5 | POLICIES AND DESIGN CRITERIA

INTRODUCTION

The City of Woodland (City) operates and plans water service for City water system customers according to the design criteria, laws, and policies that originate from the seven sources listed in **Table 5-1** in descending order from those with the broadest to narrowest authority.

Table 5-1

Regulatory Agencies

Agency	Design Criteria/Laws/Policies
U.S. Department of Health & Human Services	Federal Regulations
U.S. Environmental Protection Agency	Federal Regulations
Washington State Department of Health	State Regulations
Washington State Department of Ecology	State Regulations
Clark County Council Board of Cowlitz County Commissioners	County Regulations
Woodland City Council	City Regulations
American Water Works Association	Design Criteria

These laws, design criteria, and policies guide the City's operation and maintenance of the water system on a daily basis, and its planning for growth and improvements. Their overall objective is to ensure that the City provides high-quality water service at a minimum cost to its customers. They also set the standards the City must meet to ensure that its water supply is adequate to meet existing and future water demands. The system's ability to meet these demands is detailed in **Chapter 7**, and the recommended improvements are identified in **Chapter 9**.

The highest three governmental entities establishing policies and laws – the U.S. Government, Washington State, and County Councils (the City is located in both Cowlitz and Clark Counties) – establish requirements in statutes, regulations, or ordinances. The Woodland City Council and Mayor adopt policies that cannot be less stringent or in conflict with those established by governments above them. The City's policies take the form of ordinances, memoranda, and operational procedures, many of which are summarized in this chapter.

The policies associated with the following categories are presented in this chapter.

- Supply
- Customer Service
- Facilities
- Finance
- Organization

SUPPLY POLICIES

Quality Protection

- The City will pursue steps to meet or exceed all water quality regulations and standards.
- The City will take all reasonable measures to protect its system and customers.

Cross-Connection Control

- The City has a responsibility to protect the public water system from contamination due to cross-connections. Cross-connections that can be eliminated will be eliminated. Cross-connections that cannot be eliminated must be controlled by an approved air-gap or backflow preventer that is commensurate with the assessed degree of hazard.
- The City has a cross-connection control program for eliminating cross-connections. A copy of the City's Cross-Connection Control Plan is contained in **Appendix G**.
- The City has staff that is certified for backflow prevention and testing.
- The City will comply with the backflow prevention assembly installation and testing requirements as indicated in Washington Administrative Code (WAC) 246-290-490, and as published in the most recent version of the *Cross Connection Control Manual Accepted Procedure and Practice*, Pacific Northwest Section – American Water Works Association (AWWA).

Quantity

- The City plans to fully develop its water rights to improve supply redundancy and to be better prepared for future growth.
- The City will ensure that the capacity of the system, including wells, treatment systems, pump stations, storage, and transmission mains, is sufficient to meet the maximum day demands of the system.

Fire Flow

- The City will plan to provide the minimum fire flows as outlined in **Table 4-9**. Actual fire flow requirements, as determined by the local Fire Marshal, may differ from those shown based on such factors as proposed use and building size. Improvements to

increase the available fire flow to meet actual fire flow requirements greater than those shown shall be the responsibility of the developer.

Water Use Efficiency

- The City will promote the efficient and responsible use of water and will implement conservation measures during a water shortage.
- The City has established water use efficiency goals through a public process. Water use efficiency goals will be evaluated and reported annually and updated at least every 10 years as part of the Water System Plan (WSP) update.
- The City's Water Use Efficiency Program, which is contained in **Appendix F**, describes the City's current adopted program.

Regional Participation

- The City will continue to participate in regional supply management and planning activities to protect the environment, reduce cost of service, increase reliability, improve water quality, and secure needed quantity. The Water System Plan will be provided to both Cowlitz and Clark County planning agencies with requests to confirm the WSP is consistent with the comprehensive plans for both counties. The City has participated in the development of the *Salmon-Washougal and Lewis Watershed Management Plan,* which establishes policies for municipal water supply in Watershed Resource Inventory Areas (WRIA) 27 and 28.

CUSTOMER SERVICE POLICIES

Duty to Serve

The City has a duty to provide service to all new connections within the retail service area when the circumstances meet the following four threshold factors:

- The City has sufficient capacity to serve water in a safe and reliable manner.
- The service request is consistent with local plans and development regulations.
- The City has sufficient water rights to provide service.
- The City can provide service in a timely and reasonable manner.

Time extensions in regard to water availability shall be granted in accordance with the associated permit requirements. When extensions are denied, the disputes are handled through the rules guiding the associated permit process. Disputes can be brought to the City Council for discussion.

