Population and Flow Analysis by Wastewater Basin

Supplement to the 2004 Update to the Regional Wastewater Services Plan

May 2004

King County

Department of
Natural Resources and Parks
Wastewater Treatment Division

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Section 1. Population Forecasts and Wastewater Flow Projections

In 1998, King County's Wastewater Treatment Division (WTD) prepared population forecasts and wastewater flow projections for its wastewater service area in order to develop the Regional Wastewater Services Plan (RWSP). The forecasts extend to the year 2050 when it is assumed that population will reach saturation ("buildout"). In 2003, the County updated these forecasts and projections as part of the 2004 update to the RWSP. The 2004 update report presents the RWSP and updated forecasts and projections for the service area as a whole. This supplement to the update report presents breakdowns of the forecasts and projections according to sewer basins in the service area and describes the methodology used to prepare the forecasts and projections. All figures referenced in this supplement appear at the end of the text.

Population Forecasts

To identify future wastewater facility needs in its service area, the WTD projects future wastewater flows by first using population and employment forecasts provided by the Puget Sound Regional Council (PSRC).

Analysis of the updated PSRC data suggests that the RWSP population and employment forecasts within the King County wastewater service area are similar to the updated population and employment forecasts. Table 1 and Figure 1 show that total sewered population for residential, commercial, and industrial categories grows by 44 percent from 2000 to 2030 using RWSP forecasts compared to 40 percent for the same period using the updated forecasts.

In 2000 (the base year for updated forecasts), residential and industrial populations were similar to those predicted for the RWSP. The number of commercial employees in 2000, however, was 65,000 greater systemwide than predicted for the RWSP. The higher commercial numbers were on the eastside and in the South Treatment Plant service area as a whole (south side and east side). Commercial employment was lower in Seattle than was forecast for the RWSP. The updated forecasts for growth rates between 2000 and 2050 are similar to RWSP forecasts for all sectors.

Figure 2 shows RWSP and updated total population forecasts for 2000–2050 broken down into the seven major sewer basins in the wastewater service area. These basins are shown in Figure 3. Table 2 and Figures 4, 5, and 6 give the same information broken down even further for residential, commercial, and industrial populations. For most basins, the forecasts are similar. Two basins show a greater difference between forecasts. The RWSP forecast and actual total population in Metro West Side basin in 2000 are similar, but the updated forecast shows that growth is slower through 2050 than predicted in the RWSP. By 2050, the population in this basin is predicted to be about 200,000 fewer than originally predicted. The Metro East Side basin, on the other hand, shows a faster growth rate than predicted in the RWSP. The 2000 population was about 60,000 higher than predicted. By 2050, the population in this basin is predicted to be almost 140,000 greater than RWSP forecasts. The Metro South Side and Kenmore-Snohomish County basins show slightly elevated populations from those predicted in the RWSP.

Table 1. RWSP and Updated Forecasts of Sewered Population (1990–2030)

	Sewered Population (Residential + Commercial + Industrial)		
Decade	**RWSP Forecasts[a]**	**Updated Forecasts[b]**	**Percent Change**
1990	2,053,746		
2000	2,372,701	2,462,476	3.7%
2010	2,739,328	2,769,130	1.1%
2020	3,106,175	3,148,747	1.4%
2030	3,411,920	3,455,896	1.2%
Percent Change 2000–2030	44%	40%	

a. Based on Puget Sound Regional Council forecasts by Forecast Analysis Zones (FAZs) in 1995, which used 1990 census data.

b. Based on Puget Sound Regional Council forecasts by Traffic Analysis Zones (TAZs) in 2003, which used 2000 census data.

The tables and figures in Attachment A show population forecasts by sub-basins for 2010, 2020, 2030, and 2050.

Flow Projections

This document presents projections for average wet-weather flow (AWWF), which is the primary means used to plan for treatment capacity. Updated peak flow projections are currently in progress. Results will be ready in summer 2004. Findings from a preliminary analysis of peak flows is presented for the north end of the service area where the new Brightwater Treatment Plant will be located.

The difference in overall change between population forecasts over the planning period is insignificant with respect to the County's flow projections. The RWSP flow projections for the entire service area show that in 2013, the projected AWWF will reach the system capacity of 248 mgd and that by 2050, King County will need an additional 74 mgd of wastewater capacity (Table 2 and Figure 7). According to the RWSP, the Brightwater Treatment Plant will provide 36 mgd of new capacity by 2010 not only to accommodate these new demands but also to provide peak flow relief in the north end of the service area. Another capacity increment will be provided with the expansion of the South Treatment Plant in 2029 and, if needed, a further expansion of Brightwater in 2040 to 54 mgd.

For 2000, the measured AWWF for the entire service area was 7 mgd less than predicted for the RWSP (Table 2 and Figure 7). The actual flow in Seattle was lower than predicted; the actual flow in the South plant service area (primarily on the east side) was higher than predicted. The RWSP assumptions for wet-weather infiltration and water conservation levels account for the difference between predicted and actual 2000 AWWF in Seattle. The RWSP assumption for wet-weather infiltration was too high, and the assumption for water conservation was too low. A decrease in AWWF is expected to occur in Seattle between 2000 and 2010 (Figure 8). This decrease results from water conservation and from recent removal of Green Lake flows from the wastewater system. The flow will steadily increase after 2010 at the same rate as predicted in the RWSP.

Table 2. RWSP and Updated Population and Average Wet-Weather Flow Projections by Basin (2000–2050)

Basin	RWSP					Updated				
	Sewered Population				AWWF (mgd)	Sewered Population				AWWF (mgd)
	Residential	Commercial	Industrial	Total Sewered		Residential	Commercial	Industrial	Total Sewered	
2000 Forecasts and Projections										
Total Metro System	1333919	885760	153022	2372701	212	1346375	950301	147645	2462476	205
Metro West Side	487691	496867	41600	1026159	91	484869	465391	45217	995477	82
Kenmore – Snohomish Co.	74971	20033	9437	104442	9	100975	29687	10724	141386	12
Kenmore-King	37229	15681	2927	55837	5	35899	20204	4803	60906	5
West Point basin	701358	556362	54439	1312159	120	695859	527967	61061	1303042	110
Hollywood P.S. Basin	75619	38751	7953	122322	9	59569	54007	9784	123360	9
Metro East Side	316444	171670	39081	527195	43	337844	219212	33813	590869	47
Metro South Side	190126	97461	42248	329834	29	196445	132230	41464	370139	29
Renton West	50373	21516	9301	81190	10	56659	16885	1523	75067	10
Renton Plant Basin	632561	329397	98583	1060541	92	650516	422334	86584	1159434	94
2010 Forecasts and Projections										
Total Metro System	1531050	1060294	147984	2739328	237	1518022	1114858	136250	2769130	213
Metro West Side	532612	585766	41595	1159973	98	512336	534076	37403	1083815	75
Kenmore – Snohomish Co.	124294	27620	9609	161523	14	139321	38156	10133	187610	16
Kenmore-King	44212	17420	3129	64762	6	40524	22809	3981	67314	6

Table 2. RWSP and Updated Population and Average Wet-Weather Flow Projections by Basin (2000–2050)

	RWSP					Updated				
	Sewered Population					Sewered Population				
Basin	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)
West Point basin	805210	656890	54855	1516955	132	767573	609080	51780	1428433	107
Hollywood P.S. Basin	91667	49447	8944	150058	11	70481	61833	8796	141110	10
Metro East Side	352866	203266	36324	592457	48	383521	269446	31515	684481	52
Metro South Side	227912	123481	39343	390737	35	232632	152169	42821	427621	34
Renton West	53394	27210	8518	89121	11	63815	22331	1339	87485	10
Renton Plant Basin	725840	403404	93128	1222373	105	750449	505778	84470	1340697	106
2020 Forecasts and Projections										
Total Metro System	1779552	1186585	140038	3106175	266	1739616	1276859	132272	3148747	246
Metro West Side	590375	643118	36581	1270074	103	555313	587087	36175	1178575	79
Kenmore – Snohomish Co.	180,477	32,760	9,956	223,193	20	189,062	47,199	10,971	247,232	22
Kenmore-King	53,902	18,738	2,981	75,621	7	46,621	25,843	3,597	76,061	7
West Point basin	933,000	722,085	49,994	1705,079	145	868,163	675,845	51,000	1,595,008	118
Hollywood P.S. Basin	102,418	59,389	8,662	170,469	13	81,576	849,11	8,403	174,890	13
Metro East Side	400,323	233,414	34,993	668,730	55	440,144	312,449	29,701	782,293	62
Metro South Side	281,136	141,557	37,796	460,488	42	277,812	177,418	41,888	497,117	43
Renton West	62,675	30,139	8,595	101,409	11	71,922	26,236	1,281	99,439	11

Table 2. RWSP and Updated Population and Average Wet-Weather Flow Projections by Basin (2000–2050)

	RWSP					Updated				
	Sewered Population					Sewered Population				
Basin	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)
Renton Plant Basin	846,552	464,500	90,045	1,401,096	121	871,453	601,014	81,272	1,553,739	128
2030 Forecasts and Projections										
Total Metro System	1,935,383	1,342,777	133,760	3,411,920	283	1,898,849	1,424,566	132,481	3,455,896	263
Metro West Side	637,953	721,501	34,906	1,394,359	109	608,691	630,008	36,076	1,274,775	83
Kenmore – Snohomish Co.	209,788	39,531	10,187	259,505	22	223,688	56,141	11,879	291,708	25
Kenmore-King	59,038	20,283	3,060	82,381	7	49,267	28,093	3,417	80,777	7
West Point basin	1,017,862	810,781	48,645	1,877,288	154	962,196	731,610	51,640	1,745,446	126
Hollywood P.S. Basin	108,196	69,164	9,129	186,490	14	87,410	86,787	7,860	182,057	13
Metro East Side	432,976	263,865	32,677	729,518	59	470,249	369,237	28,216	867,702	67
Metro South Side	308,895	164,056	35,211	508,162	45	300,949	205,581	43,499	550,028	46
Renton West	67,453	34,912	8,098	110,462	11	78,046	31,351	1,266	110,663	11
Renton Plant Basin	917,520	531997	85115	1,534,632	130	936,653	692,956	80,841	1,710,450	137
2050 Forecasts and Projections										
Total Metro System	2274941	1,637,685	120,539	4,033,166	312	2,195,686	1,746,981	121,335	4,064,002	288
Metro West Side	737,343	867,752	29,886	1,634,981	119	684,182	745,666	28,721	1,458,569	90
Kenmore – Snohomish Co.	266,555	52,058	10,706	329,319	26	290,023	73,769	12,818	376,610	30

Table 2. RWSP and Updated Population and Average Wet-Weather Flow Projections by Basin (2000–2050)

	RWSP					Updated				
	Sewered Population					Sewered Population				
Basin	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)	Residential	Commercial	Industrial	Total Sewered	AWWF (mgd)
Kenmore-King	70,109	23,330	3,114	96,554	8	55,084	33,612	2,385	91,081	8
West Point basin	1,191,270	976,295	44,201	2,211,766	169	1,113,457	873,503	44,143	2,031,103	138
Hollywood P.S. Basin	130,947	89,598	9,647	230,192	16	103,966	108,919	6,682	219,567	15
Metro East Side	501,921	321,591	28,548	852,060	65	534,794	470,002	24,631	1,029,426	74
Metro South Side	371,731	206,666	307,52	609,148	50	352,234	253,977	44,824	651,034	51
Renton West	79,073	43,535	7,391	129,999	12	91,236	40,580	1,056	132,872	11
Renton Plant Basin	1,083,672	661,390	76,338	1,821,399	143	1,082,229	873,478	77,192	2,032,899	150

Although the updated AWWF projections for the entire service area are lower than predicted for the RWSP, the projections show higher initial population and greater growth in the south end of the service area than was assumed for the RWSP. It now appears that the South plant will reach its rated design capacity by 2007. However, the South plant's actual capacity may be greater than its rated capacity. Rated capacity is an operating criterion based on conservative design predictions approved by the Washington State Department of Ecology (Ecology) before the facility is constructed. Since the South plant was built, performance has exceeded expectations. The County is exploring whether the plant, with a few adjustments, could provide more treatment capacity. If so, the County may then work with Ecology to re-rate the plant to reflect the higher performance. The re-rating, if successful, will enable the South plant to manage additional flows until they can be sent to Brightwater in 2010.

If the forecasts for future population hold true and if the rate of water conservation does not increase, the South plant may need to be expanded by 2023 instead of by 2029. King County will continue to monitor actual population and flow against the projections. Schedules will be modified and completion dates for related performance measures will be changed to accommodate accelerated expansion of the South plant if and when it is needed.

The Brightwater plant will still need to be online by 2010 to manage peak flows in the north end of the service area and to offload flows from the South plant. The Kenmore Interceptor continues to be a major constriction in the system. Based on model results done in 1998, King County estimated that the Kenmore Interceptor and upstream storage and flow transfers to Edmonds will reach capacity no later than 2010. Preliminary updated peak flow estimates that were done in 2003 indicate the following conditions for 2000:

- Peak 20-year flows in the Brightwater service area in 2000 are 4 percent higher overall than previously estimated.
- Some basin flows to the Kenmore Interceptor are higher than anticipated for 2000.
- Capacity in conveyance leading to existing County treatment plants may be exceeded earlier than anticipated. When it comes online in 2010, the Brightwater System will alleviate conveyance system constraints in the north end of Lake Washington.

This preliminary finding is supported by checks against the model, which compared 1998 modeled flows for basins discharging to the Kenmore Interceptor for the year 2000 against updated peak flows modeled using actual rainfall data from the 2001–2002 wet season. The results shown in Table 3 confirm that original estimates of total peak flow from sub-basins served by the Kenmore Interceptor are still valid, with specific sub-basin variations noted. (Figure 9 shows the sub-basins.)

Preliminary updated 2050 peak flow estimates range from 156 to 190 mgd depending on new construction inflow and infiltration (I/I) assumptions. Therefore, the RWSP's design 20-year peak flow estimate of 170 mgd is still valid for the Brightwater plant at buildout (2050).

The tables and figures in Attachment A show flow projections by sub-basins for 2010, 2020, 2030, and 2050.

Table 3. Year 2000 RWSP and Updated Peak Flow Estimates for the Kenmore Interceptor

Sub-Basin	RWSP 2000 20-Year Peak (mgd)[a]	Updated 2000 20-Year Peak (mgd)[b]
Swamp Creek – Snohomish County	9.6	7.1
Swamp Creek – King County	1.7	1.7
Kenmore Section 5 plus Bothell	5.8	8.8
Inglewood	2.6	3.6
Lake Forest – Snohomish & King County	5.4	5.4
Lyon Creek – Snohomish County	0.7	1.7
McAleer & Lyon	6.2	6.2
Lake Ballinger Pump Station	16	14
Total	**48**	**48.5**

a Modeled flow in 1998.

b Modeled flow using measured rainfall from the 2001–2002 wet season.

Conclusions

- All indicators used to project conveyance and treatment plant capacity indicate that King County will require additional capacity by 2010.
- The 20-year design standard for conveyance will be exceeded in the north end by 2010.
- The South plant will reach capacity before 2010, which is sooner than estimated in the RWSP.
- West Point solids handling is currently near its capacity because of digester limitations.

King County will carefully monitor population and flow by basin and will continue to evaluate the effects of I/I reduction and water conservation. Adjustments will be made to assure that adequate capacity is available to treat flows to secondary levels.

Section 2. Methodology

Population Forecasting Methodology

The Puget Sound Regional Council (PSRC) generates its data by allocating regional population and employment forecasts to small geographic areas called Forecast Analysis Zones (FAZs). FAZ boundaries are derived from census tracts. There are approximately 219 FAZs in the regional study area. Preliminary FAZ level forecasts undergo extensive review by local governments, public agencies, and others before FAZ level forecasts are released. PSRC then develops forecasts for Traffic Analysis Zones (TAZs), which are smaller than FAZs and provide greater specificity on where population is currently located and where it is expected to grow. Because TAZ information is generated from FAZ information, the TAZ forecasts also reflect information that has undergone local review.

For the RWSP population forecasts, WTD used PSRC FAZ data generated in 1995, which was based on the 1990 census. For the updated forecasts, WTD used PSRC TAZ data generated in 2003, which was based on the 2000 census.

Forecasting Methodology for the RWSP

At the time the RWSP was adopted in 1999, PSRC forecasted population growth through 2020. King County extended this forecast through 2050 by applying a linear trend function, essentially assuming that growth would continue at the same rate until 2050, the time when the area is expected to reach saturation for wastewater services.

For the RWSP, PSRC population data was converted from FAZ geographic units into wastewater service basin geographic units. Service basins identify the source of flow for major wastewater interceptors; therefore, they are a more logical geographical boundary for modeling wastewater flow than smaller geographic units such as FAZs.

The shapes and sizes of the service basins were defined in King, Snohomish, and Pierce Counties according to local sewer agency and Urban Growth Area (UGA) boundaries. In areas not covered by sewer maps, future service basin boundaries were estimated. Where possible, estimates were based on comprehensive facilities plans adopted by local jurisdictions and counties in compliance with the state Growth Management Act (GMA).

The total regional system includes the King County–Metro System, south Snohomish (non-Metro) basin, and north Pierce County basin. The King County–Metro System makes up the King County wastewater service area. Seven major basin divisions were designated for the King County–Metro System: Metro West Side, Kenmore-Snohomish County, Kenmore-King County, Hollywood P.S., Renton West, Metro East Side, and Metro South Side (Figure 3). [1]

The RWSP work incorporated the King County and Snohomish County UGA constraints in its forecasting and allocation. Because the boundary of the UGA does not coincide with the PSRC FAZ boundaries and

[1] Three small basins—Ballinger-King, Carkeek Creek, and Alki—are included in the population and flow calculations, but the forecasts and projections for these three basins are too small to show graphically.

because PRSC does not provide information on allocating population on either side of the boundary within a FAZ, the rural residential, commercial, and industrial densities for each FAZ were estimated for each 10-year increment. The rural density was multiplied by rural acreage and subtracted from total FAZ population to determine the remaining residential population on the urban side of the UGA. The remaining urban population was used in the model to calculate population within each service basin. It was assumed that all commercial and industrial employment was located within the UGA for any FAZ that was part of the UGA.

