

**CITY OF MERCER ISLAND
RESOLUTION NO. 1633**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERCER ISLAND, WASHINGTON ADOPTING THE CITY OF MERCER ISLAND 2022 LIMITED WATER SYSTEM PLAN UPDATE OF THE 2015 WATER SYSTEM PLAN

WHEREAS, the City of Mercer Island's comprehensive Water System Plan describes the existing water system and service area, forecasts future demands, identifies policies and design criteria for water system operation and improvements, describes the operations and maintenance program, and identifies a schedule of improvements; and

WHEREAS, the City of Mercer Island's previous Water System Plan revisions were approved by the Washington State Department of Health, Office of Drinking Water in 2016; and

WHEREAS, the Washington State Department of Health Public Water Supplies Rules, WAC 246-290-100 modified the planning period of the Water System Plan (WSP) from 6 years to 10 years in recent years; and

WHEREAS, the Washington State Department of Health is allowing water system owners to extend their current Water System Plan with an Appropriate Level of Planning (ALOP) approach to update their Water System Plan if the existing approval plan still has useful life extending beyond the existing approval time frame; and

WHEREAS, the City of Mercer Island Public Works Department has studied the current and projected conditions by computer modeling and update its 2015 Water System Plan to meet the City's water system needs to 2036; and

WHEREAS, the City of Mercer Island Public Works Department, on the basis of said review, has updated the 2015 Water System Plan per ALOP guidelines to complete this 2022 Limited Water System Plan Update to extend the WSP planning period from 2022 to 2026; and

WHEREAS, the City of Mercer Island Public Works Department has submitted the 2022 Limited Water System Plan Update to the Washington State Department of Health and obtained preliminary approval of that plan;

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF MERCER ISLAND, WASHINGTON, AS FOLLOWS:

The 2022 Limited Water System Plan Update of the 2015 Water System Plan, dated September 14, 2022, attached to this Resolution as Exhibit A, is hereby adopted as the official Water System Plan for the City of Mercer Island.

**ADOPTED BY THE CITY COUNCIL OF THE CITY OF MERCER ISLAND,
WASHINGTON, AT ITS MEETING ON THE 20TH DAY OF SEPTEMBER, 2022.**

CITY OF MERCER ISLAND

Salim Nice, Mayor

ATTEST:

Andrea Larson, City Clerk

EXHIBIT A

City of Mercer Island **2022 Limited Water System Plan Update**

September 2022



Prepared by HDR, Inc. 2022

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Certification

This 2022 Limited Water System Plan Update for the City of Mercer Island was prepared by HDR Engineering, Inc., and City of Mercer Island staff, under the direction of the following Registered Professional Engineers:



David Kuhns, PE
HDR Engineering, Inc.

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City of Mercer Island Limited WSP Update

1.0 Introduction

The City of Mercer Island (City) developed its most recent Water System Plan (WSP) in 2015 (2015 WSP). The 2015 WSP was adopted by the City and approved by the Washington State Department of Health (DOH) on July 12, 2016. The prior WSP approval expired on July 13, 2022. Since development of the 2015 WSP update, the required water system planning period has been extended by DOH from six years to ten years. The City is extending the planning period its WSP covers from 2022 to 2026, through this Limited WSP Update, following the guidance set forth in DOH's "Contents of Limited WSP Update – Appropriate Level of Planning (ALOP)" memorandum.

This Limited WSP Update focuses on updating planning data, the water demand forecast, and system analyses. The capital improvement plan (CIP) and budget were also updated to reflect the most current information regarding these items as of the date of publishing this document. Other elements of the previously approved WSP that are not addressed in this document will remain valid through the 10-year planning period (i.e., through 2026).

Several of the standard regulatory requirements that apply to regular WSP updates also apply to this Limited WSP update. These include:

- Making the draft WSP available to neighboring jurisdictions for review and comment. This includes the City of Seattle and King County. Only the City of Seattle provided comments on the draft plan, which are included with responses in Appendix A.
- Receiving confirmation of local government consistency with the planning departments of the land use jurisdictions within which the water utility provides service. This includes the Mercer Island Community Planning and Development department. This form is shown in Appendix A.
- State Environment Policy Act (SEPA) documentation, available in Appendix B.
- Review and comment by DOH. No comments were provided on the draft WSP and DOH provided conditional approval, thereby extending the approval period to 2026. Final approval will occur upon receipt of confirmation that the WSP extension is adopted by the Mercer Island City Council (Appendix A).
- Hosting a public meeting and allowing public comment on the plan prior to adoption. Documentation of this public meeting is available in Appendix C.

2.0 Planning Data and Demand Forecast Update

The following sections describe the updated planning data and demand forecast.

2.1 Historical Production and Consumption Data

The 2015 WSP presents historical data and water use factors based on production and consumption data through 2013. The City updated the historical data to understand water use trends and factors during the time since then (i.e., for years 2014 – 2021). Table 2-1 through Table 2-6 display updated historical data and water use factors.

Table 2-1. Total annual water purchases from SPU, in millions of gallons (mg), 2014 – 2021

Year	2014	2015	2016	2017	2018	2019	2020	2021
Water purchased (mg)	779.4	808.2	792.9	785.3	796.6	728.5	724.9	792.8

Table 2-2. Total annual consumption by customer class, in mg, 2014 - 2021

Customer Class	2014	2015	2016	2017	2018	2019	2020	2021
Single Family	539	546	519	529	531	497	517	521
Multifamily	78	76	79	80	80	77	80	74
Commercial	39	43	41	44	49	39	31	26
Government	13	12	16	18	12	9	6	8
Total Consumption	669	677	655	670	671	622	634	629

Table 2-3. Annual connection count by customer class, 2014 - 2021 ^a

Customer Class	2014	2015	2016	2017	2018	2019	2020	2021
Single Family	7,158	7,187	7,287	7,287	7,225	7,277	7,239	7,261
Multifamily	76	72	--	--	--	89	93	93
Commercial	130	130	361	361	297	125	142	141
Government	43	50	--	--	--	38	117	42
Total Connections	7,407	7,439	7,648	7,648	7,522	7,529	7,591	7,537

^a Connection data from 2016 – 2018 is questionable for the Multifamily, Commercial, and Government categories; the data shown in this table is identical to the historical record (SPU wholesale report).

Table 2-4. Average day water use factors, per account, by customer class, in gallons per account per day (gpd)

Classification	2014	2015	2016	2017	2018	2019	2020	2021	3-Year Average
Single-family Residential	206	208	195	199	201	187	196	197	193
Multifamily Residential	2,810	2,901	--	--	--	2,367	2,346	2,194	2,302
Commercial/Other	826	911	311	331	456	864	589	500	651
Government	806	642	--	--	--	672	145	493	583 ^a

^a The three-year average for the government category is the average of 2019, and 2021. The COVID-19 pandemic had a significant negative effect on Government consumption, which rebounded in 2021. Therefore, excluding 2020 in favor of prior years provides a more accurate average of Government consumption. No prior years were included due to data issues from 2016 – 2018.

Table 2-5. Non-revenue water and distribution system leakage calculations, 2014 - 2021

Year	Water Produced and Purchased (mg)	Authorized Consumption (mg)	Non-Revenue Water		Distribution System Leakage	
			Qty (mg)	Percent of Consumption	Qty (mg)	Percent of Production & Purchases
2014	779	725	110	15.2%	54	7.0%
2015	808	717	131	18.3%	91	11.3%
2016	793	696	138	19.8%	97	12.2%
2017	785	720	115	16.0%	65	8.3%
2018	794	716	122	17.1%	69	8.7%
2019	728	657	106	16.2%	72	9.8%
2020	725	659	91	13.9%	66	9.1%
2021	793	664	164	24.6%	128	16.2% ^a
3-year Average	749	660	120	18.2%	89	11.7% ^b
6-year Average	770	685	123	17.9%	83	10.7%

^a The DSL factor for 2021 is unusually high. The City is investigating the potential causes of this jump in DSL.

^b The three-year average DSL is above 10% due to the influence of the high 2021 value. The four years prior were consistently below 10%. Additionally, the City tracks water use closely and is implementing advanced metering infrastructure which will improve accuracy of metered consumption tracking. Therefore, Mercer Island asserts that a Water Loss Control Action Plan is not necessary at this point.

Table 2-6. Average day demands, peaking factor, and maximum day demands, 2014 - 2021

	2014	2015	2016	2017	2018	2019	2020	2021	3-Year Average
Water Purchased (mg) ^a	779.37	808.21	792.89	785.34	796.55	728.46	724.93	792.83	748.74
Average Annual Day Demand (ADD) (mgd) ^b	2.13	2.21	2.17	2.15	2.18	1.99	1.98	2.17	2.05
Peaking Factor (MDD/ADD) ^c	2.33	2.50	2.11	2.64	2.61	2.04	2.06	2.20	2.10
Maximum Day Demand (MDD) (mgd) ^d	4.96	5.52	4.58	5.67	5.69	4.07	4.09	4.78	4.31
	July	July	August	August	August	4-Aug	16-Aug	28-Jun	-

^a Total volume purchased from SPU.

^b Total volume purchased divided by the number of days in a year.

^c Due to data availability, peaking factors for 2014 - 2018 were calculated using the DOH-recommended method using monthly purchases and assumed MDD/MMADD ratio (1.35) from the Water System Design Manual. Peaking factors for 2019 - 2021 were developed using SCADA data, from which peak daily usage was available.

^d Maximum day demand calculated by multiplying average day demand by peaking factor. Month, and day where known, of peak demand is also noted.

Key notes regarding updated water use factors and their application to the demand forecast and capacity analyses are as follows:

- A new equivalent residential unit (ERU) value of 193 gpd has been calculated, based on the most recent three years of single family consumption and connection data (Table 2-4). This compares to the value of 202 gpd presented in the 2015 WSP.
- A new non-revenue factor of 18.2 percent has been calculated, based on the most recent three years of data.
 - This includes both distribution system leakage (DSL) and authorized non-revenue water. The DSL factor is 11.7 percent, though this factor could be biased high due to an unusually high DSL year in 2021.
 - The City is conducting a meter replacement and advanced metering infrastructure (AMI) implementation project from July 2022 through June 2024. The new meters and AMI system will provide more accurate data of non-revenue and DSL proportions of consumption which will be reported in the annual water use efficiency reports. The City will adapt to the new data as it becomes available.

Regarding calculating a peaking factor, the system's operational configuration typically utilizes storage to meet demands during high demand days. Therefore, a direct comparison of average day demands (ADD) through the intertie to the maximum day demand (MDD) through the intertie is not adequate to determine a peaking factor.

To determine the peaking factor, flow data for the "Total Res Demand" flow rate was obtained from the City SCADA system. This value represents the pumped flow from the pump station connecting the intertie source to the Reservoir zone, equal to approximately 98 percent of system demand. This data set is the most accurate representation of average day and maximum day demands available. Data were compiled into the average one-hour flow rate. In some instances, there were some hours where there was missing data. These were calculated assuming a similar flow rate to the same time of day for an adjacent day. ADD was calculated as the average of all flow rates (in gpm). MDD was calculated based on the highest 24-hour running average. PHD was calculated by finding the highest hourly flow rate. The peaking factor was calculated by dividing MDD by ADD. The highest peaking factor between 2019 – 2021 was utilized, which was 2.20.

2.2 Demographic Projections

The prior demand forecast utilized household forecasts from Puget Sound Regional Council (PSRC) Traffic Analysis Zone (TAZ) data. An updated data set was not available for this analysis. Furthermore, 2020 Census estimates of population are greater than population forecasts for the same time frame from the prior PSRC data, so a new methodology was needed to accurately characterize how population growth would impact demand growth.

The Mercer Island Comprehensive Plan states the City anticipates population growth of 5,900 people between 2006 and 2035. Using census data for 2000 and 2010, a 2006 population was estimated, and a compound annual growth rate (CAGR) was developed for population growth between 2006 and 2035 of 0.64 percent. The comprehensive plan provides estimates of needed housing units based on this population growth but were not segregated between anticipated proportions of single family and multifamily. Therefore, this growth rate was assumed to apply to forecasting demands for the single family, multifamily, and government customer categories.

As documented in the City's comprehensive plan, commercial growth targets suggest 1,000 new jobs will be added in the City between 2010 and 2035. Using a baseline of 6,622 jobs in the City in 2010 (described in the comprehensive plan), a CAGR of 0.56 percent was calculated for employment growth through 2035. This rate was used to forecast commercial demands.

2.3 Demand Forecast

Base year (2021) ADD was established using 2021 historical data. Forecasted ADD for 2026 (10-year horizon) and 2036 (20-year horizon) were forecast by applying the CAGRs described in Section 2.2 to the appropriate customer classes over the appropriate number of years. The number of ERUs for each forecast period and customer class was calculated by dividing the ADD by the ERU water use factor. Non-revenue water was calculated by summing the ADD of all customer classes and multiplying by 18.2 percent (the non-revenue factor). MDD for each forecast period and customer class was calculated by multiplying the ADD by the peaking factor (2.20).

Table 2-7 displays the updated demand forecast summary. This summary does not include effects of conservation.

Table 2-7. Mercer Island water demand forecast summary

	2021 Base Year			2026 10-Year			2036 20-Year		
Classification	ERUs ^a	Avg. Day (gpd)	Max. Day (gpd)	ERUs ^a	Avg. Day (gpd)	Max. Day (gpd)	ERUs ^a	Avg. Day (gpd)	Max. Day (gpd)
Single-family	7,390	1,427,393	3,141,439	7,630	1,473,619	3,243,175	8,132	1,570,611	3,456,637
Multifamily	1,056	203,900	448,749	1,090	210,504	463,281	1,162	224,359	493,774
Commercial	365	70,403	154,945	375	72,412	159,365	397	76,602	168,587
Government	107	20,672	45,495	110	21,341	46,968	118	22,746	50,059
Non-Revenue Water ^b	2,321	448,278	986,580	1,678	324,091	713,266	1,788	345,317	759,982
Total	11,239	2,170,646	4,777,207	10,883	2,101,966	4,626,056	11,596	2,239,635	4,929,040

^a ERUs calculated by dividing average day demands by the ERU water use factor (193 gpd).

^b The forecasted non-revenue volumes are lower than the non-revenue volume in the base year because of the abnormally high non-revenue portion in the 2021 data. The 3-year average, which is lower than the 2021 factor, was used to forecast non-revenue water, thereby reducing the non-revenue forecast volume below the 2021 volume.

2.4 RRA and ERP Planning Efforts

Since the 2015 WSP, Congress passed the America's Water Infrastructure Act (AWIA) in October 2018. As part of the AWIA, municipal water systems serving more than 3,300 people were required to perform Risk and Resilience Assessments (RRA) and update their Emergency Response Plans (ERP). The goal of AWIA is to assist water utilities in increasing their resilience and achieving a state of preparedness, which will allow them to handle emergency situations quickly and efficiently.

In June 2021, the City completed a RRA which identified and quantified the risks facing the City and its critical water facilities. The RRA evaluated all potential hazards including natural hazards, cyber security, source water, proximity and dependency hazards, and others. Due to the sensitivity of some of the risk categories, the majority of the findings and recommendations will remain confidential within the City.

The certification of compliance for RRA was submitted to EPA before the deadline of June 30, 2021. The certification of compliance for the ERP Update was submitted to EPA before the deadline of December 31, 2021.

