

7. DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

7.1 Introduction

The objective of this chapter is to describe and provide guidance for the inclusion of water system distribution facilities design and construction standards to relieve the City from the requirement to submit project reports and construction documents to DOH for approval for new distribution mains. With advanced approval of design and construction standards along with an approved WSP, the City does not need to obtain written DOH approval of individual project reports and construction documents for projects relating to distribution mains. The City must still comply with all applicable sections of the regulations, including project report and construction document requirements listed under WAC 246-290-110 and -120, whether or not documents are submitted to DOH for approval.

Design and construction standards are based on DOH design guidance and other documents generally accepted by engineering professionals as containing fundamental criteria for design and construction of water utility projects. The water system standards that the City has developed and that are described here are at least as stringent as those discussed in WAC 246-290.

7.2 Project Review Procedures

The City has developed standards and requirements pertaining to water line projects. These standards are utilized in the City's project review process. During the review process, the City's development review engineer or the Public Works Director typically will review the plans of the proposed project to verify that the project plans and specifications are consistent with the City's construction and development standards as well as this WSP. In the past, the City has used outside consulting engineers to review plans and specifications. The City's development and construction standards for its water system are included Appendix 7A.

The development and construction standards include the process by which a new service is provided. At the time of application by the prospective customer, the City first determines if there is a duty to serve based on DOH duty to serve requirements. Additionally, the City determines if annexation is required and if water is available. The current process is shown in Figure 7-1. Proposed changes to this process are also shown on the figure to make the process consistent with the policies described in Chapter 1 of this WSP.

7.3 Policies and Requirements for Outside Parties

The City has established policies and requirements for development/extension of the water system by outside parties, such as developers. Outside parties making alterations to the system are required to comply with the policies and requirements included in this WSP and the following documents:

- City of Yelm Development Guidelines
- City of Yelm and Thurston County Joint Growth Management Plan
- City of Yelm Ordinances: Chapter 13, Water and Sewer.

