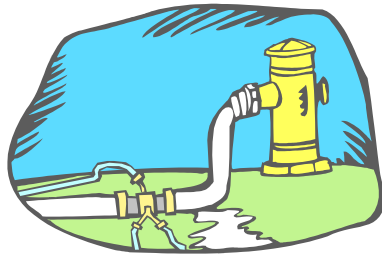
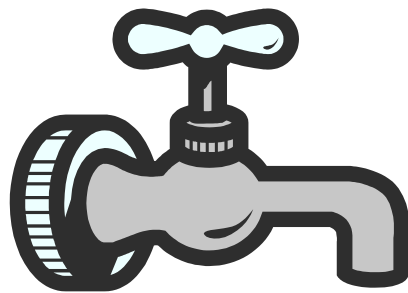


Water



WATER

The water supplied to Olympia is of the highest quality and is, at the moment, found in great abundance. The Water Utility continues to deliver safe, clean water to the community. Four key influencing factors drive the development of the thirteen water capital project programs identified in the Capital Facilities Plan (CFP). They are:

- ◆ **Regulation/Compliance:** Federal Safe Drinking Water Act (SDWA) and Washington State Department of Health (DOH) regulation, Uniform Fire Code (UFC) fireflow criteria.
- ◆ **Adopted Sustainability Philosophy:** to manage the water in sustainable ways and develop integrated solutions that solve more than one problem at a time.
- ◆ **Growth:** accommodating growth defined by Olympia's new Comprehensive Plan (July 1994) and continuing to provide service to existing customers.
- ◆ **Operational and System Delivery Strategies:** to manage water as a limited resource, recognizing components of the water cycle; meet water regulation objectives using approaches that limit human influence on the naturally good quality of water Olympia now has; and implement water zone restructure system changes for cost-effective delivery.

Level of Service Determinations

Water capital facilities are designed and built to provide citizens on the system with clean, safe, drinking water in adequate supply. Water capital program activities recognize managing the water as a resource in the water cycle. Furthermore, the activities recognize that the resource needs to be protected, conserved, and managed responsibly.

Level of Service I: This first Level of Service (LOS) involves maintaining the current system as is and addressing the need to remain in regulatory compliance for water quality and quantity requirements.

- ◆ Meet minimal standards for water pressure (30 psi) and UFC fireflow criteria for a majority of system customers.
- ◆ No consideration given for growth-related projects or projects anticipating future regulatory compliance.
- ◆ An automatic system deficit when growth has occurred, or new regulations for water delivery take effect.

Level of Service II: The second LOS goes beyond system maintenance and existing regulatory needs.

- ◆ Anticipates future water quality regulations and develops facilities that will accommodate the increased requirements prior to the system becoming deficient.
- ◆ Goes beyond the required minimum of 30 psi average water pressure for residents and strives to improve the average to 65 psi. The higher standard is the most cost-effective approach to anticipating and meeting system growth needs. As well, LOS II strives to eventually eliminate areas within the system that do not meet UFC fireflow criteria.

Level of Service III: The final LOS recognizes Olympia's commitment to sustainability and to the approach of managing water as a limited resource. LOS III projects and programs address DOH regulations to a further extent, with the underlying driver to be a responsible water purveyor.

- ◆ Based on projections within current water rights, the City of Olympia is able to meet growth demand through the year 2015. Olympia's system currently depends on 80% of its supply from one source. Programs to seek additional sources and diversify the sources are LOS III programs.
- ◆ To comply with DOH regulations, there must be some form of conservation activity within an adopted Water Plan. The degree to which Olympia approaches a conservation program is a component of managing a limited resource.

Capital Facilities Projects by Level of Service

Level of Service I

- ◆ Asphalt Overlay Adjustments
- ◆ Infrastructure Predesign and Planning
- ◆ Public Works Trust Fund Loan Repayment
- ◆ Replace Small Diameter Water Piping
- ◆ Water System Planning
- ◆ Water Storage Systems
- ◆ Wellhead Protection Land Acquisition

Level of Service II

- ◆ Emergency Preparedness
- ◆ Water Source Development
- ◆ Wellhead Protection Land Acquisition

Level of Service III

- ◆ Decatur Street
- ◆ Transmission and Distribution Projects
- ◆ Water Storage Systems

Annual Operations and Maintenance

The water supplied to Olympia flows through concrete, clay, ductile iron, and PVC. These lines, in general, have a life expectancy of 50 years. New water lines are typically replaced with ductile iron, ductile iron cement line, or PVC pipes. Currently, most maintenance work involves repairs to the older, non-PVC water lines, connections, and valves within the City. Breaks within these lines are usually caused by roots, geological shifts within the ground, or from construction work. As these older waterlines and components are replaced throughout the City, the overall required maintenance cost will decrease. This is because PVC pipes are usually only broken through construction related activities.

The annual operations and maintenance costs provided below represent an overall average that is subject to change due to unique circumstances that may be encountered at each location. Typically, for new infrastructure, initial operations and maintenance costs for repairs, replacements, and cleanings are minimal. As the infrastructure ages, maintenance costs will increase.