One of the system improvements identified by the RRA is replacement of pressure reducing valve (PRV) stations. The City is currently working on design of the Phase 1 PRV Stations Replacement Project.

3.0 Water Rights Self-Assessment

The City's water rights have not changed since the 2015 WSP was adopted. The updated water rights self-assessment, which compares the updated demand forecast to the City's water rights, is displayed in Table 3-1.

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Table 3-1. Water Rights Self-Assessment and Interruptible Water Rights

Water Right Permit, Certificate, or Claim #	WFI Source #	Existing Water Rights		Current Source Production				10-Year Forecasted Source Production, 2026				20-Year Forecasted Source Production, 2036			
		Maximum Instantaneous Rate (Qi) (gpm)	Maximum Annual Quantity (Qa) (afy)	Maximum Qi	Current Excess or (Deficiency)	Maximum Qa	Current Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)
G1-28425	S04	400	66.3	N/A ^a											
Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date	Currently Purchased				10-Year Forecasted Purchase (2026)				20-Year Forecasted Purchase (2036)			
				Current quantity purchased through intertie				Forecasted quantity purchased through intertie				Forecasted quantity purchased through intertie			
	Maximum Qi ^b	Maximum Qa ^c		Maximum Qi	Current Excess or (Deficiency)	Maximum Qa	Current Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)
	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)		Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)	Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)	Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)
1. #67 @ SE 43rd & 89th Ave - SPU	2,684	3,866,468	1/1/2062	See totals below											
2. #68 @ SE 40th & 97th Ave - SPU	Zone Backup														
3. #171 @ Boat Launch - SPU	521	749,011													
TOTALS =	3,205	4,615,479 ^d		3,318	(113)	2,444,833	2,170,646	3,213	(8)	2,513,512	2,101,966	3,423	(218)	2,375,844	2,239,635
^a No water rights analysis performed because S04 is an emergency well and cannot be used to meet forecasted demands.															
^b The maximum instantaneous flow rate specified in the SPU water supply contract is the maximum flow guaranteed at the 405 ft hydraulic grade. There is no maximum permitted instantaneous flow rate through the intertie in the supply contract.															
^c Annual volumes expressed as an average day demand in gallons per day.															
^d The water supply contract does not contain a maximum annual volume. This volume was determined by calculating a full day of flow at the maximum instantaneous flow rate guaranteed at the 405 ft hydraulic grade.															
Interruptible Water Rights: Identify Limitation on any water rights listed above that are interruptible.															
Water Right #	Conditions of Interruption			Time Period of Interruption											
G1-28425	The Emergency Well is an emergency water source and can only be activated when an emergency is declared by Governor, local (government) Incident Response Commander, or other authorized local official(s). Therefore, it is not in use except for the monthly pump exercises.														

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G1-28425 is for an Emergency Well which is on a constant standby mode except for its monthly pumping exercise which flows at a rate of 200 to 225 gpm until it exceeds 10,000 gallons of output (10,000 gallons/month = 120,000 gallons/Year = 0.37 Acre-Fee/Year).

The self-assessment shows water rights are satisfactory for total annual demands. While contractually there is not a permitted maximum instantaneous flow rate through the intertie, there is a maximum flow rate that a minimum hydraulic grade line of 405 feet is guaranteed. The flow rate with a guaranteed hydraulic grade line was used as the maximum instantaneous flow rate (Q_i) for the purposes of the water right self-assessment. Based on this assumption there are deficiencies in meeting maximum day demands in all planning years. Using a similar assumption, the 2015 WSP also suggested a likely deficiency for maximum day demand capacity in the 20-year planning period. However, growth in recent years has outpaced growth forecast in the 2015 WSP, and deficiencies are forecast for all planning horizons. This deficiency is related to the maximum contractual volume currently guaranteed at a minimum hydraulic gradient through the intertie rather than the actual hydraulic capacity possible through the intertie (see Section 6.0 for more detail). As noted in the 2015 WSP, the City will consider updating the supply agreement with SPU to cover these increased demands at that minimum hydraulic gradient.

4.0 Source and Storage Capacity Update

The following sections describe the source and storage capacity analyses.

4.1 Source Capacity

The system-wide source capacity analysis is captured in the WRSA (Section 3.0) since all supply to the island comes from the SPU interties. However, that analysis assumes the contractual constraint of 3,205 gpm at the 405 ft hydraulic grade line, resulting in deficiencies throughout the planning horizon. By contrast, the actual physical capacity of the interties is approximately 4,200 gpm based on analysis with the hydraulic model, which eliminates the deficiencies.

This source capacity update also explores pressure zone-specific capacities, which are evaluated in more detail than they were in the 2015 WSP. Figure 1-1 of the 2015 WSP displays the pressure zones and the connections between the zones through PRVs. Water is pumped directly from the interties into the Reservoir zone, where it can be then transferred to the Freeway zone through PRVs. Water can also be pumped into the Pumped zone through the Main Pump Station, where it can then be transferred to the Intermediate and Low zones through PRVs (collectively referred to as the “main pumped zones”). The main pumped zones collectively comprise approximately 50 percent of system demands. Water can also be pumped to the First Hill zone. This zone comprises approximately 2.5 percent of system demands. Both the main pumped zones and the First Hill zone are “closed” zones, meaning there is no reservoir and pressure is maintained entirely by the booster pumps.

Table 4-1 displays the source capacity analysis for the main pumped zones. Table 4-2 displays the source capacity analysis for the First Hill zone. Demands for each analysis were determined by multiplying total system demands by the proportions described in the previous paragraph.

The analyses indicate no source deficiency to the main pumped zones within the 20-year planning horizon.

Given Mercer Island's nearly built-out status, it is likely that no pumping capacity upgrades will be needed even beyond the 20-year timeframe.

Table 4-1. Source capacity analysis for the main pumped zones

	2021	2026	2036	Max ^d
Projected ERUs and Demand ^a				
Equivalent Residential Units (ERU's)	5,589	5,413	5,767	7,456
Average Day Demand (gpm)	750	726	774	1,000
Maximum Day Demand (gpm)	1,650	1,598	1,702	2,200
Peak Hour Demand (gpm)	3,024	2,930	3,118	4,015
Fire flow Requirement (gpm)	5,000	5,000	5,000	5,000
Evaluation of Existing Sources				
Main Pump Station ^b				
Pump 1	1,800	1,800	1,800	1,800
Pump 2	1,800	1,800	1,800	1,800
Pump 3	1,800	1,800	1,800	1,800
Pump 4	1,800	1,800	1,800	1,800
Pump 5	1,800	1,800	1,800	1,800
Total Available Source (gpm)	9,000	9,000	9,000	9,000
Total Available Source; Largest Source Offline (gpm) ^c	7,200	7,200	7,200	7,200
Source Surplus/(Deficiency) (gpm)				
Peak Hour Demand	5,976	6,070	5,882	4,985
MDD + Fire Flow; Largest Source Offline	550	602	498	0

^a Projected demands taken from Table 2-7 and multiplied by 50%. ERUs calculated as Average Day Demand / ERU water use factor (193 gpd/ERU).

^b Assumes the Main Pump Station is operating 24 hours/day. The pump station includes 5 pumps.

^c Largest source offline means a single pump in the pump station is inactive.

^d Maximum ERUs to be served with current sources, based on limiting capacity analysis.

Table 4-2. Source capacity analysis for the First Hill zone

	2021	2026	2036	Max ^g
Projected ERUs and Demand ^a				
Equivalent Residential Units (ERU's)	274	266	283	372
Average Day Demand (gpm)	37	36	38	50
Maximum Day Demand (gpm)	81	78	84	110
Peak Hour Demand (gpm)	201	196	205	260
Fire Flow Demand (gpm) ^b	1,000	1,000	1,000	1,000
Evaluation of Existing Sources				
First Hill Booster Pump Station ^c				
Domestic Pump 1	65	65	65	65
Domestic Pump 2	65	65	65	65
Domestic Pump 3	65	65	65	65
Domestic Pump 4	65	65	65	65
Fire Pump 1	1,250	1,250	1,250	1,250
Fire Pump 2	1,250	1,250	1,250	1,250
Total Available Source (gpm)	2,760	2,760	2,760	2,760
Total Available Domestic Source (gpm) ^d	260	260	260	260
Total Available Source; Largest Source Offline (gpm) ^e	1,510	1,510	1,510	1,510
Source Surplus/(Deficiency) (gpm)				
Peak Hour Demand ^f	59	64	55	0
MDD + Fire Flow; Largest source offline	429	432	426	400

^a Projected demands taken from Table 2-7 and multiplied by 2.5%. ERUs calculated as Average Day Demand / ERU water use factor (193 gpd/ERU).

^b As described in the "First Hill Booster Pump Station Task 200 – Design Criteria" technical memorandum, dated June 11, 2010.

^c Assumes the First Hill Booster Pump Station is operating 24 hours/day.

^d Total available domestic source includes only the four domestic pumps.

^e Largest source offline means a single pump in the pump station is inactive.

^f The peak hour demand capacity analysis excludes the fire pumps because PHD should be met without the use of fire back-up sources.

^g Maximum ERUs to be served with current sources, based on the peak hour demand scenario.

4.2 Storage Capacity

The storage analysis was conducted for full system demands, similar to what was presented in the 2015 WSP. The only significant change in assumptions was the elevation of the highest meter in the Reservoir pressure zone. The system model was used to determine the highest meter in the zone directly fed by the reservoirs (the Reservoir zone), and this new elevation (312 feet above mean sea level) was used to recalculate the available storage at 30 and 20 psi in the Reservoir zone. These pressure standards don't apply in the other zones because they are closed zones and pressure is regulated by PRV or booster pump settings. The results of this analysis are displayed in Table 4-3. The analysis indicates storage is sufficient throughout the planning period.

Table 4-3. Storage capacity analysis for the full system

	2021	2026	2036	Max ^j
Projected ERUs and Demand ^a				
Equivalent Residential Units (ERU's)	11,239	10,883	11,596	17,415
Average Day Demand (gpd)	2,170,646	2,101,966	2,239,635	3,363,475
Maximum Day Demand (gpd)	4,777,207	4,626,056	4,929,040	7,399,644
Available Source (gpd) ^b				
Master Meter (3,205 gpm)	4,615,200	4,615,200	4,615,200	4,615,200
Total Available Source (gpd)	4,615,200	4,615,200	4,615,200	4,615,200
Required Storage Calculations				
Operational Storage (gal) ^c	507,937	507,937	507,937	507,937
Equalizing Storage (gal) ^d	327,743	302,561	353,039	765,114
Standby Storage (gal) ^e	4,341,292	4,203,932	4,479,269	6,726,949
Fire Flow Storage (gal) ^f	1,200,000	1,200,000	1,200,000	1,200,000
Required Storage				
Greater than 30 psi at highest meter (gal) ^g	835,680	810,497	860,976	1,273,051
Greater than 20 psi at highest meter (gal) ^h	5,176,972	5,014,430	5,340,245	8,000,000
Existing Storage Greater Than 30 psi (mg) ⁱ				
North Tank	2,535,775	2,535,775	2,535,775	2,535,775
South Tank	2,535,775	2,535,775	2,535,775	2,535,775
Total Existing Storage at 30 psi (gal)	5,071,551	5,071,551	5,071,551	5,071,551
Storage Surplus/(Deficiency) at 30 psi (gal)	4,235,871	4,261,053	4,210,575	3,798,500

	2021	2026	2036	Max ^j
Existing Storage Greater Than 20 psi (gal) ⁱ				
North Tank	4,000,000	4,000,000	4,000,000	4,000,000
South Tank	4,000,000	4,000,000	4,000,000	4,000,000
Total Existing Storage at 20 psi (gal)	8,000,000	8,000,000	8,000,000	8,000,000
Storage Surplus/(Deficiency) at 20 psi (gal)	2,823,028	2,985,570	2,659,755	0

^a Projected demands taken from Table 2-7. ERUs calculated as Average Day Demand / ERU water use factor (193 gpd/ERU).

^b Available source assumes the intertie is supplying the maximum contract volume through the master meter for 24 hours.

^c Required operational storage is based on summer operational setting with the start level at 29.5 feet.

^d Required Equalizing Storage is equal to [(PHD - Total Available Source) x 150 minutes].

PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18

(C & F values obtained from Table 3-1 in DOH June 2020 WSDM)

^e Required Standby Storage is the greater of (2*ADD less multi-source credit) or (200 gallons per ERU).

^f Required Fire Flow Storage = 5,000 gpm x 4 hours.

^g Total required storage greater than 30 psi is equal to the total of operational and equalizing storage.

^h Total required storage greater than 20 psi is equal to the total of operational, equalizing, and the greater of either standby or fire flow storage.

ⁱ The storage volume available in existing reservoirs at 30 and 20 psi is based on the elevation of the highest customer (312 feet)

^j Maximum ERUs served by Available Storage.

5.0 Distribution System Hydraulic Modeling

This section describes distribution system hydraulic modeling that updates the modeling completed as part of the 2015 WSP.

5.1 Model Updates

Since the completion of the 2015 WSP, the City has actively maintained the City's InfoWater hydraulic model of the City distribution system. This has included updating demand allocation, extended period simulation (EPS) validation, and annual updates to piping to reflect system improvements. The City actively uses the hydraulic model to identify potential improvements to address deficiencies, validate the designs of piping improvement projects, and answer operational questions. The model is also used to determine estimates of available fire flow throughout the system.

For this Limited WSP Update, the model was further updated with the 2022, 2026, and 2036 demands discussed in Section 2.3. The average water consumption by meter for 2020 and 2021 was spatially allocated in the model using the InfoWater Demand Allocator module. Non-revenue consumption was assumed to be equally divided among all water meters. The Demand Allocator module allocates individual meter demands to the junction nodes in the model. All model junctions are then multiplied by the same factor so that the total system demand matches the forecasted demand for each forecast year.

The model was also updated to include the planned piping improvement projects for 2022 through 2026. For 2022 model runs, it is assumed that the City's 2022 Piping Improvement Project is in place as well as having the Canyon Line, the 16-inch transmission pipe along East Mercer Way, being fed from the Pumped 492 pressure zone instead of directly from SPU—a change planned as part of the City's Booster Chlorination Project. Modeling also includes the recent abandoning of a 12-inch pipe running along 89th Ave SE and SE 44th St.

The 2015 WSP also states in Chapter 3 – Policies that the maximum water velocity in pipes shall not exceed 8 feet per second during maximum day demand except for fire flow conditions, and that new mains will be sized by a hydraulic analysis to provide the required fire flow at a minimum residual pressure of 20 psi and maximum pipeline velocity of 8 feet per second during maximum daily demand conditions. While the velocity constraint does not apply to existing pipes, moving forward new piping will be sized for a maximum pipeline velocity of 10 feet per second during fire flow conditions with maximum day demand.

Distribution system modeling for determining available fire flow was completed based on maintaining 20 psi throughout the distribution system and 5 psi on transmission pipes (pipes without service connections). The analysis of the existing system does not include a velocity constraint.

