



CITY OF WEST LINN – PLANNING COMMISSION

Water System Master Plan Update

Project Overview

Presented by:

Brian Ginter, P.E.

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AGENDA

Introductions

Why Master Plan?

Plan Elements

- Existing System

- Water Demand Forecast

- System Analysis

- Recommended Capital Improvements Plan

Next Steps

Discussion/Q&A



Why Master Plan?

- **Required by the State of Oregon – DHS, Drinking Water Program**
- **Identify short- and long-term needs**
 - Capital improvements
 - Policy updates
 - Financial strategy
- **Improve level of service to customers**
 - Economic development support
 - Reliability
 - Seismic resilience
 - Capital maintenance prioritization
 - Developer standards identification
- **Develop short- and long-term roadmap for system improvements**



Plan Elements

Plan Foundation

- System Inventory
- Water Demand Forecast
- Performance Criteria

System Analysis

- Hydraulic Model Development, Calibration and Analysis
- Storage and Pumping Needs
- Seismic Resiliency

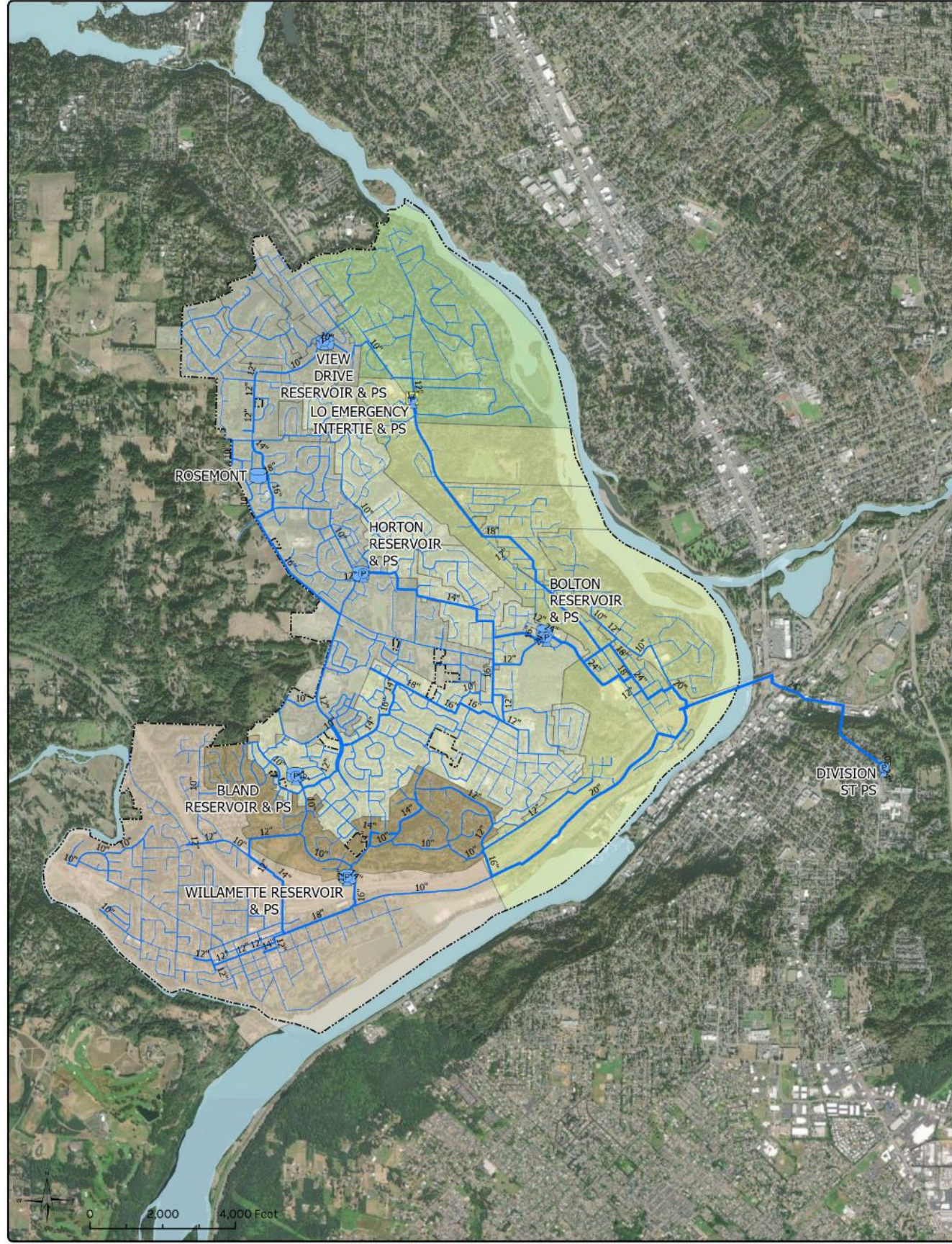
Capital Improvement Plan

- Capital Improvements
Capacity, Reliability, Resilience, Maintenance

Financial Analysis and WSMP Report

- Utility Rates
- SDCs
- WSMP - UAB Review, City Council Approval, Regulatory Approval

Existing System



9,000 Service Connections

1 Primary and **1** Emergency Supply

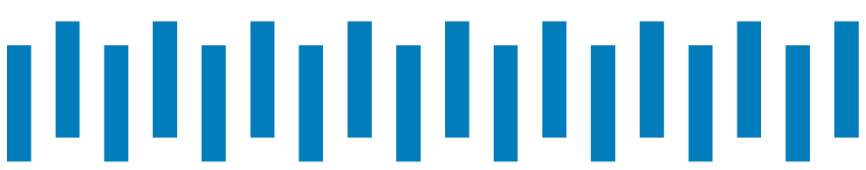
6 Pressure Zones (with 12 subzones)