Repair service leak (3/4" - 1"): \$250
Install service (meter) on a 3/4"-1" line: \$600
Install small main (2" line): \$20 per linear foot
Install 6" or larger main: \$50 per linear foot
Main line valve installation and replacement: \$3,750
Main line (2" - 8" line) leak repair: \$600
Fire hydrant installation or replacement: \$2,100
Fire hydrant repair: \$300

Asphalt Overlay Adjustments - Water Program

Project #9021

Location:

- Various locations

Links to Other Projects or Facilities:

- Street Repair and Reconstruction Projects – Transportation Section
- Asphalt Overlay Adjustments – Sewer Section
- Asphalt Overlay Adjustments – Stormwater Section

Description: Make necessary adjustments to street-level water system components in conjunction with the annual asphalt overlay/street reconstruction process. This is a pass-through amount that is used by the Transportation Street Repair and Reconstruction Project for water facilities.

Justification (Need/Demand): Asphalt overlay and street reconstruction projects require the adjustment of water system structures and equipment (e.g., castings, manholes, inlets, and covers) during construction as part of the paving process.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS II

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 6 Provide adequate transmission, distribution, and storage facilities.

Asphalt Overlay Adjustments - Water Program



Capital Costs:	2004	2005 - 2009	Total
Design & Engineering	\$10,000	\$50,000	\$60,000
Construction	\$55,000	\$275,000	\$330,000
TOTAL	\$65,000	\$325,000	\$390,000

Funding Sources:	2004	2005 - 2009	Total
Rates	\$65,000	\$325,000	\$390,000
TOTAL	\$65,000	\$325,000	\$390,000

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	Not yet determined
Estimated Revenues -	\$0
Anticipated Savings Due to Project -	\$0
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South X West X Downtown

Decatur Street - Water Program

Project #9408

Location:

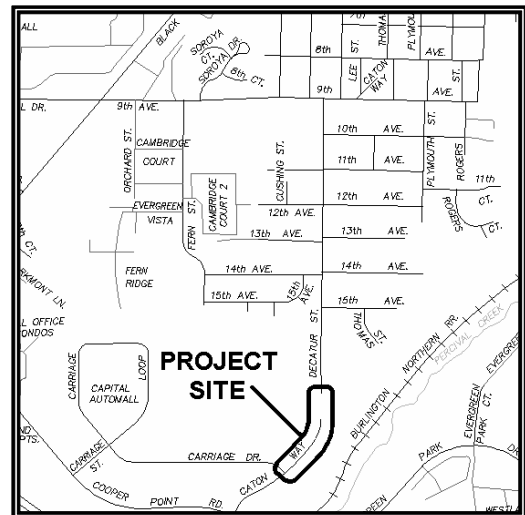
- Connection between south end of Decatur Street to Carriage Street/Caton Way. (*Quadrant:W, Coordinate:D4*)

Links to Other Projects or Facilities:

- Decatur Street – Transportation Section

Description: This project incorporates improvements to the existing Decatur Street and connection of the south end of Decatur Street to Carriage Street/Caton Way. Project components may include:

- Hydrants – Install at required intervals.
- Hydraulic Modeling – Use of mathematical models to determine the size of a water line based on the volume of water through the line.
- Valves – Confirm condition on existing Decatur Street and install valves; mechanical devices by which the flow of water may be started, stopped, or regulated as needed on the connection to Caton Way.
- Vaults – Confirm condition on existing Decatur Street and install vaults; structures that provide access to underground valves and pumps as necessary on connection to Caton Way.
- Water Lines – Confirm condition of the existing water supply pipe and extend the line to Caton Way during construction of the street connection.
- Water Meters – Allow for future connections to meters on Caton Way.



Justification (Need/Demand): This project will be completed in conjunction with the Decatur Street Transportation Program project in the Transportation Section.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

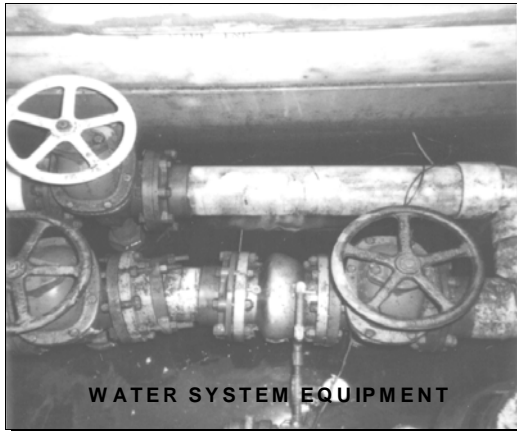
Established LOS – LOS II

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.3 Main sizes in newly developing areas should be designed to serve future growth.
- PF 8 To allocate costs of water service in an equitable manner.

Decatur Street - Water Program



Capital Costs:	2004	2005 - 2009	Total
Design & Engineering		\$42,000	\$42,000
Construction		\$607,278	\$607,278
TOTAL		\$649,278	\$649,278

Funding Sources:	2004	2005 - 2009	Total
Rates		\$649,278	\$649,278
TOTAL		\$649,278	\$649,278

Annual Operations and Maintenance

Estimated Costs -	Not yet determined
Estimated Revenues -	Not yet determined
Anticipated Savings Due to Project -	Not yet determined
Department Responsible for Operations -	Public Works

Quadrant Location

_____ North _____ South X West _____ Downtown



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Emergency Preparedness

Project #N/A

Location:

- Various locations. See Project List section.