Sewered population for the basins was then calculated for residential, commercial, and industrial categories. It was assumed that 100 percent of the commercial and industrial employment populations contributed to the base sanitary flow. It was also assumed that only a percentage of the total residential population contributed in the years prior to 2020 because not all residential population is sewered. The model assumed that for 2020 and beyond, all residential population would be on sewers within the UGA.[2]

For the years preceding 2020, most residential population in the service basins was estimated to be less than 100 percent sewered, particularly those on the eastern edge of area. To estimate the percentage of sewered land for 1990, the King County map of the sewered area was overlaid on the service basin map. The sewered area within each basin was determined by planimetry[3] and normalized to match PSRC acreages. The actual number of people on sewers per basin was unavailable and was estimated based on the percentage of sewered land within each basin in conjunction with aerial maps to identify types of land development. The percent of residential population that would be sewered between 1990 and 2020 was linearly interpolated such that all population and employment was 100 percent sewered by the year 2020.

Forecasting Methodology for the 2004 Update

For the updated forecasts, FAZ boundaries were adjusted to match changes that occurred in census geography in the 2000 census. The total number of FAZs was the same as for the RWSP (219). In addition, King County used TAZ information to account for existing and future population in the appropriate sewer basins. TAZ boundaries were modified to match 2000 census changes. This modification resulted in an increase in the number of TAZs from 832 to 938.

The following updated population methods and assumptions were used by King County for determining sewered populations within its service area:

- Commercial and industrial employment from any TAZ crossing the UGA boundary are considered sewered and within the UGA.
- Total population within a TAZ and crossing the UGA boundary and basin boundaries is distributed according to the number and location of non-vacant parcels.

[2] A sensitivity analysis was done as part of the update process. This analysis indicated that if the assumption that all residential populations would be on sewers by 2020 proved to be incorrect and that only a portion or none of the households on septic systems hooked up to the wastewater system, Brightwater would still be needed in 2010 to accommodate peak flows. The increase in available capacity resulting from a lower hookup rate could delay the online date of treatment plant upgrades by 1 to 3 years. It was therefore recommended that the assumption of 100 percent conversion by 2020 be used and refined, if needed, for subsequent planning studies. See Appendix 2-A, Population and Flow Analysis, in the Brightwater Final Environmental Impact Statement.

[3] Planimetry is the identification and location of basic land cover (such as forest and marsh), drainage, and anthropogenic features (such as urban infrastructure and transportation networks) in the x, y plane.

- Sewered residential population is distributed according to sewered, non-vacant parcels.
- Parcels that are sewerable and currently vacant and/or unsewered in 2000 within the King County service area are assumed to be half occupied and sewered by 2010 and completely occupied and sewered by 2020.
- Multi-unit parcels with greater than four units are assumed to be sewered. Multi-unit parcels with less than four units are assumed to be either sewered or unsewered based on the sewer and geographic information system (GIS) coverage developed for the King County regional inflow and infiltration reduction program (I/I project).
- Any parcel not containing residential, commercial, or industrial populations, such as ball-fields, cemeteries, rights-of-way, and water bodies, were not included in determining the distribution of the populations.
- Geography was based on 2003 PSRC TAZ boundaries, 2003 PSRC forecasts, RWSP basin boundaries (updated to reflect connectivity and flow identified in the I/I project), March 2003 King County and Snohomish County parcel geography and current use, and the estimate of sewered land developed for the I/I project in 2001–2002.
- Additional geographic analysis was conducted using King County's sewer agency GIS coverage and the 2001–2002 model basin coverage developed for the I/I project.
- The distribution of commercial and industrial employment was adjusted in the TAZs that contain the Microsoft campus and Boeing's Renton plant to reflect the current modeling basin for these concentrated employment centers. This redistribution affected 25,000 and 8,000 employees respectively.

Methodology for Projecting Wastewater Flow

King County's wastewater flow projection process is described in a flowchart depicted in Figure 10. In general terms, the method used for converting forecasted population and employment data to wastewater flow projections is to multiply population forecasts by flow factors representing average volumes of wastewater generated per person, yielding a "base" sanitary flow. Base sanitary flow projections are combined with inflow and infiltration (I/I) components to estimate dry-weather, wet-weather, and peak flows. I/I estimates are increased by 7 percent per decade (non-compounded) through 2030 to account for deteriorating pipes and pipe joints and for other factors that typically increase I/I. The King County Executive is scheduled to propose an overall I/I control program at the end of 2005, after which I/I reduction, if warranted, may be included in flow projections.

King County uses average wet-weather flow (AWWF) as a summary parameter to evaluate available treatment capacity at the treatment plants. The sizing of the conveyance system is based almost solely on being able to transport peak flows. Peak 20-year flow is the flow that would be expected once every 20 years, on average, based on 50- or 60-year simulations of current conditions. The conveyance system is usually built to handle this peak flow at full buildout. It is important to consider the ultimate capacity at buildout when designing wastewater facilities because the lifetime of the facilities can easily go beyond 50 years. Accordingly, King County has forecasted 30- to 50-year flow projections for all of its facilities since the first wastewater comprehensive plan was adopted in 1958. Because some portions of treatment plants are amenable to phasing, they are usually built in increments to handle the hydraulic peak as the region grows.

Solids handling is also a critical factor in determining the timing for new treatment plant facilities. Solids are estimated by applying unit-loading factors to the population and employment forecasts. Biological

oxygen demand and total suspended solids are measured daily so that there is regular data to be used to estimate future solids loading. Actual solids volumes that leave the plants as biosolids are also measured and used to "back calculate" in-plant facility needs.

Flow Projection Methodology for the RWSP

The residential flow factor of 60 gallons per capita per day (gpcd) has been used historically by King County and formerly by Metro to develop both the South and West Point systems. The industrial and commercial flow factors of 75 and 35 gallons per employee per day (gped), respectively, were derived based on permitted flow for industrial processes and on modeling and measured flows at the plants for commercial employees. Using measured flows along with King County's hydraulic model and the assumption that residential flows equal 60 gpcd, the relationship between commercial flow and dry-weather I/I was established. Dry-weather flows include base sanitary flow plus dry-weather I/I. The estimated flows derived from population and sewered area compare closely with the flows measured from each treatment plant in the years around 1990.

Alternative unit flow factors were examined by modeling wastewater unit flow factor changes as a result of water conservation, pricing, and plumbing and building codes. This analysis indicated that the base sanitary flows could decrease from 10 to 18 percent using a moderate to aggressive water conservation program. While this sounds significant, base flow is not a major factor in the timing and sizing of a conveyance system. Base flow represents less than 20 percent of the peak 20-year storm flow, which is King County's design standard. The potential conservation measures resulted in peak flow reductions in 2020 from 2 to 4 percent. Peak flows at 2030 are projected to be 608 mgd in the separated portion of the system. This reduction will not change the timing or size of any facilities currently planned. Based on this analysis and on the fact that water conservation benefits are uncertain because they are not mandatory, the flow factors were not adjusted to include reliance on future water conservation.

King County derived AWWF for the base planning year of 1990 by measuring flow at the treatment plants over several years and adjusting these flows using rainfall data to reflect an average wet period during historical conditions. This approach is unique to King County and has been approved by the Washington State Department of Ecology. The South Treatment Plant service area collection system is a separated system, and its AWWF definition is the average of all flows during the months of November through April (six months). For the West Point collection system, which has a combined sanitary and stormwater conveyance system, the AWWF is defined as the average of all non-storm flows during the months of November through April.

Peak flows were projected starting with 1990 as the base year using King County's hydrologic and hydraulic routing models. The models use various inputs in addition to base sanitary flow estimates and sewered area estimates, and the model was calibrated for 12 sub-areas making up the entire service area. The model simulates flow, including I/I, during dry weather and storm events. Forty-three years of rainfall data was also run through the model to estimate 20-year peak flow in each sub-basin. Future peak flows were projected using population, sewered area, existing I/I responses, and a degradation factor for increases in I/I.

See the tables and figures in Attachment A for information on dry- and wet-weather flows and I/I.

Flow Projection Methodology for the 2004 Update

AWWF values were updated according to TAZ 2003 population forecasts and projected flow factors assuming 10 percent additional conservation over 2000 levels by 2010, as shown in Table 4.

Table 4. RWSP, Actual, and Projected Daily Wastewater Generation

	RWSP Assumption	Actual 2000[a]	Projected 2010–2050[b]
Residential	60 gpcd	56 gpcd within Seattle 66 gpcd outside Seattle	50 gpcd within Seattle 60 gpcd outside Seattle
Commercial	35 gped	33 gped	30 gped
Industrial	75 gped	55 gped	50 gped

gpcd = gallons per capita per day.
gped = gallons per employee per day.

a. Based on winter water consumption.
b. Assumes 10 percent more water conservation than in 2000.

The flow factors that were used in the RWSP were reviewed with recent winter water consumption data. The overall residential flow factor is still a good estimate of wastewater generated by residential population for the base year of 2000. The commercial factor may be slightly lower than that used in the RWSP. There is strong evidence that industrial process water consumption has significantly been reduced between 1990 and 2000.

The City of Seattle has indicated that winter water consumption in Seattle is about 56 gpcd for residential customers. Other water purveyors in the King County service area indicate that their residential winter water consumption is about 66 gallons per capita per day (gpcd).

The City of Seattle tracks combined commercial and industrial flow. The City indicated that the combined industrial and commercial flow factor is 36 gped for the city and 31 to 35 gped for Seattle's wholesale water purveyors. With the inclusion of five other large water purveyors in the King County service area, the combined flow factor is 34 to 37 gped. Using the different residential flow factors for Seattle (56) and other jurisdictions (66 gpcd) resulted in roughly a 4 mgd reduction in AWWF at the West Point Plant and about a 4 mgd increase in AWWF at the South Plant for year 2000.

King County tracks both commercial and industrial flow separately. Actual process flow discharged from industrial customers in 2001 was about 22 gallons per employee per day (gped). This number is added to the commercial flow factor to obtain the total industrial flow factor. It is estimated for year 2000 that about 33 gped was from commercial employees and about 55 mgd was from industrial employees, including process flow.

Thus, it appears that water conservation has resulted in lower indoor water consumption in the City of Seattle than in other cities of the region. There is evidence, however, that per capita indoor water consumption in the other cities is decreasing. Winter water conservation benefits wastewater capacity management more than does summer conservation.

It is now projected that by 2010, per capita indoor water consumption will be about 10 percent below 2000 levels throughout the service area. Recent from water purveyors indicates that by 2003, the per capita water consumption had already dropped 5 to 8 percent from 2000 levels, reducing the flow even further than the 2000 levels. Water purveyors have committed to further increases in water conservation.

Preliminary updated peak flows were projected based on FAZ data. TAZ projections are in progress and will be available in summer 2004. The TAZ projections are based on three main areas of change from information used for the RWSP FAZ projections: new sewered population methodology, new flow meter data, a new assumption about when the unsewered areas will be sewered, and a different I/I model. The new flow meter data results from an extensive flow-monitoring program conducted during the 2000–2001 and 2001–2002 wet seasons as part of King County's I/I reduction program. About 800 meters were installed throughout the system. King County computer models were updated based on the information collected during these monitoring periods. In regard to when unsewered areas will be sewered, it was assumed that 90 percent of the unsewered-but-sewerable areas will be sewered by 2030 and that 100 percent of these areas will be sewerd by 2050 (buildout). This new assumption was recommended during the I/I project briefing by the Metropolitan Water Pollution Abatement Advisory Committee's Engineering and Planning Subcommittee.

Figures

1 RWSP and Updated Residential, Commercial, and Industrial Population Forecasts for the Entire Service Area (2000–2050)
2 Total RWSP and Updated Population Forecasts by Basin (2000–2050)
3 Wastewater Service Basins
4 Residential RWSP and Updated Population Forecasts by Basin (2000–2050)
5 Commercial RWSP and Updated Population Forecasts by Basin (2000–2050)
6 Industrial RWSP and Updated Population Forecasts by Basin (2000–2050)
7 RWSP and Updated Average Wet-Weather Flow Projections for the Entire Service Area (2000–2050)
8 RWSP and Updated Average Wet-Weather Flow Projections by Basin (2000–2050)
9 Kenmore Interceptor Sewer Sub-Basins
10 Wastewater Flow Projection Process

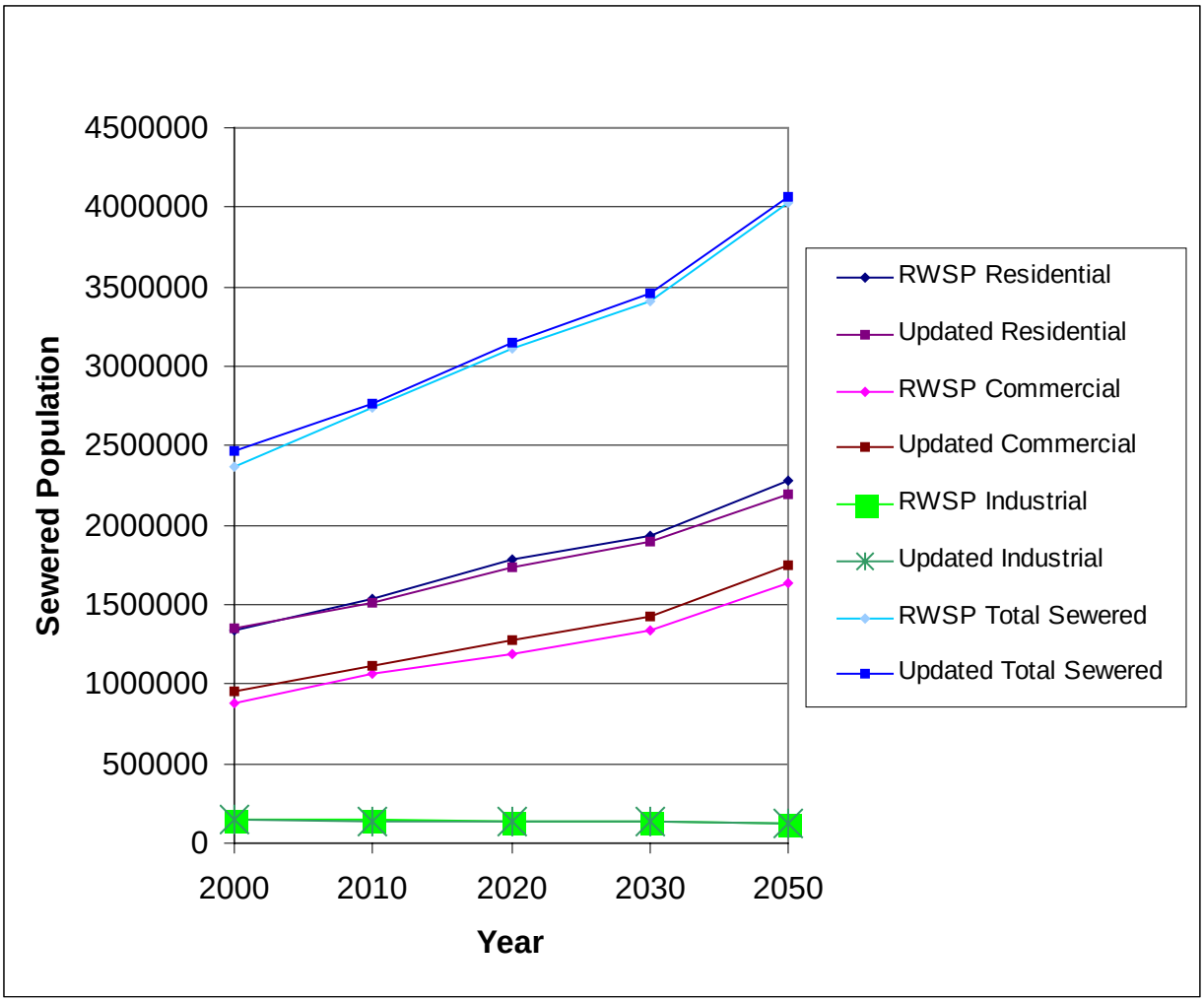

Figure 1. RWSP and Updated Residential, Commercial, and Industrial Population Forecasts for the Entire Service Area (2000–2050)