6 Storage Reservoirs with **7.5 MG** capacity

5 Pump Stations with **10,400 gpm** firm capacity

118 Miles of Pipe – **2- to 24-inch** Diameter

31 Pressure Reducing Valve (PRV) Stations



Water Demand Forecast

Table 2-2 | Historical Demand by Customer Classification by Percentage

Customer Classification	2020	2021	2022
Residential	82.13%	82.16%	81.23%
Multi-Family and Apartments	11.01%	10.39%	11.31%
Commercial	4.40%	4.56%	4.74%
Public	2.46%	2.88%	2.74%

Figure 2-2 | Historical and Projected Population Growth

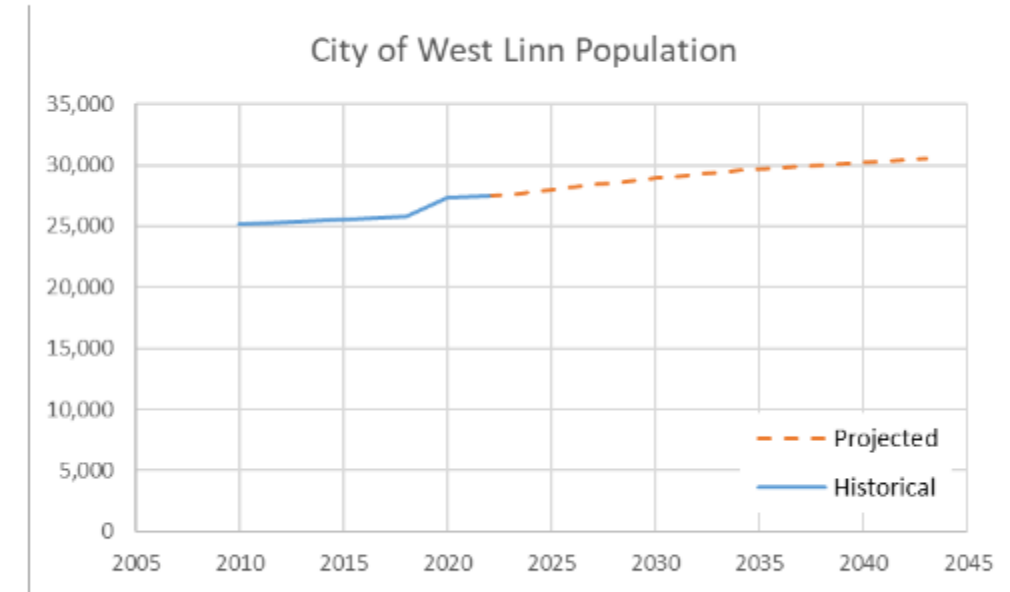


Table 2-10 | Projected Water Demand Summary

Year	Population	ADD (MGD) ¹	MDD (MGD) ²	PHD(MGD) ³
2028	28,556	2.97	7.04	16.33
2033	29,395	3.06	7.25	16.81
2038	29,991	3.12	7.39	17.15
2043	30,516	3.17	7.52	17.45

Notes:

1. Assumed ADD per capita of 104 gpcd per Table 2-4.
2. Peaking factor of 2.37 * ADD
3. Peaking factor of 2.32 * MDD



System Analysis – Supply

Table 4-4 | Summary of Source CIP Projects

Facility	Purpose	Description	Estimated Budget Cost & Schedule
Finished Water Transmission Main – Valve Replacement	The condition of the flow control valves are suspect and would require an emergency repair if they failed.	Replace the two existing ball valves located on the West Linn side of the tee on the DSPS discharge pipe.	\$200,000 FY 2024 – FY 2028

Table 4-5 | Summary of SFWB CIPs

SFWB Project	SFWB CIP Priority Rating and Projects	West Linn Impact and Priority	Estimated Cost Share	Schedule
SFWB Raw Transmission Main	1 - High Priority (raw water pipeline).	Increased capacity is required to meet the projected SFWB 2043 demand of 25 MGD, which is the combined demand from all water providers including West Linn. At the current projected rate of growth of the SFWB service area, capacity will be reached at approximately 2025.	TBD	TBD
SFWB Raw Water Pump Station	3 – Expansion to 40 MGD (backup generator)		TBD	TBD
SFWB WTP	1 - High (new chemical building)		TBD	TBD
	2 - Expansion to 30 MGD (structural upgrades)		TBD	TBD
SFWB Finished Water Transmission Line	1 - High Priority (finished water pipeline from Hunter Avenue to Cleveland)		TBD	TBD
SFWB Division Street Pump Station	2 - Expansion to 30 MGD (structural upgrades) 4 – Expansion to 52 (backup generator)	Increased capacity is required to meet the projected SFWB 2043 demand of 19.94 MGD, which is the combined demand from all water providers including West Linn. At the current projected rate of growth of the SFWB service area, capacity will be reached at approximately 2028.	TBD	TBD





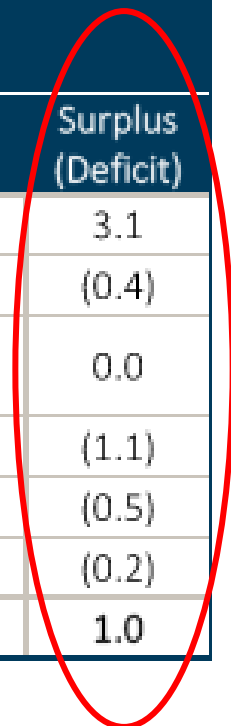
System Analysis – Capacity (Storage)