Links to Other Projects or Facilities:

- N/A

Description: All of the projects described below represent an ongoing effort on the part of the City to protect the water supply, regardless of the nature of the threat.

- Water System Vulnerability Assessment – A component of the federal and state requirements in the area of emergency preparedness and response.
- Water System Vulnerability Projects – Implement the findings of the Assessment.
- McAllister Springs Pump House Seismic Retrofits – Implements the findings of a study completed in 2003.

Project components may include:

- Valves – Mechanical devices by which the flow of liquid or gas may be started, stopped, or regulated. Will need a minimum of 2 isolation valves for the 36" line from McAllister Springs to the City; probably many more than that.
- Water Lines – The line from McAllister Springs to the City will also need a redundant transmission main.

Project List:

YEAR	PROJECT	COST ESTIMATE
2004	Water System Vulnerability Assessment Emergency Response Plan	\$103,000
	Water System Vulnerability Projects	\$77,407
	McAllister Springs Pump House Seismic Retrofits	\$76,426
2005	Water System Vulnerability Projects	\$79,729
2006	Water System Vulnerability Projects	\$82,121
2007	Water System Vulnerability Projects	\$84,584
2008	Water System Vulnerability Projects	\$87,122
2009	Water System Vulnerability Projects	\$89,735

Justification (Need/Demand): The City water supply is currently vulnerable to major fires and natural disasters, particularly earthquakes and terrorism. This project addresses specific ways in which the City

can ensure an adequate supply of water during times of crises. For instance, the seismic analysis of McAllister Springs pump house and transmission main completed in 2003 determined the best ways to protect the source of 80% of the City's potable water from damage. This project funds construction of the measures identified in the seismic analysis. This project is proactive in nature and addresses the fundamental goals of the Comprehensive Plan related to the City's water system.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

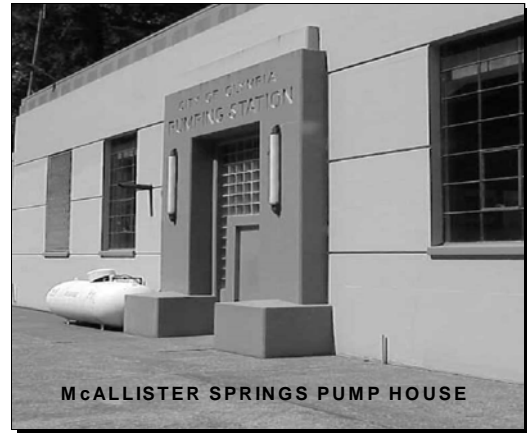
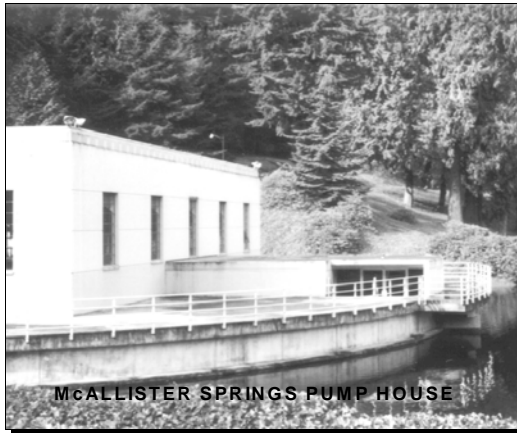
Established LOS – LOS I.

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 4.3 Create management and monitoring strategies that acknowledge the physical linkage between surface water and groundwater.
- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.6 The water supply system should be protected from contamination.
- ENV 3 Protect and improve local and regional water resources.

Emergency Preparedness



Capital Costs:	2004	2005 - 2009	Total
Design & Engineering	\$103,000		\$103,000
Construction	\$153,833	\$423,291	\$577,124
TOTAL	\$256,833	\$423,291	\$680,124

Funding Sources:	2004	2005 - 2009	Total
Rates	\$256,833	\$423,291	\$680,124
TOTAL	\$256,833	\$423,291	\$680,124

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	See Water introduction section.
Estimated Revenues -	Not yet determined
Anticipated Savings Due to Project -	Not yet determined
Department Responsible for Operations -	Public Works

Quadrant Location

_____ North X South _____ West _____ Downtown

Infrastructure Predesign and Planning - Water Program

Project #9903

Location:

- 2004-2009 – Predesign and planning activities

Links to Other Projects or Facilities:

- Not yet determined

Description: Perform predesign evaluation and analysis of water project alternatives to implement planning level projects identified in the 1989 Water Comprehensive Plan, and to support other City of Olympia project planning requirements that occur outside of the annual CFP process.

Justification (Need/Demand): The City of Olympia's Water Comprehensive Plan and six-year Capital Facilities Plan identify projects from a planning level perspective, based on identified deficiencies in a specific portion of the system. They also include planning level cost estimates done at the time the plan was developed and may not include enough detail in the scope to accurately assess project costs. This program evaluates these projects, prior to their appropriation in the annual Capital Facilities Plan, to ensure accurate scope of work, accurate cost estimates, and a full evaluation of project alternatives. Other uses for this information include project scheduling, assessment of rate impacts, and cash flow planning.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS I

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 5.1 Water system planning should be sensitive to the impact of water policy on instream flows.
- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.2 Olympia should design its water supply system to achieve the most favorable, practical fire insurance rating.
- PF 6.3 Main sizes in newly developing areas should be designed to serve future growth.