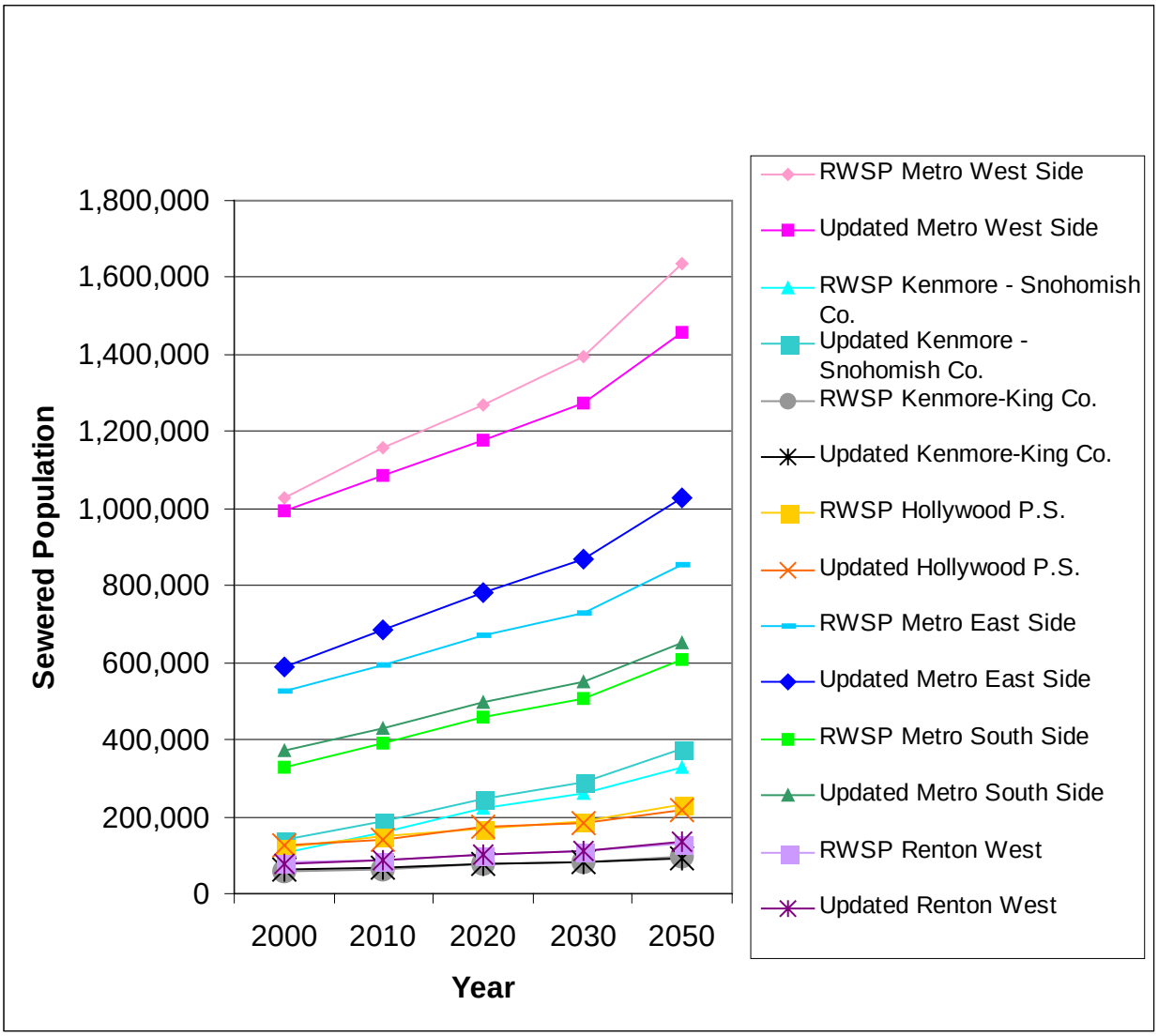

Figure 2. Total RWSP and Updated Population Forecasts by Basin (2000–2050)

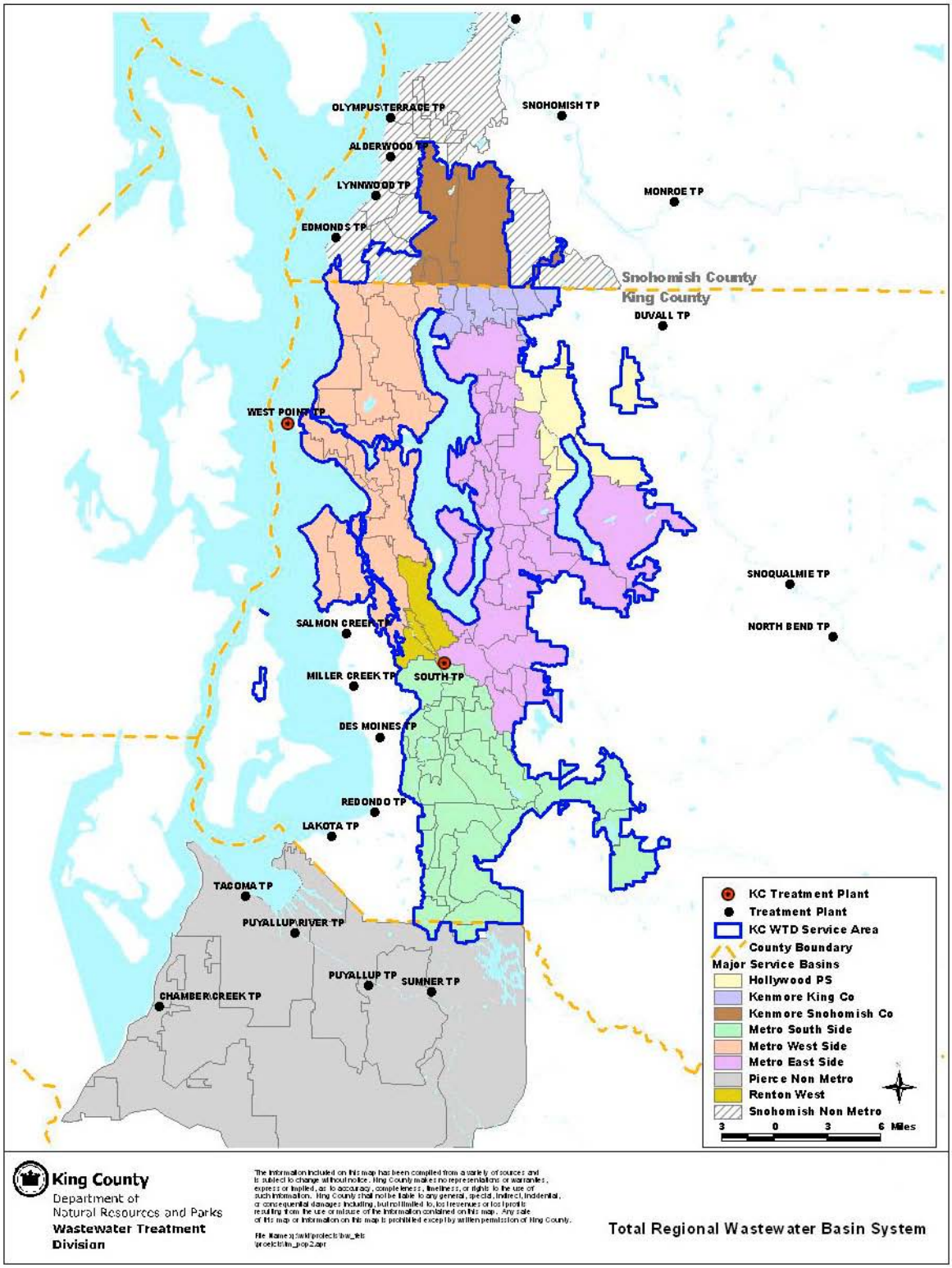

Figure 3. Wastewater Service Basins

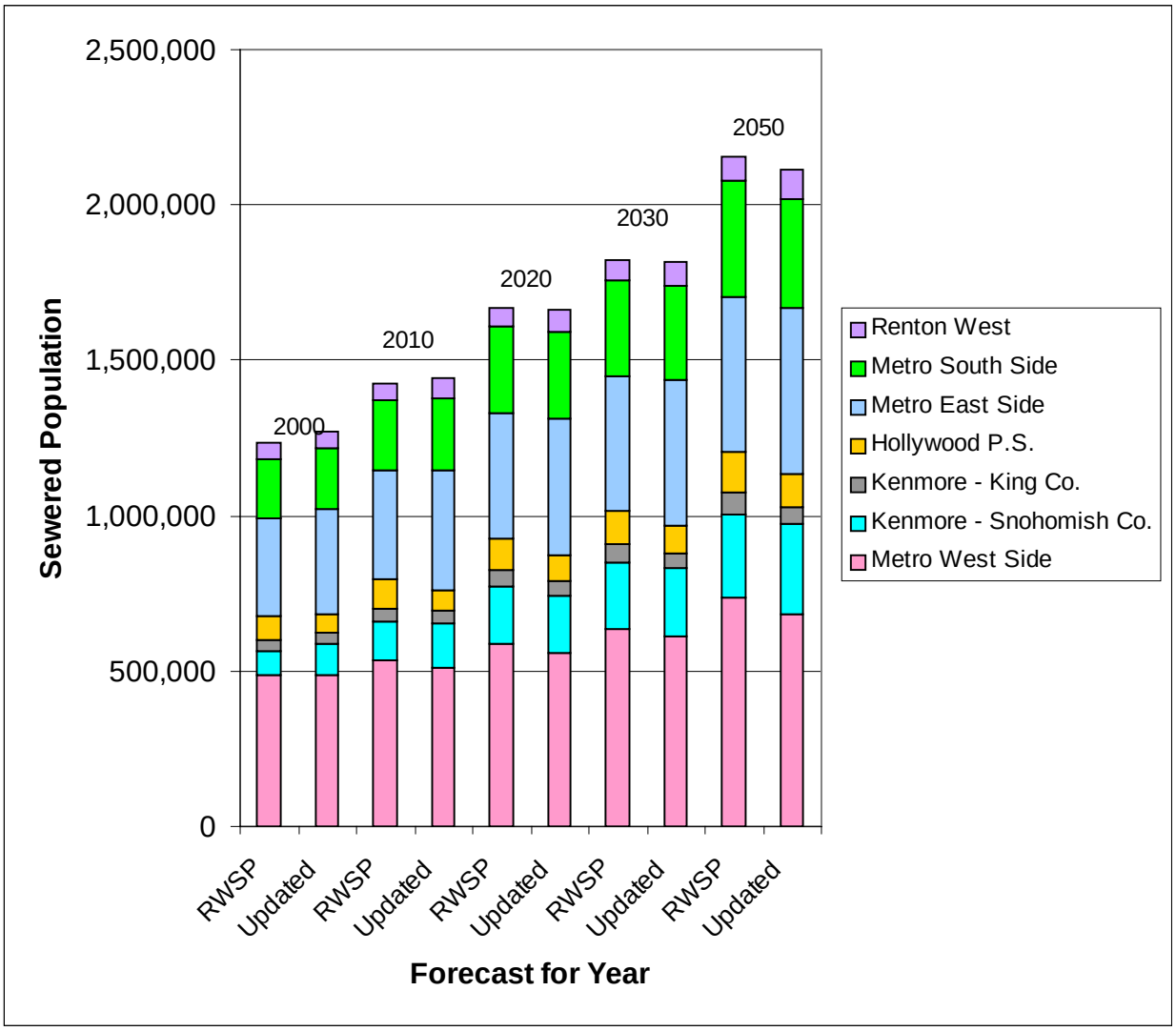

Figure 4. Residential RWSP and Updated Population Forecasts by Basin (2000–2050)

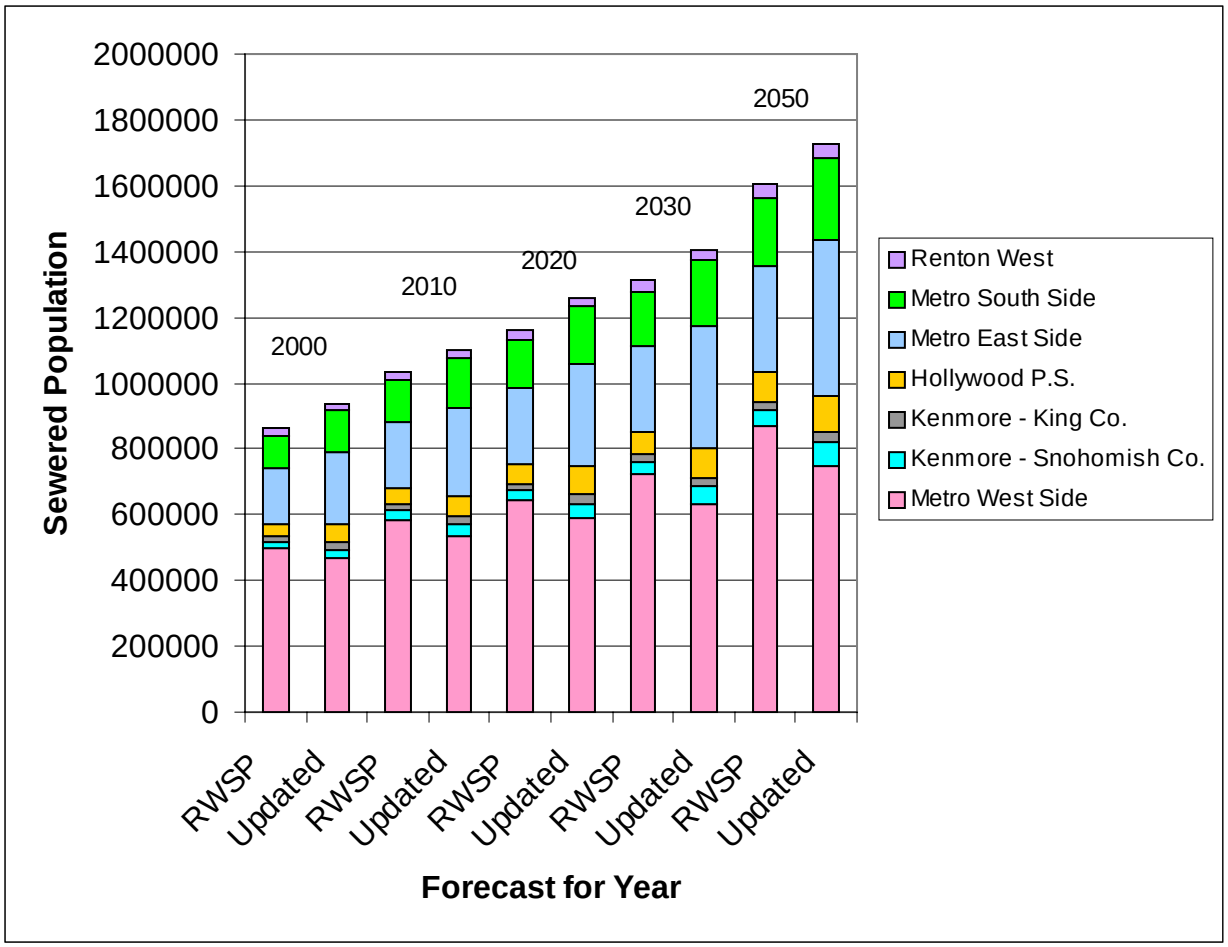

Figure 5. Commercial RWSP and Updated Population Forecasts by Basin (2000–2050)

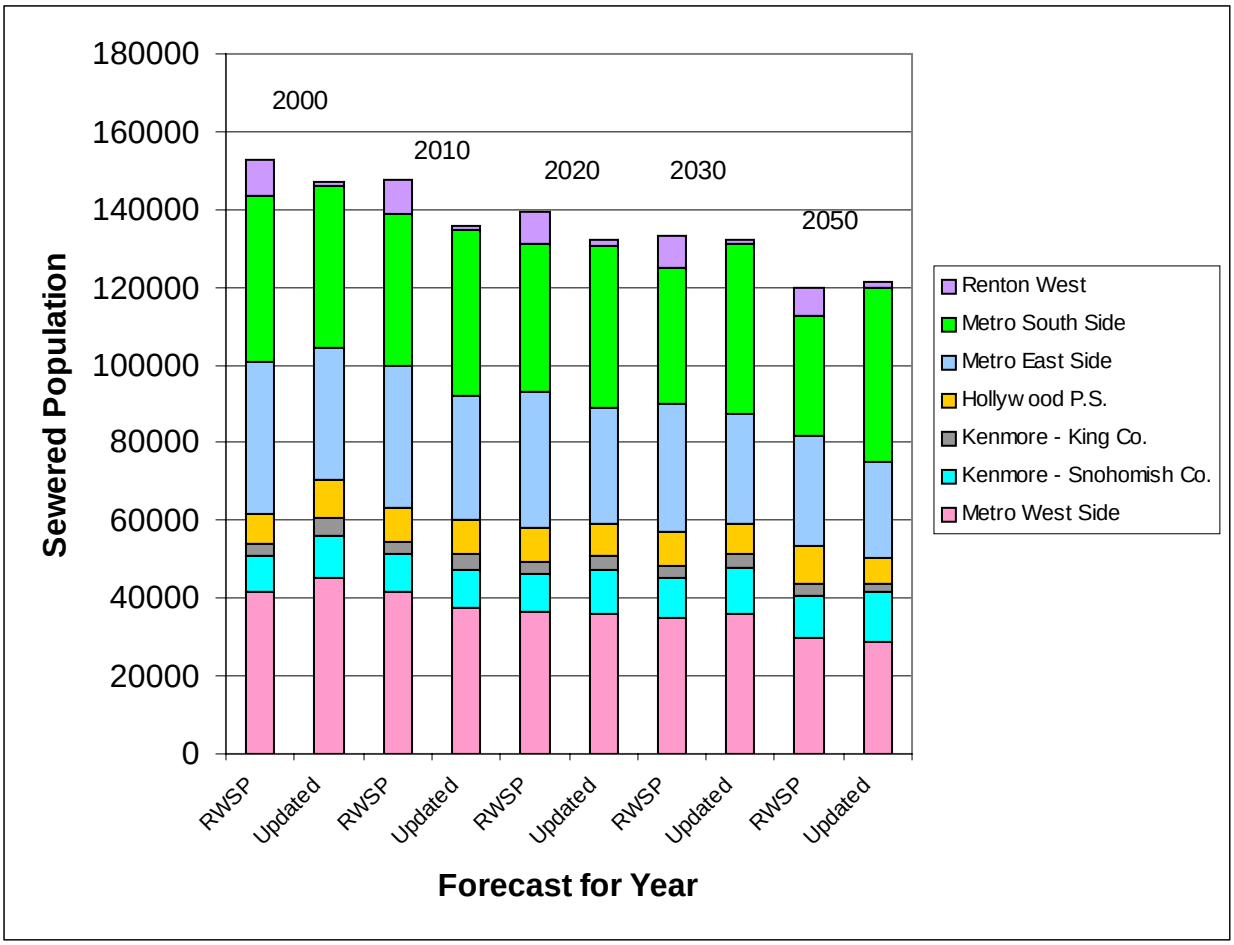

Figure 6. Industrial RWSP and Updated Population Forecasts by Basin (2000–2050)

