EXECUTIVE SUMMARY

Introduction

As a water purveyor regulated by the Washington State Department of Health (DOH), the City of Yelm (Yelm or City) is required to update its Water System Plan (WSP) every 6 years. As defined by DOH, the principal goal of water system planning is to make the best use of the City's resources in order to provide high-quality service and protect the health of its customers.

This WSP covers 6- and 20-year planning periods. A schedule of improvements has been developed for both planning horizons, along with a financial program for the 6-year period, consisting of increased monthly water rates and system development (connection) charges. Planning assumptions utilized the most recent population projections for Yelm recently completed by the Thurston Regional Planning Council (TRPC) (Buildable Lands Report, 2007) and recently adopted by Thurston County.

Two different development scenarios were evaluated as part of the planning process: one with and one without the inclusion of the master planned communities (MPCs) being planned for development inside city limits in southwest Yelm. Development of the MPCs could ultimately represent the addition of 6,200 homes along with associated commercial development. Given that the timing of the development of these MPCs is uncertain, the City has elected to base its current WSP on projected population and water demand growth that does not include the immediate development of the MPCs.

The information presented for the "without MPCs" scenario is intended to describe projected water demands and the water system infrastructure that would be required to serve the City based on population demands projected by TRPC. The information presented for the "with MPCs" scenario in this WSP is intended to describe projected water demands for these areas and the water system infrastructure that would be required to serve the MPCs given their current development plans. When it is determined that the MPCs are ready to develop, these projections will need to be reevaluated and the City's WSP will need to be updated.

This WSP includes revised City policies related to the conditions under which water service will be provided to new customers. The City has a legal duty to provide service to new connections (using DOH guidelines) provided that the following four thresholds are met:

1. The water system infrastructure has sufficient capacity to provide water in a safe and reliable manner.
2. The request for service is consistent with locally adopted plans and development regulations.
3. The City has sufficient water rights to provide service.
4. Service can be provided in a timely and reasonable manner.

Existing Water System

The Yelm water system currently serves a population of approximately 5,669 people. As of November 2008, there were approximately 2,379 service connections, where each active meter was counted as a separate service connection. Of these, 2,147 are single family residential connections. The remaining 232 are multifamily and non-residential (commercial, industrial, etc.) connections

The City prepared a revised Water Facilities Inventory Form (WFI) in May, 2010 which lists 3,188 connections. This number was calculated according to DOH methods, which include counting each multi-family unit and transient accommodation as a separate connection rather than totaling the number of water service meters. The existing service area is primarily within city limits, but there are areas served outside city limits. Figure ES-1 presents a map of the existing service area and identifies future service areas.

Financial Program

In 2008 the water bill for the average single family residential connection in Yelm was $21.50 per month, which included both the meter charge and monthly water usage. The system development charge (SDC) is currently $1,500 per ERU. A financial analysis of the existing water system evaluated the condition of the existing utility and recommended increases to the monthly rates and SDCs. The increased monthly rate will cover increased operating expenses and existing debt service that would be incurred even if no new capital projects were being constructed. In addition, the monthly rate will cover a portion of the debt service for new projects and increased levels of cash reserves and system reinvestment. The increased SDC (connection charge) is necessary to ensure that future customers pay their fair share of the cost of the existing water system infrastructure through an up-front charge for system capacity. Based on this analysis, an increase in the SDC to $5,036 per ERU is recommended for implementation once this WSP is adopted, along with annual increases in the future to account for inflation.

The recommended monthly rate structure is shown in Tables ES-1 and ES-2. Adoption of this new rate structure will result in the monthly bill for the average single family connection increasing to $39.90 per month in 2010. The revised rate structure includes increases to both the monthly fixed rate that is charged based on the size of the water meter and the monthly usage charge. Additional increases in the monthly meter and usage charges will be required after 2010 in order to continue to increase revenues to support the capital improvement plan (CIP). For the years 2011 to 2015, it is recommended that the monthly rate be increased as follows: 16 percent in 2011, and 8.25 percent annually for the years 2012 to 2015.