5.2 Modeling Results

Figures summarizing the modeling results can be found in Appendix D. Figures include the following:

- Figure D-1. 2022 Peak Hour Demand: System Pressure
- Figure D-2. 2036 Peak Hour Demand: System Pressure
- Figure D-3. 2022 Peak Hour Demand with 2022-2026 CIP: System Pressure
- Figure D-4. 2022 Maximum Day Demand: Available Fire Flow
- Figure D-5 2036 Maximum Day Demand: Available Fire Flow
- Figure D-6. 2022 Maximum Day Demand with 2022-2026 CIP: Available Fire Flow
- Figure D-7. 2022 Maximum Day Demand: Fire Flow Deficiency
- Figure D-8. 2036 Maximum Day Demand: Fire Flow Deficiency
- Figure D-9. 2022 Maximum Day Demand with 2022-2026 CIP: Fire Flow Deficiency

All modeling scenarios assume the SPU supply is at the minimum contractual hydraulic grade line elevation. Available fire flow calculations do not include a velocity constraint but apply pressure constraints of maintaining 20 psi throughout the distribution system (unless otherwise noted) and 5 psi for all transmission pipes.

5.2.1 Peak Hour Demand

Figures D-1 through D-3 show system pressures during peak hour demand conditions where operational and equalizing storage is depleted. There is little variation in pressures between the three scenarios (2022, 2036, and 2022 with CIP projects). The figures also show several low pressure areas.

As previously identified in the 2015 WSP, there are two locations where distribution system pressures are below 30 psi. One of these is a low pressure area on Hillside Ln where the pressure

drops to 16 psi. The other is in the Reservoir 398 Zone in the vicinity of the intersection of 74th Ave SE and SE 29th St. The high point in piping at the intersection can be considered transmission pipe as it does not have any service connections at the high point and the pressure drops to 7 psi during peak hour demand conditions. A nearby service connection drops to 11 psi during peak hour demand conditions. All fire flow runs currently ignore the 20 psi pressure constraint for these low pressure areas.

Aside from these two locations, distribution system pressures remain above 30 psi. Other locations indicated as having pressures below 30 psi are transmission mains (locations without service connections) where the required minimum pressure is 5 psi. All transmission pipes within the system maintain pressures above 5 psi.

For the two low pressure locations, the City has communicated the condition with customers at those locations and there is no current plan to implement a capital project to boost pressure to either location. The City will use its hydraulic model to explore potential system operational adjustments to improve this situation.

5.2.2 Available Fire Flow

The fire flow goals of 1,000 gpm for residential, 4,000 gpm for multifamily residential, and 5,000 gpm for commercial were allocated in the model based on adjacent zoning to the model node. The available fire flow was determined during maximum day demand conditions with operational, equalizing, and fire suppression storage depleted. Figures in Appendix D show both the available fire flow as well as the fire flow deficiency as a percent of the fire flow goal.

Modeling scenarios indicate that the majority of the island has sufficient fire flows when compared to fire flow goals except for isolated areas (Figure D-7). These are further improved by the addition of 2022-2026 CIP projects (Figure D-9).

There are two low pressure areas that the 20 psi pressure constraint was not applied as discussed in Section 5.2.1. The low pressure area near the intersection of 74th Ave SE and SE 29th St would limited available fire flows to the northwest corner of the system within the Reservoir 398 and Freeway 282 pressure zones. With a 1,000 gpm fire flow in these areas, the low pressure area drops to approximately 12 psi. The service connections in the low pressure area could potentially be placed in the adjacent First Hill pressure zone with the addition of piping. However, no improvements to resolve the low pressure are currently planned.

The second low pressure area is Hillside Ln within the Intermediate 361 zone. Given a 1,000 gpm fire flow in the area, the pressure at the end of Hillside Ln drops to about 4 psi. The service connections at the end of Hillside Ln could be placed on an individual booster pump; however, no plans are currently in place to boost this area.

In general, the available fire flow exceeds 1,000 gpm at most locations within the island, with no fire flow deficiencies except for smaller isolated areas.

6.0 System Capacity Summary

Table 6-1 summarizes the results of the system capacity analyses and identifies the most limiting factor in the City's delivery capacity. The "source(s)" and "transmission" categories both describe the volume of water that can be delivered through the interties. While the current maximum instantaneous volume that can be delivered through the interties at a guaranteed minimum hydraulic grade line by contract is 3,205 gpm, the hydraulic model predicts a maximum of 4,200 gpm could be delivered through the interties if assuming the same guaranteed minimum hydraulic grade line, which equals 14,234 ERUs when assuming SPU's minimum contractual hydraulic grade line elevation coming onto the island and the reservoirs with depleted operational and equalizing storage.

The City can deliver water to a maximum of 10,861 ERUs, where the SPU contract amount is the limiting factor. All other capacity constraints have sufficient capacity to serve the system beyond the 20-year planning horizon (compare the ERU limits of each component to the demand forecast, Table 2-7).

Table 6-1. System capacity summary and physical capacity determination

Water System Service Connections correlated to ERUs - Current			
Service Classification	Total MDD for the classification, gpd ⁽¹⁾	Total # Connections in the classification ⁽²⁾	ERUs ⁽³⁾
Single-Family	3,141,439	7,261	7,390
Multi-Family	448,749	93	1,056
Commercial	154,945	141	365
Governmental	45,495	42	107
Non- Revenue	986,580	N/A	2,321
Other (identify)			
Total existing ERUs (Single-Family + Multi-Family + Commercial + Governmental + Non-revenue) = 11,239			
Physical Capacity as ERUs			
Water System Component (Facility)		Calculated Capacity in ERUs for each component	
Source(s)		14,234 ⁽⁴⁾	
Treatment		NA ⁽⁵⁾	
Equalizing Storage		71,052 ⁽⁶⁾	
Standby Storage		17,415 (at 20 psi) ⁽⁷⁾	
Distribution		NA ⁽⁵⁾	
Transmission		14,234 ⁽⁴⁾	
Water Rights		10,861 ⁽⁸⁾	
Water System Physical Capacity (ERUs) = 14,234 ⁽⁹⁾ (based on the limiting water system component shown above)			

¹ Based on Table 2-7, for Year 2021.

² Based on Table 2-3, for Year 2021.

³ Calculated using MDD ERU factor (425 gpd). The number of single family connections does not match the number of ERUs because the ERU factors is the average from 2019 - 2021, and therefore does not correspond exactly to the ERU value in 2021.

⁴ Based on maximum hydraulic capacity of the interties to deliver at the 405 hydraulic grade line, estimated in the hydraulic model at 4,200 gpm.

⁵ This category does not apply; water is treated by SPU before it arrives at the interties.

⁶ Based on the maximum ERUs that can be served at 30 psi, as described in the storage analysis (Table 4-3).

⁷ Based on the maximum ERUs that can be served at 20 psi, as described in the storage analysis (Table 4-3).

⁸ Based on water rights described in Table 3-1. The instantaneous contractual volume that can be delivered of 3,205 gpm is equivalent to 10,861 ERUs. However, this is not a physical limitation.

⁹ The second lowest value was chosen because the water rights limitation is not a physical limitation. The transmission capacity of the intertie is the true limiting factor.

7.0 Capital Improvement Plan and Budget Update

The City's proposed Capital Improvement Plan (CIP) describing projects it will implement between 2023 – 2028.

The proposed CIP is displayed in Table 7-1. There are four primary categories of projects in the CIP:

- **Sub-standard water main replacements:** projects to replace water mains that are beyond their design life or require improvement due to system changes since installation. A detailed outline of the projects and their planned schedule is in Appendix E.
- **Asbestos concrete (AC) water main replacement program:** projects to remove AC water mains and replace with approved piping materials. A detailed outline of the projects and their planned schedule is in Appendix E.
- **Water system improvements:** this category is a “catch-all” for standard water system capital projects such as emergency repairs and purchase of new components. Significant projects in this category include reservoir improvements, water meter replacement and launch of the automated metering infrastructure (AMI) system, and generator replacements at key assets.
- **Other water system projects:** this includes ongoing modeling work to maintain knowledge of system status. this also includes a feasibility and assessment phase for developing the City's emergency well.

The proposed CIP Plan is expected to be adopted by Mercer Island City Council in November 2022.

Identification and prioritization of future pipeline projects is an ongoing effort related to water modeling updates and fire flow analyses. When priority projects are identified through hydraulic modeling, they will be added to the CIP and coordinated with other utility and street projects as appropriate.

Table 7-1. City of Mercer Island Water System Capital Improvement Plan, 2023 – 2028

	2023	2024	2025	2026	2027	2028	Total	Description
SUB-STANDARD WATER MAIN REPLACEMENTS								
2023 Water System Improvements (First Hill, NMW, SE 37th PI, SE 41st, & SE 42nd PI)	\$4,684,000						\$4,684,000	7,720 LF of 4" and 6" CI water mains
2024 Water System Improvements (SE 47th, 86th Ave SE, SE 59th, SE 72nd PI and stub out at three intersections)	\$373,000	\$2,082,000					\$2,455,000	3,458 LF of 4", 6", and 8" CI water mains (and 3 watermain connections with stub-outs)
2025 Water System Improvements - No work							\$0	
2026 Water System Improvements (82nd Ave SE, Forest Ave SE, and W Mercer PI)			\$89,000	\$498,000			\$587,000	825 LF of 4" CI water mains
2027 Water System Improvements (south end in Avalon neighborhood)				\$352,000	\$1,970,000		\$2,322,000	3,360 LF of 4" and 6" CI water mains
2028 Water System Improvements (south Town Center and north of P & R)					\$443,000	\$2,475,000	\$2,918,000	4,225 LF of 6" and 8" CI water mains
AC (ASBESTOS CEMENT) WATER MAIN REPLACEMENT PROGRAM								
2023 AC Water Main Replacement (No work)							\$0	
2024 AC Main Replacement (SE 40th, Greenbrier Ln, Gallagher Hill Rd, SE 36th, Holly Hill Rd, 90th Ave SE, and SE 61st)	\$479,000	\$2,680,000					\$3,159,000	4,346 LF of 4", 6" and 10" AC water mains
2025 AC Main Replacement (Upper Mercerwood, 91st Ave SE, 92nd Ave SE, SE 42nd, SE 43rd, & SE 44th St)		\$1,040,000	\$5,822,000				\$6,862,000	9,441 LF of 4" and 6" AC water mains
2026 AC Main Replacement (3800 block EMW, 7900 block SE 67th, and adjacent 80th Ave SE & SE 70th St)			\$451,000	\$2,529,000			\$2,980,000	4,099 LF of 4", 6" and 8" water mains
2027 AC Water Main Replacement (Lower Mercerwood)				\$576,000	\$3,227,000		\$3,803,000	5232 of 6" AC watermains and 2" CI water mains
2028 AC Water Main Replacement (SE 40th to SE 36th and 97th Ave to EMW)					\$289,000	\$1,616,000	\$1,905,000	2,621 LF of 10" AC water mains
WATER SYSTEM IMPROVEMENTS								
PRV Stations Replacement	\$2,025,000		\$395,000	\$2,025,000		\$395,000	\$4,840,000	
Street-Related Water System Improvements	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$900,000	
Emergency Water System Repairs	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$900,000	
Water System Components	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$300,000	

Table 7-1. City of Mercer Island Water System Capital Improvement Plan, 2023 – 2028

	2023	2024	2025	2026	2027	2028	Total	Description
SCADA System Replacement (Water)	\$75,000						\$75,000	Contingency in case project extends into 2023
Meter Replacement Implementation	\$3,192,000	\$3,192,000					\$6,384,000	Replace all water meters to AMI meters
Reservoir Generator Replacement	\$1,495,000						\$1,495,000	Replace and relocate emergency generator
Reservoir Pump Replacement	\$540,000	\$540,000					\$1,080,000	Replace/upgrade 5 pumps and add 2 smaller pumps. Reservoir Generator Replacement needs to occur first
Water Reservoir Improvements	\$2,805,000	\$2,750,000					\$5,555,000	South tank construction, then North tank construction
First Hill Generator Replacement	\$400,000	\$400,000					\$800,000	Generator replacement, construction
Other Water System Projects								
Water Model Updates/Fire Flow Analysis	\$15,000	\$50,000	\$15,000	\$50,000	\$15,000	\$50,000	\$195,000	Model updates and fire flow analysis every two years, & additional modeling after construction/improvements
Emergency Well Phase II - Feasibility & Assessment		\$45,000					\$45,000	
TOTAL	\$16,433,000	\$13,129,000	\$7,122,000	\$6,380,000	\$6,294,000	\$4,886,000	\$54,244,000	

8.0 Budget Update

This section describes information regarding the City's budget planning that is new relative to that presented in the 2015 WSP.

In 2006, the Utility Board reviewed and updated the fiscal policies for the Water Fund. The Board recommended: (1) Increasing the operating reserve from 75 days to 90 days, and (2) Creating a capital contingency reserve of 1% of original asset value. These reserve policy changes were adopted as part of the 2006 water rate study. In 2016, the Utility Board reviewed and updated the Water Fund's fiscal policies again to increase the rate funding for capital reinvestment from \$2,800,000 to \$3,900,000 over a six-year period. The Financial Policies are detailed in the City of Mercer Island's biennial budget.

Table 8-1 presents a financial summary of the water utility's operating revenues and expenses from 2015 through 2021. During this period rate increases averaged 7.54%, contributing to the increasing fund balance in the Water Fund. Total revenues (excluding debt proceeds and the sale of fixed assets) increased from \$7.5 million in 2015 to \$10.0 million in 2021. Total expenses, which include personnel, materials, supplies, water purchases from Seattle Public Utilities and rate funded capital outlays, have ranged from a low of about \$6.1 million in 2017 to a high of about \$8.3 million in 2021.

Table 8-1. Water System Revenue and Expense Summary, 2015 – 2021

Year Ending	2021	2020	2019	2018	2017	2016	2015
Beginning Working Capital	\$ 13,110,251	\$ 10,918,426	\$ 8,566,636	\$ 6,224,479	\$ 3,584,047	\$ 2,632,766	\$ 2,187,649
Revenue							
Water Service	\$ 9,779,482	\$ 8,799,591	\$ 8,232,322	\$ 8,283,281	\$ 7,874,969	\$ 7,181,664	\$ 6,726,416
Conservation Surcharge	33,304	27,494	26,807	34,269	35,248	30,716	36,930
Special Service Fees	17,370	20,550	41,045	41,350	48,495	32,000	42,525
Meter Installations	(54,977)	578,543	87,246	38,356	76,798	100,000	114,470
Connection Fees	190,362	141,186	235,144	261,178	469,641	153,226	395,314
Interest on Investments	31,760	118,331	348,755	192,114	82,006	7,615	8,676
Leases of Public Cell Towers	29,195	29,195	29,195	29,195	27,320	27,320	27,320
Sale of Fixed Assets	-	-	-	-	-	-	-
Debt Proceeds	-	-	-	-	-	-	-
Transfer from Other Funds	-	-	-	142,168	134,182	122,451	121,448
Other Revenues	3,936	5,742	8,214	21,886	16,282	-	31,745
Total Revenue	\$ 10,030,432	\$ 9,720,631	\$ 9,008,728	\$ 9,043,797	\$ 8,764,941	\$ 7,654,991	\$ 7,504,843
Expenses							
Operating Expense	\$ 3,346,985	\$ 3,794,589	\$ 2,767,798	\$ 2,886,589	\$ 2,809,123	\$ 2,548,718	\$ 2,497,110
Water Purchases	2,222,931	2,016,364	1,922,076	1,993,442	1,998,695	2,010,226	2,079,865
Water Purchases-Settlement							
Water Conservation	-	-	-	2,000	-	-	-
Debt Service	106,969	70,000	108,195	110,309	107,272	109,072	105,597
Rate Funded Capital Outlays	2,702,585	1,647,854	1,858,870	1,709,299	1,209,419	2,035,693	2,377,155
Total Expenses	\$ 8,379,470	\$ 7,528,807	\$ 6,656,938	\$ 6,701,640	\$ 6,124,508	\$ 6,703,710	\$ 7,059,727
Net Increase (Decrease) in Working Capital	\$ 1,650,962	\$ 2,191,825	\$ 2,351,790	\$ 2,342,157	\$ 2,640,432	\$ 951,281	\$ 445,117
Ending Working Capital	\$ 14,761,213	\$ 13,110,251	\$ 10,918,426	\$ 8,566,636	\$ 6,224,479	\$ 3,584,047	\$ 2,632,766
Overall Rate Increase:	5.25%	6.50%	6.50%	5.30%	5.50%	10.90%	12.80%

No debt proceeds were received during this period. Debt service expenses are related to the debt proceeds of \$1,519,771 that were received in 2011 to fund the construction of Water System Improvements on First Hill. This debt is in the form of LTGO bonds which will be paid off in 2030.