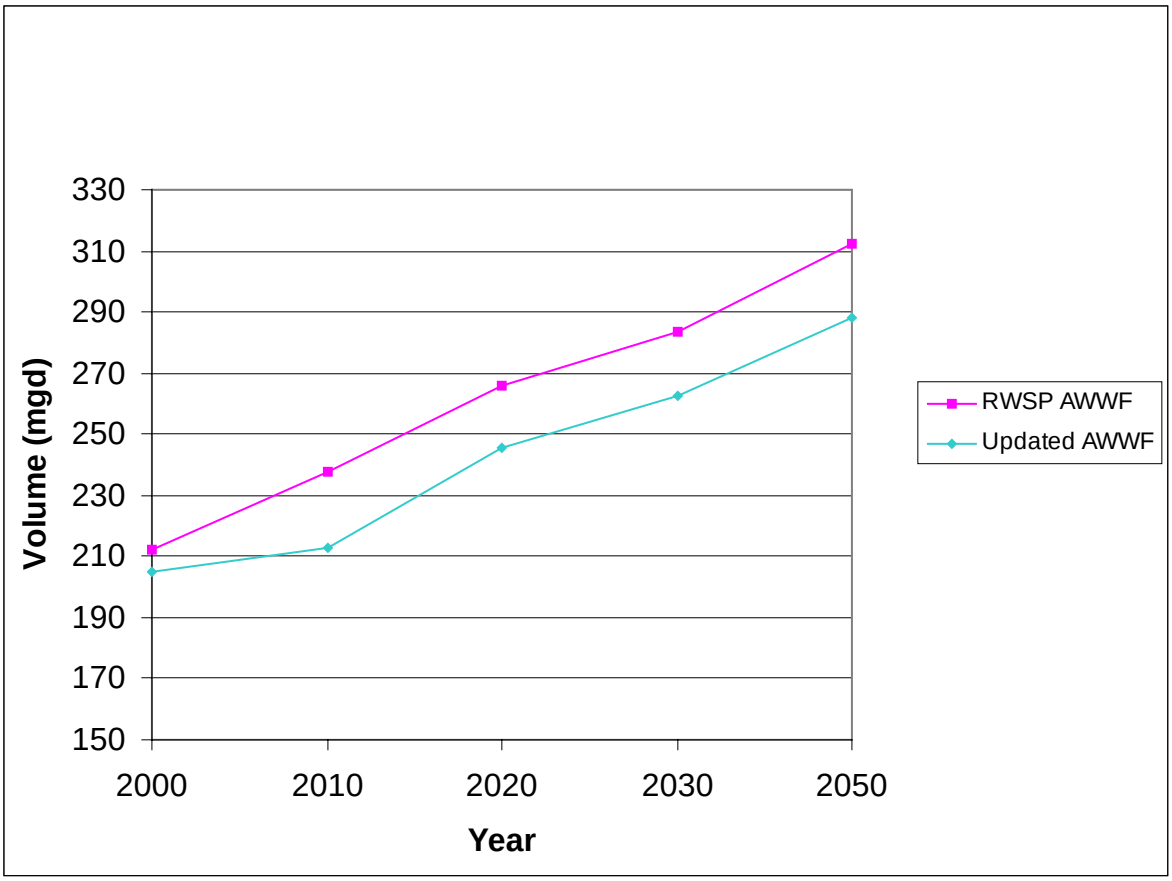

Figure 7. RWSP and Updated Average Wet-Weather Flow Projections for the Entire Service Area (2000–2050)

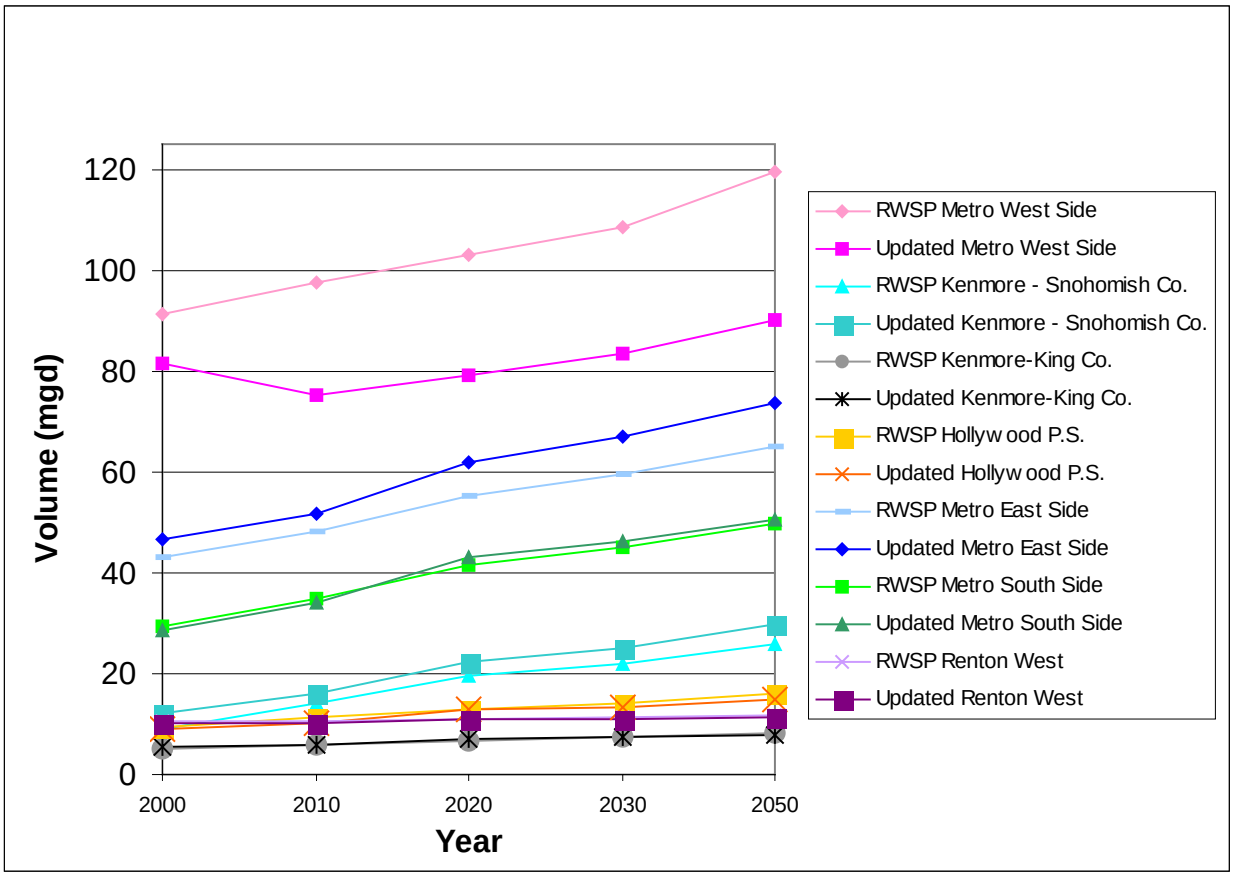

Figure 8. RWSP and Updated Average Wet-Weather Flow Projections by Basin (2000–2050)

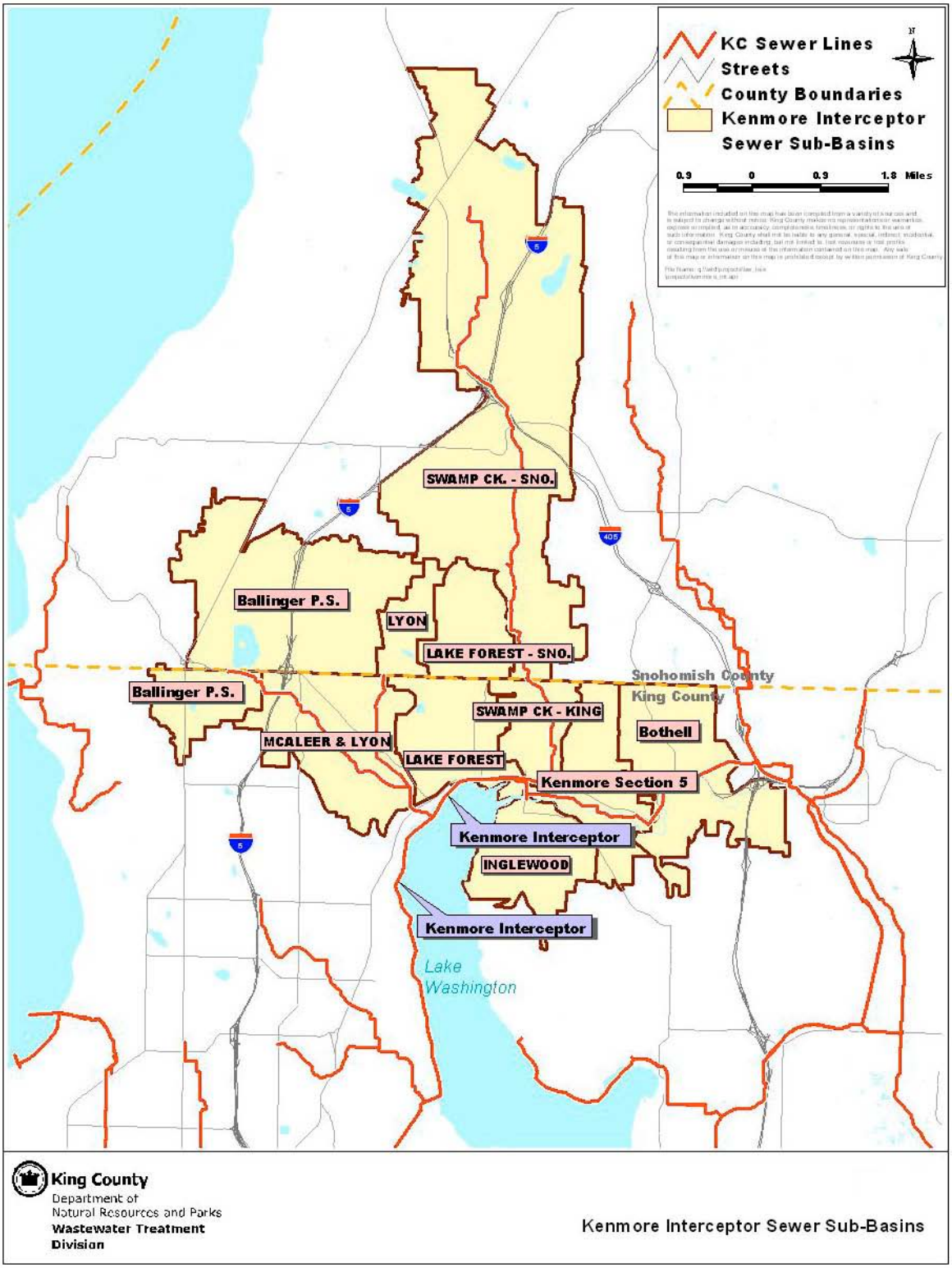

Figure 9. Kenmore Interceptor Sewer Sub-Basins

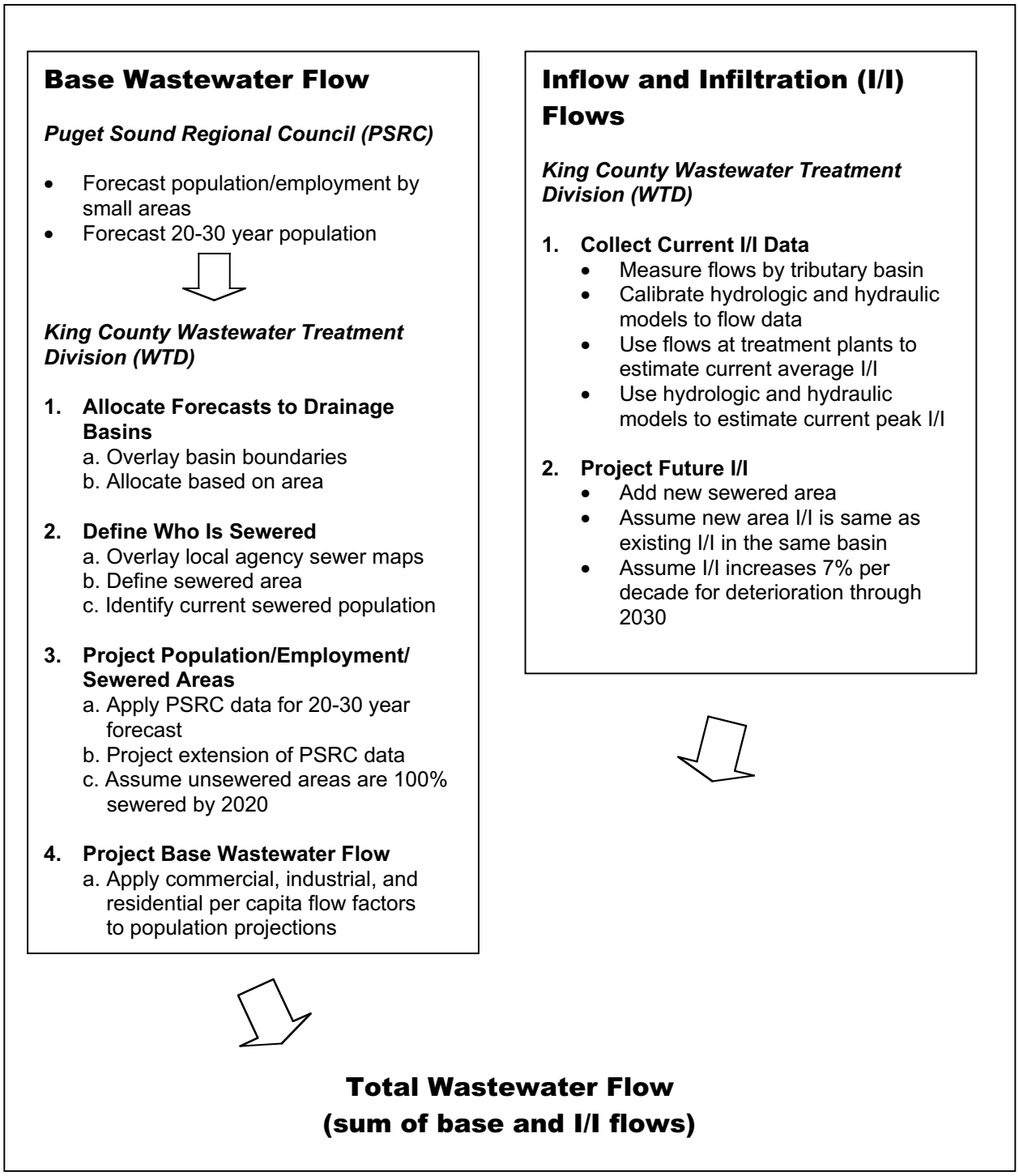

Figure 10. Wastewater Flow Projection Process

Attachment A—Population and Flow Projections by Decade

This attachment presents sewered population forecasts and wastewater flow projections for sewer basins in King County's wastewater service area. The information is grouped according to each decade of the RWSP planning period (2000 to 2030) and includes information on 2050 when buildout in the area is expected to occur. The two figures for each decade graphically depict residential, commercial, industrial, and total sewered populations and the average wet-weather flow (AWWF) for the basins, as projected for the RWSP and updated in 2003. The accompanying tables break down the updated population forecasts and AWWF projections by sub-basin and provide additional information, including base flow, average dry-weather flow, inflow and infiltration (I/I), and sewered land. The tables include information for three small basins—Ballinger-King, Carkeek Creek, and Alki—in addition to the seven basins discussed in this document. The forecasts and projections for these three basins are too small to show graphically.