Table ES-1. 2010 Rates: Meter Charges[1]

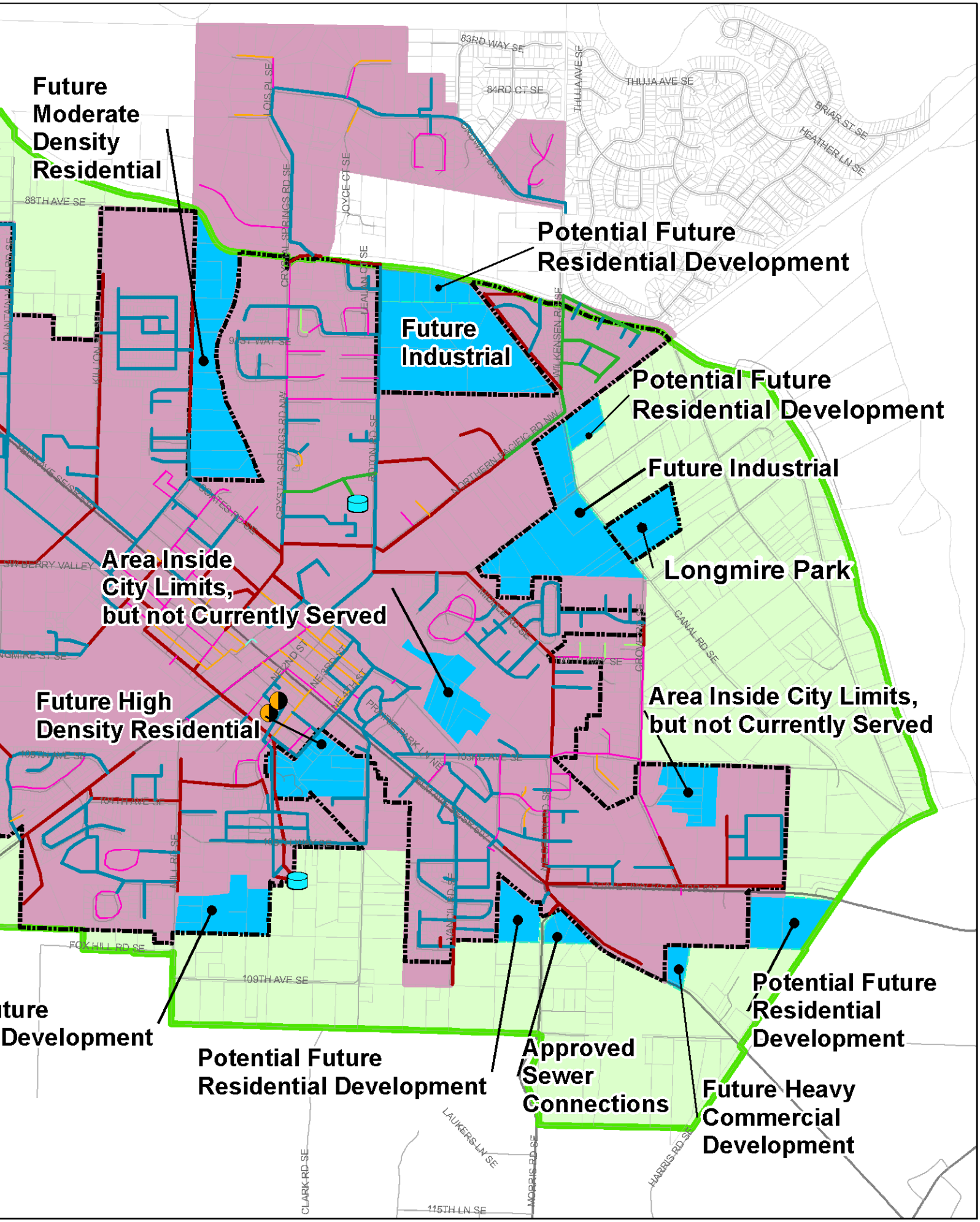
Meter Size	Monthly Meter Charge inside City Limits	Monthly Meter Charge outside City Limits
⅝"	$20.42	$33.41
1"	51.04	
2"	102.08	
3"	163.33	
4"	326.66	
6"	510.40	

[1]Reflects rate increases adopted in September, 2009 and March 2010.