Infrastructure Predesign and Planning - Water Program



No Photo Available



No Photo Available

Capital Costs:	2004	2005 - 2009	Total
Design & Engineering	\$40,000	\$200,000	\$240,000
TOTAL	\$40,000	\$200,000	\$240,000

Funding Sources:	2004	2005 - 2009	Total
Rates	\$40,000	\$200,000	\$240,000
TOTAL	\$40,000	\$200,000	\$240,000

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	N/A
Estimated Revenues -	N/A
Anticipated Savings Due to Project -	N/A
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South X West X Downtown

Replace Small Diameter Water Pipe

Project #9408

Location:

- Various locations within the existing system as service complaints and operation and maintenance records indicate. See Project List section.

Links to Other Projects or Facilities:

- N/A

Description: Replace small diameter substandard watermain within the existing system. Project components may include:

- Hydraulic Modeling** – Use of a mathematical model to determine the size of a water line based on the volume of water passing through the line.
- Valves** – Replacement, repair, or reconnection of valves; mechanical devices by which the flow of water may be started, stopped, or regulated as necessary.
- Vaults** – Make necessary adjustments or repairs to vaults; structures that provide access to underground valves and pumps with the connection of new water pipes.
- Water Lines** – Replacement of older, undersized water supply pipe with larger capacity lines.

Justification (Need/Demand): A Class "A" water system is responsible for providing domestic and firefighting water flows at a minimum of 30 psi of pressure as established by the Department of Health. This program implements the improvements outlined in the 1989 Water Comprehensive Plan. The Plan identifies location, size, and timing of major and minor watermain distribution line improvements. The Plan also identifies deficient areas that require looping or upgrading. This project provides improvements to the basic system to assure adequate pressure and flow for domestic and firefighting situations consistent with population growth. Maintenance records and service complaints are used to identify the lines needing replacement.

Project List:

YEAR	LOCATION*	LENGTH (ft)	COST ESTIMATE
2004	7 th Ave (N:C6)	505	\$ 62,524
	Boundary St (N:C6)	475	\$ 58,810
	9 th Ave (N:C6)	850	\$ 105,239
2005-2009	To be determined		

* Location column is as follows: Street Name (*Quadrant: Coordinate*)

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS II. Current inventory of the system identifies 292,000 lineal feet of substandard pipe.

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 5 Provide adequate supplies of water for future needs.
- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.2 Olympia should design its water supply system to achieve the most favorable, practical fire insurance rating.

Replace Small Diameter Water Pipe



Capital Costs:	2004	2005 - 2009	Total
Design & Engineering	\$37,067		\$37,067
Construction	\$189,506	\$905,000	\$1,094,506
Public Involvement	\$4,875	\$35,750	\$40,625
TOTAL	\$231,448	\$940,750	\$1,172,198

Funding Sources:	2004	2005 - 2009	Total
Rates	\$231,448	\$940,750	\$1,172,198
TOTAL	\$231,448	\$940,750	\$1,172,198

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	See Water introduction section.
Estimated Revenues -	N/A
Anticipated Savings Due to Project -	Decreases likelihood of line failure.
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South X West X Downtown



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Transmission and Distribution Projects - Water Program

Project #9609

Location:

- Various locations within the existing system as service complaints and operation and maintenance records indicate. See Project List section.

Links to Other Projects or Facilities:

- N/A

Description: There are two types of projects under this general heading. The first, described directly below, are in response to specific problems and issues within the water system. The second are repair and enhancement projects to the water lines and system as a whole. Descriptions of the first type are as follows:

- Installation of the 30-50 Sampling Stations – A water quality project that will allow the City to monitor water quality throughout the City.
- Replacement of the 30-50 Two Port Hydrants – Standardize existing fire hydrants throughout the City, as requested by the Fire Department.
- Telemetry Calibration and Maintenance – Includes calibration and maintenance of the City's telemetry system to comply with the Department of Health's requirements for source meter records and system monitoring.
- Service Line Replacements – Includes research, design, and construction abandonment of unused or unneeded service lines throughout the system.
- Replacing Asbestos Cement Main Lines – Identified by the Asbestos Concrete Main Line Replacement Assessment; eliminates lines that have a high incidence of work order requests and other maintenance problems.
- Mary Elder Watermain Connection – Will provide a loop to the distribution system near St. Peter's Hospital. This is a high demand area of the water zone and is essential for operations of medical facilities in the area.
- Fones Road Booster Station Rehabilitation – Includes an evaluation of the existing electrical, pumps, and access to the booster station. The rehabilitation of the existing facility will bring the station up to current electrical codes, pump requirements, and access standards.
- Yelm Highway Realignment – Includes design and realignment of the existing 10" watermain to accommodate the improvements Thurston County is proposing in the near future.