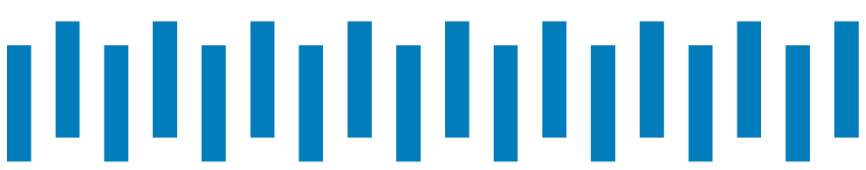
Figure 3-1 | Storage Volumes



Table 5-8 | 2043 Storage Capacity Analysis

Reservoir	Required Storage Capacity (Mgal)					Available	Surplus (Deficit)
	Operational	Equalization	Fire/ Emergency	Seismic & Dead	Required		
Bolton	0.00	0.00	0.93	0	0.9	4.0	3.1
Horton	0.19	0.00	1.73	0	1.9	1.5	(0.4)
View Drive (Robinwood)	0.00	0.00	0.49	0	0.5	0.5	0.0
Rosemont	0.09	0.00	1.37	0	1.5	0.4	(1.1)
Willamette	0.00	0.00	1.09	0	1.1	0.6	(0.5)
Bland	0.03	0.08	0.54	0	0.7	0.5	(0.2)
Total	0.31	0.08	6.14	0	6.5	7.5	1.0





System Analysis – Capacity (Pumping)

Table 6-2 | Pumping Firm Capacity Analysis

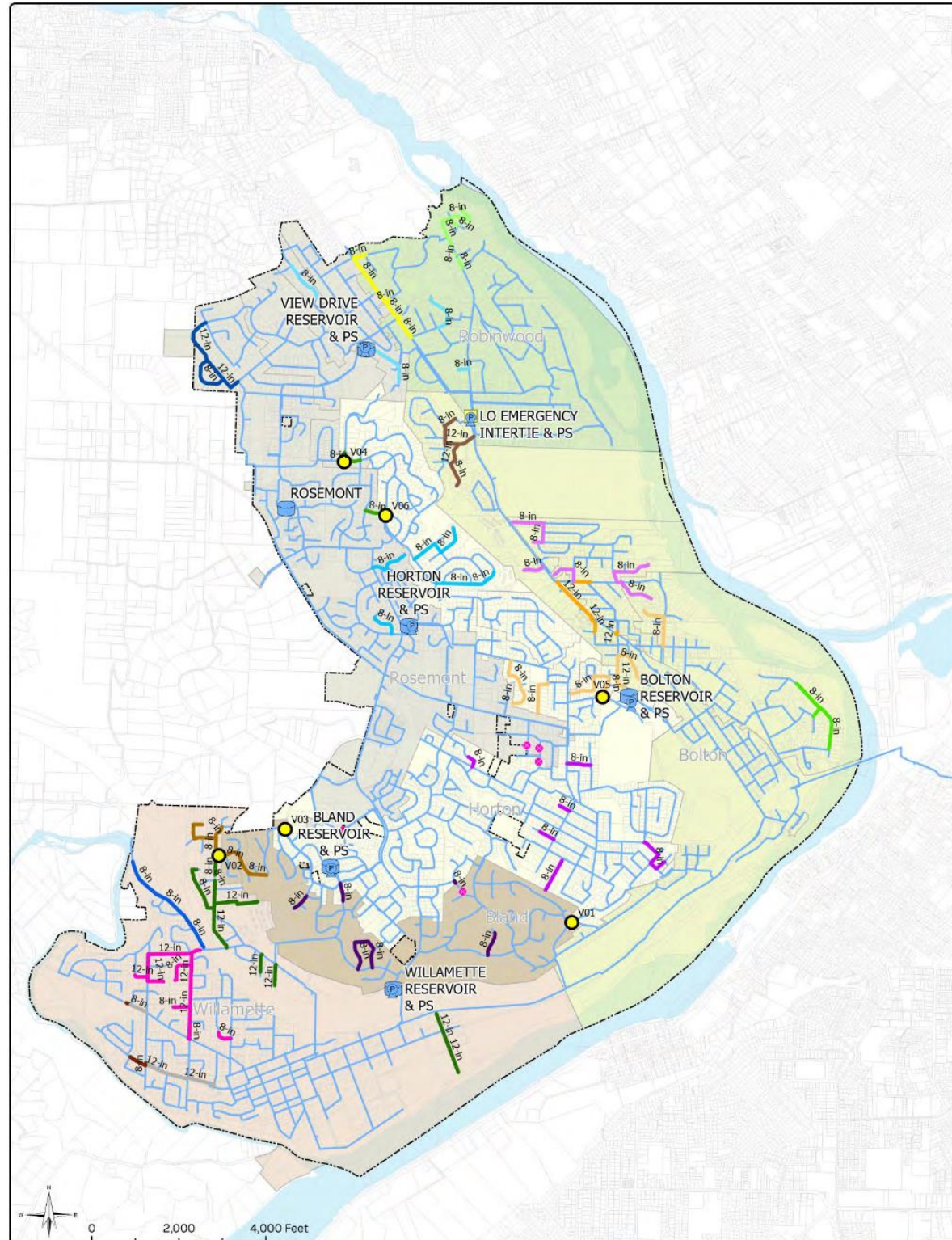
Pump Station	Discharge Pressure Zone	Firm Capacity (gpm)		Pressure Zone MDD			
				2023		2043	
				(Mgal)	(gpm)	(Mgal)	(gpm)
Bolton	Horton	3,900		1.8	1,245	2.02	1,400
Willamette	Bland	1,000		0.78	540	0.87	607
Horton	Rosemont	3,100	5,500	1.63	1,133	1.83	1,270
View Drive		1,200					
Bland		1,200					

