x	50	=	0	
RV Camps		site	x	400	=	0	
Schools (Elem. & Middle)		person	x	7	=	0	
Schools (High)		person	x	20	=	0	
Church		seat	x	7	=	0	per 2 hours
Total Demand - Institutional						0.00	

Development Total Demand - Gallons Per Day		**GMWSS OFFICE USE ONLY**	
Total Demand - Residential	0.00		
Total Demand - Commercial	0.00	Equivalent Residential Units - Commercial	
Total Demand - Institutional	0.00	Equivalent Residential Units - Institutional	
Total Demand	0.00	**Total ERUs**	

See Engineering Manual, Section 2.2.A for more information regarding Water and Sanitary Sewer Availability Requests.

Checklist for Construction Plans

PROJECT NAME:_____ID#_____

Note: This checklist is provided for the convenience of design firms, so that the most common errors and omissions may be avoided. Refer to GMWSS's Standard Specification - Water for complete discussion of design requirements and parameters. PLEASE DO NOT INCLUDE THIS FORM WITH YOUR APPLICATION.

DATES: 1st Sub._____2nd Sub._____3rd Sub.

_____

Cover Sheet and General	**1st sub.**	**2nd sub.**	**3rd sub.**
GMWSS Project ID	Blank		
Engineer's Seal, Signature and Date			
Accurate Sheet Index			
GMWSS revision block, every applicable sheet			
GMWSS Standard Notes & Details			
All and only applicable series from the Standard Details included in plan set			
Standard Details provided are current			
Design follows applicable basis of design, preliminary plat, and/or master plans			
Facilities sized correctly			
Existing conditions and utilities shown			
Coordinate system and vertical datum identified			
CAD files for use in GMWSS GIS	Required	Not Required	

Plan View – General	**1st sub.**	**2nd sub.**	**3rd sub.**
North arrow			
Adequate separation between water and sanitary sewer, and with other utilities			
Pipes a minimum 15' from buildings			
Service connection for each building (water and sewer)			
Easements shown for utilities outside of public right of way			
Easements unencumbered and accessible for traverse			
Landscaping outside of easements			
Access to utilities provided to adjoining properties			

Water - Plan View	1st sub.	2nd sub.	3rd sub.
Min. 300' radius for pipe 12" and smaller, bends required otherwise			
Min. 500' radius for pipe 16" and larger, bends required otherwise			
Separation from sewer, curb, drains, and structures			
Dead-end line less than 500' for 8" and larger, 300' for 6"			
Adequate hydrant coverage to all structures			
All permanent terminations by means of a hydrant			
Air release valves specified at significant high points of 16" and larger pipes			
Hydrants at appropriate spacing and at substantial high and low points			
Line anchor and blow-off valve provided where future extension needed			
Valve between service connection and blow-off valve in temporary terminus			
Valving at appropriate intervals and configurations			
Fire hydrant min. 50' from commercial/industrial building			
Fire service independent with anchored branch valve (6" min.) at main			
Meter pits 5' from driveway apron and fire hydrants			
Load letter and meter sizing; coordinate plumbing concerns			

Hydraulic Model Results and Data Summary

Project Name:

Date: _____

GMWSS Project ID#: _____
or Preliminary Plan # _____

Model Preparer Name: _____

Preparer Email: _____

Software Package/Version used: _____

Hydraulic modeling method used: _____

Model Iteration/Submission #: _____
(e.g., steady state (default), extended, manual, etc.)

Description of Project:

Approx LF of proposed mains:

_____ <= 6"
_____ 8"
_____ 12"
_____ 16"
_____ >= 24"

Source of Demands: (Place "X" which applies)

_____ Using ERU unit rates and Ex. Zoning and Ex. uses
_____ Other: (explain in box below, e.g., rezoning, special demand, ...)

*Attach project Demands table with phasing as Attachment A with a map depicting node labels.

Model Start Point: (Place "X" which applies and explain in text box)

_____ Existing constructed main utilizing minimum Zone HGL as start condition. In box below, list the Zone, reservoir, and Low HGL assumed and the source of this data. [Default modeling basis]

_____ Existing Main with Two-Point Flow Test generated pump curve. In box below, list fire flow test number, date of test, static, residual and flow. Provide the model produced pump curve as Attachment B. [Alternate modeling basis, only as approved by GMWSS]

_____ Extension from other existing modeled point. In box below, list the name and approval date of that existing model and other pertinent information. [Only as approved by GMWSS]

Explanation / Detail of selection made above:

Hydraulic modeling method used:__(e.g., steady state (default), extended, manual, etc.)