The following section, **Water Service and Connection**, provides additional details regarding the City's duty to serve policies.

Water Service and Connection

- The City will strive to provide potable water service to all people within the City limits and designated retail water service area (i.e., where there are existing water mains), provided all policies related to service can be met. Requests for new water service outside the City limits, but within the Urban Growth Area (UGA), where there are no existing water mains fronting the property, will be granted only upon extension of water service and completion of an annexation agreement (provided that the property is not already served or showing a bona fide public health emergency).
- All proposed developments within the City's water service area shall connect directly to the City's water system, unless deemed infeasible by the City at the time of the request.
- Water system extensions required to provide water service to proposed developments shall be approved by the City and must conform to the City's adopted design criteria, construction standards, and specifications, as shown in the City's Water System Standards contained in **Appendix H**. All costs of the extension shall be borne by the developer.
- Water service cannot be extended outside of the water service area.
- A certificate of water availability shall be applied for prior to issuance of a water service installation permit to determine if water is available.
    - For water service applications within the City limits, the City will review the availability for water service at the time of the land use permit, site civil review, and building permit. During the land use permitting process, the City will determine if water is available for the site. During the site civil review, the City will address the sizing and looping of the water main. The formal water service application begins at the time of building permitting, when fire flow and service sizing is evaluated.
    - Water system capacity will be evaluated based on the capacity analysis contained in **Chapter 7** of this WSP to evaluate if source of supply, storage, treatment, transmission, and water rights capacity is available to the applicant.
    - Water system capacity, pressure, and fire flow will be considered when confirming water availability to applicants.
    - If the City has water available in sufficient annual and instantaneous quantities to serve the property, and if the City water system is sufficiently sized, constructed, and maintained so as to enable delivery of that water to the subject property, the certificate shall be issued by the City and will be valid for 6 months from the date of issuance, unless the applicant renews the certificate of availability prior to the expiration date.
    - A certificate of water availability may be renewed only once, for an additional 6-month period, unless the applicant provides written documentation to the director's satisfaction demonstrating that the applicant has on file with the jurisdiction in which the subject property is located (County or City) a complete

building application or complete application for a subdivision, master site plan, or other binding land use application for the underlying property, and that, through no fault of the applicant, the building permit, subdivision, master site plan, or other land use application is not likely to be approved within the certificate of water availability's renewal term, in which case the Director may grant one or more additional renewal terms as the Director determines in his/her reasonable discretion.

- When time extensions are denied, the disputes are handled through the rules guiding the permit process. Disputes can be brought to the City Council for discussion.

Annexations

- Areas annexed without existing municipal water supply will be served by the City, provided the area is within the water service area and the area is not being served by another water purveyor at the time of annexation.
- Areas annexed with existing municipal water supply must meet City water standards.
- The City will follow State guidelines in the assumption of facilities in annexation areas.

Temporary Services

- No temporary service is allowed, unless there is a bona fide health emergency.
- Temporary connections may be made to hydrants, blow-offs, or other connections approved by the City engineer or his/her designee only upon issuance of a permit. Conditions of use will be set forth on the permit by the City engineer or designee.
- Meter assemblies will be provided by the City. No other meter assembly will be allowed unless approved by the City engineer or designee prior to connection.
- The City may require the applicant to discontinue use of the connection to City water for any reason and at any time it deems necessary.

Emergency Service

- Compliance with standards may be temporarily deferred for emergency water service.
- Policy criteria may be waived for emergency service.

Planning Boundaries

- The City's retail water service area and existing and future water service areas will be designated in the current WSP and will be consistent with the *City of Woodland Comprehensive Plan*.
- The City will follow State of Washington guidelines in coordination with adjacent water systems as a result of annexations or water service agreements.

Satellite System Management

- The City will consider providing satellite system management or ownership services within and adjacent to the City's existing service area.

FACILITY POLICIES

This section describes the planning criteria and policies used to establish an acceptable hydraulic behavior level and standard of quality for the water system. Additional criteria are contained in the City's Water System Standards, a copy of which is included in **Appendix H**.

Minimum Standards

- All proposed developments within the City's existing and future service areas shall conform to the City's adopted design criteria, construction standards, and specifications, in addition to the requirements of governmental agencies.

Pressure

- The City will endeavor to maintain a minimum pressure of 40 pounds per square inch (psi) at customer meters during normal demand conditions, excluding a fire or emergency.
- The City will endeavor to maintain a maximum pressure of 100 psi in the water mains during normal demand conditions. Individual residences are responsible for reducing pressures over 80 psi.
- The City will maintain a minimum pressure of 30 psi at customer meters during all high demand conditions, excluding a fire or emergency.
- During fire or other emergency conditions, the minimum pressure at customer meters and throughout the remainder of the system is 20 psi.
- During a failure of any part of the system, the maximum pressure will not exceed 150 psi.