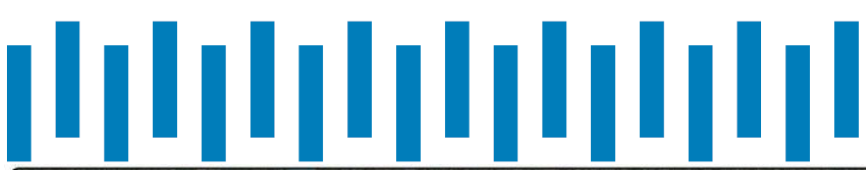


System Analysis – Capacity (Piping)

Hydraulic Capacity Improvement Prioritization

1. Significant subzone deficiencies. *Often include a PRV improvement.*
2. High head loss/velocity between supplying facility (storage) and demand. *Transmission improvements.*
3. Local fire flow deficiencies. *8- and 12-inch mains.*
4. System looping and new development. *8- and 12-inch mains.*

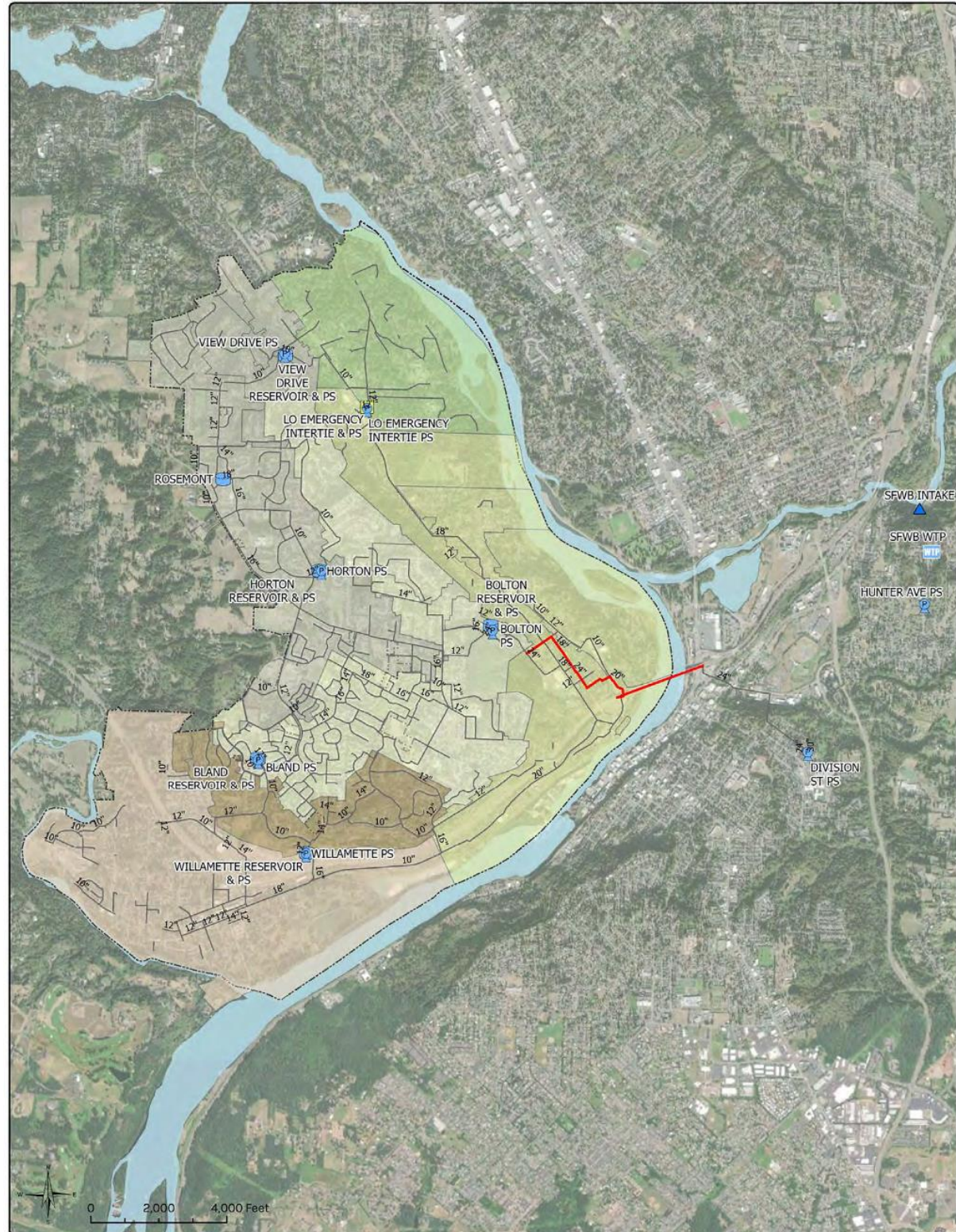




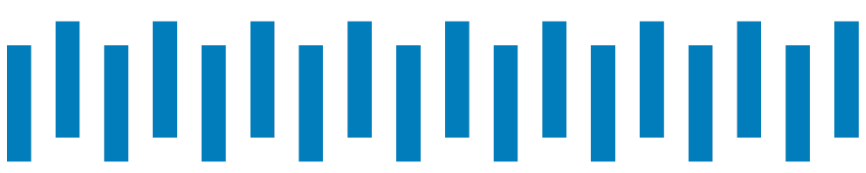
System Analysis – Renewal and Replacement