Scenario Description:

Describe each "Parent" scenario below and the purpose of each scenario in the model. Single phase developments will generally have a basic model with one parent scenario and "child" scenarios for avg, max, peak, and max+fire. Multi-phased developments will have multiple parent scenarios corresponding to each phase of project. Very complex or complicated models should have separate attachments with details as appropriate. Please note that only one water source (reservoir) is permitted, except where allowed by GMWSS.

Scenario Name:	Description / Purpose / Phasing / Interim Condition
Scenario 1 ----------	
Scenario 2 ----------	
Scenario 3 ----------	
Scenario 4 ----------	
Scenario 5 ----------	
Scenario 6 ----------	

Scenario Results:

Each parent scenario generally will have critical node(s) (i.e. node with the lowest pressure in system/zone, node at the highest elevation, node at most distant location from the source, at important locations of demand). Max+Fire should indicate the node at which minimum available fire flow was determined and then which node was the resultant critical pressure node (which could be the same node). Repeat this page for models with more than six scenarios.

Hydraulic modeling method used: (e.g., steady state (default), extended, manual, etc.)

		Scenario Name					
		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Max Day + Fire	Fire Flow Node Name:						
	Fire Flow Available gpm						
	Critical Node #1 Name:						
	Critical Node #1 Description:						
	Residual Pressure: psi						
	Demand at node: gpm						
	Node elevation: ft						
	Critical Node #2 Name:						
	Critical Node #2 Description:						
	Residual Pressure: psi						
	Demand at node: gpm						
	Node elevation: ft						
	Critical Node #3 Name:						
	Critical Node #3 Description:						
	Residual Pressure: psi						
	Demand at node: gpm						
	Node elevation: ft						
	Critical Node #4 Name:						
	Critical Node #4 Description:						
	Residual Pressure: psi						
	Demand at node: gpm						
	Node elevation: ft						

Closing Statement:

Submitter should provide any appropriate closing statement here, such as opinion of adequate pressure, flow, fire flow, meeting EDM criteria or other pertinent closing information.

HYDRANT FLOW TEST REQUEST FORM

Check applicable:

_____ First Request
_____ Verification Request
_____ Revision to Approved Plan

Date: _____
Project Id # _____

Project Name: _____

Description of Proposed Work: _____

_____

Project Location:

_____

_____

Parcel Identification:

_____

_____

Owner/Developer

Company: _____

Contact Person: _____

Telephone: _____ Fax: _____ Email: _____

City, State, Zip Code: _____

Engineer

Company: _____

Contact Person: _____

Telephone: _____ Fax: _____ Email: _____

City, State, Zip Code: _____

Development

Type of Development (Circle) Residential Commercial Institutional

General Information

Hydrant Physical Location (address, hydrant #, etc.) _____

Reason for request: _____

_____

_____

Date for Information (30 Day notice required)

_____

New Service – Sanitary Sewer Connections And Plat Certifications

Purpose:

In order to manage sanitary sewer capacity within the collection/conveyance system and wastewater treatment plants (WWTP) owned and operated by Georgetown Municipal Water and Sewer Service (GMWSS) until a time when additional and adequate capacity is available, GMWSS must implement new governing policy and update existing policy to manage the sanitary sewer system, prevent detrimental impacts to the environment resulting from sanitary sewer overflows (SSOs) and bypasses, and maintain regulatory compliance.

Background:

GMWSS owns and operates municipal Wastewater Treatment Plant No. 1 (hereinafter "WWTP No. 1") located at 740 Cincinnati Pike, Georgetown, KY, in Scott County. WWTP No. 1 discharges into North Elkhorn Creek. WWTP No. 1 has a design capacity of 4.5 million gallons per day (hereinafter "MGD") average daily flow (hereinafter "ADF") and 13.5 MGD peak daily flow (hereinafter "PDF"). At the time of execution of this pending Agreed Order, the percentage of utilized hydraulic capacity for WWTP No. 1 is 72.94%. An additional 22.81% of hydraulic capacity has been allocated to sewer expansion by the GMWSS Board of Commissioners; and