Within the second type of project, work may also include installation of new water distribution lines to existing and developing areas of the community, and reinstallation of booster pumps identified by the water zone restructure. Additional lists of projects will be developed following adoption of the Water Master Plan scheduled for 2003. These improvements meet Department of Health pounds per square inch (psi) standards, Uniform Fire Code fireflow criteria, and provide reliable and higher quality water to City customers. Project components may include:

- Hydrants – Reconnection or placement of new hydrants as necessary.
- Hydraulic Modeling – Use of mathematical models to determine the size of a water line based on the volume of water through the line.
- Valves – Repair, replacement, or installation of valves; mechanical devices by which the flow of water may be started, stopped, or regulated.
- Vaults – Repair, replacement, or installation of vaults; structures that provide access to underground valves and pumps.
- Water Lines – Repair or replacement of water supply pipe as necessary.
- Water System Structures and Equipment – Reinstallation of structures and equipment that includes booster pump stations and hydropneumatic (pressure) tanks.

Project List:

YEAR	PROJECT/ LOCATION*	COST ESTIMATE
2004	Install 30-50 Water Quality Sample Stations	\$ 76,426
	Replace 30-50 Two Port Hydrants	\$191,065
	Telemetry Calibration and Maintenance	\$ 51,500
	Service Line Replacement and Abandonment	\$ 66,983
	Asbestos Cement and Old Pipe Replacement	\$ 206,417
2005	Asbestos Cement and Old Pipe Replacement	\$ 212,610
	Mary Elder Watermain Connection (N:C7)	\$ 169,670
	Service Line Replacement and Abandonment	\$ 68,992
	Telemetry Calibration and Maintenance	\$ 53,045
2006	Asbestos Cement and Old Pipe Replacement	\$ 218,988
	Service Line Replacement and Abandonment	\$ 71,062
	Telemetry Calibration and Maintenance	\$ 54,636
2007	Asbestos Cement and Old Pipe Replacement	\$ 225,558
	Fones Rd Booster Station Rehabilitation (N:C7)	\$ 334,051
	Service Line Replacement and Abandonment	\$ 73,194
	Telemetry Calibration and Maintenance	\$ 56,275
2008	Asbestos Cement and Old Pipe Replacement	\$ 232,325
	Service Line Replacement and Abandonment	\$ 75,390
	Telemetry Calibration and Maintenance	\$ 57,964
	Yelm Highway Realignment (S:F6)	\$ 770,723
2009	Asbestos Cement and Old Pipe Replacement	\$ 239,294
	Service Line Replacement and Abandonment	\$ 77,651
	Telemetry Calibration and Maintenance	\$ 59,703

* Location column is as follows: Street Name (*Quadrant: Coordinate*)

Justification (Need/Demand): Certain areas within the water system fall short of meeting DOH standards for water pressure and UFC fireflow criteria, or have ongoing maintenance problems. As growth occurs, and to meet the demands of recent growth, restructuring the water delivery zones has emerged as the most cost-effective option. Once restructuring is complete, more of Olympia's system will meet regulation standards and growth can be accommodated without building additional reservoirs.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

- Established LOS – LOS I: Replace 30-50 Two Port Hydrants and Telemetry Calibration and Maintenance.
- LOS II: With completion of the projects listed in Water Transmission and Distribution System Improvements, the target outcome of 100% of the water supply system meeting UFC fireflow criteria will be maintained.

Comprehensive Plan and Functional Plan(s) Citations:**Goals:**

- PF 5 Provide adequate supplies of water for future needs.
- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.2 Olympia should design its water supply system to achieve the most favorable, practical fire insurance rating.
- PF 6.3 Main sizes in newly developing areas should be designed to serve future growth.

Transmission and Distribution Projects - Water Program



Capital Costs:	2004	2005 - 2009	Total
Design & Engineering	\$139,034	\$716,101	\$855,135
Construction	\$453,357	\$2,335,030	\$2,788,387
TOTAL	\$592,391	\$3,051,131	\$3,643,522

Funding Sources:	2004	2005 - 2009	Total
Rates	\$592,391	\$3,051,131	\$3,643,522
TOTAL	\$592,391	\$3,051,131	\$3,643,522

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	See Water introduction section.
Estimated Revenues -	N/A
Anticipated Savings Due to Project -	Postpones additional reservoir development. Decreases likelihood of line failure.
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South X West Downtown



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Water Source Development and Protection

Project #9700

Location:

- Various locations. See Project List section.

Links to Other Projects or Facilities:

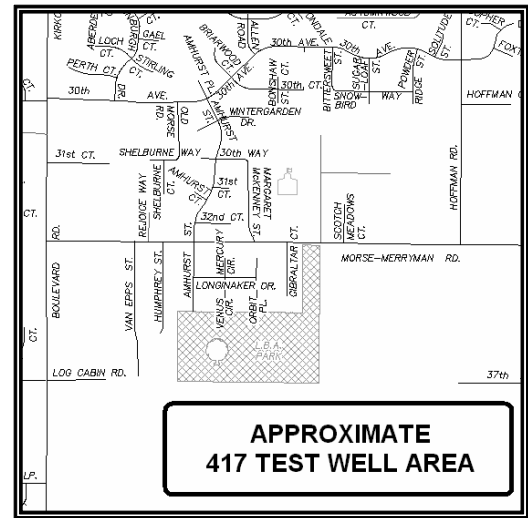
- N/A

Description: There are two types of projects under this general heading. The first, described directly below, are in response to specific problems and issues related to water source development and protection. The second is related to an ongoing effort to obtain additional water rights to ensure an adequate water supply in the future. Descriptions of the first type are as follows:

- Indian Summer Well Development – Includes development of the well, building the pump house, and other connecting appurtenances.
- 417 Pressure Zone Reservoir – Includes drilling a test well, a hydrologic study, and the acquisition of water rights if water is present in sufficient amounts. The water rights would have to be submitted to the state and meet all state requirements.
- Percival Pump Station – Predesign activities, land acquisition, and environmental activities are scheduled in 2004. The pump station will enhance fire flows in the area and will loop the water distribution system. The connection will decrease demand on the West Bay Booster Station and the pressure reducing valves.
- McAllister Springs Phase II – Includes the design and development of wells, in addition to the building of pump houses and other connecting appurtenances for the new McAllister Well field.
- Briggs Development – Intended to acquire water rights from Brigg's Nursery on Henderson Boulevard. The water rights would have to be converted from an agricultural use to a municipal use. The water rights would have to be submitted to the state and meet all state requirements. Upon approval of the water rights, the Brigg's Nursery well would be drilled and developed, a pump house constructed, and other appurtenances constructed and connected.

The second type of project, acquisition of water rights, provides adequate future water supplies to ensure uninterrupted operation of the City's water system, continued evaluation regarding how reclaimed water can be incorporated into the overall water system, and performance of major maintenance on water resources as necessary. Project components may include:

- Hydraulic Modeling – Use of a mathematical model to determine the size of a water line based on the volume of water through the line.
- Water Rights – Purchase adequate water rights. The amount of water legally available for service.
- Water Quality and Treatment – Employ various technologies to ensure the safety of the City's water sources.
- Watershed Modeling and Plan – Maintain updated document presenting the findings and recommendations for a Watershed Management Program.
- Water System Structures and Equipment – Provide adequate structures and equipment; includes booster pump stations, hydropneumatic (pressure) tanks.
- Wells – Bore wells as needed to ensure adequate future water supplies.
- McAllister Wells – Continue expansion of well field to full utilization.



Project List:

YEAR	PROJECT/LOCATION*	COST ESTIMATE
2004	Percival Pump Station Predesign	\$ 75,050
	Indian Summer Well Development Predesign	\$ 50,213
	417 Test Well and Water Rights (S:E7)	\$ 335,324
	Acquisition of Water Rights	\$ 250,000
2005	Acquisition of Water Rights	\$ 250,000
	Indian Summer Well Development	\$ 459,953
	Percival Pump Station (W:D4)	\$ 1,069,852
2006	Acquisition of Water Rights	\$ 250,000
2007	Acquisition of Water Rights	\$ 250,000
	McAllister Wells Development Design	\$ 180,081
2008	Briggs Water Rights (S:F6)	\$ 579,637
	Briggs Well Development (S:F6)	\$ 602,127
	Briggs Nursery Well, Wellhead Protection Plan	\$ 231,855
	McAllister Wells Development Construction	\$ 2,567,097

* Location column is as follows: Street Name (*Quadrant: Coordinate*)

Justification (Need/Demand): The 1994 Water Comprehensive Plan Update restructures water delivery zones to better meet regulatory standards for water pressure and fireflow, as well as accommodating growth demands by avoiding costly storage facilities whenever possible. Source diversification is necessary to eliminate dependence on a single source of supply and transmission. Acquiring additional water rights and developing production wells at newly acquired sources accomplishes this goal.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS I: Well #20 (Indian Summer) Well Development 417 Test Well and Water Rights, Percival Pump Station Predesign, McAllister Springs Phase II, and Briggs Development.

LOS III: Acquisition of Water Rights. This project's program addresses the target outcome of water sources at geographically dispersed locations. Until a test well is drilled, the percent of redundancy in the system's water source cannot be projected.

Comprehensive Plan and Functional Plan(s) Citations:**Goals:**

- PF 5.1 Water system planning should be sensitive to the impact of water policy on instream flows.
- PF 5.2 Reserve water supply rights for at least 50 years in advance of need.
- PF 5.5 Olympia should encourage multi-jurisdictional approaches to water rights and source development.
- PF 5.6 Establish multiple sources of water supply.
- PF 6 Provide adequate transmission, distribution, and storage facilities.

Water Source Development and Protection



Capital Costs:	2004	2005 - 2009	Total
Land & Right-of-Way	\$301,500	\$1,329,637	\$1,631,137
Design & Engineering	\$409,087	\$411,936	\$821,023
Construction		\$4,699,029	\$4,699,029
TOTAL	\$710,587	\$6,440,602	\$7,151,189

Funding Sources:	2004	2005 - 2009	Total
Rates	\$710,587	\$6,440,602	\$7,151,189
TOTAL	\$710,587	\$6,440,602	\$7,151,189

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	See Water introduction section.
Estimated Revenues -	N/A
Anticipated Savings Due to Project -	N/A
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South West Downtown



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Water Storage Systems Project #9610

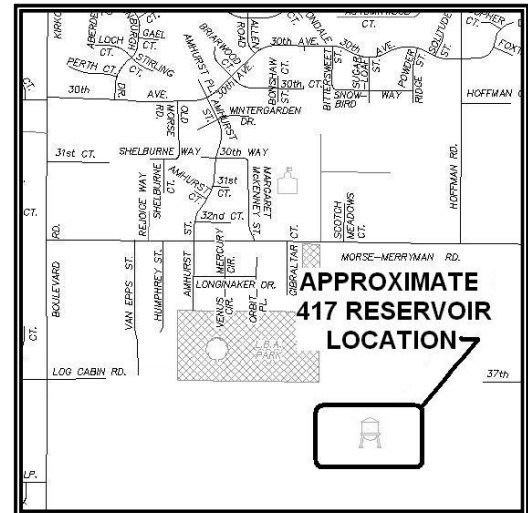
Location:

- Various locations. See Project List section.