Table 8-2 (Residential Bimonthly Water Rates) and Table 8-3 (Non- Residential Bimonthly Water Rates) present the adopted water rates for 2022 for the City. In 2022, rates will increase an average of 5.25% over 2021. Table 8-4 (Meter Equivalents and Fixed Charges) provides further detail on the fixed charges portion of the rates shown in Table 8-2 and Table 8-3.

Table 8-2. Residential Bimonthly Water Rates

Class	Fixed Charge	Volume Charge			
	Per Meter Equivalent*	Block 1 (0-10 ccf)	Block 2 (11-20 ccf)	Block 3 (21-30 ccf)	Block 4 (31+ ccf)
Single Family Residential	\$40.85	\$4.85	\$8.20	\$9.85	\$13.25
Low-Income Residential	\$40.85	\$1.21	\$2.05	\$2.46	\$3.31
Conservation Surcharge**				\$0.10	\$0.30
Class	Fixed Charge	Volume Charge			
	Per Meter Equivalent*	All Use (0-99+ ccf)			
Multi-Family Residential	\$40.85	\$7.19			

* Meter Equivalents are summarized in a following table. The total meter equivalent charge is based on the meter size and is calculated by multiplying the meter equivalents by the per meter equivalent rate.

** A surcharge of \$0.10 per ccf for single family residential bimonthly usage between and including 21 and 30 ccf, and \$0.30 per ccf for bimonthly usage in excess of 30 ccf, shall be included in the rates as an incentive to conserve and may be used to fund conservation education. This surcharge shall apply on consumption of water from June 1 through September 30.

Table 8-3. Non-Residential Bimonthly Water Rates

Class	Fixed Charge	Volume Charge	
	Per Meter Equivalent*	Winter** (All Usage)	Summer** (All Usage)
Commercial/Public	\$40.85	\$4.46	\$11.09
Irrigation	\$40.85	\$6.68	\$14.04

* Meter Equivalents are summarized in a following table. The total meter equivalent charge is based on the meter size and is calculated by multiplying the meter equivalents by the per meter equivalent rate.

** Seasons: Summer is June 1 through September 30; rest of year is winter.

Table 8-4. Meter Equivalents and Fixed Charges

Meter Size	Meter Equivalent	Fixed Charge
3/4 Inch or Smaller	1.0	\$40.85
1 Inch	2.5	\$102.13
1-1/2 Inch	5.0	\$204.25
2 Inch	8.0	\$326.80
3 Inch	16.0	\$653.60
6 Inch	50.0	\$2,042.50

Table 8-5 presents the forecasted annual water revenues, expenses and fund balances, based on the adopted 2021-2022 biennial budget, water consumption to date, and forecasted changes to the budget.

Table 8-5. Water System Revenue and Expense Summary, 2021 – 2022

Year Ending	2021 Actual	2022 Forecast
Beginning Working Capital	\$ 13,110,251	\$ 14,761,213
Revenue		
Water Service	\$ 9,779,482	\$ 8,895,900
Conservation Surcharge	33,304	20,000
Special Service Fees	17,370	40,000
Meter Installations	(54,977)	50,000
Connection Fees	190,362	158,000
Interest on Investments	31,760	157,100
Lease of Public Cell Towers	29,195	29,000
Sale of Fixed Assets (Property)	-	-
Debt Proceeds	-	-
Transfer from Other Funds	-	-
Other Revenues	3,936	-
Total Revenue	\$ 10,030,432	\$ 9,350,000
Expenses		
Operating Expense	\$ 3,346,985	\$ 4,327,496
Water Purchases	2,222,931	2,415,000
Debt Service	106,969	108,263
Rate Funded Capital Outlays	2,702,585	12,790,955
Total Expenses	\$ 8,379,470	\$ 19,641,714
Net Increase (Decrease) in Working Capital	\$ 1,650,962	\$ (10,291,714)
Ending Working Capital	\$ 14,761,213	\$ 4,469,499

Table 8-6 presents a projection of the annual utility revenues, expenses, and fund balances for the next six years, based on the 2021-2022 adopted biennial budget and changes expected to occur in the various categories over the subsequent six-year period as a result of new customers, general inflation, and other related factors. This type of forecast is routinely used by Finance staff to develop rate adjustment proposals and to assess the impact of changing budget assumptions on future rate requirements.

Some key assumptions used to forecast future annual revenues and expenses that appear in Table 8-6 are outlined below:

1. Water consumption is expected to remain at current levels for the period of 2023-2028. This is based on a historical average of less than a 1% decline over the past 12 years. While the demand forecast suggests modest growth through the 20-year timeframe, this assumption is appropriate for the financial analysis through 2028.
2. Wholesale water costs for 2023 through 2028 are expected to increase by 5% per year. Overall, the cost of purchased water is expected to increase about 24% over the six-year period.
3. Personnel labor costs are expected to increase annually by 2% while benefit costs are anticipated to increase by about 6.5% per year for the 6-year period of 2023-2028. Overall, personnel costs are expected to increase about 22.7% over the six-year period.
4. Other maintenance and operations expenses will increase annually by 4.0%, based on historical trends and projected increases in the Seattle Consumer Price Index (CPI-U). An increase of 26.5% is expected over the 6-year period.
5. The average annual water consumption is 1,045,100 ccf based on water purchases from Seattle Public Utilities in 2020. With water losses of close to 10%, water sales to Mercer Island customers are estimated at an average of 940,600 ccf.
6. Rate funding for capital reinvestment is based on the capital reinvestment project plan for 2023-2028. Details of the capital funding needs for anticipated system improvements are detailed in Chapter 7.

The City of Mercer Island has prudently issued little debt over the years, maintaining a sizable debt capacity. The City has consistently followed a conservative fiscal management policy, which is reflected by the high Aa1 rating from Moody's Investors Service. The City plans to issue debt in 2023 to support the multiple high-cost projects required to repair aging infrastructure that has a 20–30-year lifespan. Because of the City's exemplary debt status, the Utility can expect the proposed bond issued to receive a similarly favorable credit rating and, therefore, to sell at lower interest rates than would otherwise be possible.

Table 8-6. Water System Revenue and Expense Summary, 2023 – 2028

Year Ending	2023	2024	2025	2026	2027	2028
Beginning Working Capital	\$4,469,499	\$4,077,321	\$3,624,563	\$3,144,557	\$2,652,201	\$2,158,708
Revenue						
Water Service	\$8,272,471	\$8,706,776	\$9,163,881	\$9,644,985	\$10,151,347	\$10,684,293
Conservation Surcharge	20,000	20,000	20,000	20,000	20,000	20,000
Special Service Fees	40,000	40,000	40,000	40,000	40,000	40,000
Meter Installations	50,000	50,000	50,000	50,000	50,000	50,000
Connection Fees	161,160	164,383	167,671	171,024	174,445	177,934
Interest on Investments	26,015	10,512	11,430	19,376	24,923	46,409
ARPA Funding	649,000	-	-	-	-	-
Total Revenue	\$8,569,646	\$8,991,671	\$9,452,983	\$9,945,386	\$10,460,714	\$11,018,635
Expenses						
Operating Expense	\$3,257,831	\$3,361,547	\$3,470,062	\$3,583,431	\$3,701,725	\$3,825,509
Water Purchases	2,535,755	2,662,542	2,795,669	2,935,453	3,082,226	3,236,337
Debt Service	418,239	420,339	417,258	418,858	420,258	416,458
Rate Funded Capital Outlays	2,750,000	3,000,000	3,250,000	3,500,000	3,750,000	3,900,000
ARPA Funded Capital Outlays	649,000	-	-	-	-	-
Total Expenses	\$8,961,824	\$9,444,428	\$9,932,989	\$10,437,742	\$10,954,208	\$11,378,303
Net Increase (Decrease) in Working Capital	\$(392,178)	\$(452,757)	\$(480,006)	\$(492,356)	\$(493,493)	\$(359,668)
Ending Working Capital	\$4,077,321	\$3,624,563	\$3,144,557	\$2,652,201	\$2,158,708	\$1,799,040
<i>Target - 90 days Operating Reserve</i>	<i>803,301</i>	<i>828,875</i>	<i>855,632</i>	<i>883,586</i>	<i>912,754</i>	<i>943,276</i>
<i>Target - 1% Asset Value Capital Reserve</i>	<i>373,023</i>	<i>396,278</i>	<i>420,982</i>	<i>447,227</i>	<i>475,108</i>	<i>504,727</i>
Available Working Capital	\$2,900,997	\$2,399,411	\$1,867,943	\$1,321,388	\$770,846	\$351,036
Forecasted Rate Increase:	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%

9.0 Appendices

Appendix A. Local Government Correspondence and Response to Comments

Appendix B. State Environmental Policy Act Documentation

Appendix C. Public Meeting Documentation

Appendix D. Hydraulic Modeling Figures

Appendix E. Capital Improvement Program Supplemental Tables

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Appendix A. Local Government Correspondence and Response to Comments

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Local Government Consistency Determination Form

Water System Name: City of Mercer Island PWS ID: 53640 5

Planning/Engineering Document Title: Limited WSP Update Plan Date: 6/16/2022

Local Government with Jurisdiction Conducting Review: Mercer Island Community Planning and Development

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.	Page 1, second paragraph	Yes
b) The <u>growth projection</u> used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Page 4, section 2.2	Yes
c) For <u>cities and towns that provide water service</u> : All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .	Page 1, second paragraph	Yes
d) <u>Service area policies</u> for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	Page 1, second paragraph	Yes
e) <u>Other relevant elements</u> related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Page 1, second paragraph	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

/S/ Adam Zack

Signature

Adam Zack, Senior Planner, City of Mercer Island

Printed Name, Title, & Jurisdiction

06/23/2022

Date

Local Government Consistency Determination Form

Water System Name: City of Mercer Island PWS ID: 53640 5

Planning/Engineering Document Title: Limited WSP Update Plan Date: 6/16/2022

Local Government with Jurisdiction Conducting Review: King County

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.	Page 1	Yes
b) The <u>growth projection</u> used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Page 4	Yes
c) For <u>cities and towns that provide water service</u> : All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .	Page 1	Yes
d) <u>Service area policies</u> for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	Page 1	Yes
e) <u>Other relevant elements</u> related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Page 1	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Jae Hill
Signature
Jae Hill, Chair of the King County UTRC

8/24/2022
Date

Printed Name, Title, & Jurisdiction



STATE OF WASHINGTON
DEPARTMENT OF HEALTH

NORTHWEST DRINKING WATER REGIONAL OPERATIONS

20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

August 24, 2022

Allen Hunter
allen.hunter@mercergov.org

Subject: Mercer Island, City of, ID#53640
King County
Water System Plan Limited Update
Submittal #22-0711

Dear Mr. Hunter:

The City of Mercer Island (the City) Water System Plan (WSP) update/approval date extension request was received in this office on July 7, 2022 and has been reviewed.

Information contained in this submittal supports extending the approval period of the City's current WSP until **July 13, 2026**.

Prior to DOH approval of this extension, I will need the following:

Documentation that the WSP extension was adopted by the City's elected governing body.

We understand this is scheduled to occur on September 20, 2022.

Regulations establishing a schedule for fees for review of planning, engineering and construction documents have been adopted (WAC 246-290-990). Please note that we have included an invoice in the amount of **\$ 1349.00** for the review of the Water System Plan update extension request. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, and P.O. Box 1099, Olympia, WA 98507-1099**.

Thank you for your submittal. If you have any questions or wish to check our records, please contact me at the number listed below.

Sincerely,

Richard Rodriguez
Regional Planner
Northwest Drinking Water Operations
(253) 395-6771

cc: Brietta Carter, DOH
Jae Hill, King County UTRC
Doug Wood, WSDOE- NWRO
Rona Linn, City of Mercer Island
David Kuhns, P.E., HDR
Dan Graves, HDR



****City of Mercer Island responses to comments in highlighted bold text.**

August 10, 2022

Rona Lin, Utilities Engineer
City of Mercer Island, Public Works
(emailed rona.lin@mercergov.org)

Re: Review of Mercer Island Water System Plan

Dear Rona,

Thank you for the opportunity for Seattle Public Utilities (SPU) to review the City of Mercer's draft Limited Water System Plan Update. Our comments are provided below.

The nature of our review was limited to content related to SPU contracts, infrastructure, and programs. For typical water system plans, this translates to the following topics: wholesale water supply contract, SPU supply stations, demand forecast, water quality, and water conservation. However, since your draft water system plan is a "limited update", this was narrowed to the following topics: wholesale water supply contract, SPU supply stations, and demand forecast. SPU's comments reflect reviews of your water system plan by the following SPU staff: Terri Gregg, Eugene Mantchev, Elizabeth Garcia, and myself.

1. **Water Quantities in Wholesale Water Supply Contract:** The description of the water quantity in the supply contract is not accurate in a few sections of the water system plan. This is likely an issue of semantics.
 - a. Section 3.0 Water Rights Self-Assessment includes the following text (underline added by SPU for emphasis):

"The self-assessment shows water rights are satisfactory for total annual demands. There are deficiencies in meeting maximum day demands based on the maximum instantaneous volume contractually permitted through the interties in all planning years. The 2015 WSP suggested a likely deficiency in instantaneous capacity in the 20-year planning period. However, growth in recent years has outpaced growth forecast in the 2015 WSP, and instantaneous deficiencies are forecast for all planning horizons. This deficiency is related to the maximum contractual volume currently allowed through the intertie rather than the actual hydraulic capacity possible through the intertie (see Section 6.0 for more detail). As noted in the 2015 WSP, the City will consider updating the supply agreement with SPU to cover these increased demands."

However, the maximum flow rates in the water supply contract are the maximum flow rates guaranteed at the specific hydraulic gradient called out in Exhibit II (see screen shot below), which is somewhat different than an absolute maximum flow rate allowed.

Text has been revised and added to better describe the contract terms. We have noted that the deficiency in the water rights self-assessment is related to the max instantaneous flow guaranteed at the specific hydraulic gradient, not the maximum capacity that can be passed through the intertie. RESOLVED.