Velocities

- During normal demand conditions, the velocity of water in a water main should be less than 5 feet per second (fps).
- During emergency conditions such as a fire, and for design purposes, the City will endeavor to ensure the velocity of water in a water main does not exceed 10 fps.

Storage

- Storage within the distribution system must be of sufficient capacity to supplement supply when system demands are greater than the supply capacity (equalizing storage),

and still maintain sufficient storage for proper pump operation (operational storage), fire suppression (fire flow storage), and other emergency conditions (standby storage).

- Equalizing storage must be provided when source pumping capacity cannot meet peak hour demands. Equalizing storage must be available at 30 psi to all service connections.
- Standby storage must be located above an elevation that yields a 20 psi service pressure to all services in the zone under peak hour demand conditions with the largest source out of service.
- The City will provide sufficient standby storage for an emergency condition in which a major supply source is out of service. The volume of storage will be sufficient to maintain uninterrupted supply equivalent to one day of maximum day demands. Standby storage will not be less than 200 gallons per equivalent residential unit.
- Fire suppression storage must be located above an elevation that yields a 20 psi service pressure to all services in the zone under maximum day demand conditions.
- The City will provide sufficient fire suppression storage for a fire condition equal to the system's maximum fire protection water demand and required duration.
- The City's Supervisory Control and Data Acquisition (SCADA)/Telemetry system will monitor high water level and low water level conditions and will generate alarms to be received by operations and maintenance personnel and after hours standby personnel.
- A water level indicator will be maintained on the City's SCADA/Telemetry system.
- Storage facilities will be located in areas where they will satisfy the following requirements:
    1. Minimize fluctuations in system pressure during normal demands.
    2. Maximize use of storage facilities during fires and maximum demands.
    3. Improve the reliability of supply to the City.

Transmission and Distribution

- Where practical, transmission and distribution mains will be looped to increase reliability and fire flow capacity and decrease head losses.
- All mains will comply with the generally recognized design criteria from AWWA and Washington State Department of Health guidelines that follow.
    1. All new construction will be in accordance with the City of Woodland Water System Standards, a copy of which is included in **Appendix H** of this WSP.
    2. Distribution system design assumes that adequately sized service lines will be used. All residential service lines will be ¾ inch or larger. Service lines will be the same size as the meter or larger.
    3. The minimum diameter of distribution mains will be 8 inches, unless otherwise approved by the City.

4. All new distribution mains will be sized by hydraulic analysis.
5. All new mains providing fire flow will be sized to provide the required fire flow at a minimum residual pressure of 20 psi and a maximum pipeline velocity of 10 fps during maximum day demand conditions. In general, new water mains that will carry fire flow in residential areas shall be a minimum of 8 inches in diameter and looped for multi-family residential developments. New water mains in commercial, business park, industrial, and school areas shall be a minimum of 12 inches in diameter and looped.
6. Valve installations will satisfy the following criteria:
    a. Zone valves will be located at all pressure zone boundaries to allow future pressure zone realignment without the need for additional pipe construction.
    b. Isolation valves will be installed in the lines to allow individual pipelines to be shut down for repair or installation of water appurtenances (tee for a fire hydrant, a valve, or other appurtenance that cannot be connected by direct tap). The distance between isolation valves will not exceed 500 feet in school, commercial, or multi-family areas and 800 feet in single-family residential areas. A minimum of three valves will be provided per cross and two valves per tee.
    c. Air/vacuum release valves will be placed at all high points, or “crowns,” in all pipelines.
    d. Blow-off assemblies shall be located at main dead ends where there is not a fire hydrant. If a water main extension is expected in the future, the blow-off assembly shall have a valve the same size as the main with concrete thrust blocking.
7. Individual pressure reducing valves must be installed in all customer service lines in the City where the pressure exceeds 80 psi. Pressure reducing valves protect customers from high pressures in case a main line pressure reducing station fails and are the property of the customer. The customer is responsible for the maintenance of individual pressure reducing valves.
8. Fire hydrant installations will satisfy the following criteria:
    a. Fire hydrants serving detached single-family or duplex dwellings on individual lots will be located not more than 600 feet on center, such that all single-family lots are within 300 feet from a fire hydrant, as measured along the path of vehicular access.
    b. Fire hydrants serving any use other than detached single-family or duplex dwellings on individual lots will be located not more than 300 feet on center and will be located so that at least one hydrant is located within 150 feet of all structures, but not closer than 50 feet, unless approved by the Fire Marshal.