Figure A-1—Year 2000 Total RWSP and Updated Population Forecasts by Basin
Figure A-2—Year 2000 RWSP and Updated Average Wet-Weather Flow by Basin
Table A-1—Year 2000 Updated Population and Flow Projections by Basin

Figure A-3—Year 2010 Total RWSP and Updated Population Forecasts by Basin
Figure A-4—Year 2010 RWSP and Updated Average Wet-Weather Flow by Basin
Table A-2—Year 2010 Updated Population and Flow Projections by Basin

Figure A-5—Year 2020 Total RWSP and Updated Population Forecasts by Basin
Figure A-6—Year 2020 RWSP and Updated Average Wet-Weather Flow by Basin
Table A-3—Year 2020 Updated Population and Flow Projections by Basin

Figure A-7—Year 2030 Total RWSP and Updated Population Forecasts by Basin
Figure A-8—Year 2030 RWSP and Updated Average Wet-Weather Flow by Basin
Table A-4—Year 2030 Updated Population and Flow Projections by Basin

Figure A-9—Year 2050 Total RWSP and Updated Population Forecasts by Basin
Figure A-10—Year 2050 RWSP and Updated Average Wet-Weather Flow by Basin
Table A-5—Year 2050 Updated Population and Flow Projections by Basin

Figure A-1
Year 2000 Total RWSP and Updated
Population Forecasts By Basin

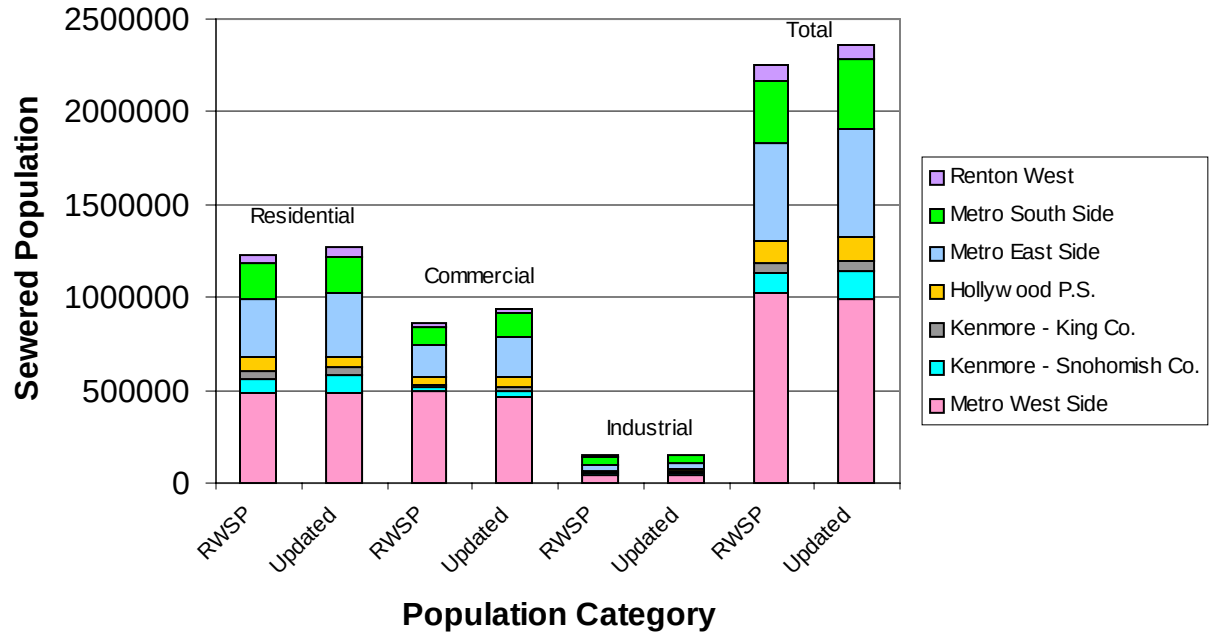

Figure A-2
Year 2000 RWSP and Updated
Average Wet-Weather Flow By Basin

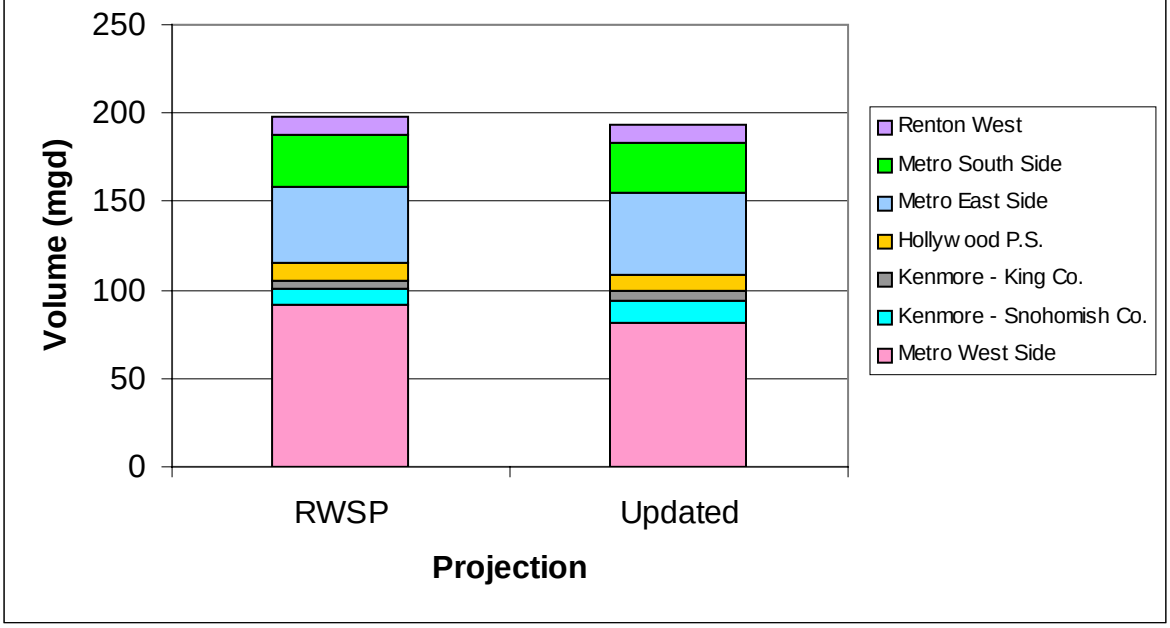

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro West Side											
Lake Forest	6,869	877	23	7,769	84%	1,083	0.4	0.1	0.4	0.5	0.8
McAleer & Lyon	13,356	1,981	36	15,373	81%	1,638	0.8	0.2	0.6	1.0	1.4
Matthews Park	69,028	24,488	370	93,886	82%	6,458	4.7	3.6	4.5	8.3	9.1
Green Lake	48,462	17,184	463	66,109	100%	4,113	3.3	2.3	2.8	5.6	6.1
Ballard	33,491	8,327	2,222	44,040	100%	2,484	2.3	1.4	1.7	3.7	4.0
University	38,784	22,219	143	61,146	100%	3,212	2.9	1.8	2.2	4.7	5.1
Fremont	32,445	21,487	1,876	55,808	100%	1,819	2.6	1.0	1.3	3.6	3.9
North Interceptor	19,181	5,997	2,548	27,726	100%	2,297	1.4	1.3	1.6	2.7	3.0
South Magnolia	9,336	3,444	346	13,126	100%	1,257	0.7	0.7	0.9	1.4	1.5
Central Trunk	22,921	74,667	1,654	99,242	100%	1,281	3.8	0.7	0.9	4.6	4.7
Denny	13,780	32,035	1,511	47,326	100%	524	1.9	0.3	0.4	2.2	2.3
Eastlake	30,479	36,491	3,531	70,501	100%	1,371	3.1	0.8	0.9	3.9	4.1
Montlake	25,807	5,167	107	31,081	100%	2,432	1.6	1.4	1.7	3.0	3.3
Connecticut & King	14,750	125,085	3,133	142,968	100%	996	5.1	0.6	0.7	5.7	5.8
Hanford & Lander	51,351	47,363	6,416	105,130	100%	4,840	4.8	2.7	3.3	7.5	8.1
West Duwamish	44,934	14,791	4,080	63,805	108%	7,290	3.2	4.1	5.0	7.3	8.3
East Duwamish	9,895	23,788	16,758	50,441	103%	3,909	2.3	2.2	2.7	4.4	5.0
Grn.Lk./dens./Rav.Cr.	0	0	0	0	0%	0	0.0	1.0	5.0	1.0	5.0
Total	**484,869**	**465,391**	**45,217**	**995,477**	**97%**	**47,004**	**45.0**	**25.9**	**36.5**	**70.9**	**81.5**
Kenmore - Snohomish Co.											

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Ballinger - Sno.	23,636	9,341	326	33,303	78%	2,538	1.9	0.3	0.9	2.2	2.8
Cross Valley	149	819	661	1,629	23%	182	0.1	0.0	0.1	0.1	0.1
North Creek - Sno	41,089	11,062	4,663	56,814	30%	4,636	3.3	0.5	1.7	3.8	5.0
Swamp Creek - Sno.	30,345	8,077	5,069	43,491	35%	2,970	2.5	0.3	1.1	2.9	3.6
Lake Forest - Sno.	2,150	137	3	2,290	39%	364	0.1	0.0	0.1	0.2	0.3
Lyon - Sno.	3,606	251	2	3,859	72%	370	0.2	0.0	0.1	0.3	0.4
Total	**100,975**	**29,687**	**10,724**	**141,386**	**37%**	**11,060**	**8.2**	**1.2**	**4.0**	**9.4**	**12.3**
Kenmore-King Co.											
Swamp Ck-King	3,675	1,224	40	4,939	65%	492	0.3	0.1	0.2	0.3	0.5
Bothell	9,605	3,528	68	13,201	58%	1,257	0.8	0.1	0.5	0.9	1.2
Kenmore Sect. 5	3,414	1,111	32	4,557	39%	502	0.3	0.1	0.2	0.3	0.4
North Ck-King	4,281	5,127	1,326	10,734	46%	500	0.5	0.1	0.2	0.6	0.7
Bear Creek-King	2,475	3,245	1,373	7,093	44%	639	0.3	0.1	0.2	0.4	0.6
Woodinville East	0	0	0	0	94%	823	0.0	0.1	0.3	0.1	0.3
Woodinville	5,862	4,856	1,963	12,681	57%	762	0.7	0.1	0.3	0.7	0.9
Inglewood	6,587	1,113	1	7,701	66%	809	0.5	0.1	0.3	0.6	0.8
Total	**35,899**	**20,204**	**4,803**	**60,906**	**57%**	**5,784**	**3.3**	**0.6**	**2.1**	**3.9**	**5.4**
Ballinger - King	5,651	1,966	12	7,629	80%	576	0.4	0.1	0.2	0.5	0.6
Carkeek Creek	25,566	4,213	119	29,898	99%	2,868	1.6	1.6	2.0	3.2	3.6
Alki	42,899	6,506	186	49,591	100%	4,190	2.6	2.3	2.9	5.0	5.5
Total West Point Plant Basin	**695,859**	**527,967**	**61,061**	**1,303,042**	**76%**	**73,347**	**62.0**	**31.9**	**48.4**	**93.9**	**110.4**

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Hollywood P.S.											
Redmond North	4,170	3,884	3,012	11,066	42%	816	0.6	0.1	0.3	0.7	0.9
Redmond East	19,622	12,976	6,642	39,240	47%	2,233	2.1	0.2	0.8	2.3	2.9
Redmond South	11,015	32,723	92	43,830	72%	1,197	1.8	0.1	0.4	1.9	2.2
Hol-Lake Hills	11,766	2,532	29	14,327	83%	1,262	0.9	0.1	0.5	1.0	1.3
Blakely/ North Ridge	387	69	2	458	0%	3	0.0	0.0	0.0	0.0	0.0
Northeast Sammamish	12,609	1,823	7	14,439	48%	1,698	0.9	0.2	0.6	1.1	1.5
Total	**59,569**	**54,007**	**9,784**	**123,360**	**45%**	**7,210**	**6.3**	**0.8**	**2.6**	**7.0**	**8.9**
Metro East Side											
Juanita PS	49,734	18,653	2,802	71,189	64%	4,867	4.1	0.5	1.8	4.6	5.8
Kirkland North	3,912	827	229	4,968	66%	513	0.3	0.1	0.2	0.4	0.5
Juanita Int.	2,399	1,426	381	4,206	80%	319	0.2	0.0	0.1	0.3	0.3
Kirkland PS	7,896	8,622	599	17,117	86%	887	0.8	0.1	0.3	0.9	1.2
Kirkland NE	5,022	2,100	196	7,318	46%	571	0.4	0.1	0.2	0.5	0.6
Kirk ESI-14	7,736	6,663	209	14,608	54%	1,025	0.7	0.1	0.4	0.9	1.1
ESI-13	2,742	17,209	989	20,940	64%	565	0.8	0.1	0.2	0.9	1.0
Bellevue	29,940	27,169	5,153	62,262	68%	3,629	3.2	0.4	1.3	3.5	4.5
Medina	6,426	896	8	7,330	77%	1,428	0.5	0.2	0.5	0.6	1.0
Yarrow	3,603	7,019	246	10,868	72%	536	0.5	0.1	0.2	0.5	0.7
Lake Hills	13,898	11,055	1,192	26,145	74%	1,431	1.3	0.2	0.5	1.5	1.9
Bellevue PS	9,088	25,886	622	35,596	88%	1,220	1.5	0.1	0.4	1.6	1.9

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Sweyolocken	6,063	20,105	471	26,639	58%	1,059	1.1	0.1	0.4	1.2	1.5
Wilburton	8,416	5,605	309	14,330	54%	1,107	0.8	0.1	0.4	0.9	1.2
Factoria	4,023	7,186	42	11,251	67%	553	0.5	0.1	0.2	0.6	0.7
Eastgate	13,091	1,956	117	15,164	56%	1,749	0.9	0.2	0.6	1.1	1.6
Sunset	8,802	3,050	2,880	14,732	65%	1,021	0.8	0.1	0.4	0.9	1.2
Mercer North	10,168	5,812	19	15,999	78%	1,342	0.9	0.1	0.5	1.0	1.4
Mercer South	11,619	1,302	13	12,934	84%	1,960	0.8	0.2	0.7	1.0	1.5
Hazelwood	8,351	795	34	9,180	57%	1,097	0.6	0.1	0.4	0.7	1.0
May Creek	1,638	132	7	1,777	24%	229	0.1	0.0	0.1	0.1	0.2
Coal Creek	12,176	1,275	77	13,528	32%	1,563	0.8	0.2	0.6	1.0	1.4
Issaquah	9,026	8,434	792	18,252	29%	1,495	0.9	0.2	0.5	1.1	1.5
Sammamish Plateau	25,680	11,245	656	37,581	27%	3,409	2.1	0.4	1.2	2.5	3.3
Renton ESI-2	25,072	7,086	9,164	41,322	65%	2,666	2.4	0.3	1.0	2.7	3.4
Renton ESI-1	13,723	12,881	2,977	29,581	60%	1,757	1.5	0.2	0.6	1.7	2.1
Renton Cedar	6,854	1,358	38	8,250	18%	783	0.5	0.1	0.3	0.6	0.8
Cedar Mol	5,569	542	9	6,120	50%	508	0.4	0.1	0.2	0.4	0.6
Cedar Mad	9,352	1,164	9	10,525	41%	820	0.7	0.1	0.3	0.7	1.0
Bryn Mawr	5,301	662	3,560	9,523	89%	775	0.6	0.1	0.3	0.7	0.8
Boeing	4	3	7	14	31%	17	0.0	0.0	0.0	0.0	0.0
Soosn	4,590	458	0	5,048	77%	525	0.3	0.1	0.2	0.4	0.5
Sooscent (50%)	5,930	636	6	6,572	43%	529	0.4	0.1	0.2	0.4	0.6
Total	**337,844**	**219,212**	**33,813**	**590,869**	**51%**	**41,955**	**31.4**	**4.5**	**15.3**	**35.9**	**46.6**
Metro South Side											
Covington	2,286	998	46	3,330	9%	474	0.2	0.1	0.2	0.2	0.4

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Tukwila South	12,476	38,531	3,069	54,076	67%	2,080	2.3	0.2	0.8	2.5	3.0
Renton	3,247	11,328	6,156	20,731	53%	1,099	0.9	0.1	0.4	1.0	1.3
Ulid/c2	84	5,787	6,967	12,838	73%	857	0.6	0.1	0.3	0.7	0.9
Ulid1	34	5,887	3,258	9,179	80%	853	0.4	0.1	0.3	0.5	0.7
250n	158	423	502	1,083	16%	261	0.1	0.0	0.1	0.1	0.1
250s	1,754	1,769	769	4,292	59%	593	0.2	0.1	0.2	0.3	0.4
Kentxval	154	663	547	1,364	83%	341	0.1	0.0	0.1	0.1	0.2
Ulid/c5e	203	2,868	1,193	4,264	84%	267	0.2	0.0	0.1	0.2	0.3
Garrison	11,747	1,483	121	13,351	52%	932	0.8	0.1	0.3	0.9	1.2
Whill	7,133	858	4	7,995	39%	773	0.5	0.1	0.3	0.6	0.8
Ulid4	9,513	7,079	2,874	19,466	58%	398	1.0	0.0	0.1	1.1	1.2
Aub2	5,438	5,302	1,237	11,977	26%	847	0.6	0.1	0.3	0.7	0.9
Aub3	3,118	4,477	1,971	9,566	26%	950	0.5	0.1	0.3	0.6	0.8
Fwaub3	1,674	592	128	2,394	23%	224	0.1	0.0	0.1	0.2	0.2
Fwne	1,015	528	124	1,667	12%	255	0.1	0.0	0.1	0.1	0.2
Msttrk	32,520	10,346	4,894	47,760	46%	2,740	2.8	0.3	1.0	3.1	3.8
Wint	3,279	6,307	4,608	14,194	68%	1,318	0.7	0.1	0.5	0.8	1.2
Algona	3,073	4,551	995	8,619	58%	677	0.4	0.1	0.2	0.5	0.7
Pacific	4,458	2,174	949	7,581	60%	613	0.4	0.1	0.2	0.5	0.6
Segreen	682	173	7	862	20%	90	0.1	0.0	0.0	0.1	0.1
Mill	26,727	7,774	588	35,089	57%	2,257	2.1	0.2	0.8	2.3	2.9
Jenkins	19,806	4,604	88	24,498	34%	2,251	1.5	0.2	0.8	1.7	2.3
Soosrent	4,929	2,644	4	7,577	60%	389	0.4	0.0	0.1	0.5	0.6
Ulid1/c2	9,002	1,872	264	11,138	55%	929	0.7	0.1	0.3	0.8	1.0
Soosmill	14,968	1,560	15	16,543	47%	1,577	1.0	0.2	0.6	1.2	1.6