EXHIBIT II**CUSTOMARY POINTS OF DELIVERY, MINIMUM HYDRAULIC GRADIENTS, AND
MAXIMUM FLOW RATES OF WATER SUPPLIED**

SECTION XI. METER SERVICE				MINIMUM HYDRAULIC GRADIENT FOR PLANNING PURPOSES AT STATION UPSTREAM OF METER (FEET NAVD-88 Datum)	MAXIMUM FLOW RATE UP TO WHICH THE MINIMUM HYDRAULIC GRADIENT APPLIES (gpm) ⁽¹⁾
LOCATION	STATION NUMBER ⁽¹⁾	PIPELINE SEGMENT NUMBER ⁽¹⁾	SIZE OF METER (IN.)		
SE 43 rd Street & 89 th Ave SE	67	9	12	405	2,685
SE 40 th Street & 97 th Ave SE	68	9	6	405	Back-up service
E MERCER WY & Mercer Island Pipeline right-of-way	171	9	10	405	520
				TOTAL:	3,205

Notes:

- (1) Station and Pipeline Segment Numbers pertain to the demand metering program.
 (2) City of Seattle's estimate of Water Utility's average daily demand for 2020 with a peaking factor of 2.0 for peak day

FULL REQUIREMENTS CONTRACT
CITY OF MERCER ISLAND

Page 33

- b. Section 6.0 System Capacity Summary includes the following text (underline added by SPU for emphasis):

"While the current maximum instantaneous volume that can be delivered through the interties by contract is 3,205 gpm, the hydraulic model predicts a maximum of 4,200 gpm could be delivered through the interties, which equals 14,234 ERUs when assuming SPU's minimum contractual hydraulic grade line elevation coming onto the island and the reservoirs with depleted operational and equalizing storage."

Same as above, the maximum flow rates in the water supply contract are the maximum flow rates guaranteed at the specific hydraulic gradient called out in Exhibit II, which is somewhat different than an absolute maximum flow rate allowed.

Text has been added to the paragraph to clarify that the contract maximum is only related to the guaranteed minimum hydraulic grade line. We also added some text noting that the hydraulic model predicts the maximum of 4,200 gpm can be delivered if assuming the same guaranteed minimum hydraulic grade line. RESOLVED.

- c. Table 3-1 Water Rights Self-Assessment and Interruptible Water Rights infers that the water supply contract contains a maximum annual volume (i.e., a maximum Qa) (see screen shot below; red box added by SPU).

Water Right Permit, Certificate, or Claim #	WFI Source #	Existing Water Rights		Current Source Production				10-Year Forecasted Source Production, 2026				20-Year Forecasted Source Production, 2036			
		Maximum Instantaneous Rate (Qi) (gpm)	Maximum Annual Quantity (Qa) (afy)	Maximum Qi	Current Excess or (Deficiency)	Maximum Qa	Current Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)
G1-28425	S04	400	66.3	225	175	0.37	65.9	225	175	0.37	65.9	225	175	0.37	66
Name of Wholesaling System Providing Water	Quantities Allowed		Expiration Date	Currently Purchased				10-Year Forecasted Purchase (2026)				20-Year Forecasted Purchase (2036)			
	In Contract			Current quantity purchased through intertie				Forecasted quantity purchased through intertie				Forecasted quantity purchased through intertie			
	Maximum Qi	Maximum Qa		Maximum Qi	Current Excess or (Deficiency)	Maximum Qa	Current Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)	Maximum Qi	Future Excess or (Deficiency)	Maximum Qa	Future Excess or (Deficiency)
	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)		Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)	Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)	Instantaneous Flow Rate (gpm)	Instantaneous Flow Rate (gpm)	Annual Volume (gpd)	Annual Volume (gpd)
	1. #67 @ SE 43rd & 89th Ave - SPU	2,684		3,866,468	See totals below										
2. #68 @ SE 40th & 97th Ave - SPU	Zone Backup	1/1/2062													
3. #171 @ Boat Launch - SPU	521	749,011													
TOTALS =		3,205	4,615,479	3,318	(113)	2,444,833	2,170,646	3,213	(8)	2,513,512	2,101,966	3,423	(218)	2,375,844	2,239,635
Interruptible Water Rights: Identify Limitation on any water rights listed above that are interruptible.															
Water Right #	Conditions of Interruption			Time Period of Interruption											
G1-28425	The Emergency Well is an emergency water source and can only be activated when an emergency is declared by Governor, local (government) Incident Response Commander, or other authorized local official(s). Therefore, it is not in use except for the monthly pump exercises.														

However, the water supply contract does not contain a maximum annual volume. We assume Mercer Island calculated the Qa (based on continuous use of the Qi number) in order to have a number to compare to your average day demand for the “excess or deficiency” columns in the table. Perhaps an easily solution would be to leave the Qa number in the table, but add a footnote explaining this.

Correct, the maximum annual volume was calculated as the total annual volume assuming the constant instantaneous rate where the 405 hydraulic gradient is guaranteed. A footnote has been added to explain this. Additionally, this value is represented as an ADD value (gpd) rather than a total Qa for the entire year. RESOLVED.

2. **Demand Forecast:** The total volume of water forecasted for use in 2036 in your water system plan is similar to the one that SPU had projected for Mercer Island in our most recent demand forecast developed in 2017 and documented in SPU’s 2019 Water System Plan.

No response required. RESOLVED.

Thank you again for the review opportunity.

Sincerely,

Kelly O'Rourke

Kelly O’Rourke, Water Conservation Manager
 Julie Crittenden, SPU Water Planning and Program Manager Interim Division Director (emailed)
 Kathy Curry, SPU Wholesale Contracts Manager (emailed)
 Terri Gregg, SPU Wholesale Contracts (emailed)
 Maura Patterson, SPU Drinking Water Planner (emailed)

Appendix B. State Environmental Policy Act Documentation

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CITY OF MERCER ISLAND

9611 SE 36th Street • Mercer Island, WA 98040-3732

(206) 275-7605 • FAX (206) 275-7726 www.mercergov.org

May 5, 2022

Rona Lin
CIP Project Manager
City of Mercer Island
9611 SE 36th Street
Mercer Island, A 98040-3732

Transmitted by email: rona.lin@mercerisland.gov

RE: SEPA Exemption for Water System Plan Extension/Appropriate Level of Planning

Rona:

The City of Mercer Island Community Planning and Development Department ("CPD") has reviewed the scope of work for Water System Plan Extension/Appropriate Level of Planning ("the Project").

Based on CPD's review of the scope, we have determined that the Project is categorically exempt from SEPA review.

A Determination of Nonsignificance (DNS) was issued on June 1, 2015 for the adoption of the 2015 Water System Plan under Project No. SEP15-003. The DNS is attached for reference. The extension of the Water System Plan proposed by the Project will not result in substantive changes respecting use or modification of the environment. Therefore, the 2015 DNS sufficiently addresses the Project.

If you have any questions or need further assistance, I can be reached at 206-275-7717 or via e-mail at tim.mcharg@mercerisland.gov. Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tim McHarg", written over a faint circular background.

Tim McHarg, AICP
Principal Planner

Attachment: DNS, SEP15-003, dated June 1, 2015



STATE ENVIRONMENTAL POLICY ACT (SEPA) DETERMINATION OF NON-SIGNIFICANCE (DNS)

June 1, 2015

Application Nos.: **SEP15-003**

Description of proposal: **An update to the City of Mercer Island's Water System Comprehensive Plan. The comprehensive plan lists projects to be constructed in a 6-year and 20-year program. The projects proposed in the plan will be reviewed as the engineering studies or scopes of work are developed and discussed in the SEPA reviews of the individual projects.**

Proponent: **Rona Lin, Project Engineer, for the City of Mercer Island**

Location of proposal: **The area covered by the Comprehensive Water System Plan serves all of Mercer Island, which covers approximately 6.2 square miles of area, located in Lake Washington, between the cities of Seattle and Bellevue.**

Lead agency: **City of Mercer Island**

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

_____ There is no comment period for this DNS.

✓ _____ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

_____ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by **N/A.**

Responsible Official: **Scott Greenberg, Development Services Director**
City of Mercer Island
9611 SE 36th Street
Mercer Island, WA 98040
Phone: (206) 275-7706
Email: scott.greenberg@mercergov.org

Date: **June 1, 2015**

Signature _____

APPEAL INFORMATION

This decision to issue a Determination of Non-significance (DNS) rather than to require an EIS may be appealed pursuant to Section 19.07 of the Mercer Island Unified land Development Code, Environmental procedures.

✓ _____ Any party of record may appeal this determination to the City Clerk at 9611 SE 36th Street Mercer Island, WA 98040 no later than **5:00 PM on Monday, June 15, 2015** by filing a timely and complete appeal application and paying the appeal fee. You should be prepared to make specific factual objections. Contact the City Clerk to read or ask about the procedures for SEPA appeals. To reverse, modify or remand this decision, the appeal hearing body must find that there has been substantial error, the proceedings were materially affected by irregularities in procedure, the decision was unsupported by material and substantial evidence in view of the entire record, or the decision is in conflict with the city's applicable decision criteria.

_____ There is no agency appeal.

Appendix C. Public Meeting Documentation

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CITY OF MERCER ISLAND

UTILITY BOARD VIDEO MEETING

Tuesday, July 12, 2022, at 5:00 PM

BOARD MEMBERS:

Tim O'Connell, Chair
Stephen Milton, Vice Chair
Stephen Majewski, George Marshall,
Meredith Lehr, William Pokorny, and Will Quantz

LOCATION & CONTACT

Mercer Island Community & Event Center – Zoom Meeting
9611 SE 36th Street | Mercer Island, WA 98040
Phone: 206.275.7706 | www.mercerisland.gov

In compliance with the Americans with Disabilities Act, those requiring accommodation for meetings should notify the Staff Liaison at least 24 hours prior to the meeting at 206.275.7706.

The virtual meeting will be broadcast live on Zoom and recorded and saved on the City Council's [YouTube Channel](#)

Registering to Speak: Individuals wishing to speak live during Appearances will need to register their request with the City Clerk at **206.275.7793** or email the [City Clerk](#) and leave a message before 4 PM on the day of the Utility Board meeting. Please reference "Appearances" on your correspondence and state if you would like to speak either in person at Mercer Island Community & Event Center or remotely using Zoom. Each speaker will be allowed three (3) minutes to speak.

Join by Telephone at 5:00 PM: To listen to the meeting via telephone, please call **253.215.8782** and enter Webinar ID **869 0002 8763** and Password **363425** when prompted.

Join by Internet at 5:00 PM: To watch the meeting over the internet via your computer, follow these steps:

- 1) Click [this link](#)
- 2) If the Zoom app is not installed on your computer, you will be prompted to download it.
- 3) If prompted for Webinar ID, enter **869 0002 8763**; Enter Password **363425**

Join in person at Mercer Island Community & Event Center at 5:00 PM: Mercer Island Community & Event Center
8236 SE 24th Street.

CALL TO ORDER & ROLL CALL, 5:00 PM

PUBLIC APPEARANCES

REGULAR BUSINESS

1. Approval of Minutes for the June 14, 2022, Regular Video Meeting
Recommended Action: Approve Minutes of June 14, 2022, Utility Board Meeting.
2. 2023-2024 Utility CIP Preview
Recommended Action: Discuss and provide feedback.
3. ALOP Water System Plan Update
Recommended Action: Discuss and provide feedback.

OTHER BUSINESS

4. 2022 Workplan
5. Next Meeting September 13, 2022 (No Meeting in August)

ADJOURNMENT

Agenda

UTRC Regular Meeting

Wednesday August 17, 2022

2:30-4:00pm

[Via Teams app](#) or join by phone

[+1 425-653-6586,,446134177#](#)

Phone Conference ID: 446 134 177#

Meeting will be recorded*

-
1. Review and approve agenda (All)
 2. Review and approve the April 20, 2022 regular meeting minutes (All)
 3. Status of pending plans (Jae)
 - a. Draft plans expected—Bothell Water System Plan
 - b. Final plans expected—Renton Wastewater Plan, City of Snoqualmie Sewer Plan, City of Snoqualmie Water Plan
 4. Appeals Status (Jae)
 - a. Pending
 - i. Seago (KCWD 19/Heights)
 - b. Filed
 - i. n/a
 - c. On Hold/Withdrawn
 - i. Williamson (Covington)
 - ii. Singh/Chohan (Covington)
 5. PAO Report (Jina)
 6. Franchise Updates (Terri/Michael)
 - a. City of Issaquah
 - b. City of Shoreline
 - c. City of Kirkland
 7. Stevens Pass Water System Plan, Final (Jae)
 8. District 19 Water System Plan, Final (Jae)
 9. Mercer Island Water Plan, Extension (Jae)
 10. Lake Meridian Water System Plan, Draft (Jae)
 11. Northeast Sammamish Sewer Plan, Draft (Jae)

*The public portions of the meeting will be recorded to assist with developing the minutes only. The minutes are the official record of UTRC action; any recordings are transitory documents and will be destroyed immediately after the official minutes are approved at the next UTRC meeting.



King County
Utilities Technical Review Committee
Department of Local Services
201 S Jackson Street
KSC-LS-0815
Seattle, WA 98104
www.kingcounty.gov

City of Mercer Island, Water System Plan Extension

The City of Mercer Island (“City”) has submitted a request for a Water System Plan (“Plan”) Extension by the King County Utilities Technical Review Committee (UTRC). This will extend the previously-approved 2016 plan to the full ten years recently allowable under state law with a renewal date of July 12, 2026. Extensions for non-expanding systems are reviewed and approved by the UTRC under King County Code 13.24.010.D and RCW 57.16.010 via KCC 13.24.020.

The City’s service area is coterminous with the island, and there is no unincorporated or rural area, however the City is a contributor to the King County Regional Wastewater System and therefore must receive local government consistency for water and sewer plans from the County under King County Code 13.24.010.A.

Staff has reviewed the extension request for local statutory requirements as well as impacts on service to residents in the unincorporated county—of which there are none.

On August 17, 2022, the UTRC held an open public meeting and deliberated the extension request, and agreed to the suitability of the extension.

Recommended motion: I move that the UTRC approves the extension and directs the Chair to sign the State-required Local Government Consistency Form.

Jae Hill, Chair of the King County Utility Technical Review Committee

8/24/2022

Date



2022 PLANNING SCHEDULE

Please email the City Manager & City Clerk when an agenda item is added, moved, or removed.