PRIORITY 1

Table 7-2 | Galvanized/Steel Piping Length and Diameter



Pressure Zone	Length (feet)				
	<4-inch	8-inch	18-inch	20-inch	24-inch
Bland					
Bolton	285		2,723	1,558	2,702
Horton	375				
Robinwood	90				
Rosemont					
Willamette	200				
TOTAL	950		2,723	1,558	2,702

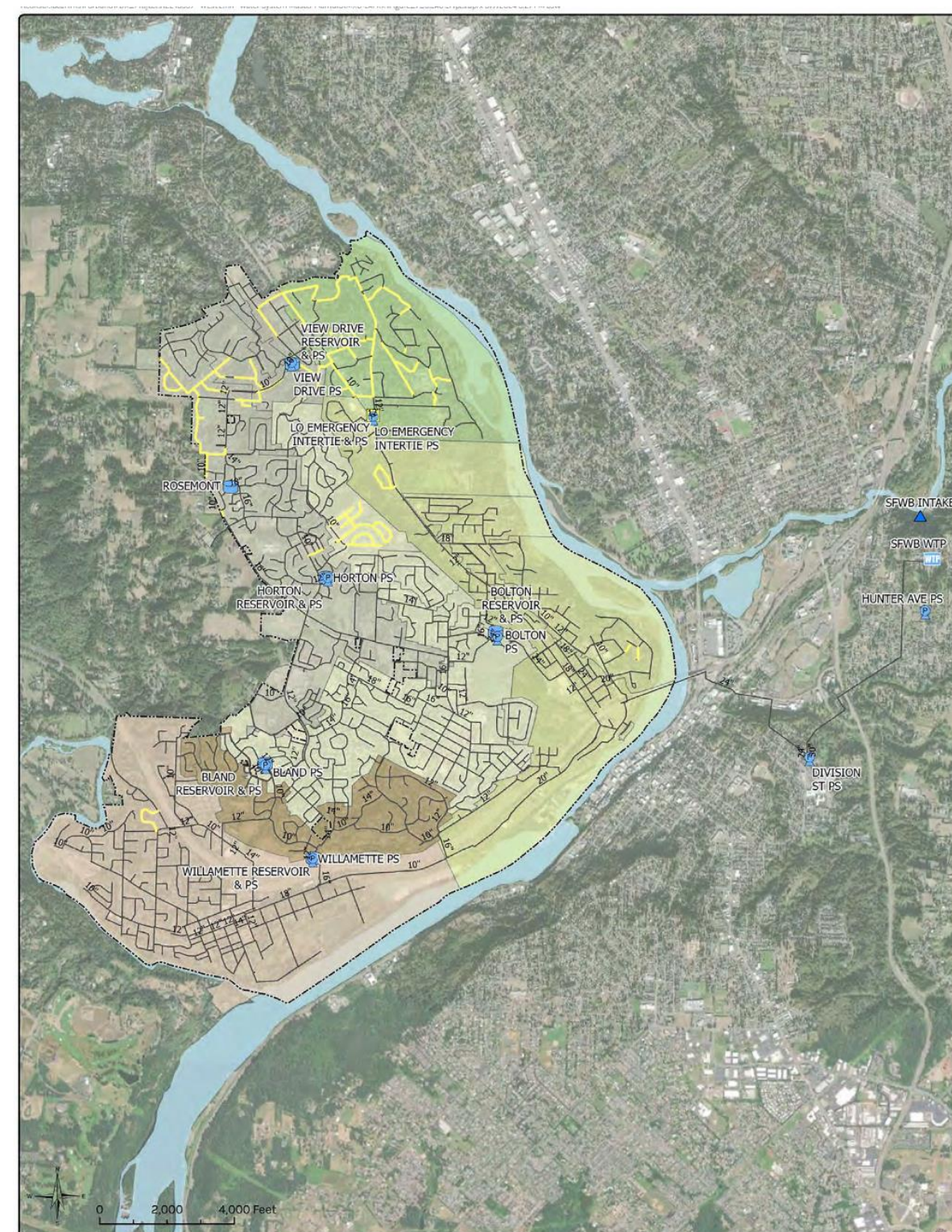


System Analysis – Renewal and Replacement

PRIORITY 2

Table 7-3 | AC Piping Length and Diameter – CMP Priority 2

Pressure Zone	Length (feet)		
	4-inch	8-inch	10-inch
Bland			
Bolton		1,860	
Horton		7,530	
Robinwood		10,950	3,315
Rosemont	1,090	9,015	850
Willamette		650	
TOTAL	1,090	30,005	4,165

