WESTERN VIRGINIA
WATER AUTHORITY

MEMO

ENGINEERING SERVICES

Date: April 5, 2021

To: All Developers, Engineers, Builders, and Contractors Engaging in Installation of Western Virginia Water Authority Infrastructure

From: Will Bulloss, PE, PMP, Chief Engineer

Subject: Western Virginia Water Authority ("WVWA" or "Authority") Local Review Program

Notice of Plan Approval Process for Water Distribution Mains

This is to clarify the Developer's and Authority's respective responsibilities pertaining to design and approval of new water main within the Authority's system. The guidance herein has immediate effect.

Local Review Program Applicability

The Western Virginia Water Authority has been granted local review authority by the Virginia Department of Health (VDH). This applies to extensions of the Authority's water distribution mains up to 16-inch in diameter. For projects under this authority, projects do not require an individual construction permit from VDH, so long as the project meets all applicable VDH regulations and has been appropriately reviewed and approved by the Authority.

For projects including water mains greater than 16-inch, transmission mains (a pipeline whose primary purpose is to move significant quantities of treated water among service areas), pumping stations, or treatment facilities, the Developer shall submit all required documentation to VDH Office of Drinking Water after first obtaining Western Virginia Water Authority's written acceptance of the design. Construction of the project may not begin until the Commonwealth's Waterworks Construction Permit has been obtained. Refer to Figure 1 for a decision tree for determining applicability.

Design and Submittal Requirements for Projects under WVWA's Local Review Program

For individual projects serving more than 15 service connections or consisting of pipe greater than 8-inch diameter, the Developer shall provide construction plans and specifications, prepared by a Professional Engineer licensed to practice in the Commonwealth of Virginia, which comply with applicable provisions of Western Virginia Regional Design and Construction Standards and VDH Waterworks Regulations. Supporting technical documentation including hydraulic modeling, and design calculations must be submitted to demonstrate adequate design. Master plans, phasing plans, and other supporting information shall be submitted as directed by the Authority to facilitate evaluation of proposed improvements and other requirements for compliance.

When modeling is performed, the Engineer of Record shall complete the Hydraulic Model Data Form for inclusion in the application package. This form can be found on VDH's website. Plans, models, and calculations submitted for approval shall bear the design engineer's original signature and seal on the cover sheet. Seals and signatures must appear on all plan sheets. Upon request by the Authority or VDH, the Developer or designee will provide physical plan sets with wet ink signatures in accordance with VDH requirements. Refer to Figure 2 below for submittal requirements. PLEASE NOTE: Effective as of this date of issuance, the previously required VDH Form – Hydraulic Modeling Analysis Certification is no longer required to be submitted to WVWA.

The Authority will review the Submittal for compliance with the Western Virginia Regional Design and Construction Standards (latest edition), Waterline Project Review Sheet (from VDH), and system design based on sound engineering principals. It is the Developer's responsibility to ensure that designs comply with the requirements of all applicable regulatory agencies, including but not limited to Virginia Department of Health (VDH), Virginia Department of Environmental Quality (DEQ), Virginia Department of Transportation (VDOT), and the applicable locality. In cases where the design does not comply with requirements, the Developer or Engineer of Record is expected to review with the Authority and, if necessary, obtain an approved Waiver prior to submitting the entire project for review. Designs shall function properly within the existing system and support the logical extension of the Authority's water distribution network. The Authority has ultimate determination on what logical extension entails. Any requests for cost sharing, credits, or other participation by WVWA must be submitted in writing and in accordance with WVWA Development Regulations.

Upon review and final approval by the Authority, the Authority will issue a letter of approval to the design engineer of record that the submitted water main is acceptable for construction. Construction may not begin without final approval.