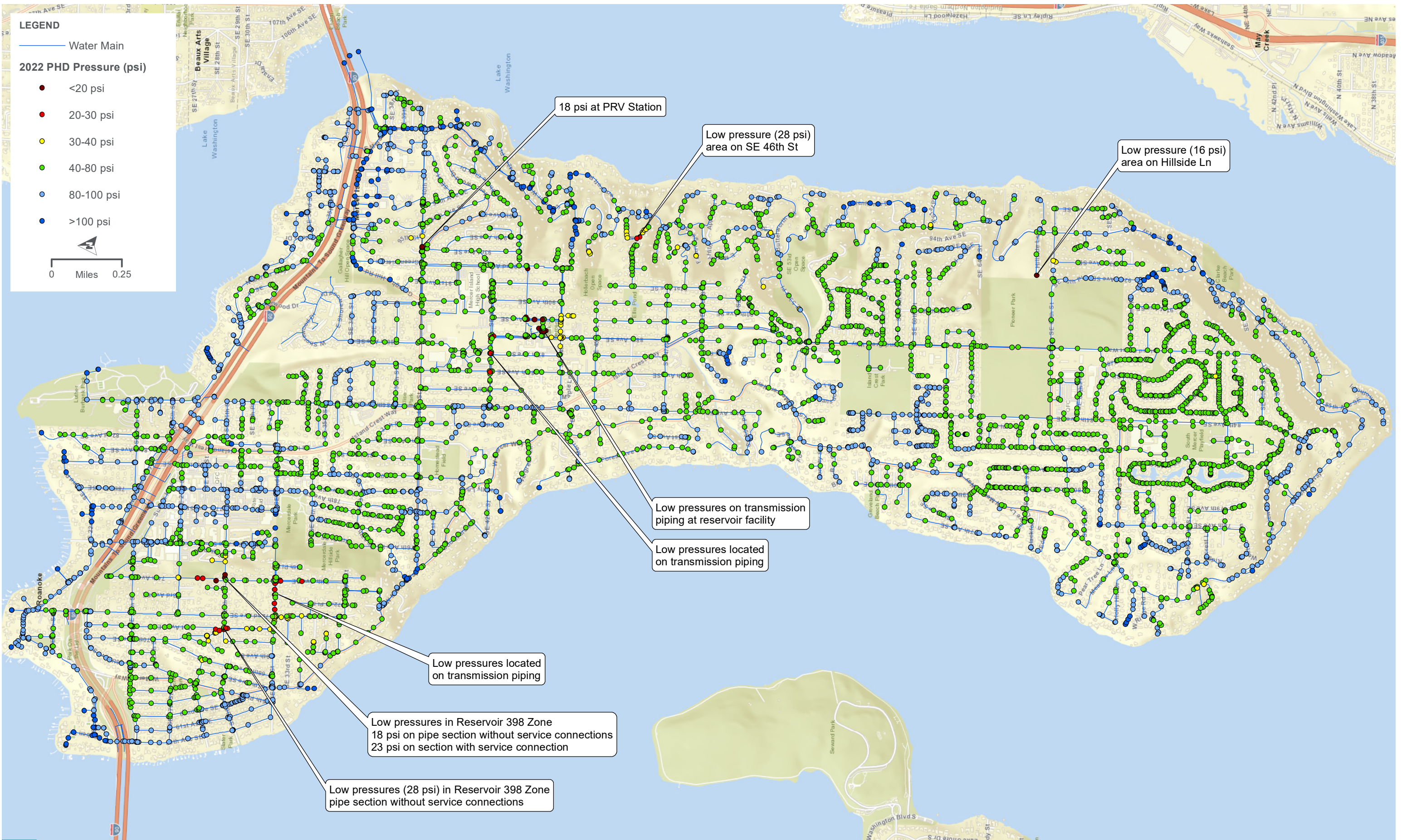
NOTE - Regular Meetings begin at 5:00 pm from June 16, 2020, through December 31, 2022.
Items are not listed in any particular order. Agenda items & meeting dates are subject to change.

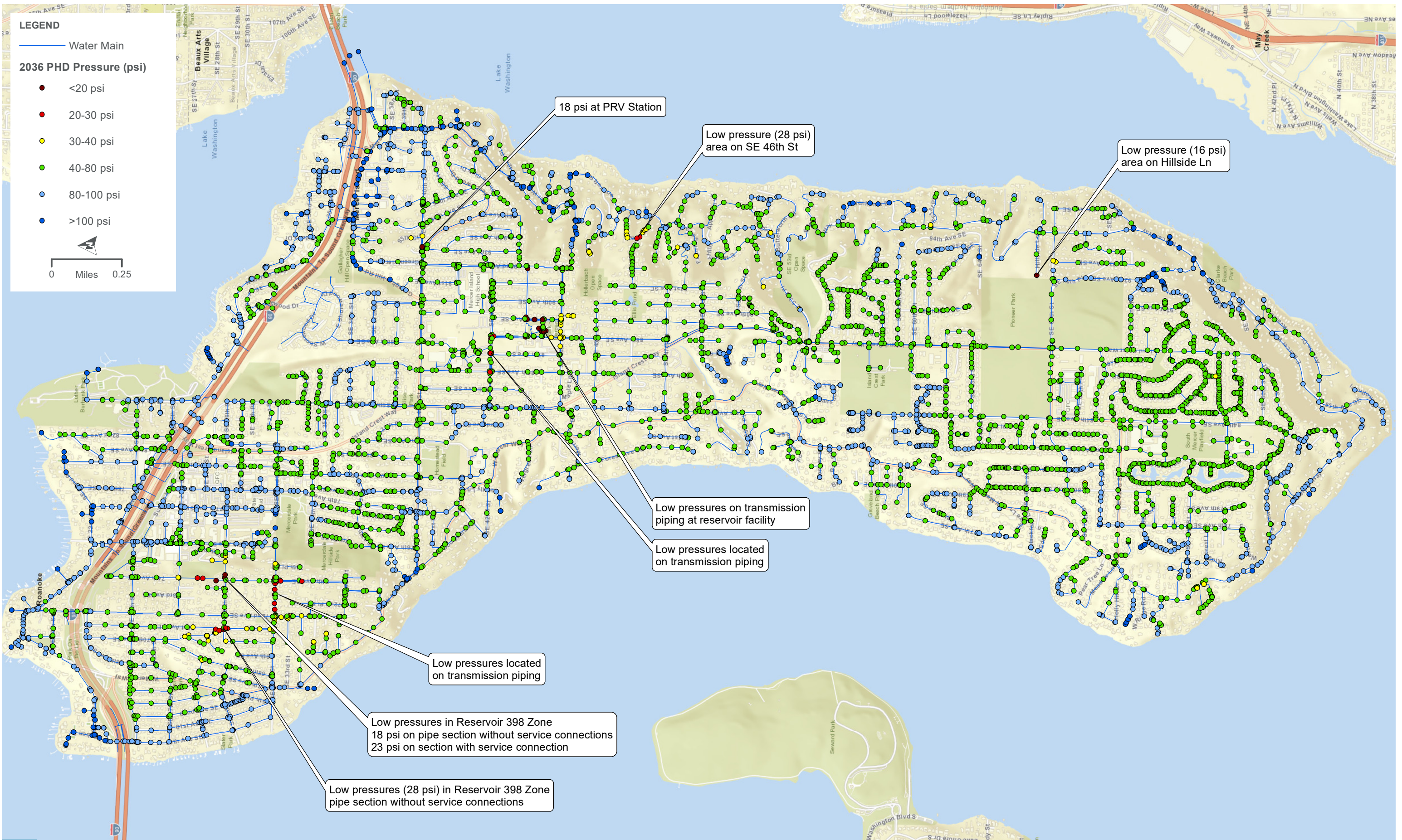
SEPTEMBER 20, 2022			DD	FN	CA	Clerk	CM
ABSENCES:			9/9	9/12	9/12	9/13	9/13
ITEM TYPE TIME TOPIC					STAFF		
STUDY SESSION							
90	Parliamentary Procedure Training				Ann Macfarlane, Jurassic Parliament		
SPECIAL BUSINESS							
CONSENT AGENDA							
--	AB 6158: September 9, 2022 Payroll Certification				Nicole Vannatter		
--	AB 6134: Mayor’s Day of Concern for the Hungry, Proclamation No. 294				Mayor Nice/Tambi Cork		
--	AB 6136: Peace Day on Mercer Island, Proclamation No. 296				Mayor Nice/Andrea Larson		
--	AB 6149: Opioid Distributors Washington Settlement				Jessi Bon/Bio Park		
--	AB 6150: Engstrom Open Space Title Transfer to Open Space Conservancy Trust (Resolution No. 1631)				Bio Park/Alaine Sommargren		
--	AB 6151: 2023 Water System Improvements Design Budget Appropriation				Jason Kintner/Patrick Yamashita/George Fletcher		
--	AB 6152: Interlocal Agreement South Correctional Entity (SCORE) Jail				Ed Holmes/Jeff Magnan/Dominic Amici		
--	AB 6157: Letter of Support for the GMA Periodic Update Grant				Jeff Thomas/Alison Van Gorp		
REGULAR BUSINESS							
10	AB 6153: Board & Commission Vacancy Appointment (Resolution No. 1632)				Mayor Nice/Deputy Mayor Rosenbaum/Andrea Larson		
60	AB 6154: 2022 Limited Water System Plan Update (Resolution No. 1633)				Jason Kintner/Patrick Yamashita/Rona Lin		
30	AB 6155: ARCH 2023 Budget and Work Plan [Lindsay Masters is available after 7:00pm, please place later in agenda]				Jeff Thomas/Alison Van Gorp/Lindsay Masters		
60	AB 6138: 2022 CIP Project Update & 2023-2028 CIP Preview				Jason Kintner		
EXECUTIVE SESSION							

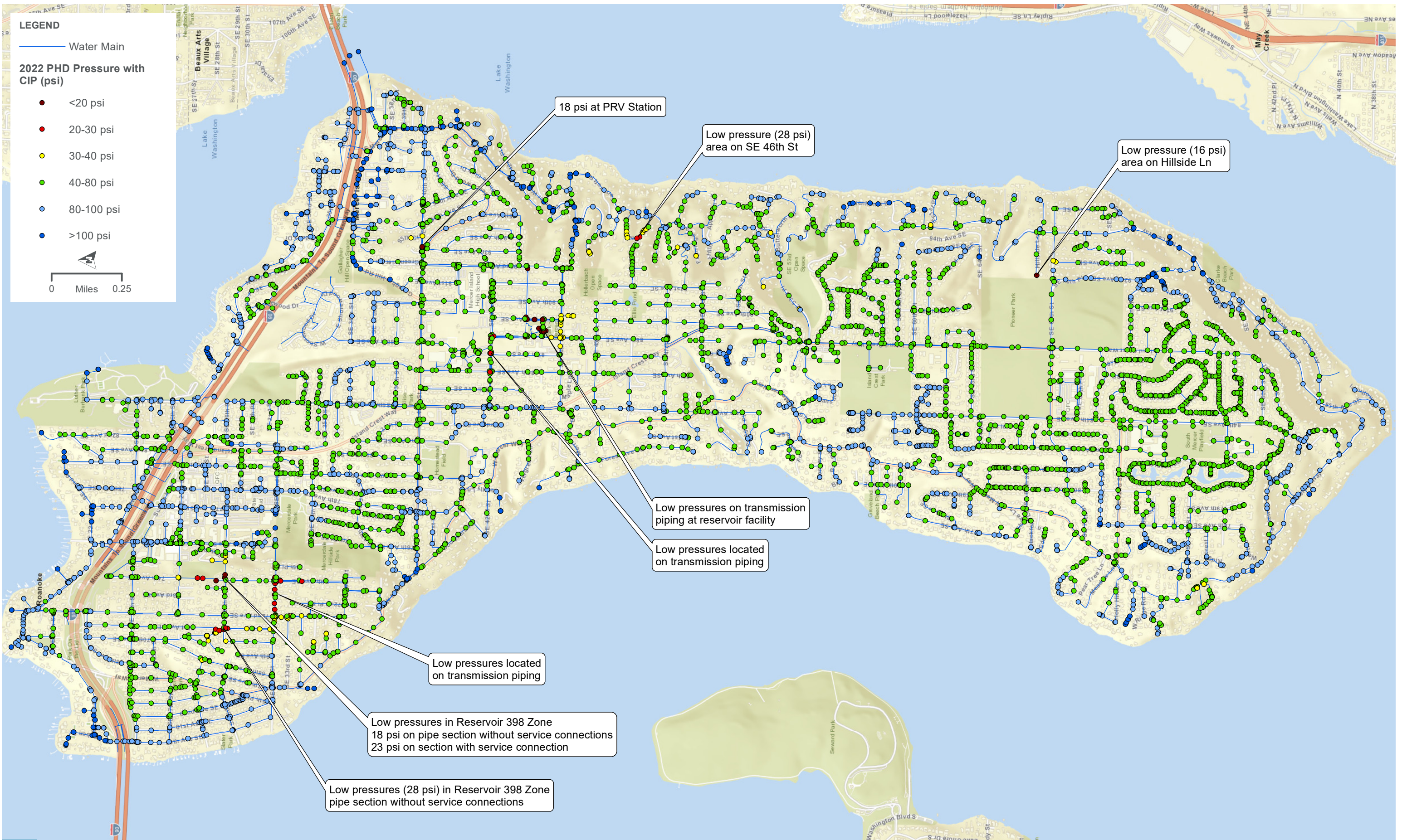
OCTOBER 3, 2022 SPECIAL MEETING				DD	FN	CA	Clerk	CM
ABSENCES:				9/22	9/23	9/23	9/26	9/26
ITEM TYPE TIME TOPIC						STAFF		
STUDY SESSION								
60	AB xxxx: Town Center Parking Study Presentation (Draft Final Report)					Sarah Bluvass/Jason Kintner/ Jeff Thomas/Ed Holmes		
SPECIAL BUSINESS								

Appendix D. Hydraulic Modeling Figures

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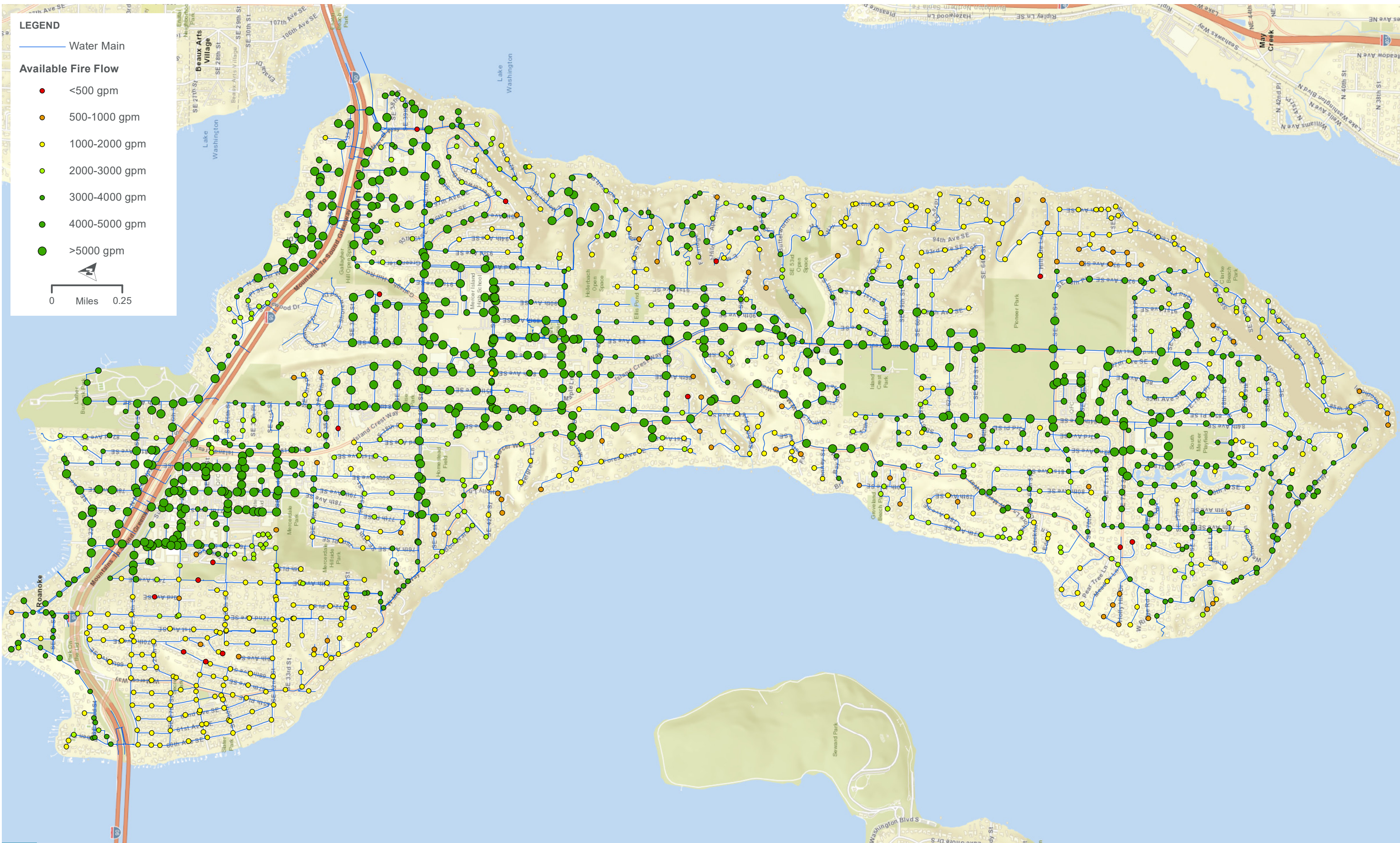