Table A-1. Year 2000 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Sooscent (50%)	5,930	636	6	6,572	43%	529	0.4	0.1	0.2	0.4	0.6
Soose	1,030	48	0	1,078	15%	85	0.1	0.0	0.0	0.1	0.1
Southern soos	2,412	232	11	2,655	15%	267	0.2	0.0	0.1	0.2	0.3
White River	7,595	736	69	8,400	8%	270	0.5	0.0	0.1	0.6	0.6
Total	**196,445**	**132,230**	**41,464**	**370,139**	**39%**	**25,195**	**19.6**	**2.7**	**9.2**	**22.3**	**28.7**
Renton West											
Norfolk	45,601	6,736	640	52,977	91%	4,464	2.8	3.3	5.6	6.1	8.4
Tukwila North	10,001	8,607	735	19,343	74%	1,160	1.0	0.1	0.4	1.1	1.4
Interurban	1,057	1,542	148	2,747	47%	484	0.1	0.1	0.2	0.2	0.3
Total	**56,659**	**16,885**	**1,523**	**75,067**	**81%**	**6,108**	**3.9**	**3.5**	**6.2**	**7.4**	**10.1**
Total Renton Plant Basin	**650,516**	**422,334**	**86,584**	**1,159,434**	**47%**	**80,468**	**61.1**	**11.4**	**33.2**	**72.6**	**94.3**
Metro System	**1,346,375**	**950,301**	**147,645**	**2,462,476**	**58%**	**153,814**	**123.1**	**43.4**	**81.7**	**166.5**	**204.8**

Figure A-3
Year 2010 Total RWSP and Updated
Population Forecasts By Basin

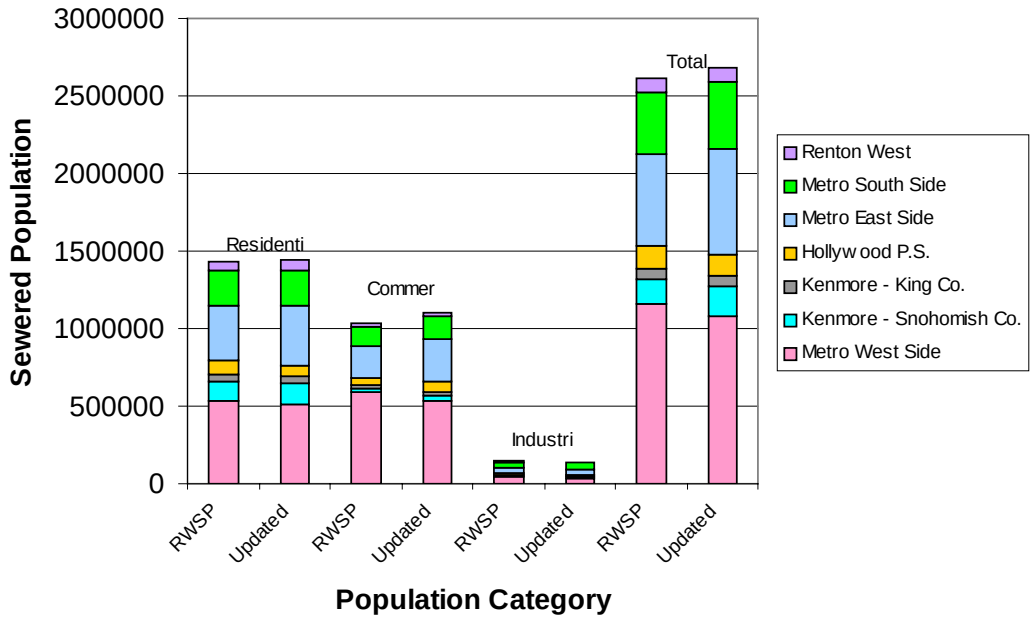

Figure A-4
Year 2010 RWSP and Updated
Average Wet-Weather Flow By Basin

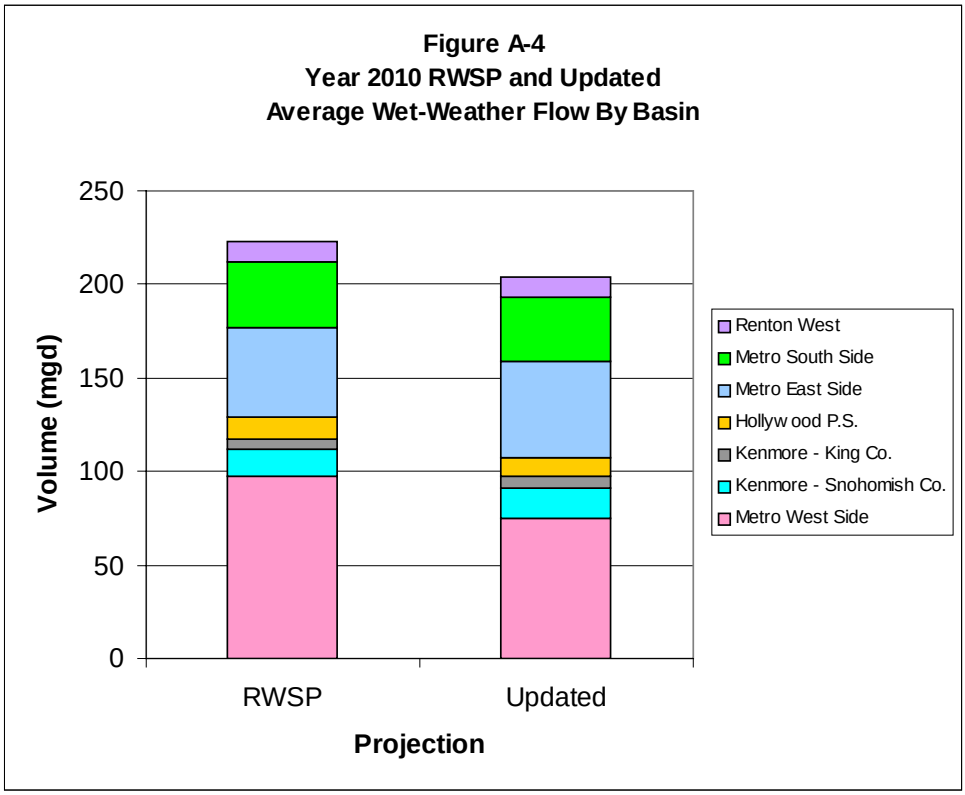

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro West Side											
Lake Forest	7,312	1,045	24	8,381	89%	1,144	0.4	0.1	0.4	0.5	0.8
McAleer & Lyon	14,407	2,248	26	16,681	87%	1,759	0.8	0.2	0.6	1.0	1.4
Matthews Park	71,311	28,500	309	100,120	82%	6,521	4.4	3.6	4.5	8.1	8.9
Green Lake	50,553	18,991	345	69,889	100%	4,118	3.1	2.3	2.8	5.4	6.0
Ballard	34,038	9,434	1,900	45,372	100%	2,484	2.1	1.4	1.7	3.5	3.8
University	38,966	24,015	129	63,110	100%	3,212	2.7	1.8	2.2	4.5	4.9
Fremont	32,951	23,938	1,428	58,317	100%	1,819	2.4	1.0	1.3	3.4	3.7
North Interceptor	19,465	7,019	1,882	28,366	100%	2,297	1.3	1.3	1.6	2.6	2.9
South Magnolia	9,619	3,964	279	13,862	100%	1,257	0.6	0.7	0.9	1.3	1.5
Central Trunk	26,731	89,111	1,429	117,271	100%	1,281	4.1	0.7	0.9	4.8	5.0
Denny	17,827	41,438	1,261	60,526	100%	524	2.2	0.3	0.4	2.5	2.6
Eastlake	32,991	44,949	3,269	81,209	100%	1,371	3.2	0.8	0.9	3.9	4.1
Montlake	25,967	5,725	69	31,761	100%	2,432	1.5	1.4	1.7	2.8	3.2
Connecticut & King	18,325	139,176	2,082	159,583	100%	996	5.2	0.6	0.7	5.7	5.9
Hanford & Lander	53,716	52,593	4,734	111,043	100%	4,840	4.5	2.7	3.3	7.2	7.8
West Duwamish	47,460	16,628	3,537	67,625	109%	7,350	3.0	4.1	5.1	7.1	8.1
East Duwamish	10,697	25,302	14,700	50,699	105%	4,009	2.0	2.2	2.8	4.3	4.8
Total	**512,336**	**534,076**	**37,403**	**1,083,815**	**98%**	**47,417**	**43.5**	**25.1**	**31.8**	**68.6**	**75.3**

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Kenmore - Snohomish Co.											
Ballinger - Sno.	25,653	10,433	188	36,274	80%	2,606	1.9	0.3	0.9	2.1	2.8
Cross Valley	268	831	602	1,701	41%	318	0.1	0.0	0.1	0.1	0.2
North Creek - Sno	59,200	15,304	4,565	79,069	50%	7,898	4.2	0.8	2.9	5.1	7.1
Swamp Creek - Sno.	46,341	11,134	4,771	62,246	60%	5,175	3.4	0.6	1.9	3.9	5.2
Lake Forest - Sno.	3,650	181	5	3,836	68%	632	0.2	0.1	0.2	0.3	0.5
Lyon	4,209	273	2	4,484	76%	388	0.3	0.0	0.1	0.3	0.4
Total	**139,321**	**38,156**	**10,133**	**187,610**	**57%**	**17,017**	**10.0**	**1.8**	**6.2**	**11.8**	**16.2**
Kenmore- King Co.											
Swamp Ck-King	3,962	1,431	42	5,435	76%	575	0.3	0.1	0.2	0.3	0.5
Bothell	10,392	3,816	50	14,258	71%	1,532	0.7	0.2	0.6	0.9	1.3
Kenmore Sect. 5	3,986	1,409	36	5,431	56%	730	0.3	0.1	0.3	0.4	0.5
North Ck-King	4,671	5,299	868	10,838	61%	664	0.5	0.1	0.2	0.6	0.7
Bear Creek-King	3,183	3,998	1,271	8,452	67%	989	0.4	0.1	0.4	0.5	0.7
Woodinville East	856	592	103	1,551	94%	823	0.1	0.1	0.3	0.2	0.4
Woodinville	6,411	4,825	1,610	12,846	71%	941	0.6	0.1	0.3	0.7	1.0
Inglewood	7,063	1,439	1	8,503	72%	884	0.5	0.1	0.3	0.6	0.8
Total	**40,524**	**22,809**	**3,981**	**67,314**	**70%**	**7,138**	**3.3**	**0.8**	**2.6**	**4.1**	**5.9**

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Ballinger – King	5,721	1,964	8	7,693	80%	578	0.4	0.1	0.2	0.5	0.6
Carkeek Creek	26,196	4,537	94	30,827	99%	2,868	1.5	1.6	2.0	3.0	3.4
Alki	43,475	7,538	161	51,174	100%	4,190	2.4	2.3	2.9	4.7	5.3
Total West Point Plant Basin	**767,573**	**609,080**	**51,780**	**1,428,433**	**82%**	**79,208**	**61.1**	**31.6**	**45.6**	**92.7**	**106.7**
Hollywood P.S.											
Redmond North	4,905	5,474	2,630	13,009	50%	963	0.6	0.1	0.4	0.7	0.9
Redmond East	23,226	17,312	6,016	#REF!	61%	2,913	2.2	0.3	1.1	2.5	3.3
Redmond South	13,094	33,251	87	46,432	74%	1,236	1.8	0.1	0.4	1.9	2.2
Hol-Lake Hills	12,568	3,005	29	15,602	85%	1,300	0.8	0.1	0.5	1.0	1.3
Blakely/North Ridge	1,739	477	23	2,239	38%	982	0.1	0.1	0.4	0.2	0.5
Northeast Sammamish	14,949	2,314	11	17,274	63%	2,214	1.0	0.2	0.8	1.2	1.8
Total	**70,481**	**61,833**	**8,796**	**141,110**	**60%**	**9,608**	**6.5**	**1.0**	**3.5**	**7.6**	**10.0**
Metro East Side											

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Juanita PS	52,928	21,256	2,466	76,650	74%	5,669	3.9	0.6	2.1	4.5	6.0
Kirkland North	4,395	994	254	5,643	71%	551	0.3	0.1	0.2	0.4	0.5
Juanita Int.	2,589	1,528	264	4,381	83%	332	0.2	0.0	0.1	0.2	0.3
Kirkland PS	8,584	9,203	524	18,311	86%	889	0.8	0.1	0.3	0.9	1.1
Kirkland NE	6,405	2,592	303	9,300	68%	843	0.5	0.1	0.3	0.6	0.8
Kirk ESI-14	9,114	7,193	145	16,452	64%	1,233	0.8	0.1	0.4	0.9	1.2
ESI-13	2,832	18,447	1,022	22,301	68%	608	0.8	0.1	0.2	0.8	1.0
Bellevue	32,194	33,744	5,053	70,991	78%	4,137	3.2	0.4	1.5	3.6	4.7
Medina	6,407	1,292	6	7,705	79%	1,465	0.4	0.2	0.5	0.6	1.0
Yarrow	3,772	7,299	172	11,243	73%	545	0.5	0.1	0.2	0.5	0.7
Lake Hills	14,173	12,096	937	27,206	76%	1,475	1.3	0.2	0.5	1.4	1.8
Bellevue PS	10,747	33,231	678	44,656	90%	1,250	1.7	0.1	0.5	1.8	2.1
Sweyolocken	7,220	25,525	508	33,253	60%	1,096	1.2	0.1	0.4	1.3	1.6
Wilburton	8,762	6,826	292	15,880	63%	1,278	0.7	0.1	0.5	0.9	1.2
Factoria	4,269	8,099	38	12,406	74%	607	0.5	0.1	0.2	0.6	0.7
Eastgate	14,436	2,368	93	16,897	66%	2,044	0.9	0.2	0.7	1.2	1.7
Sunset	9,140	3,158	2,356	14,654	71%	1,120	0.8	0.1	0.4	0.9	1.2
Mercer North	10,658	5,913	12	16,583	79%	1,355	0.8	0.1	0.5	1.0	1.3
Mercer South	12,142	1,427	8	13,577	85%	2,000	0.8	0.2	0.7	1.0	1.5
Hazelwood	9,260	1,233	29	10,522	65%	1,245	0.6	0.1	0.5	0.7	1.0
May Creek	2,524	259	9	2,792	54%	519	0.2	0.1	0.2	0.2	0.3
Coal Creek	14,009	1,716	34	15,759	44%	2,133	0.9	0.2	0.8	1.1	1.7
Issaquah	10,038	9,686	534	20,258	43%	2,189	0.9	0.2	0.8	1.2	1.7
Sammamish Plateau	36,618	17,404	620	54,642	56%	7,210	2.8	0.8	2.6	3.5	5.4

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Renton ESI-2	28,731	10,041	8,569	47,341	77%	3,128	2.5	0.3	1.1	2.8	3.6
Renton ESI-1	16,025	20,082	3,122	39,229	68%	1,977	1.7	0.2	0.7	1.9	2.4
Renton Cedar	11,903	2,238	56	14,197	47%	2,052	0.8	0.2	0.7	1.0	1.5
Cedar Mol	6,052	667	11	6,730	60%	619	0.4	0.1	0.2	0.5	0.6
Cedar Mad	9,959	1,392	10	11,361	54%	1,075	0.6	0.1	0.4	0.8	1.0
Bryn Mawr	6,006	1,037	3,376	10,419	91%	788	0.6	0.1	0.3	0.6	0.8
Boeing	6	8	7	21	31%	17	0.0	0.0	0.0	0.0	0.0
Soosn	4,700	631	0	5,331	79%	540	0.3	0.1	0.2	0.4	0.5
Sooscent (50%)	6,923	861	8	7,791	62%	770	0.4	0.1	0.3	0.5	0.7
Total	**383,521**	**269,446**	**31,515**	**684,481**	**65%**	**52,759**	**32.7**	**5.7**	**19.2**	**38.3**	**51.9**
Metro South Side											
Covington	3,819	1,192	40	5,051	37%	1,876	0.3	0.2	0.7	0.5	0.9
Tukwila South	14,609	43,464	3,086	61,159	74%	2,294	2.3	0.2	0.8	2.6	3.2
Renton	3,648	15,803	7,591	27,042	66%	1,377	1.1	0.1	0.5	1.2	1.6
Ulid/c2	87	5,233	6,377	11,697	81%	959	0.5	0.1	0.3	0.6	0.8
Ulid1	82	5,513	3,072	8,667	86%	917	0.3	0.1	0.3	0.4	0.7
250n	291	1,068	1,014	2,373	39%	643	0.1	0.1	0.2	0.2	0.3
250s	1,833	1,806	774	4,413	64%	640	0.2	0.1	0.2	0.3	0.4
Kentxval	179	734	578	1,491	86%	353	0.1	0.0	0.1	0.1	0.2
Ulid/c5e	213	2,726	1,167	4,106	87%	278	0.2	0.0	0.1	0.2	0.3
Garrison	13,211	2,042	167	15,420	73%	1,302	0.9	0.1	0.5	1.0	1.3
Whill	8,022	1,010	7	9,039	50%	994	0.5	0.1	0.4	0.6	0.9
Ulid4	9,949	7,112	2,818	19,879	60%	418	1.0	0.0	0.2	1.0	1.1