Table ES-2. Proposed 2010 Rates: Usage Charges[1]

Use Rate per 100 cubic feet (cf)				
Residential				
Block 1	Block 2	Block 3	Block 4	Block 5
0–400 cf	401–1,000 cf	1,001–2,000 cf	2,001–3,000 cf	> 3,000 cf
$1.91/ccf	$2.96/ccf	$6.68/ccf	$7.25/ccf	$8.31/ccf
Commercial/Multifamily				
$5.13/ccf				
Irrigation				
$8.31/ccf				

[1]Reflects rate increases adopted in September, 2009 and March 2010.


Future Moderate Density Residential
Potential Future Residential Development
Future Industrial
Potential Future Residential Development
Future Industrial
Longmire Park
Area Inside City Limits, but not Currently Served
Future High Density Residential
Area Inside City Limits, but not Currently Served
Potential Future Residential Development
Potential Future Residential Development
Approved Sewer Connections
Future Heavy Commercial Development
83RD WAY SE
84RD CT SE
THUJA AVE SE
BRIAR ST SE
HEATHER LN SE
88TH AVE SE
JOYCE CT SE
CRYSTAL SPRINGS RD SE
DEALAN CT SE
WILKENSEN RD SE
91ST WAY SE
CRYSTAL SPRINGS RD NW
BITTON RD SE
NORTHERN LACEIC RD NW
SW BERRY VALLEY
CANAL RD SE
NE 2ND ST
NE 3RD ST
NE 4TH ST
PRAIRIE PARK LN NE
GROVE WAY SE
109TH AVE SE
FOX HILL RD SE
HILL RD SE
MAIN ST SE
CLARK RD SE
LAUKERS LN SE
MORRIS RD SE
HARRIS RD SE
115TH LN SE

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Water Rights/Demand

The City currently holds water rights totaling 796.66 acre-feet. In addition, the City has a pending water rights transfer application for 121.33 acre-feet which has been approved by the Thurston County Water Conservancy Board and is now awaiting resolution through the Pollution Control Hearings Board. The City also has a pending water right application for 31.26 acre-feet to receive credit for decommissioned wells. These applications are expected to be approved by 2011. Combined, these pending transfers and the water rights already held by the City are expected to total 949.25 acre-feet by 2011.

Annual water withdrawals and the estimated population served for the period from 2006–2009 are shown in Table ES-3, along with projected populations and water withdrawals through 2015. Table ES-3 shows that demands in 2009 reached the capacity of the City's existing water right. In 2010, the City implemented a conservation program to reduce demand on the system to equal the existing water right.

Table ES-3. Past Water Consumption and Projected Future Demands

Year	Population Served	Annual Water Demand[4] (ac-ft)
2006[1]	5,236	766
2007	5,516	731
2008[2]	5,669	819 / 756
2009[2]	5,815	843 / 812
2010[3]	5,961	868 / 796.66
2011[5]	6,215	904
2012	6,469	952
2013	6,723	994
2014	6,977	1,036
2015	7,231	1,079

[1] Population and demands reflect operating records through 2009.

[2] Projected Demand /Actual demand.

[3] Originally projected demand / demand projected after conservation savings. In 2010, the City developed a conservation program. As a result of water savings anticipated from this program, water demands in 2010 have been revised to equal 796.66 acre-feet. This conservation program is described in Chapter 4.

[4] Water rights currently held by City = 796.66 ac-ft. See Chapter 4 for a description of pending water rights transfers and new water rights applications. Current water rights portfolio of 796.66 ac-ft does not include 112 ac-ft held by the City but which is disputed by Ecology.

[5] Population served and water demands are projected for 2011–2015.

In 1994, the City applied to Washington State Department of Ecology (Ecology) for additional water rights to supplement the rights it currently holds. In October 2008, the City submitted a Mitigation Plan to Ecology outlining a phased approach to the requested water rights applications that proposes mitigation to offset the impacts of these future groundwater withdrawals. Ecology is currently reviewing this Mitigation Plan. Until additional water rights are secured, the City's ability to meet projected demands will be limited.

From 2005–2007, the typical single family residential water service connection (termed an equivalent residential unit, or ERU) used an average of 215 gallons of water per day. In 2008, the amount of water withdrawn from the City's wells totaled 756 acre-feet, or 246.4 million gallons. This volume of water is equivalent to the consumption that would be expected for 3,140 single family residences or a mixture of

commercial, industrial, and residential customers that generate a water demand equivalent to 3,140 residential units. In other words, the water demand in Yelm in 2008 represented 3,140 ERUs.