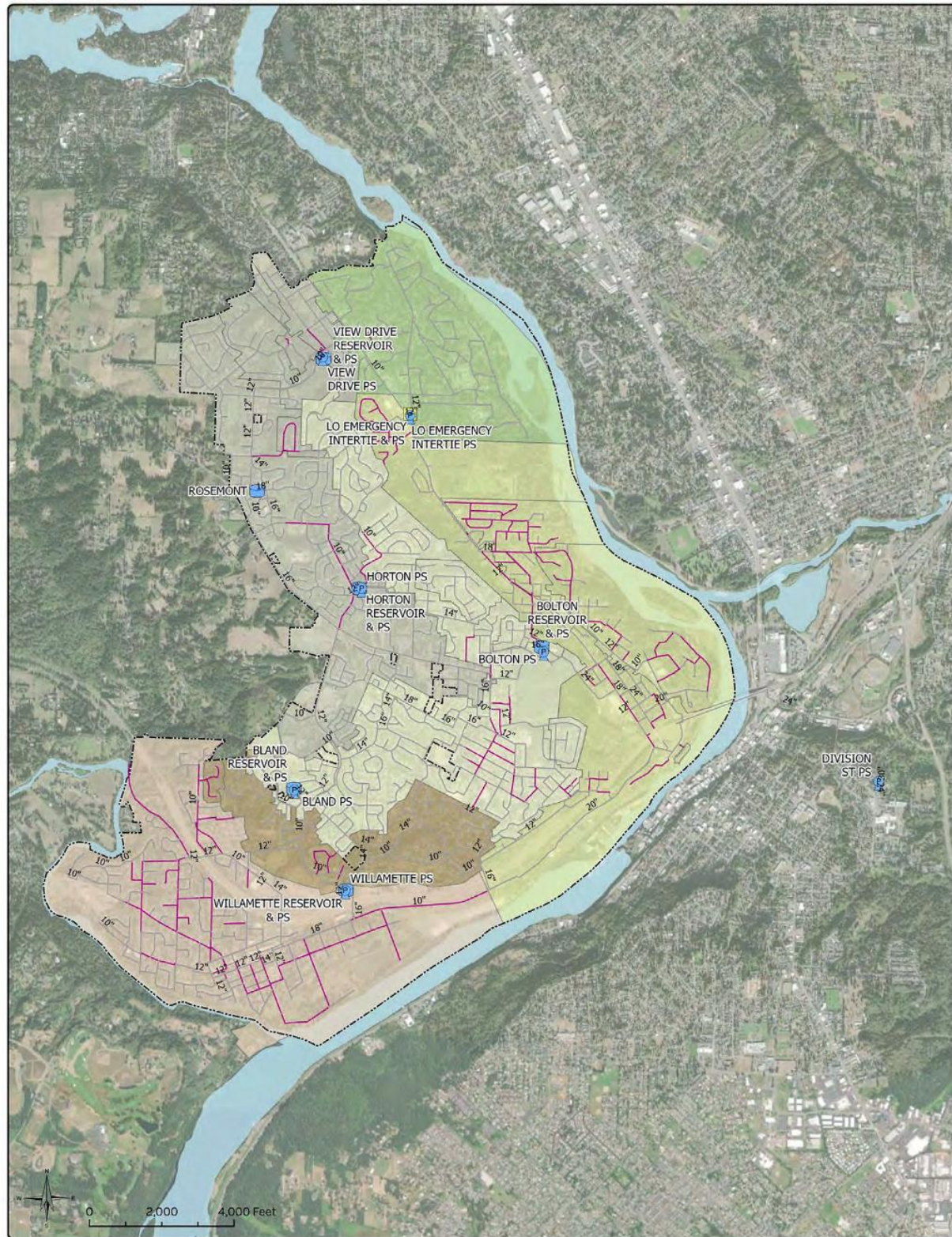


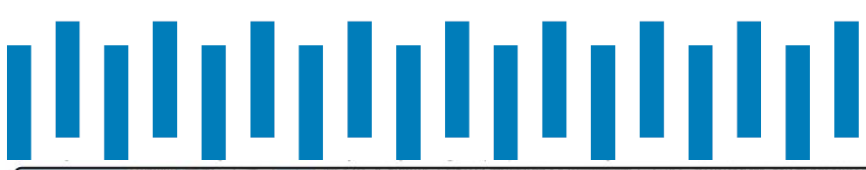
System Analysis – Renewal and Replacement