Links to Other Projects or Facilities:

- N/A

Description: The overall goal of this project is to develop and maintain a water reservoir system that provides adequate water storage and "chlorine contact time" in compliance with federal and state safe drinking water standards. A list of projects in out-years will be developed following adoption of a Water Master Plan scheduled for 2003. Specific project descriptions are as follows:



- Steven's Field Reservoir Replacement – Includes demolition of the existing elevated tank and replacement with a standpipe tank.
- Bush Reservoir Replacement – Includes predesign work for a new standpipe reservoir at the current Bush Avenue site.
- Fir Street/McCormick Street Improvements – Involves installation of reservoir control equipment in the valve house. Elliott Street and Fir Street Seismic Retrofit includes design of the seismic retrofitting of the existing reservoirs.
- New Zone 417 Reservoir – Includes the predesign, 10-acre parcel acquisition, and environmental components for the proposed new reservoir in the 417 pressure zone.
- Tanglewilde Reservoir – Includes demolition and replacement of the existing reservoir.

Project components may include:

- Reservoirs – Repair, replace, or meet seismic upgrade requirements of reservoirs; storage facility for water based on life-cycle costing and evaluation of options.
- Water Lines – Water supply pipe that connects the water storage source to lines located at the street.
- Water Quality and Treatment – Use various technologies to ensure safety of the City's water storage systems.
- Water System Structures and Equipment – Make improvements as necessary to structures and equipment used in conjunction with reservoirs; includes booster pump stations, hydropneumatic (pressure) tanks.

Project List:

YEAR	PROJECT/LOCATION*	COST ESTIMATE
2004	Bush Reservoir Replacement Design (W:C3)	\$305,000
	Steven's Field Reservoir Replacement Construction (DT:D5)	\$1,746,262
2005	Bush Reservoir Replacement Construction (W:C3)	\$1,468,286
	Elliott Street #1 Seismic Design (W:B3)	\$67,898
	Fir St #1 & #2 Seismic Design (N:C6)	\$51,454
2006	Elliott Street #1 Construction (W:B3)	\$936,894
	Fir St #1 & #2 Construction (N:C6)	\$733,482
	New 417 Reservoir Predesign and Design (S:E7)	\$333,810
	New 417 Reservoir Land Acquisition (S:E7)	\$1,005,309
	Tanglewilde Reservoir Replacement Predesign	\$63,654
2007	New 417 Reservoir Construction (S:E7)	\$4,758,522
	Tanglewilde Reservoir Construction and Demolition	\$907,401
2008	Hoffman Court Reservoir Interior Coating Replacement (S:E7)	\$181,050

* Location column is as follows: Street Name (*Quadrant: Coordinate*)

Justification (Need/Demand): The Safe Drinking Water Act (SDWA) of 1974 signaled the beginning of a new age in public water supply. The detection of organic contaminants in drinking water throughout the United States spurred the passage of the SDWA. Although the City of Olympia's water source is one of the cleanest in the state, it still must meet requirements of the SDWA.

One of the federally-mandated standards of the SDWA is adequate "chlorine contact time". When added to drinking water, chlorine is a disinfectant agent. The chlorine needs time, however, to react with the water to provide adequate disinfection. Water reservoirs provide the safest and most effective method to insure chlorine levels and contact times are adequate to meet disinfection levels. Reservoirs also provide water storage to allow for proper domestic and firefighting flows.

The existing Stevens Field and Bush Reservoirs do not meet seismic standards. Repair or replacement of these reservoirs will meet system storage capacity requirements and ensure that the City's water supply remains safe and continues to meet SDWA requirements at critical times. A reservoir evaluation study conducted in 2003 identified the projects described above.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS I

Comprehensive Plan and Functional Plan(s) Citations:**Goals:**

- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.1 Main sizes and storage reservoirs should be designed to meet fire flow needs.
- PF 6.6 The water supply system should be protected from contamination.

Water Storage Systems



Capital Costs:	2004	2005 - 2009	Total
Land & Right-of-Way		\$1,005,309	\$1,005,309
Design & Engineering	\$305,000	\$516,816	\$821,816
Construction	\$1,746,262	\$8,985,635	\$10,731,897
TOTAL	\$2,051,262	10,507,760	\$12,559,022

Funding Sources:	2004	2005 - 2009	Total
Rates	\$2,051,262	10,507,760	\$12,559,022
TOTAL	\$2,051,262	10,507,760	\$12,559,022

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs - See Water introduction section.
 Estimated Revenues - \$0
 Anticipated Savings Due to Project - \$0
 Department Responsible for Operations - Public Works

Quadrant Location

 X North X South X West Downtown

Water System Planning

Project #9906

Location:

- Various locations. See Project List section.