The capacity of the Yelm water system infrastructure can be equated to the number of ERUs that it can serve, consistent with DOH-prescribed criteria, as follows:

Table ES-4. Existing Water System Capacity

Facility	Description	Capacity (ERUs)[1]
Water rights	796.66 ac-ft annual water right currently held by City [2]	3,308
Sources (wells)	Two wells, each with a capacity of 1,200 gpm. Only one well can operate at a time.	3,335
Water treatment	Disinfection and corrosion control systems are sized to match the capacity of the wells	3,335
Reservoirs	Two 500,000-gallon reservoirs	3,728

[1] 2008 water system demand = 3,140 ERUs; 2009 water system demand = 3,373 ERUs.

[2] Water rights currently held by City = 796.66 ac-ft. See Chapter 4 for a description of pending water rights transfers and new water rights applications. Current water rights portfolio of 796.66 ac-ft does not include 112 ac-ft held by the City but which is disputed by Ecology.

With respect to distribution system capacity, a hydraulic model of the existing system identified several areas where the necessary fire flows cannot be achieved due to undersized pipes or the lack of adequate looping of the water lines. The most serious of these deficiencies is downtown in the vicinity of City Hall.

Planned System Improvements

It is assumed in this WSP that the request for new water rights through Ecology will be completed in phases as outlined in the City's Mitigation Plan and will be fully approved by 2037, with the first phase being approved by 2012, resulting in an increase in the City's water rights portfolio to 1,503.25 acre-feet (including other pending applications).

Capital Improvement Plans (CIPs) have been developed for the 6- and 20-year planning horizons to implement the infrastructure improvements necessary to provide the increased capacity needed to serve projected future demands. Figure ES-2 shows the planned improvements that make up the 6- and 20-year CIPs. Table ES-5 describes the individual projects that make up the 6-year CIP. The total estimated cost of this 6-year CIP is $10.8 million.

In addition to the CIP projects, the WSP identifies additional efforts that are necessary to improve the reliability of the system and comply with DOH guidelines. These include operation and maintenance (O&M) projects and updates to existing plans and guidelines (for example an update to the wellhead protection plan).

In 2015 the projected water demand is expected to be 1,079 acre-feet, or the equivalent of 4,479 ERUs. Table ES-6 shows the water system capacity that will be achieved when the 6-year CIP is completed. This table shows that implementation of the CIP will result in there being sufficient capacity to meet project demands.

The 20-year CIP will provide sufficient capacity to accommodate growth through the 20-year planning horizon, as shown in Table E-7. The estimated cost to complete the 20-year CIP for years 2016 to 2029 is $19.8 million.