PRIORITY 3

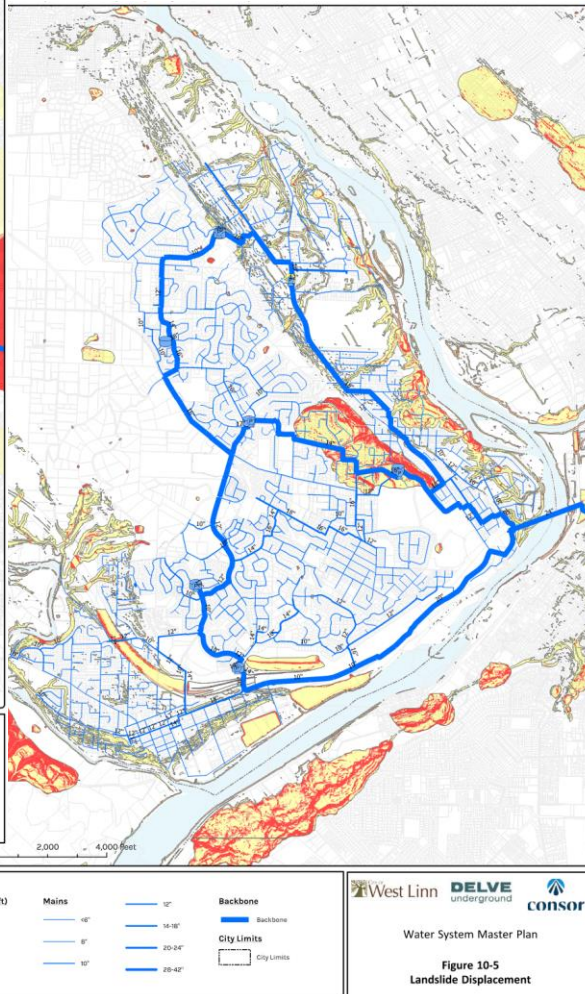
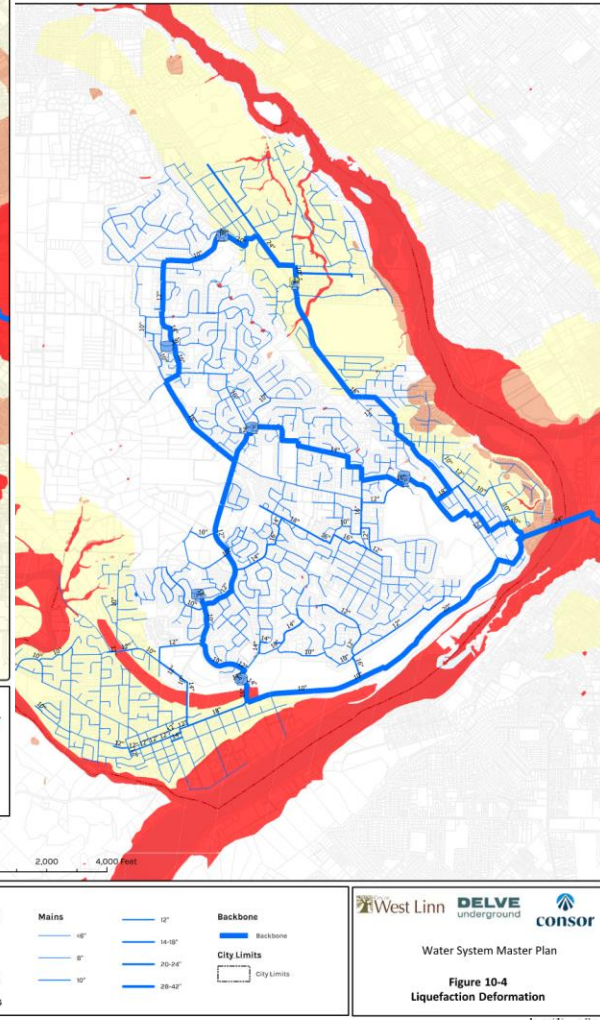
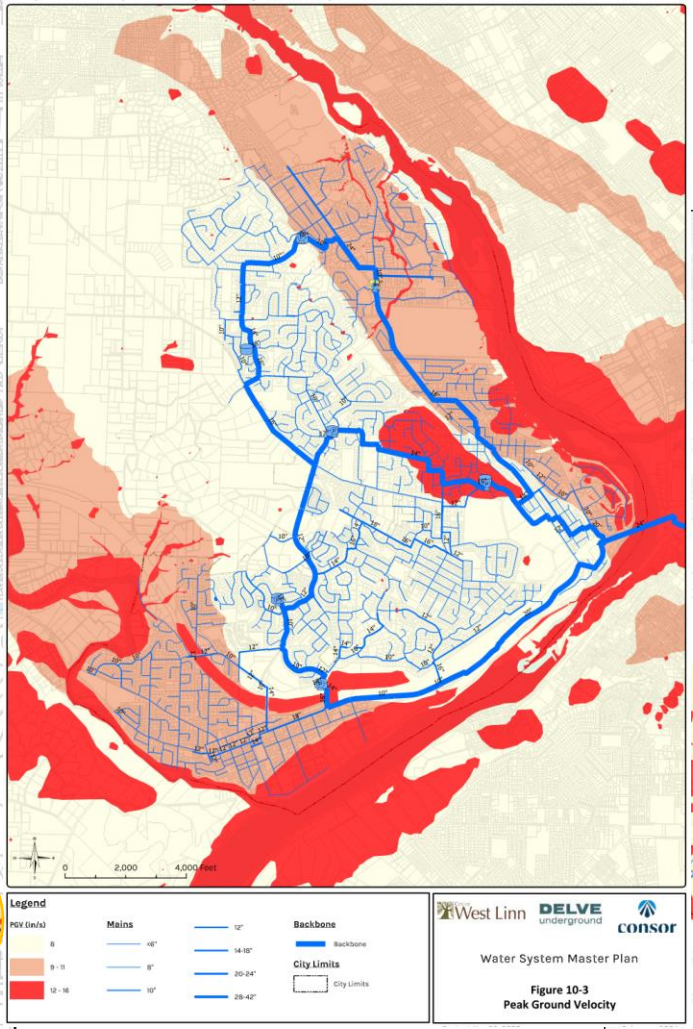
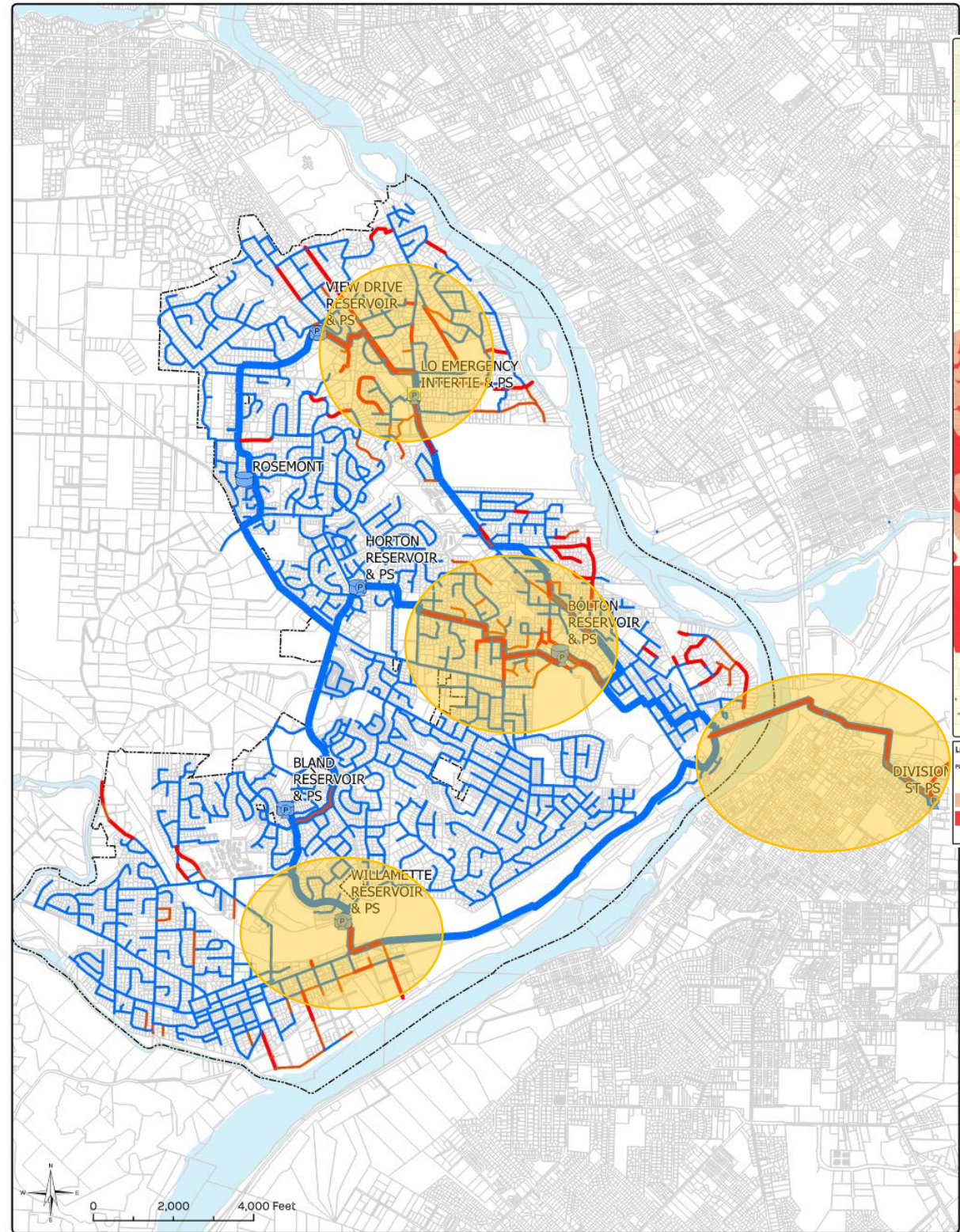
Table 7-4 | Cast Iron Piping Length and Diameter – CMP Priority 3