c. A minimum of one fire hydrant shall be installed per intersection unless deemed unnecessary by both the Fire Marshal and the City.

d. The Fire Marshal will review all proposed fire hydrant installations to ensure the correct number and spacing of fire hydrants for each project.

e. All fire hydrants shall be connected to a main that is not less than 8 inches in diameter. A minimum 6-inch-diameter lateral pipe is required for connecting to hydrants located 50 feet or less from the main line, and a minimum 8-inch-diameter lateral pipe is required where hydrants are located more than 50 feet from the main.

f. Fire hydrants shall be located and installed to facilitate unidirectional flushing activities.

Supply and Booster Pump Stations

- All existing and future booster pump stations will be modified/constructed to comply with the following minimum standards:
    1. All structures will be non-combustible, where practical.
    2. All buildings will have adequate heating, cooling, ventilation, insulation, lighting, and workspaces necessary for on-site operation and repair.
    3. Sites will be fenced to reduce vandalism and City liability, where appropriate.
    4. Each station will be equipped with a flow meter and all necessary instrumentation to assist personnel in operating and troubleshooting the facility.
    5. Emergency power capability will be provided to at least one booster pump station supplying each pressure zone.
- Pumps will be operated automatically, with flexibility in pump start/stop settings.
- Stations will be operated with the provision for at least two methods of control to minimize system vulnerability.
- Manual override of stations will be provided for using the City's SCADA/Telemetry system.
- Stations will be monitored with alarms for the following conditions.
    1. Pump started manually (indicator light for pump started automatically)
    2. Power phase failure
    3. Power outage/generator running
    4. Communication failure
    5. Water in structure (flood)
    6. Low suction pressure
    7. High and low discharge pressure

8. Intrusion
9. Pump failure
10. Smoke detector
11. Heat detector

- Stations will have the following indicators:
    1. Local flow indication and totalizing.
    2. Flow indication and totalizing to the City's SCADA/Telemetry system.
    3. Recording of combined supply flow to the system.
    4. Discharge pressure gauges.
    5. Motor amperage gauges.
    6. Alarm indicators for all items included under station monitoring.
    7. Appropriate hazardous material signage on exterior of buildings.
- Booster pump stations will be placed wherever necessary to fulfill the following criteria:
    1. Provide supply redundancy to a pressure zone.
    2. Improve the hydraulic characteristics of a pressure zone.
    3. Maximize storage availability and transmission capacity.
    4. Improve water quality (i.e., increase circulation) and quantity.

Pressure Reducing Stations

- All pressure reducing valves will be placed in vaults that are large enough to provide ample workspace for field inspection and valve repair.
- Vaults will drain to daylight or be equipped with sump pumps to prevent vault flooding.
- Pressure relief valves will be provided on the low pressure side of the pressure reducing valves to prevent system over pressurization in case of a pressure reducing valve failure.

Supervisory Control

- The City's supervisory control system must be capable of efficiently operating the water system's components in accordance with this WSP, and in response to reservoir levels, system pressures, abnormal system conditions, and water costs.

Maintenance

- Facility, equipment, and infrastructure breakdowns are given the highest maintenance priority. Emergency repairs will be made even if overtime labor is involved.
- Equipment will be scheduled for replacement when it becomes obsolete and as funding is available.

- Worn parts will be repaired, replaced, or rebuilt before they represent a high failure probability.
- Spare parts will be stocked for all facility, equipment, and infrastructure items whose failure will impact the ability to meet other policy standards.
- Equipment and infrastructure that is out of service will be returned to service as soon as possible.
- A preventive maintenance schedule will be established for all facilities, equipment, infrastructure, and processes.
- Tools will be obtained and maintained to repair all items whose failure will impact the ability to meet other policy standards.
- Dry, heated shop space will be available for maintenance personnel to maintain facilities.
- All maintenance personnel will be trained to efficiently perform their job duties.
- Maintenance will be performed by the Water Maintenance staff and supervised by the Public Works Superintendent who oversees maintenance activities.
- Written records and reports showing operation and maintenance history will be maintained for each facility and item of equipment. Not all sites have a location to store records, so some records will be maintained in the maintenance office.

Reliability

- Supply to the service area will be pursued to meet maximum day demand during a reasonable worst-case supply system failure.
- System demand planning will use historical demand data and assume all available land will be developed at saturation.