**2022 PEAK HOUR DEMAND WITH 2022-2026 CIP
SYSTEM PRESSURE**

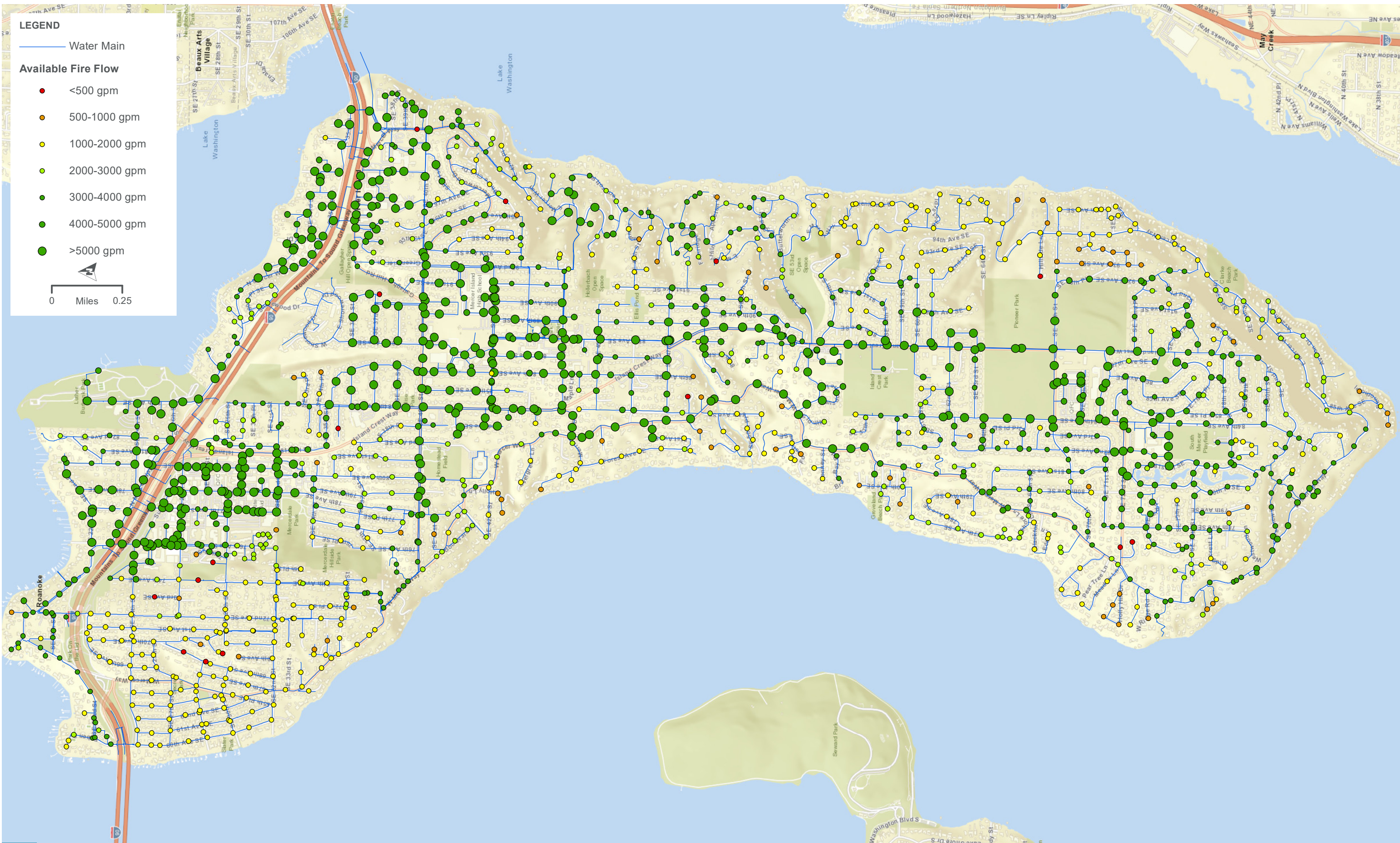
FIGURE D-3

LIMITED WSP UPDATE



**2022 MAXIMUM DAY DEMAND
AVAILABLE FIRE FLOW**

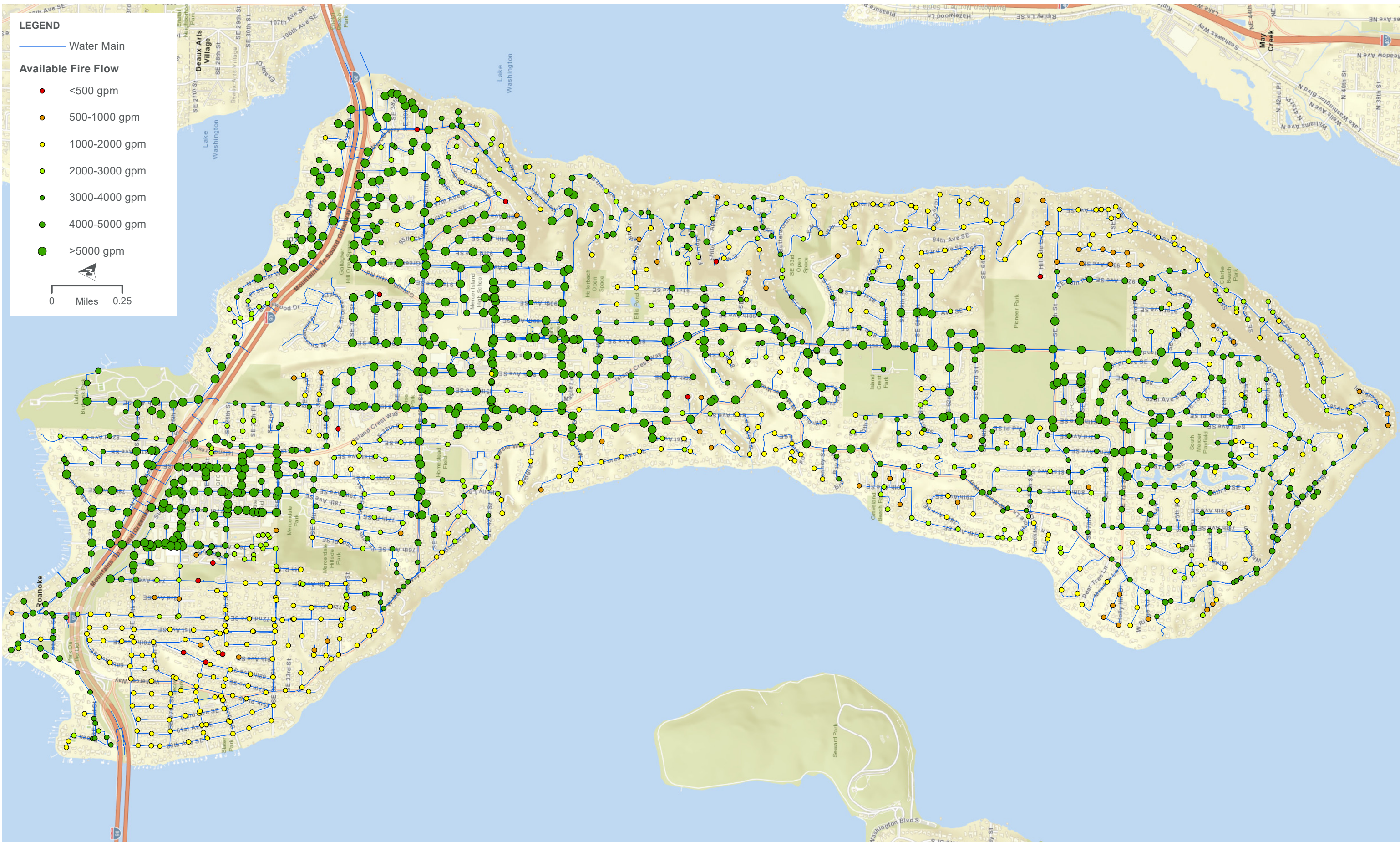
FIGURE D-4



**2036 MAXIMUM DAY DEMAND
AVAILABLE FIRE FLOW**

FIGURE D-5

LIMITED WSP UPDATE



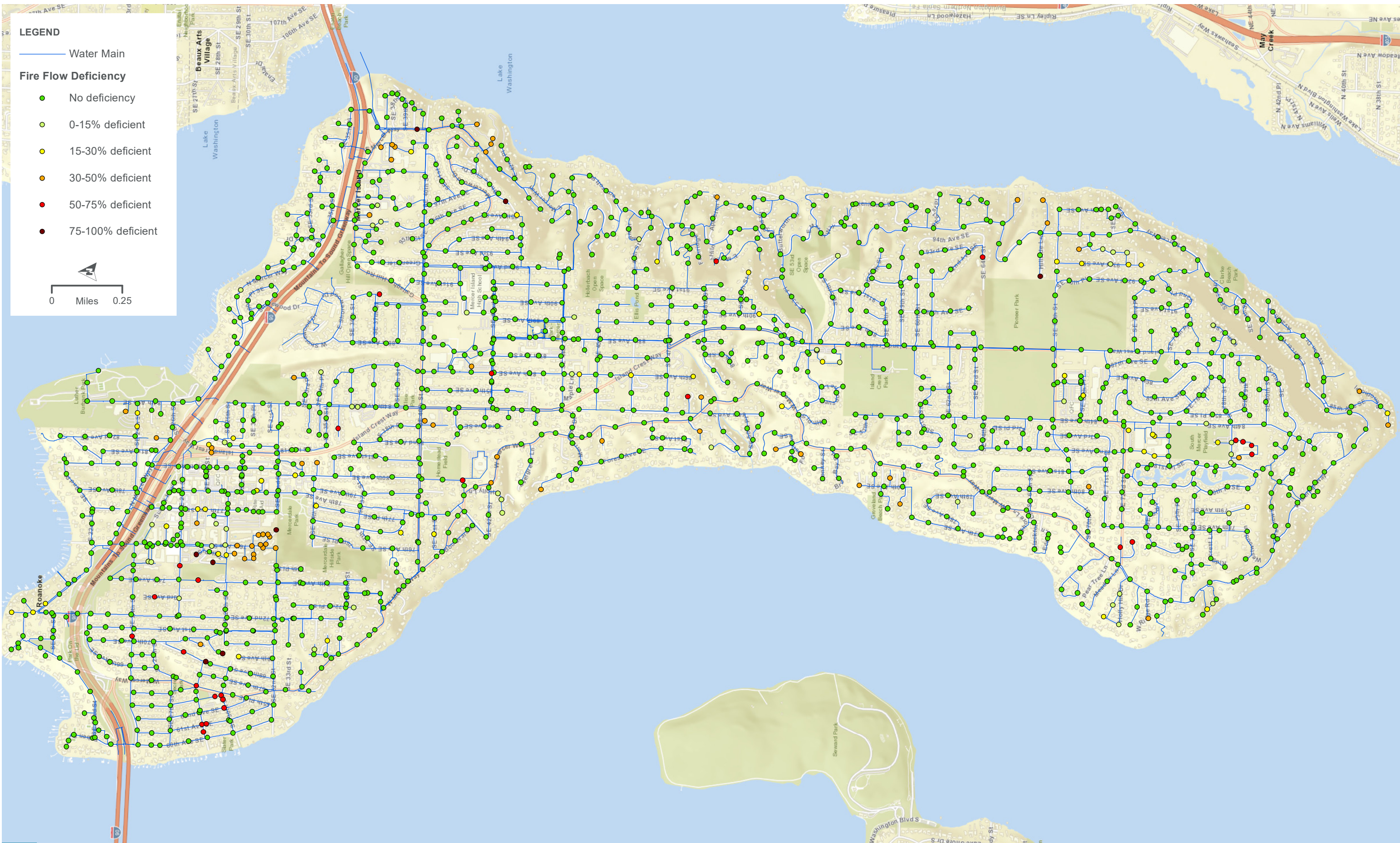
2022 MAXIMUM DAY DEMAND WITH 2022-2026 CIP