Links to Other Projects or Facilities:

- N/A

Description: Various types of planning efforts are needed on an ad hoc basis to address specific problems and issues. Projects include:

- *Pre-Design for Wells, Ground Water Rule* – Includes the evaluation, design, and construction solution for the City's wells to comply with future federal regulations.
- *The Ultraviolet Disinfection Study* – Evaluates future water quality needs that are driven by federal and state requirements.
- *Water Comprehensive Plan Update* – Completed on a six-year update cycle as required by law. The last update was in 2002. The costs in 2008 are for pre-planning efforts prior to full plan update in 2009.

Project List:

YEAR	PROJECT	COST ESTIMATE
2004	Pre-Design for Wells, Ground Water Rule	\$ 75,000
	Ultraviolet Disinfection Study	\$ 50,000
2008	Predesign for Six-Year Water Comprehensive Plan Update	\$ 50,000
2009	Six-Year Water Comprehensive Plan Update	\$ 100,000

Justification (Need/Demand): These projects allow the City to be in a position to meet current and future state and federal requirements.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS I

Comprehensive Plan and Functional Plan(s) Citations:**Goals:**

- ENV 3.7 Regularly review the effectiveness and adequacy of ordinances and requirements.
- ENV 6.1 Include environmental protection and enhancement as an integral part of all its planning efforts.
- PF 5 Provide adequate supplies of water for future needs.
- PF 6 Provide adequate transmission, distribution, and storage facilities.
- PF 6.5 Olympia's Water System Comprehensive Plan shall establish the standards for development and improvement of the water system.

Water System Planning



No Photo Available



No Photo Available

Capital Costs:	2004	2005 - 2009	Total
Design Reports	\$125,000	\$150,000	\$275,000
TOTAL	\$125,000	\$150,000	\$275,000

Funding Sources:	2004	2005 - 2009	Total
Rates	\$125,000	\$150,000	\$275,000
TOTAL	\$125,000	\$150,000	\$275,000

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	N/A
Estimated Revenues -	\$0
Anticipated Savings Due to Project -	\$0
Department Responsible for Operations -	Public Works

Quadrant Location

 X North X South X West X Downtown

Wellhead Protection Land Acquisition

Project #9701

Location:

- Various locations. See Project List section.

Links to Other Projects or Facilities:

- Critical Habitat Land Acquisition – Stormwater Section
- Open Space Expansion – Parks Section

Description: There are two parts to this project. The first involves a one-time capture zone analysis and the second is an ongoing effort to acquire land that will protect Olympia's wellheads. They are described as follows:

- *Capture Zone Analysis* – Re-examines soil and groundwater data to determine if current capture zone delineation is appropriate and if there are particularly vulnerable areas needing further protection within the Allison Springs and East Olympia capture zone.
- *Wellhead Protection Land Acquisition* – Includes implementation of land acquisition and management strategy for the City's wellhead protection area. This is one component of the Wellhead Protection Management Strategy. The strategy sets aside funds to acquire parcels that are particularly vulnerable to contamination, with priority given to parcels in the one-year capture zones of McAllister Springs and Allison Springs supply wells. A list of properties will be developed following adoption of a Water Master Plan scheduled for 2003.

Project List:

YEAR	PROJECT DESCRIPTION	COST ESTIMATE
2004	Capture Zone Analysis for Allison Springs and East Olympia	\$257,500
2004-2009	Wellhead Protection Land Acquisition	\$600,000

Justification (Need/Demand): The acquisition of land within the City's designated wellhead protection areas represent the ultimate groundwater protection strategy. By owning land or easements, the City can control land uses and associated activities on land near its wellheads.

Level of Service (LOS): See Program Overview for Levels of Service definitions.

Established LOS – LOS I: At present for Wellhead Protection Land Acquisition.

LOS II: Capture zone analysis for Allison Springs and East Olympia.

Comprehensive Plan and Functional Plan(s) Citations:

Goals:

- PF 1 Develop utility and land use plans cooperatively.
- PF 5 Provide adequate supplies of water for future needs.
- PF 5.2 Reserve water supply rights for at least 50 years in advance of need.
- PF 6 Provide adequate transmission, distribution, and storage facilities.

Wellhead Protection Land Acquisition



Capital Costs:	2004	2005 - 2009	Total
Land & Right-of-Way	\$100,000	\$500,000	\$600,000
Design & Engineering	\$257,500		\$257,500
TOTAL	\$357,500	\$500,000	\$857,500

Funding Sources:	2004	2005 - 2009	Total
Rates	\$357,500	\$500,000	\$857,500
TOTAL	\$357,500	\$500,000	\$857,500

***Note: The 2004 portion of this project may be delayed, pending adoption of the Water Comprehensive Plan.**

Annual Operations and Maintenance

Estimated Costs -	\$600,000
Estimated Revenues -	None
Anticipated Savings Due to Project -	Difficult to calculate savings from these risk management activities. However, failure to effectively respond to water supply contamination or loss would have significant financial and public health implications to the City.
Department Responsible for Operations -	Public Works

Quadrant Location

_____ North _____ South X West _____ Downtown



City of
OLYMPIA