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Aub2	6,129	6,437	1,777	14,343	34%	1,122	0.6	0.1	0.4	0.8	1.1
Aub3	4,445	4,887	1,386	10,718	48%	1,753	0.5	0.2	0.6	0.7	1.1
Fwaub3	1,952	640	97	2,689	44%	441	0.1	0.0	0.2	0.2	0.3
Fwne	1,578	793	133	2,504	35%	726	0.1	0.1	0.3	0.2	0.4
Msttrk	39,487	11,636	4,784	55,907	63%	3,722	3.0	0.4	1.4	3.4	4.3
Wint	3,814	6,784	4,680	15,278	72%	1,395	0.7	0.1	0.5	0.8	1.2
Algona	3,739	4,604	1,008	9,351	68%	789	0.4	0.1	0.3	0.5	0.7
Pacific	5,283	2,519	1,111	8,913	71%	718	0.4	0.1	0.3	0.5	0.7
Segreen	754	143	4	901	48%	218	0.0	0.0	0.1	0.1	0.1
Mill	31,456	9,085	667	41,208	74%	2,900	2.2	0.3	1.1	2.5	3.2
Jenkins	23,042	5,836	72	28,950	56%	3,759	1.6	0.4	1.4	2.0	2.9
Soosrent	5,665	3,587	4	9,256	78%	500	0.4	0.1	0.2	0.5	0.6
Ulid1/c2	10,317	2,239	280	12,836	71%	1,206	0.7	0.1	0.4	0.8	1.1
Soosmill	17,215	2,961	20	20,196	60%	2,007	1.1	0.2	0.7	1.3	1.9
Sooscent (50%)	6,923	861	8	7,791	62%	770	0.4	0.1	0.3	0.5	0.7
Soose	1,261	140	0	1,401	40%	232	0.1	0.0	0.1	0.1	0.2
Southern soos	3,471	340	15	3,826	52%	945	0.2	0.1	0.3	0.3	0.6
White River	10,158	974	84	11,216	37%	1,312	0.6	0.1	0.5	0.8	1.1
Total	**232,632**	**152,169**	**42,821**	**427,621**	**57%**	**36,566**	**20.7**	**3.9**	**13.3**	**24.6**	**34.0**
Renton West											
Norfolk	50,618	8,215	450	59,283	95%	4,674	2.8	3.3	5.6	6.1	8.4
Tukwila North	11,530	11,769	736	24,035	80%	1,258	1.1	0.1	0.5	1.2	1.5
Interurban	1,667	2,347	153	4,167	55%	563	0.2	0.1	0.2	0.2	0.4
Total	**63,815**	**22,331**	**1,339**	**87,485**	**86%**	**6,495**	**4.1**	**3.5**	**6.3**	**7.6**	**10.3**

Table A-2. Year 2010 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Total Renton Plant Basin	750,449	505,778	84,470	1,340,697	62%	105,429	63.9	14.1	42.3	78.0	106.2
Metro System	1,518,022	1,114,858	136,250	2,769,130	70%	184,636	125.0	45.8	87.9	170.8	212.9

Figure A-5
Year 2020 Total RWSP and Updated
Population Forecasts By Basin

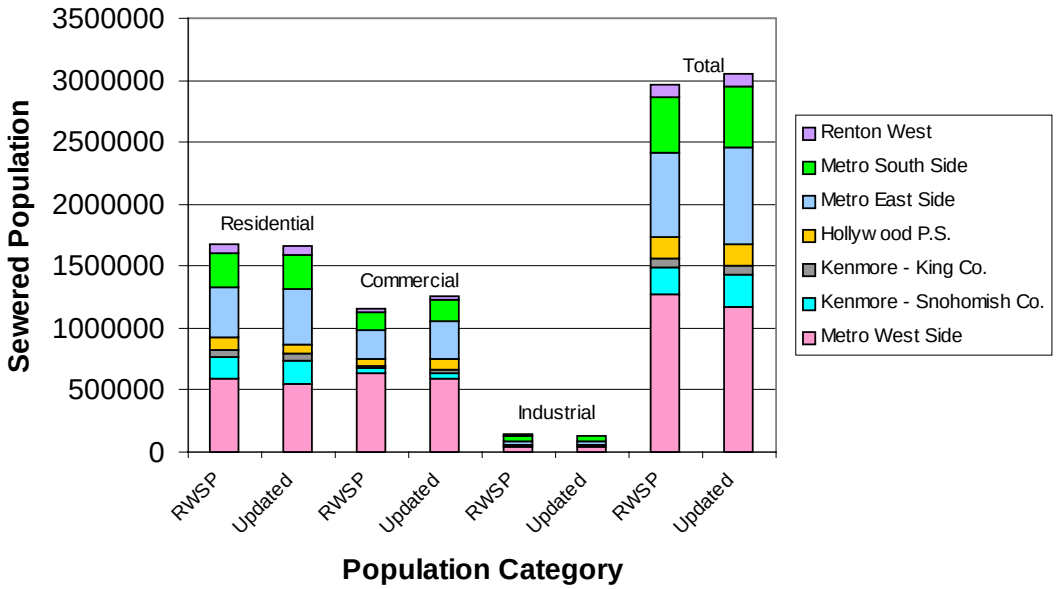

Figure A-6
Year 2020 RWSP and Updated
Average Wet-Weather Flow By Basin

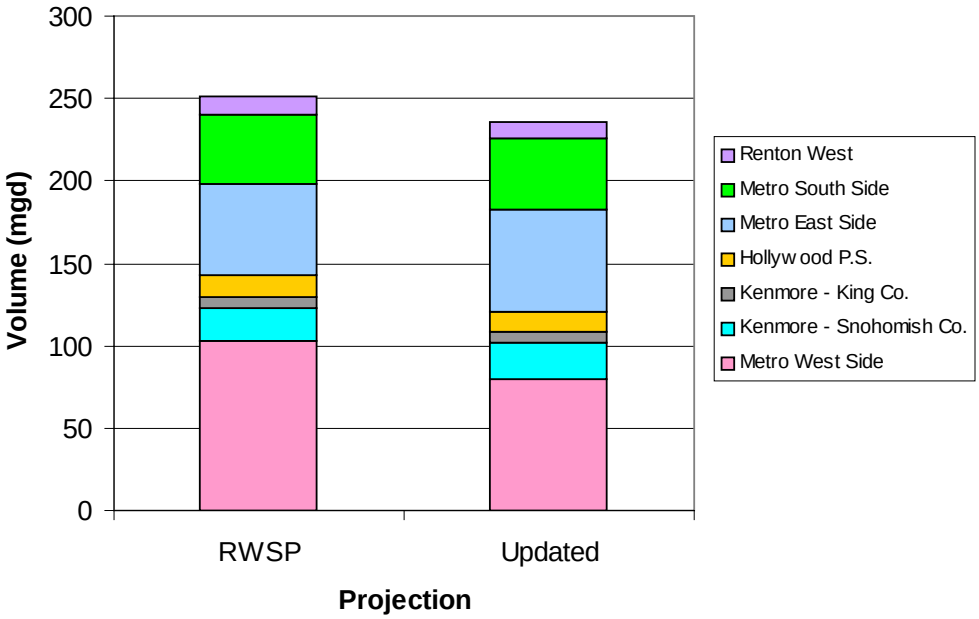

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro West Side											
Lake Forest	7,708	1,272	33	9,013	93%	1,205	0.4	0.1	0.5	0.6	0.9
McAleer & Lyon	15,310	2,848	25	18,183	93%	1,881	0.9	0.2	0.7	1.1	1.6
Matthews Park	74,558	33,591	354	108,503	83%	6,585	4.8	3.7	4.5	8.4	9.3
Green Lake	53,334	21,877	366	75,577	100%	4,123	3.3	2.3	2.8	5.6	6.2
Ballard	34,895	12,321	1,879	49,095	100%	2,484	2.2	1.4	1.7	3.6	3.9
University	39,761	25,709	147	65,617	100%	3,213	2.8	1.8	2.2	4.6	5.0
Fremont	34,853	26,115	1,560	62,528	100%	1,819	2.6	1.0	1.3	3.6	3.9
North Interceptor	20,031	7,843	1,591	29,465	100%	2,297	1.3	1.3	1.6	2.6	2.9
South Magnolia	9,952	4,489	244	14,685	100%	1,257	0.6	0.7	0.9	1.3	1.5
Central Trunk	34,037	96,601	1,470	132,108	100%	1,281	4.7	0.7	0.9	5.4	5.6
Denny	23,085	47,118	1,308	71,511	100%	524	2.6	0.3	0.4	2.9	3.0
Eastlake	39,168	51,364	3,427	93,959	100%	1,371	3.7	0.8	0.9	4.4	4.6
Montlake	26,876	6,050	57	32,983	100%	2,432	1.5	1.4	1.7	2.9	3.2
Connecticut & King	21,683	146,671	1,861	170,215	100%	996	5.6	0.6	0.7	6.1	6.3
Hanford & Lander	57,777	55,891	4,419	118,087	100%	4,840	4.8	2.7	3.3	7.5	8.1
West Duwamish	50,525	19,534	3,352	73,411	110%	7,411	3.3	4.1	5.1	7.4	8.4
East Duwamish	11,760	27,793	14,082	53,635	108%	4,109	2.1	2.3	2.8	4.4	5.0
Total	**555,313**	**587,087**	**36,175**	**1,178,575**	**99%**	**47,829**	**47.2**	**25.2**	**32.1**	**72.4**	**79.3**
Kenmore - Snohomish Co.											
Ballinger - Sno.	28,393	11,585	169	40,147	82%	2,674	2.1	0.3	1.0	2.4	3.1
Cross Valley	456	1,078	633	2,167	58%	455	0.1	0.1	0.2	0.1	0.3

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
North Creek - Sno	82,997	20,324	5,032	108,353	71%	11,159	5.8	1.3	4.3	7.1	10.2
Swamp Creek - Sno.	66,767	13,624	5,127	85,518	86%	7,379	4.7	0.8	2.9	5.5	7.5
Lake Forest - Sno.	5,554	272	7	5,833	97%	900	0.3	0.1	0.3	0.4	0.7
Lyon	4,895	316	3	5,214	79%	407	0.3	0.0	0.2	0.3	0.5
Total	**189,062**	**47,199**	**10,971**	**247,232**	**77%**	**22,974**	**13.3**	**2.6**	**8.9**	**15.9**	**22.2**
Kenmore-King Co.											
Swamp Ck-King	4,256	1,629	55	5,940	87%	659	0.3	0.1	0.3	0.4	0.6
Bothell	11,811	4,158	43	16,012	84%	1,808	0.8	0.2	0.7	1.0	1.5
Kenmore Sect. 5	4,607	1,729	51	6,387	74%	957	0.3	0.1	0.4	0.4	0.7
North Ck-King	5,348	5,593	640	11,581	76%	827	0.5	0.1	0.3	0.6	0.8
Bear Creek-King	4,054	5,042	1,219	10,315	91%	1,339	0.5	0.2	0.5	0.6	1.0
Woodinville East	1,894	1,353	200	3,447	94%	823	0.2	0.1	0.3	0.3	0.5
Woodinville	7,090	4,747	1,388	13,225	84%	1,120	0.6	0.1	0.4	0.8	1.1
Inglewood	7,561	1,592	1	9,154	78%	960	0.5	0.1	0.4	0.6	0.9
Total	**46,621**	**25,843**	**3,597**	**76,061**	**83%**	**8,492**	**3.8**	**1.0**	**3.3**	**4.7**	**7.0**
Ballinger - King	5,860	2,156	10	8,026	80%	580	0.4	0.1	0.2	0.5	0.6
Carkeek Creek	26,987	5,084	93	32,164	99%	2,868	1.5	1.6	2.0	3.1	3.5
Alki	44,320	8,476	154	52,950	100%	4,190	2.5	2.3	2.9	4.8	5.4
Total West Point Plant Basin	**868,163**	**675,845**	**51,000**	**1,595,008**	**90%**	**86,933**	**68.6**	**32.8**	**49.4**	**101.5**	**118.0**

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Hollywood P.S.											
Redmond North	5,730	7,560	2,381	15,671	57%	1,109	0.7	0.1	0.4	0.8	1.1
Redmond East	27,273	22,607	5,818	#REF!	75%	3,593	2.6	0.4	1.4	3.0	4.0
Redmond South	15,242	47,523	72	62,837	77%	1,274	2.3	0.1	0.5	2.5	2.8
Hol-Lake Hills	13,305	3,517	34	16,856	88%	1,339	0.9	0.2	0.5	1.1	1.4
Blakely/North Ridge	3,383	1,214	84	4,681	76%	1,962	0.2	0.2	0.8	0.5	1.0
Northeast Sammamish	16,643	2,490	14	19,147	77%	2,729	1.1	0.3	1.1	1.4	2.1
Total	**81,576**	**84,911**	**8,403**	**174,890**	**75%**	**12,006**	**7.9**	**1.4**	**4.7**	**9.2**	**12.5**
Metro East Side											
Juanita PS	57,404	25,373	2,214	84,991	85%	6,472	4.3	0.7	2.5	5.1	6.8
Kirkland North	5,040	1,336	251	6,627	76%	590	0.4	0.1	0.2	0.4	0.6
Juanita Int.	2,881	1,614	263	4,758	86%	344	0.2	0.0	0.1	0.3	0.4
Kirkland PS	9,575	10,127	508	20,210	86%	891	0.9	0.1	0.3	1.0	1.2
Kirkland NE	8,205	2,958	416	11,579	91%	1,115	0.6	0.1	0.4	0.7	1.0
Kirk ESI-14	10,962	7,576	146	18,684	75%	1,440	0.9	0.2	0.6	1.1	1.5
ESI-13	3,023	19,218	1,069	23,310	73%	651	0.8	0.1	0.3	0.9	1.1
Bellevue	35,137	28,579	4,569	68,285	87%	4,646	3.2	0.5	1.8	3.7	5.0
Medina	6,222	1,529	9	7,760	81%	1,502	0.4	0.2	0.6	0.6	1.0
Yarrow	4,100	7,449	173	11,722	74%	553	0.5	0.1	0.2	0.5	0.7
Lake Hills	14,379	13,610	900	28,889	79%	1,518	1.3	0.2	0.6	1.5	1.9
Bellevue PS	13,956	42,975	670	57,601	92%	1,281	2.2	0.1	0.5	2.3	2.7
Sweyolocken	9,389	32,031	519	41,939	62%	1,133	1.6	0.1	0.4	1.7	2.0
Wilburton	9,270	7,686	332	17,288	71%	1,450	0.8	0.2	0.6	1.0	1.4
Factoria	4,504	9,102	41	13,647	80%	661	0.5	0.1	0.3	0.6	0.8

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Eastgate	15,949	2,664	94	18,707	75%	2,340	1.0	0.3	0.9	1.3	1.9
Sunset	9,526	3,840	2,346	15,712	78%	1,220	0.8	0.1	0.5	0.9	1.3
Mercer North	11,153	6,307	8	17,468	80%	1,367	0.9	0.2	0.5	1.0	1.4
Mercer South	12,663	1,520	6	14,189	87%	2,040	0.8	0.2	0.8	1.0	1.6
Hazelwood	9,930	2,171	31	12,132	72%	1,394	0.7	0.2	0.5	0.8	1.2
May Creek	3,400	545	14	3,959	85%	809	0.2	0.1	0.3	0.3	0.5
Coal Creek	15,893	2,201	24	18,118	55%	2,703	1.0	0.3	1.0	1.3	2.1
Issaquah	11,025	11,090	525	22,640	56%	2,883	1.0	0.3	1.1	1.3	2.1
Sammamish Plateau	49,896	23,707	732	74,335	86%	11,010	3.7	1.3	4.3	5.0	8.0
Renton ESI-2	33,349	12,621	8,120	54,090	88%	3,590	2.8	0.4	1.4	3.2	4.2
Renton ESI-1	18,630	25,930	2,892	47,452	75%	2,197	2.0	0.3	0.9	2.3	2.9
Renton Cedar	17,590	3,123	66	20,779	76%	3,321	1.2	0.4	1.3	1.5	2.4
Cedar Mol	6,602	826	14	7,442	71%	730	0.4	0.1	0.3	0.5	0.7
Cedar Mad	10,692	1,717	11	12,420	66%	1,330	0.7	0.2	0.5	0.8	1.2
Bryn Mawr	6,800	1,180	2,722	10,702	92%	800	0.6	0.1	0.3	0.7	0.9
Boeing	6	13	7	26	31%	17	0.0	0.0	0.0	0.0	0.0
Soosn	4,851	779	0	5,630	81%	555	0.3	0.1	0.2	0.4	0.5
Sooscent (50%)	8,142	1,053	9	9,203	82%	1,011	0.5	0.1	0.4	0.6	0.9
Total	**440,144**	**312,449**	**29,701**	**782,293**	**78%**	**63,563**	**37.3**	**7.2**	**24.6**	**44.5**	**61.9**
Metro South Side											
Covington	5,837	1,228	32	7,097	64%	3,278	0.4	0.4	1.3	0.8	1.7
Tukwila South	17,347	51,874	2,739	71,960	81%	2,509	2.7	0.3	1.0	3.0	3.7
Renton	4,103	18,907	7,020	30,030	79%	1,655	1.2	0.2	0.6	1.4	1.8
Ulid/c2	94	5,246	5,304	10,644	90%	1,062	0.4	0.1	0.4	0.5	0.8
Ulid1	142	5,964	2,642	8,748	92%	981	0.3	0.1	0.4	0.4	0.7