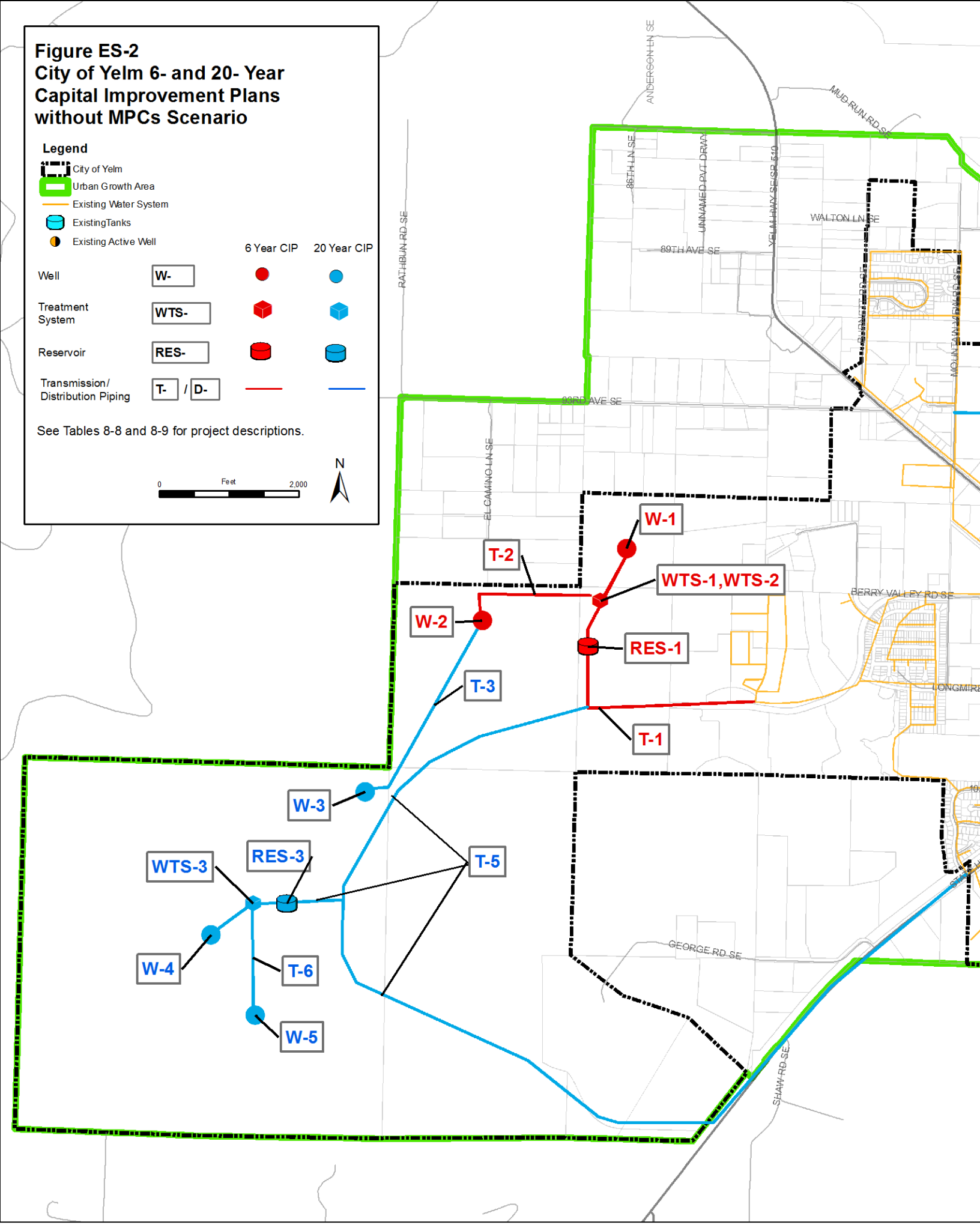
Figure ES-2
City of Yelm 6- and 20- Year Capital Improvement Plans without MPCs Scenario
Legend
City of Yelm
Urban Growth Area
Existing Water System
ExistingTanks
Existing Active Well
6 Year CIP
20 Year CIP
Well
W-
Treatment System
WTS-
Reservoir
RES-
Transmission/ Distribution Piping
T- / D-
See Tables 8-8 and 8-9 for project descriptions.
0
Feet
2,000
N
ANDERSON LN SE
MUD RUN RD SE
86TH LN SE
UNNAMED PVT DRWY
YELM HWY SE/SR 510
WALTON LN SE
89TH AVE SE
RATHBUN RD SE
93RD AVE SE
EL CAMINO LN SE
BERRY VALLEY RD SE
GEORGE RD SE
SHAW RD SE
W-1
T-2
WTS-1,WTS-2
W-2
RES-1
T-3
T-1
W-3
WTS-3
RES-3
T-5
W-4
T-6
W-5