Plan Submittal Shall Include:

1. Construction plans and specifications signed and sealed by design engineer of record
2. Draft Project Summary Form (from VDH) with data filled in
3. Hydraulic Model Report OR Supporting Design Calculations, signed and sealed by design engineer of record
4. Hydraulic Model Data Summary (from VDH), when hydraulic modeling is performed

Hydraulic Models

In all cases, it is the Engineer of Record's responsibility to provide adequate design to meet ordinary and reasonable system design, standard of care, and all applicable regulations. The Engineer of Record may determine that hand calculations are sufficient on smaller developments. Hydraulic modeling is generally expected for larger and more complex extensions to the distribution system. The Authority will make various system data available to the Engineer upon written request in order to assist in hydraulic design (ex. tank levels, PRV set points, other control factors). When requested, hydraulic models will be submitted Authority for review. The following are minimum requirements for all models submitted.

1. Provide a written model summary, area map, scenarios analyzed, and outputs. Identify the computer modeling software used to create the model. An electronic copy of the model shall be made available to the Authority upon request. In these cases, submit all related database files to ensure the model will import into Innovyze InfoWorks WS Pro 4.5, or Western Virginia Water Authority's latest software.

2. Provide a map showing pipe network. Label all pipes, nodes, road names, north arrow, scale, number of units, unit type, demands, elevation contours, and outline the phasing of the project.

3. Demonstrate that the development(s) can meet the following demands: average day, maximum daily, peak hour, and maximum daily plus fire flow, throughout development.

4. Model must represent the entire development, including each planned sequence of phases. Each phase of the development must be hydraulically adequate. The model must support the desired phasing in the order that the construction will occur.

5. Neighboring developments and system demands must be included in model to accurately represent system pressures.

6. Identify model assumptions, including water source and calculated demands based on the number of units and the type of units in the development. Only one water source may be used to supply the model, except where two hydraulically independent sources exist, such as from two separate pressure zones.

7. State the required fire flow demands (as determined by locality fire official) for each unit type and call out specific nodes that require different fire flow demands.

8. Include a node report showing elevation, demand, hydraulic grade line (HGL), and pressure. A pipe report showing diameter, flow, velocity, length, and head loss should also be included.

9. Provide a conclusion of the model results identifying the nodes with the lowest pressure during the various scenarios.