Vulnerability

- Supply vulnerability analyses will determine a reasonable worst-case failure for the water system. The analyses will consider the following conditions:
    1. Failure of the single largest source of supply.
    2. Reservoir out of service.
- Storage vulnerability analyses will determine a worst-case failure scenario for the water system. The analyses will consider:
    1. Maximum day demand with simultaneous fire; and
    2. Peak hour demand with the largest source of supply out of service.

FINANCIAL POLICIES

General

- The City will set rates that comply with standards established by AWWA.
- Rates and additional charges established for the City should be:
    1. Cost-based rates that recover current, historical, and future costs associated with the City's water system and services;
    2. Equitable charges to recover costs from customers commensurate with the benefits they receive; and
    3. Adequate and stable source of funds to cover the current and future cash needs of the City.
- Existing City customers will pay the direct and indirect costs of operating and maintaining the facilities through user rates. In addition, the user rates will include debt service incurred to finance the capital assets of the City.
- New customers seeking to connect to the water system will be required to pay a connection charge for an equitable share of the historical cost of the system and for the system's capital improvement program (CIP). Connection charge revenues will be used to fund the CIP in conjunction with rate revenue.
- New and existing customers will be charged for extra services through separate ancillary charges based on the cost to provide the services. Ancillary charges can increase equitability and operating efficiency by discouraging unnecessary demand for services. The charges should be reviewed regularly and updated annually based on increases in the Consumer Price Index. Revenue from ancillary charges will be used to finance annual operations and maintenance.
- The City will maintain information systems that provide sufficient financial and statistical information to ensure conformance with rate setting policies and objectives.
- User charges must be sufficient to provide cash for the expenses of operating and maintaining the system. To ensure the fiscal and physical integrity of the utility, an amount should be set aside each year and retained for capital expenditures.
- A Working Capital Reserve will be maintained to cover unanticipated emergencies and fluctuations in cash flow.
- Water rates will strive to equitably charge customers with different service requirements based on the cost of providing the water service. Service requirements relate to the total volume of water used, peak rates of use, and other factors.
- Water rates will be tiered to encourage the efficient use of water.
- Fees and charges are calculated based on the service provided and differ based on the location of the service inside or outside of the City limits.

Connection Charges

- Owners of properties that have not been assessed, charged, or borne an equitable share of the cost of the water system will pay one or more of the following connection charges prior to connection to a water main:

    1. Service Installation Charges: Service installation charges include all labor and materials, but exclude road crossing, for which the customer shall pay the actual cost incurred for the connection/installation and meter tests. A property owner desiring the extension of water service to his property may be required to extend or improve the municipal water supply system as a condition thereof, and to execute a developer's agreement regarding the apportionment of the costs thereof and other appropriate conditions, including payment of the City's engineering, legal, and other professional consultant fees in reviewing and processing the water service extension. Such developer's agreements may include provisions for recovery of a pro rata share of the initial construction costs of the water service extensions from additional customers desiring to connect to such extensions.
    2. Direct Facilities Charges: Direct facilities charges are collected from property owners that directly benefit from the City's water system, except property owners who previously paid their fair share through a Local Improvement District or Utility Local Improvement District. The direct facilities charge is the property owner's equitable share of the established costs of the water system facilities they benefit from, regardless of whether those facilities were constructed by the City water utility or a private party.
    3. Water General Facilities Charges: The general facilities charge is a charge imposed upon new customers to recover the customer's equitable share of the cost of the system and is used for funding construction of future general facilities. Funds received pursuant to the general facilities charge shall be used for capital improvement projects undertaken to construct general facilities and payment of debt service on capital improvement projects.
    4. Latecomers Fees: Latecomers fees are negotiated with developers and property owners; they provide for the reimbursement of a pro rata portion of the original cost of the water system extensions and facilities.

ORGANIZATIONAL POLICIES

Staffing

- Personnel certification will comply with State standards.
- The Public Works Department will promote staff training.

Relationship with Other Departments

- The Finance Department is responsible for customer billing, payment collection, project cost accounting, and fund activity reporting.
- The Public Works Department is responsible for construction and oversight of capital improvement projects, as well as development standards and review and inspection of new infrastructure built by private developers.
- The Community Development Department is responsible for coordinating with the Public Works Department for placing appropriate conditions on development proposals and ensuring that development impacts are mitigated.
- The Human Resources Department is responsible for employee records, union labor negotiations, and salary schedules.
- The Police Department is responsible for enforcing violations of the City's water ordinances.
- Clark County Fire and Rescue (CCFR) uses water utility facilities for fire protection and establishes fire flow requirements. CCFR also is responsible for emergency responses to hazardous events at water system facilities.