AVAILABLE FIRE FLOW

FIGURE D-6

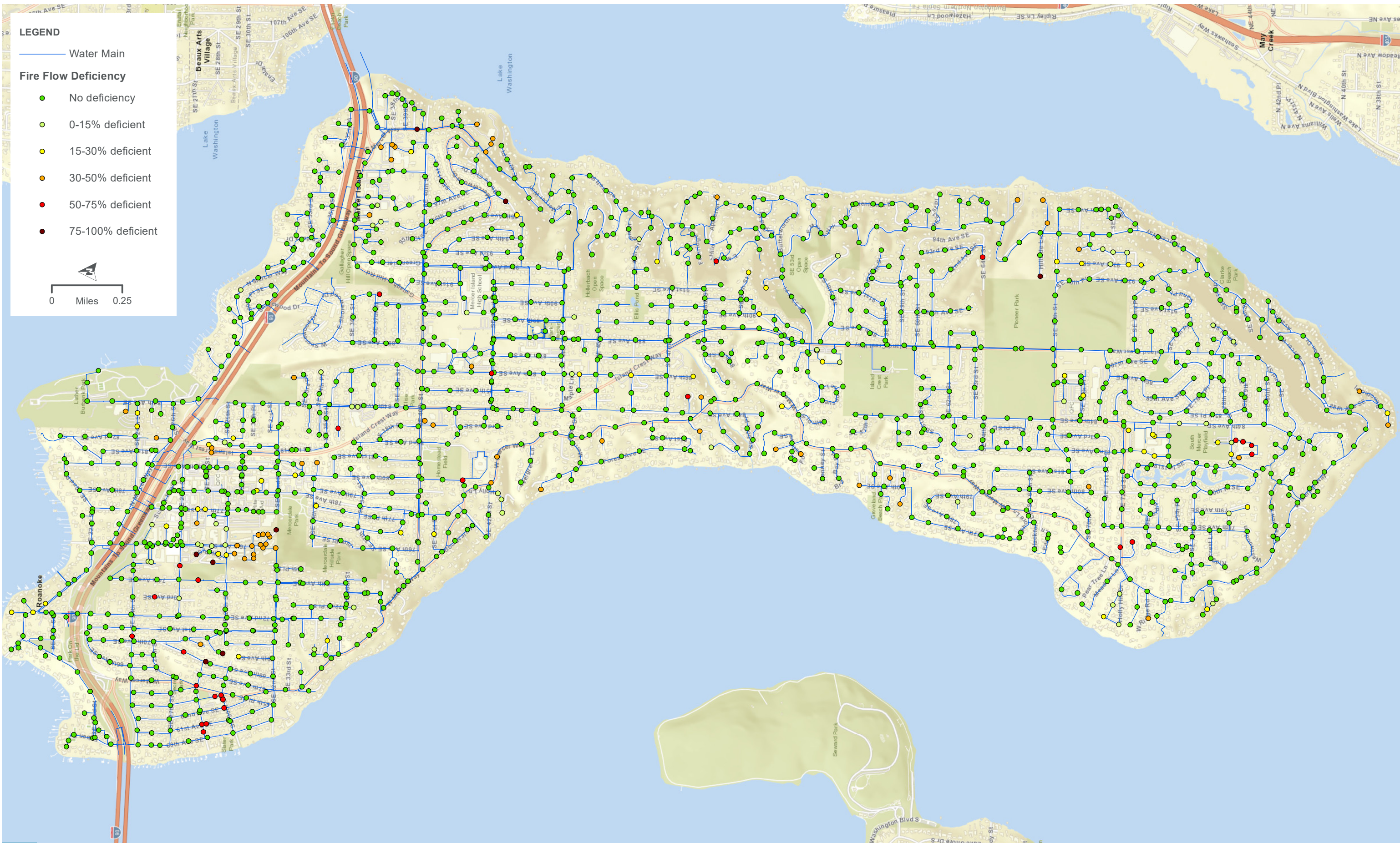
LIMITED WSP UPDATE





**2022 MAXIMUM DAY DEMAND
FIRE FLOW DEFICIENCY**

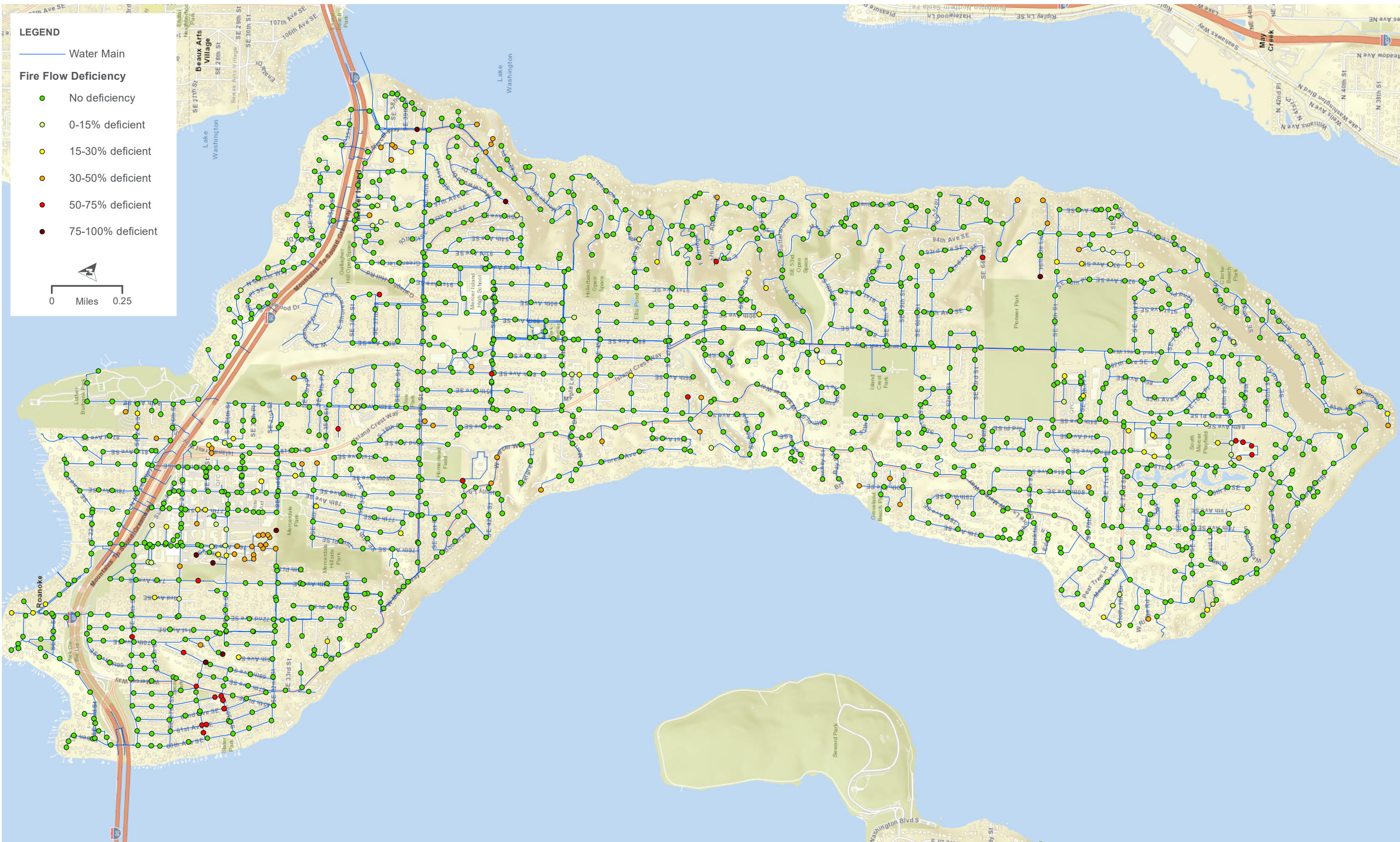
FIGURE D-7



**2036 MAXIMUM DAY DEMAND
FIRE FLOW DEFICIENCY**

FIGURE D-8





2022 MAXIMUM DAY DEMAND WITH 2022-2026 CIP

FIRE FLOW DEFICIENCY

FIGURE D-9

LIMITED WSP UPDATE



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Appendix E. Capital Improvement Program Supplemental Tables

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2023-2028 WATER CIP PROJECTS - Sub Standard Water Main Replacement Program

YEAR	CIP ID#	RANKING #	ADDRESS	Range From	Range To	PIPE DIA.	PIPE MATERIAL	Length of Pipe (ft)
2023								
2023 Water System Improvements	96	#54	60th Ave SE & SE 32nd St	SE 27th St	SE 32nd St	6"	CI	2,260
(First Hill & NMW, SE 37th Pl, SE 41st St & SE 42nd Pl)	86	#57	2400 Block of 62nd Ave SE	SE 24th St	SE 27th St	6"	CI	675
	27	#55	7400 Block N Mercer Way	7414 NMW	74th Ave SE	6"	CI	275
	29	#32	7406 N Mercer Way	NMW	north to end of street	4"	CI	330
	138	#31	2400 Block 73rd Ave SE	SE 24th St	north to end of street	4"	CI	610
	42	#99	2400 Block 74th Ave SE	SE 24th St	SE 27th St	6"	CI	880
	41	#217	2200 Block 74th Ave SE	SE 24th St	north to end of street	4"	CI	440
	1207	#22	7600 Block SE 41st St	76th Ave SE	78th Ave SE	4"	CI	935
	272	#37	7600 Block SE 37th PL	76th Ave SE	77th Ave SE	4"	CI	440
	1217	#77	7800 Block SE 42nd St	Boulevard PL	Holly Lane	4"	CI	875
TOTAL 2023								7,720
2024								
2024 Water System Improvements	1144	#78	8600 Block SE 47th St	86th Ave SE	west of 88th Ave SE	8"	CI	665
(SE47th, 86th Ave SE, SE 59th, & SE 72nd Pl)			Intersection	Stub out 77th Ave into SE 27th		6"	CI	20
			Intersection	Stub out 78th Ave into SE 27th		8"	CI	20
			Intersection	Stub out 97th AVE into SE 36th St.		10"	AC	20
	1146	#64	4700 Block 86th Ave SE	SE 47th St	south to end of street	4"	CI	490
	951	#80	8800 Block SE 59th St	ICW	east to 92nd Ave SE	6"	CI	1,210
	563	66	7600 BLOCK SE 72ND PL	West Mercer Way	78th ave SE	4"	CI	1033
TOTAL 2024								3,458
2025								
No work								
TOTAL 2025								0
2026								
(W Mercer Island segments between SE 37th PL and 5300 Block WMW)	1022	#23	5200 Block 82nd Ave SE	Forest Ave SE	north to hyd F3-05	4"	CI	305
	1017	#24	5200 Block Forest Ave SE	82nd Ave SE	southwest to hyd F3-07	4"	CI	245
	983	#72	5212 W Mercer PL	WMW	north to hyd F4-19	4"	CI	275
TOTAL 2026								825
2027								
2027 Water System Improvements	506	#43	Avalon Drive	EMW	8370 Avalon Dr	6"	CI	1,980
	505	#17	Avalon Place	valve J4-4(8051 Avalon Dr)	northeast to end of street	4"	CI	425
(South end of Island in Avalon neighborhood)	500	#28	Benotho Pl	85th Ave SE	end of street @hyd J4-12	4"	CI	445
	502	#27	SE 87th St	tee @valve J4-13	southwest to end of street	4" & 6"	CI	510
TOTAL 2027								3,360
2028								
2028 Water System Improvements	154	#19	2800 Block 76th Ave SE	SE 27th St	SE 29th St	6"	CI	885
(south Towncenter and north of P & R)	205	#60	2700 Block 77th Ave SE	SE 27th St	SE 29th St	6"	CI	900
	194	#62	2700 Block 78th Ave SE	SE 27th St	SE 29th St	8"	CI	860
	150	#70	SE 29th	74th Ave SE	76th Ave SE	6"	CI	720
	71	#62	8000 Block SE 22nd St	22nd	east to hyd A3-13, south to SE 24th	6"	CI	860
TOTAL 2028								4,225

2023-2028 WATER CIP PROJECTS (AC REPLACEMENT PROGRAM)

YEAR 2023	CIP ID#	RANKING #	ADDRESS	Range From	Range To	PIPE DIA.	PIPE MATERIAL	Length of Pipe (ft)
TOTAL 2023								0
2024	383	3	9500 BLOCK SE 40TH ST	Greenbrier ln	9700 block SE 40th	6	AC	1190
	324	36	3900 BLOCK GREENBRIER LN	SE Gallagher Hill Rd	SE 40th st	6	AC	1278
	326	52	3800 BLOCK GALLAGHER HILL RD	3700 block Gallagher	3900 Block Gallagher	6	AC	386
	329	165	9100 BLOCK SE 36TH ST	Greenbrier ln	92nd ave SE	10	AC	233
	746	56	only WMW portion, Holly hill rd	7200 block of WMW	7300 block WMW	6	CI	305
	952	7	6000 BLOCK 90TH AVE SE	SE 60th	SE 61st	4	AC	294
	905	40	8800 BLOCK SE 61ST ST	Island Crest Way	90th ave SE	6	AC	660
TOTAL 2024								4346
2025	418	1	4000 BLOCK 94TH AVE SE	4000 block 94th ave se	SE 43rd st	4	AC	1571
	417	4	4200 BLOCK CRESTWOOD PL	Crestwood pl	Crestwood pl	6	AC	537
	409	8	4200 BLOCK 93RD AVE SE	SE 42nd st.	SE 43rd st	4	AC	764
	410	10	9300 BLOCK SE 43RD ST	92nd ave se	94th ave se	4	AC	270
	414	14	9300 BLOCK SE 43RD ST	94th ave se	95th ave se	6	AC	1050
	411	29	4200 BLOCK 92ND AVE SE	SE 42nd st.	SE 43rd st	6	AC	1402
	408	49	9200 BLOCK SE 42ND ST	92nd ave se	93rd ave se	6	AC	339
	407	50	4000 BLOCK 93RD AVE SE-South portion	4000 block of 93rd	SE 43rd st	6	AC	770
	1496	38	9100 BLOCK SE 44TH ST	91st ave se	92nd ave SE	6	AC	299
	1497	34	9100 BLOCK SE 44TH ST	SE 44th st	9100 block 92nd	6	AC	162
	407	50	4000 BLOCK 93RD AVE SE-Only Portion	Mercerwood Dr	4000 block of 93rd ave se	6	AC	300
	1490	39	9000 BLOCK SE 42ND ST	90th ave se	91st Ave SE	6	AC	172
	413	5	4400 92ND AVE SE	93rd ave se	94th ave se	4	AC	138
	1498	20	9100 BLOCK SE 43RD ST	9100 block of SE 43 dr	92nd ave SE	6	AC	127
	412	15	4354 92ND AVE SE	92nd ave se	93rd ave se	6	AC	218
	1495	2	4200 Block 91st Ave SE	SE 42nd st.	SE 44th st	6	AC	1322
TOTAL 2025								9441
2026	401	6	3838 E MERCER WAY	SE 38th St	Private Rd @ 3800 block of East Mercer Way	4	AC	189
	399	9	3716 E MERCER WAY	EMW	Private Rd @ 3700 block of EMW	8	AC	805
	403	16	3828 E MERCER WAY	EMW	Private Rd @ 3800 block of EMW	6	AC	501
	763	11	7900 BLOCK SE 67TH ST	West Mercer Way	80th Ave SE	6	AC	371
	766	41	6700 BLOCK 80TH AVE SE	SE 67th st	SE 70th st	6	AC	773
	756	42	7800 BLOCK SE 70TH ST	West Mercer Way	7800 Block SE 70th	6	AC	490
	767	21	7900 BLOCK SE 70TH ST	7800 block	80th Ave SE	6	AC	569
	768	35	7000 BLOCK 80TH AVE SE	SE 70th st	7100 block	6	AC	401
TOTAL 2026								4099
2027	422	12	4100 BLOCK 96TH AVE SE	4100 Block 96th ave se	Mercerwood Dr	6	AC	1038
	421	13	9700 BLOCK MERCERWOOD DR	96th Ave SE	Shoreclub Dr	6	AC	960
	428	44	4200 BLOCK SHORECLUB DR	Mercerwood Dr	4200 block of ShoreClub Dr	6	AC	499
	427	45	4200 BLOCK SHORECLUB DR	Mercerwood Dr	Shoreclub Dr	6	AC	183
	425	46	4200 BLOCK SHORECLUB DR	4200 block of ShoreClub Dr	4300 Block of Shoreclub Dr	6	AC	743
	423	47	4000 BLOCK 97TH AVE SE	SE 40th St	Mercerwood Dr	6	AC	1018
	424	68	4200 BLOCK SHORECLUB DR	4300 Block of Shoreclub Dr	95th Ave SE	2	Steel	160
	415	48	4200 BLOCK 95TH AVE SE	Mercerwood Dr	SE 43rd st	6	AC	631
TOTAL 2027								5232
2028	376	58	9655 SE 36TH ST (CELL 13)	SE 36th St	SE 40th St	10	AC	1200
	379	164	9700 BLOCK SE 40TH ST	97th Ave SE	East Mercer Way	10	AC	1413
	320	73	9100 BLOCK SE 40TH ST	(Shorewood Service line)		10	AC	8
TOTAL 2028								2621