GMWSS owns and operates municipal Wastewater Treatment Plant No. 2 (hereinafter "WWTP No. 2") located at 900 Cherry Blossom Way, Georgetown, KY, in Scott County. WWTP No. 2 discharge into Lanes Run. WWTP No. 2 was designed with capacity of 2.2 MGD, ADF and PDF. GMWSS operates WWTP No. 2 under KPDES Permit No. KY0082007, issued by the Cabinet's Division of Water on June 10, 2014. The permit was revised and re-issued to GMWSS on April 22, 2021, with an effective date of April 1, 2021. Based on the revised permit, WWTP No. 2 has a permitted capacity of 3.0 MGD ADF and 6.0 MGD PDF. WWTP No. 2 is governed, operated, and maintained under a User Agreement between Toyota Motor Manufacturing of Kentucky (hereinafter "TMMK") and GMWSS. Per the User Agreement, TMMK is allocated 1.56 MGD of WWTP No. 2 hydraulic capacity, GMWSS is allocated 1.34 MGD of WWTP No. 2 hydraulic capacity, and Lanes Run Business Park is allocated 0.10 MGD of WWTP No. 2 hydraulic capacity. 0.12 MGD is not accounted for in the User Agreement. At the time of execution of this Agreed Order, percentage of GMWSS allocated hydraulic capacity for WWTP No. 2 is 23.33% of 44.67%. An additional, 6.84% of GMWSS allocated hydraulic capacity is committed to sewer expansion by the GMWSS Board of Commissioners; and

GMWSS intends to expand sewer service in order to serve new customers in multiple planned residential, commercial, industrial, and institutional developments. The WWTP No. 1 Upgrade and Expansion will increase its capacity from 4.5 MGD ADF to 9.0 MGD ADF and 13.5 MGD PDF to 36.0 MGD PDF. Beneficial Use of the expanded facility is anticipated in June 2025; and

When required in the future, GMWSS will pursue an expansion of WWTP No. 2 to expand sewer service in order to serve new customers; and

In addition to planned upgrades to WWTPs No. 1 and 2, GMWSS is in the process of providing additional capacity within the sanitary sewer collection and conveyance system through upgrades identified in the system assessment entitled "Critical Needs Analysis 2019." Identified projects were included in a 5-year capital improvements program and funded through an adjustment to sanitary sewer rates in 2019; and

All sanitary sewer improvements were identified in the GMWSS 2020 Regional Facilities Plan; and

GMWSS is currently negotiating, and will enter into, an Agreed Order with the Kentucky Energy and Environment Cabinet (EEC) Division of Water (KDOW) and Division of Enforcement(DOE). The Agreed Order will include a moratorium on new connections to the sanitary sewer system and stipulated penalties for non-compliance and sanitary sewer overflows; and

There exists an unknown number of plats with GMWSS certification of sanitary sewer service with no sunset clause; and

GMWSS policy updates have been implemented since numerous certifications of sanitary sewer service were made regarding certifications and limits to certifications; and

Certifications of sanitary sewer service made prior to February 17, 2021, do not meet the requirements for service under current approved policies; and

GMWSS cannot reserve capacity indefinitely for properties that obtained certification prior to February 17, 2021, and the owners of those properties have not made any prior attempt to make connection to the sanitary sewer system; and

Current policy requires that an Availability Request for sanitary sewer service be approved by the GMWSS Board of Commissioners; and

Approved Availability Requests are only valid for twelve (12) months; and

Current certification of sanitary sewer service is only valid with a current and approved Availability Request; and

Properties that were certified for sanitary sewer service prior to February 17, 2021, are seeking immediate connection to the sewer system without an approved Availability Request and without adherence to current GMWSS policies.

Now, therefore, the following policy shall be implemented and included in the GMWSS Water Distribution Manual:

1. All new service connections to the sanitary sewer system must meet the requirements of the Section 2 of the GMWSS Engineering Manual, including but not limited to the Availability Request approval process, Plan and Specification Review, Hydraulic Analysis, and Certification of Service.

2. Certification of sanitary sewer service dated prior to February 17, 2021, must be accompanied by a current Availability Request approved by the GMWSS Board of Commissioners in accordance with all requirements of Section 2 of the GMWSS Engineering Manual.

3. Effective as of the same date of the pending Agreed Order, new connections may only be approved in accordance with the pending Agreed Order currently in development with the Kentucky EEC DOE.