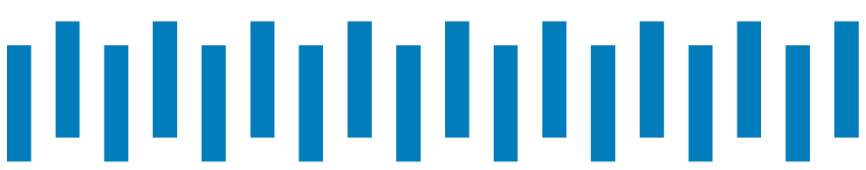
Pressure Zone	Pipe Length (feet)				
	4"	6"	8"	10"	12"
Bland	280	3,315			
Bolton	2,810	21,805	3,740		
Horton	1,180	3,750	500	2,150	1,450
Robinwood		450	530	185	
Rosemont	750	1,715	1,435	4,365	
Willamette	2,485	18,220	1,635	2,195	
TOTAL	7,505	49,255	7,840	8,895	1,450





System Analysis – Seismic Resilience





Recommended CIP

Project No.	Project Description	CIP Schedule and Project Cost Summary (2024 Dollars)				Total
		FY 2024-2028	FY 2029-2033	FY 2034-2044	Beyond	
	Source Subtotal	\$200,000				\$200,000
	Storage Subtotal	\$1,300,000	\$1,170,000	\$3,750,000		\$6,220,000
	Pump Station Subtotal	\$975,000				\$975,000
	Operations Subtotal	\$5,390,000	\$2,000,000	\$2,300,000	\$2,250,000	\$11,940,000
	CMP Subtotal	\$4,300,000	\$3,500,000	\$6,000,000	\$30,815,000	\$44,615,000
	Distribution Subtotal	\$750,000	\$6,460,000	\$13,640,000	\$11,907,000	\$32,757,000
	CIP & CMP Total	\$12,915,000	\$13,130,000	\$25,690,000	\$44,972,000	\$96,707,000
	Planning Period Estimated Annual Budget	\$2.6M	\$2.6M	\$2.6M		



Next Steps

Task	Schedule
Staff Review and Comment – WSMP DRAFT	March 2024
UAB Review and Comment – WSMP DRAFT	March – April 2024
Financial Plan – Rate Analysis and SDC Update	March – June 2024
Planning Commission and City Council Review and Approval - WSMP	May - June 2024
OHA-DWS Approval - WSMP	June 2024
Rate and SDC Financial Analysis – Staff Review	June 2024
Rate Analysis Presentations and SDC Update (if needed)	July 2024 (+90 days for SDC notice and adoption)



Q&A

THANK YOU