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Table ES-5. 6-Year (2009–2015) Capital Improvement Plan			
Project ID	**Facility**	**Description**	**Year Online[1]**
W-DT	Downtown Well Improvements	Complete improvements at the downtown wells which would result in an increased capacity of 1,700 gpm.	2011
W-1	Southwest Yelm Well 1A	First well located in southwest Yelm wellfield. Assumed capacity of this well, and all wells in southwest Yelm, is 750 gpm.	2012
W-2	Southwest Yelm Well 2	Located in southwest Yelm wellfield. Assumed capacity of 750 gpm.	2016
RES-1	Southwest Yelm Reservoir 1	Located in vicinity of W-1, will receive water from W-1 and W-2. Volume = 500,000 gallons. Reservoir will operate at a maximum elevation of 630 feet, above the current 477 pressure zone.	2012
WTS -1	Water Treatment System 1	Located in vicinity of W-1 and RES-1. Water treatment system will provide disinfection and corrosion control. Sized so that system can be expanded to treat water from W-2 in the future.	2012
WTS -2	Expansion of Water Treatment System 1	Expand system built for W-1 to increase capacity when W-2 is constructed and provide future capacity for W-3.	2016
T-1	New Transmission Mains 1	16" pipe connects W-1, WTS-1, and RES-1 to the point where connection is made with the existing 16" line near Tahoma Terra. Final length to be determined.	2012
T-2	New Transmission Main 2	Connects W-2 to WTS-1. Estimated length = 2,200 feet.	2016
SCADA	Water System SCADA Upgrade	Upgrade system to provide remote monitoring and control.	2009
D-1	Railroad St. Distribution Replacement	Replace 4" and smaller AC pipe with 10" PVC on Railroad St. and SW Washington Ave. Portions of project may be moved to 2012, so that project costs do not exceed $200K every other year.	2010
D-2	SW Washington Ave. & Rice St. Dist. Replacement	Replace 4" and smaller AC pipe with 10" PVC on SW Washington Ave. and Rice St. Potentially could include portions of D-1.	2012
D-3	Van Trump Distribution Replacement	Replace 4" and smaller AC pipe with 10" PVC on Van Trump Ave. and 2nd St.	2014
MIT	Water Rights Mitigation Projects	Projects identified as part of Mitigation Plan. Potentially would include monitoring, purchase of water rights in the Deschutes River basin, and habitat restoration.	N/A
		6-Year CIP Total Estimated Project Cost	

[1] *Projects online in 2016 will be constructed in 2015 and are included in 6-year CIP.*

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Table ES-6. 2015 Water System Capacity		
Facility	**Description**	**Capacity (ERUs)**
Water rights[2]	1,503.25 ac-ft annual water right	6,242
Sources (wells)	Three wells, total capacity of 2,450 gpm	6,809
Water treatment	Disinfection and corrosion control systems are sized to match the capacity of the wells	6,809
Reservoirs	Three 500,000-gallon reservoirs	6,004
Distribution system	Three pipeline replacement projects completed to address deficiencies in downtown Yelm	

[1] 2015 projected water system demand = 4,479 ERUs.

[2] Calculated based on 796.66 ac-ft held, acquisition of pending transfer and application for decommissioned well credit, and 554 ac-ft in new water rights, per the Final Water Rights Mitigation Plan.

Table ES-7. 2029 Water System Capacity		
Facility	**Description**	**Capacity (ERUs)**
Water rights[2]	2,216 ac-ft annual water right	9,201
Sources (wells)[3]	Four wells, total capacity of 3,000 gpm. By 2030, five wells, total capacity of 3,750 gpm.	8,337
Water treatment	Disinfection and corrosion control systems are sized to match the capacity of the wells	8,337
Reservoirs	Five 500,000-gallon reservoirs	9,226
Distribution system	Six additional pipeline replacement projects completed. All deficiencies in existing system are addressed.	

[1] 2029 projected water system demand = 7,812 ERUs.

[2] By 2030, an additional 1,733.25 of water rights are expected to be transferred, bringing the total water rights to 3,949.25 annual water right and 16,398 ERUs. Calculated based on 796.66 ac-ft currently held, approval of transfer and application for decommissioned well credit, and 3,000 ac-ft in new water rights, per the Final Water Rights Mitigation Plan. See Table 4-7 for a year-by-year description of anticipated water rights portfolio status

[3] By 2030, the addition of the fifth Southwest Yelm Well would provide 10,422 ERUs of source capacity.

NOTES

1. Water rights held by the City and pending transfers: This WSP has been prepared assuming that 796.66 acre-feet of water rights are held by the City. As described above, the status of 112 acre-feet claimed by the City in Water Right Certificate GWC 3561 is disputed by Ecology. While the City is not waiving or relinquishing its claim to the identified 112 ac-ft, this Plan does not presently rely on that quantity for its current planning efforts. Therefore, the City's current water rights portfolio (as of May 2010) consists of 796.66 acre-feet in approved water rights. The City will continue to negotiate with Ecology to complete the transfer and reach agreement on the total capacity of the City's water rights portfolio. A pending transfer of 121.33 acre-feet as well as a pending application for 31.26 acre-feet would bring the total water rights in 2011 to 949.25 acre-feet.