PROCESS TO OBTAIN WATER SERVICE

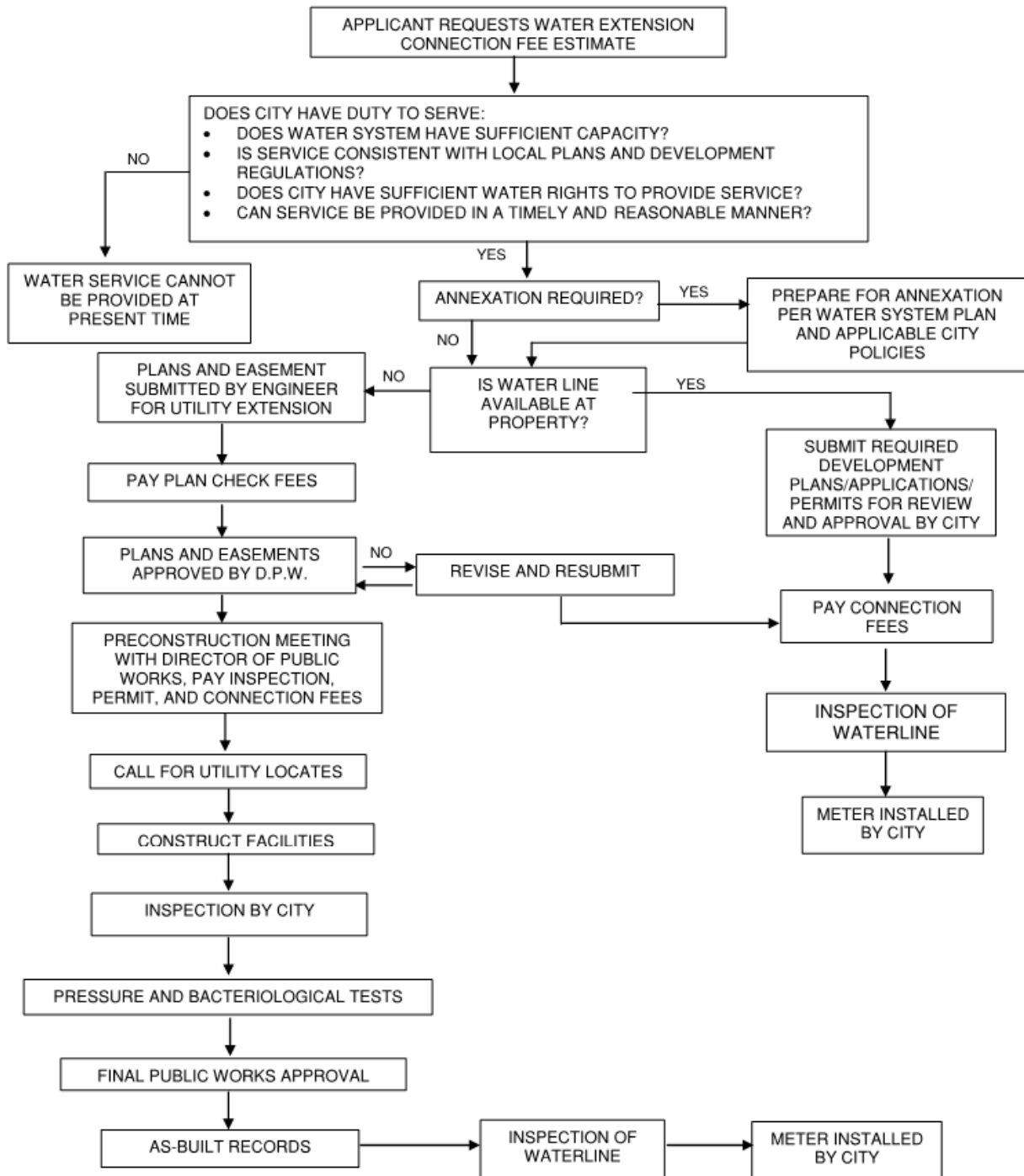


Figure 7-1. Process to Obtain Water Service

The above policies include various requirements of system performance and development standards including, but not limited to, rights-of-way, looping requirements, minimum fire flow requirements, Coordinated Water System Plans, and level of service standards according to the Growth Management Act.

7.4 Design Standards

The hydraulic evaluation criteria are based on maintaining system pressure and velocity, as defined in WAC 246-290-230 and in Group A Public Water Systems Waterworks Standards. The following criteria were used to model and evaluate the distribution system (see Chapter 3) and are to be used by developers proposing to extend the City's water system:

- Maintain a minimum pressure of 30 psi in any point in the distribution system during PHD conditions.
- Maintain a minimum pressure of 20 psi in any point in the distribution system during fire flows under MDD conditions.
- Limit pipe velocities to approximately 8 fps.
- Limit main pressures in the distribution system to 100 psi.
- The minimum line size is 8 inches for dead-end lines and 6 inches for looped lines.

It is the responsibility of the prospective developer to perform water system modeling necessary to show that these criteria are met. The City will maintain a model of the existing water system to serve as the basis for this modeling. The expanded distribution system described in Chapter 8 shows the major line sizes required for meeting these performance standards. Water line sizes for projects within the existing "skeleton" system will be determined on a case-by-case basis.

7.5 Construction Standards

The City's development standards (Appendix 7A) specifically address the accepted materials and construction methods regarding the water system. This includes equipment and material for the following components:

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| ▪ Piping | ▪ Air and vacuum release valves |
| ▪ Anchoring system | ▪ Water line testing |
| ▪ Fittings | ▪ Disinfection requirements |
| ▪ Thrust blocks | ▪ Taps |
| ▪ Hydrants | ▪ Meters |
| ▪ Blow-offs | ▪ Meter boxes |
| ▪ Meter setters | |

7.6 Construction Certification and Follow-up Procedures

The City ensures that water system distribution projects are constructed in accordance with the water utility's construction standards by inspecting the construction, observing testing, and collecting bacteriological test results. As shown in Figure 7-1, prior to installing a meter on a new water line or service, the extension must pass pressure and bacteriological tests, as-built records must be submitted, and the Public Works Department must complete a final inspection. Projects in public rights-of-way are conveyed to the City upon completion.

A DOH Construction Completion Report Form will be completed at the end of each approved water system project involving construction of a booster pump, reservoir, or transmission main, of the coating of a tank, along with as-built construction records. These records will be submitted to DOH. A copy of this form is included as Appendix 7B.

The maps of the existing system included in this document have been updated to reflect recent changes and have been reviewed with the water system operators. In the future these maps will be updated as major projects are completed and developer-funded extensions will be periodically added to the maps as well.