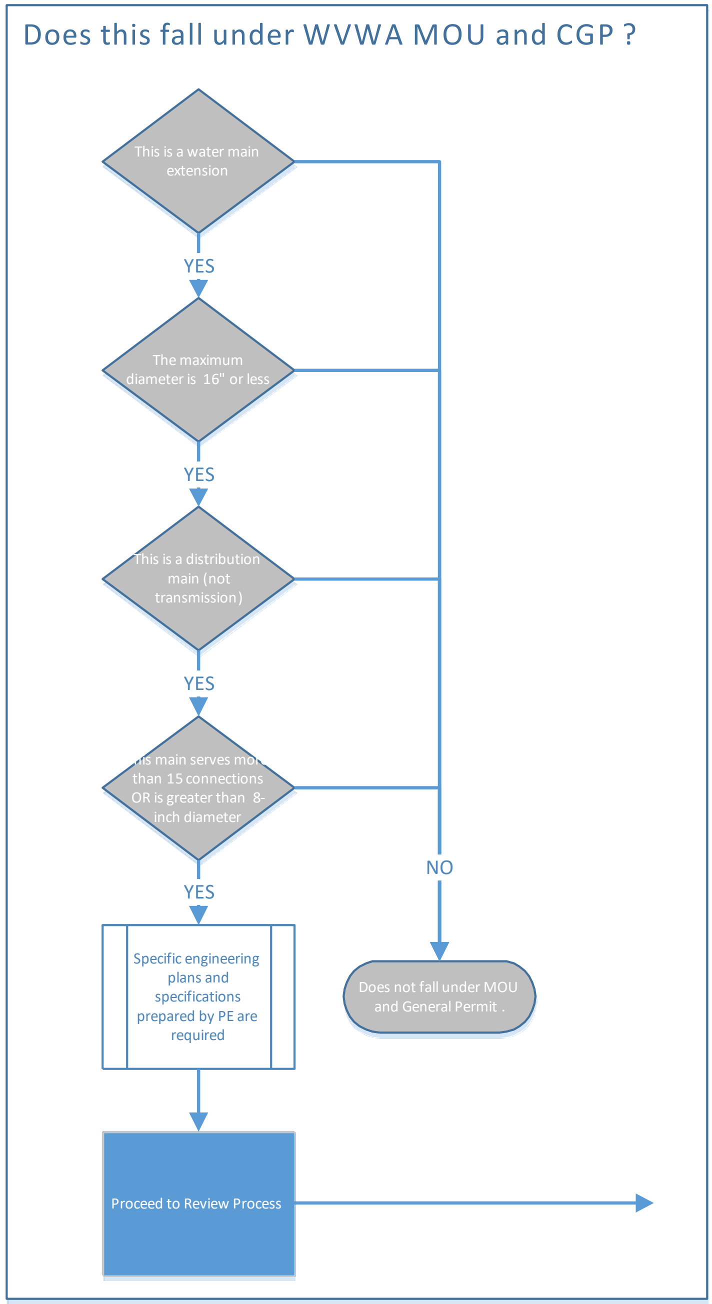

Figure 1- Applicability of WVWA Local Review Program on Development Plan

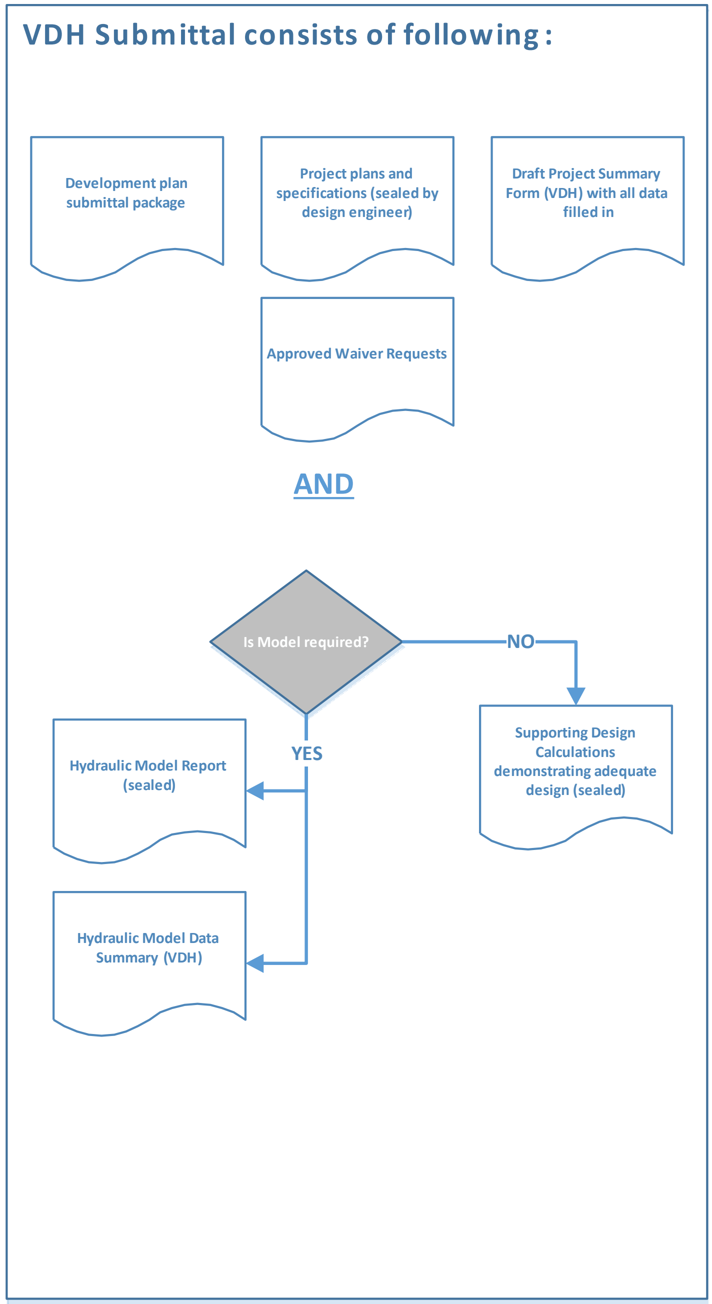

Figure 2 - Submittal Requirements under Local Review Program