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
250n	438	1,941	1,380	3,759	62%	1,025	0.2	0.1	0.4	0.3	0.6
250s	1,956	2,079	711	4,746	68%	688	0.2	0.1	0.3	0.3	0.5
Kentxval	211	918	554	1,683	89%	366	0.1	0.0	0.1	0.1	0.2
Ulid/c5e	227	3,027	1,043	4,297	91%	288	0.2	0.0	0.1	0.2	0.3
Garrison	15,004	2,653	189	17,846	94%	1,672	1.0	0.2	0.6	1.2	1.6
Whill	9,180	1,195	9	10,384	61%	1,215	0.6	0.1	0.5	0.7	1.1
Ulid4	10,646	7,978	2,522	21,146	63%	437	1.0	0.0	0.2	1.1	1.2
Aub2	7,066	7,921	1,869	16,856	43%	1,396	0.8	0.2	0.5	0.9	1.3
Aub3	6,100	5,751	1,342	13,193	69%	2,557	0.6	0.3	1.0	0.9	1.6
Fwaub3	2,181	563	76	2,820	66%	658	0.2	0.1	0.3	0.2	0.4
Fwne	2,122	987	150	3,259	59%	1,197	0.2	0.1	0.5	0.3	0.6
Msttrk	49,042	12,872	5,403	67,317	79%	4,705	3.6	0.5	1.8	4.1	5.4
Wint	4,533	7,548	5,571	17,652	76%	1,472	0.8	0.2	0.6	0.9	1.3
Algona	4,655	5,218	1,060	10,933	78%	902	0.5	0.1	0.3	0.6	0.8
Pacific	6,395	2,841	1,139	10,375	81%	823	0.5	0.1	0.3	0.6	0.8
Segreen	900	146	3	1,049	76%	346	0.1	0.0	0.1	0.1	0.2
Mill	37,218	10,553	633	48,404	90%	3,543	2.6	0.4	1.4	3.0	4.0
Jenkins	26,998	6,661	61	33,720	79%	5,267	1.8	0.6	2.0	2.4	3.9
Soosrent	6,518	4,417	4	10,939	95%	611	0.5	0.1	0.2	0.6	0.8
Ulid1/c2	11,932	2,668	269	14,869	88%	1,483	0.8	0.2	0.6	1.0	1.4
Soosmill	19,364	3,395	22	22,781	73%	2,438	1.3	0.3	0.9	1.5	2.2
Sooscent (50%)	8,142	1,053	9	9,203	82%	1,011	0.5	0.1	0.4	0.6	0.9
Soose	1,521	208	0	1,729	65%	378	0.1	0.0	0.1	0.1	0.2
Southern soos	4,661	451	20	5,132	90%	1,623	0.3	0.2	0.6	0.5	0.9
White River	13,279	1,155	112	14,546	66%	2,354	0.8	0.3	0.9	1.1	1.7

Table A-3. Year 2020 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Pop	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Total	**277,812**	**177,418**	**41,888**	**497,117**	**74%**	**47,938**	**24.1**	**5.5**	**18.6**	**29.5**	**42.7**
Renton West											
Norfolk	56,060	8,916	415	65,391	99%	4,885	3.1	3.0	5.3	6.1	8.4
Tukwila North	13,441	14,329	698	28,468	87%	1,356	1.3	0.2	0.5	1.4	1.8
Interurban	2,421	2,991	168	5,580	62%	642	0.2	0.1	0.2	0.3	0.5
Total	**71,922**	**26,236**	**1,281**	**99,439**	**91%**	**6,883**	**4.6**	**3.2**	**6.1**	**7.8**	**10.7**
Total Renton Plant Basin	**871,453**	**601,014**	**81,272**	**1,553,739**	**77%**	**130,390**	**73.8**	**17.3**	**54.0**	**91.1**	**127.8**
Metro System	**1,739,616**	**1,276,859**	**132,272**	**3,148,747**	**82%**	**217,323**	**142.5**	**50.1**	**103.3**	**192.6**	**245.8**

Figure A-7
Year 2030 Total RWSP and Updated
Population Forecasts By Basin

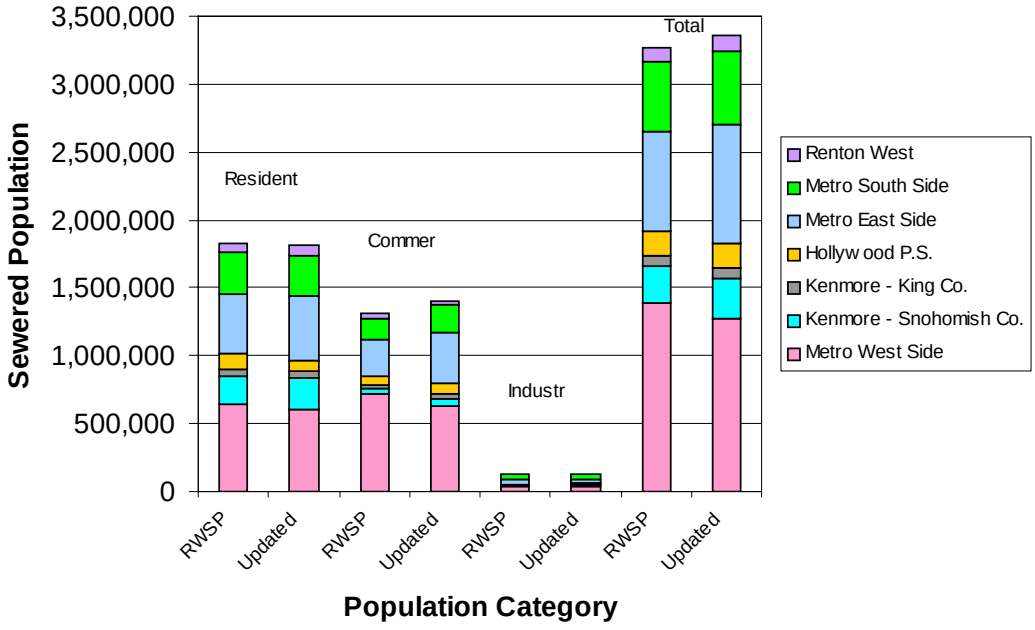

Figure A-8
Year 2030 RWSP and Updated
Average Wet-Weather Flow By Basin

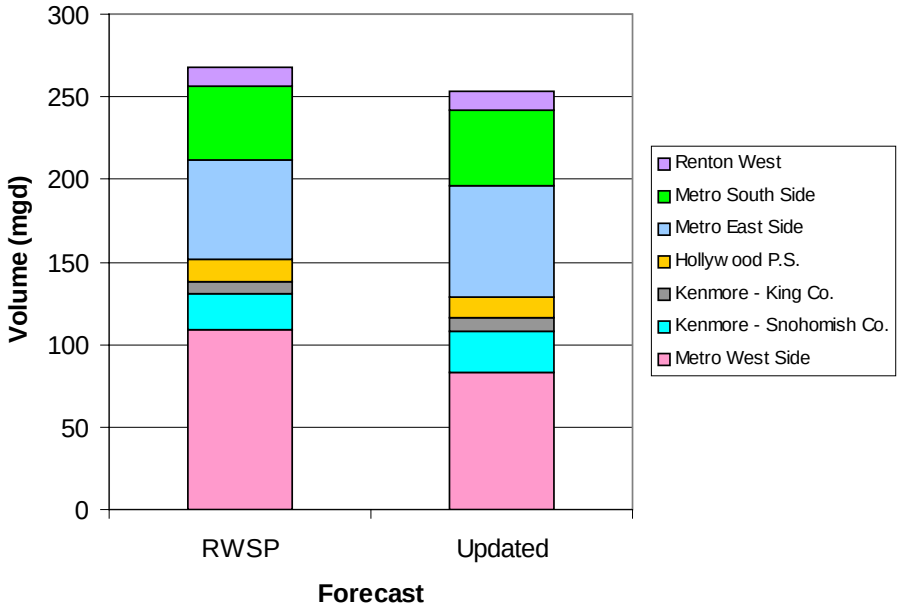

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro West Side											
Lake Forest	7,919	1,410	40	9,369	1	1,205	0	0	0	1	1
McAleer & Lyon	15,673	3,383	26	19,082	1	1,881	1	0	1	1	2
Matthews Park	84,184	38,300	408	122,892	1	6,585	5	4	5	9	10
Green Lake	57,833	25,653	415	83,901	1	4,123	4	2	3	6	7
Ballard	38,034	13,373	1,831	53,238	1	2,484	2	1	2	4	4
University	41,446	28,972	167	70,585	1	3,213	3	2	2	5	5
Fremont	38,303	32,008	1,534	71,845	1	1,819	3	1	1	4	4
North Interceptor	20,423	8,581	1,516	30,520	1	2,297	1	1	2	3	3
South Magnolia	9,920	4,831	236	14,987	1	1,257	1	1	1	1	2
Central Trunk	38,954	101,639	1,502	142,095	1	1,281	5	1	1	6	6
Denny	27,251	51,076	1,296	79,623	1	524	3	0	0	3	3
Eastlake	44,477	53,549	3,555	101,581	1	1,371	4	1	1	5	5
Montlake	29,103	6,443	54	35,600	1	2,432	2	1	2	3	3
Connecticut & King	24,760	149,651	1,837	176,248	1	996	6	1	1	6	7
Hanford & Lander	63,920	59,726	4,513	128,159	1	4,840	5	3	3	8	9
West Duwamish	53,689	21,385	3,034	78,108	1	7,411	3	4	5	8	9
East Duwamish	12,802	30,028	14,112	56,942	1	4,109	2	2	3	5	5
Total	**608,691**	**630,008**	**36,076**	**1,274,775**	**1**	**47,829**	**51**	**25**	**32**	**76**	**83**

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Kenmore - Snohomish Co.											
Ballinger - Sno.	31,238	12,848	176	44,262	1	2,674	2	0	1	3	3
Cross Valley	508	1,318	758	2,584	1	455	0	0	0	0	0
North Creek – Sno	99,816	24,679	5,301	129,796	1	11,159	7	1	5	8	12
Swamp Creek – Sno.	80,592	16,559	5,634	102,785	1	7,379	6	1	3	7	9
Lake Forest - Sno.	6,105	350	7	6,462	1	900	0	0	0	0	1
Lyon	5,429	387	3	5,819	1	407	0	0	0	0	1
Total	**223,688**	**56,141**	**11,879**	**291,708**	**1**	**22,974**	**16**	**3**	**9**	**18**	**25**
Kenmore-King Co.											
Swamp Ck-King	4,394	1,746	68	6,208	1	659	0	0	0	0	1
Bothell	12,819	4,458	39	17,316	1	1,808	1	0	1	1	2
Kenmore Sect. 5	4,774	1,866	62	6,702	1	957	0	0	0	0	1
North Ck-King	5,911	5,914	580	12,405	1	827	1	0	0	1	1
Bear Creek-King	4,300	5,549	1,163	11,012	1	1,339	0	0	1	1	1
Woodinville East	1,982	1,507	201	3,690	1	823	0	0	0	0	1
Woodinville	7,305	5,296	1,303	13,904	1	1,120	1	0	0	1	1
Inglewood	7,782	1,757	1	9,540	1	960	1	0	0	1	1

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Total	**49,267**	**28,093**	**3,417**	**80,777**	**1**	**8,492**	**4**	**1**	**3**	**5**	**7**
Ballinger - King	6,047	2,337	12	8,396	1	580	0	0	0	1	1
Carkeek Creek	28,870	5,636	96	34,602	1	2,868	2	2	2	3	4
Alki	45,633	9,395	160	55,188	1	4,190	3	2	3	5	5
Total West Point Plant Basin	**962,196**	**731,610**	**51,640**	**1,745,446**	**90%**	**86,933**	**75**	**33**	**50**	**108**	**126**
Hollywood P.S.											
Redmond North	6,154	9,637	2,215	18,006	1	1,109	1	0	0	1	1
Redmond East	29,629	27,294	5,436	#REF!	1	3,593	3	0	1	3	4
Redmond South	16,999	41,568	66	58,633	1	1,274	2	0	1	2	3
Hol-Lake Hills	13,879	3,983	43	17,905	1	1,339	1	0	1	1	2
Blakely/North Ridge	3,736	1,365	80	5,181	1	1,962	0	0	1	1	1
Northeast Sammamish	17,013	2,940	20	19,973	1	2,729	1	0	1	1	2
Total	**87,410**	**86,787**	**7,860**	**182,057**	**1**	**12,006**	**8**	**1**	**5**	**10**	**13**

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro East Side											
Juanita PS	59,352	29,509	2,032	90,893	1	6,472	5	1	3	5	7
Kirkland North	5,497	1,584	226	7,307	1	590	0	0	0	0	1
Juanita Int.	3,142	1,703	247	5,092	1	344	0	0	0	0	0
Kirkland PS	10,436	11,135	468	22,039	1	891	1	0	0	1	1
Kirkland NE	8,928	3,209	387	12,524	1	1,115	1	0	0	1	1
Kirk ESI-14	11,973	8,022	137	20,132	1	1,440	1	0	1	1	2
ESI-13	3,190	20,674	919	24,783	1	651	1	0	0	1	1
Bellevue	36,970	40,669	4,062	81,701	1	4,646	4	1	2	4	6
Medina	6,181	1,705	9	7,895	1	1,502	0	0	1	1	1
Yarrow	4,431	7,719	169	12,319	1	553	1	0	0	1	1
Lake Hills	14,559	15,148	742	30,449	1	1,518	1	0	1	2	2
Bellevue PS	17,769	50,392	625	68,786	1	1,281	3	0	1	3	3
Sweyolocken	11,805	37,679	469	49,953	1	1,133	2	0	0	2	2
Wilburton	9,729	8,247	278	18,254	1	1,450	1	0	1	1	1
Factoria	4,554	10,157	33	14,744	1	661	1	0	0	1	1
Eastgate	16,668	2,913	76	19,657	1	2,340	1	0	1	1	2
Sunset	9,723	4,302	1,891	15,916	1	1,220	1	0	1	1	1
Mercer North	11,477	6,833	8	18,318	1	1,367	1	0	1	1	1
Mercer South	12,982	1,651	6	14,639	1	2,040	1	0	1	1	2
Hazelwood	9,640	4,849	35	14,524	1	1,394	1	0	1	1	1
May Creek	3,269	1,187	17	4,473	1	809	0	0	0	0	1
Coal Creek	16,373	3,177	19	19,569	1	2,703	1	0	1	1	2

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Issaquah	11,220	12,065	519	23,804	1	2,883	1	0	1	1	2
Sammamish Plateau	56,414	26,765	679	83,858	1	11,010	4	1	5	6	9
Renton ESI-2	36,360	15,371	8,084	59,815	1	3,590	3	0	1	3	5
Renton ESI-1	20,663	32,308	2,743	55,714	1	2,197	2	0	1	3	3
Renton Cedar	18,436	3,670	69	22,175	1	3,321	1	0	1	2	3
Cedar Mol	6,725	988	16	7,729	1	730	0	0	0	1	1
Cedar Mad	10,731	2,080	14	12,825	1	1,330	1	0	1	1	1
Bryn Mawr	7,516	1,335	3,219	12,070	1	800	1	0	0	1	1
Boeing	7	16	7	30	0	17	0	0	0	0	0
Soosn	4,867	921	0	5,788	1	555	0	0	0	0	1
Sooscent (50%)	8,662	1,255	11	9,927	1	1,011	1	0	0	1	1
Total	**470,249**	**369,237**	**28,216**	**867,702**	**1**	**63,563**	**41**	**8**	**26**	**48**	**67**
Metro South Side											
Covington	6,634	1,326	29	7,989	1	3,278	0	0	1	1	2
Tukwila South	19,316	61,384	2,770	83,470	1	2,509	3	0	1	3	4
Renton	4,352	23,125	6,293	33,770	1	1,655	1	0	1	1	2
Ulid/c2	96	5,635	5,153	10,884	1	1,062	0	0	0	1	1
Ulid1	155	6,300	2,566	9,021	1	981	0	0	0	0	1
250n	449	2,090	1,340	3,879	1	1,025	0	0	0	0	1
250s	2,015	2,241	691	4,947	1	688	0	0	0	0	1
Kentxval	218	977	540	1,735	1	366	0	0	0	0	0
Ulid/c5e	235	3,182	1,013	4,430	1	288	0	0	0	0	0

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Garrison	15,885	3,161	197	19,243	1	1,672	1	0	1	1	2
Whill	9,577	1,372	9	10,958	1	1,215	1	0	0	1	1
Ulid4	11,103	8,639	2,452	22,194	1	437	1	0	0	1	1
Aub2	7,552	9,129	1,977	18,658	0	1,396	1	0	1	1	1
Aub3	6,876	6,403	1,390	14,669	1	2,557	1	0	1	1	2
Fwaub3	2,229	602	73	2,904	1	658	0	0	0	0	0
Fwne	2,168	1,050	146	3,364	1	1,197	0	0	0	0	1
Msttrk	54,805	15,331	6,617	76,753	1	4,705	4	1	2	5	6
Wint	5,151	8,404	6,772	20,327	1	1,472	1	0	1	1	2
Algona	5,371	6,205	1,156	12,732	1	902	1	0	0	1	1
Pacific	7,343	3,926	1,142	12,411	1	823	1	0	0	1	1
Segreen	1,012	148	3	1,163	1	346	0	0	0	0	0
Mill	40,067	12,237	647	52,951	1	3,543	3	0	1	3	4
Jenkins	27,335	7,225	60	34,620	1	5,267	2	1	2	2	4
Soosrent	6,931	5,292	3	12,226	1	611	1	0	0	1	1
Ulid1/c2	12,818	3,035	263	16,116	1	1,483	1	0	1	1	1
Soosmill	20,115	3,758	28	23,901	1	2,438	1	0	1	2	2
Sooscent (50%)	8,662	1,255	11	9,927	1	1,011	1	0	0	1	1
Soose	1,593	238	0	1,831	1	378	0	0	0	0	0
Southern soos	4,979	530	26	5,535	1	1,623	0	0	1	1	1
White River	15,907	1,381	132	17,420	1	2,354	1	0	1	1	2
Total	**300,949**	**205,581**	**43,499**	**550,028**	**1**	**47,938**	**26**	**6**	**20**	**32**	**46**

Renton West

Table A-4. Year 2030 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Norfolk	60,319	9,827	424	70,570	1	4,885	3	3	5	6	8
Tukwila North	14,859	17,721	671	33,251	1	1,356	1	0	1	2	2
Interurban	2,868	3,803	171	6,842	1	642	0	0	0	0	1
Total	**78,046**	**31,351**	**1,266**	**110,663**	**1**	**6,883**	**5**	**3**	**6**	**8**	**11**
Total Renton Plant Basin	**936,653**	**692,956**	**80,841**	**1,710,450**	**77%**	**130,390**	**80**	**18**	**57**	**98**	**137**
Metro System	**1,898,849**	**1,424,566**	**132,481**	**3,455,896**	**1**	**217,323**	**156**	**51**	**107**	**207**	**263**

Figure A-9
Year 2050 Total RWSP and Updated
Population Forecasts By Basin

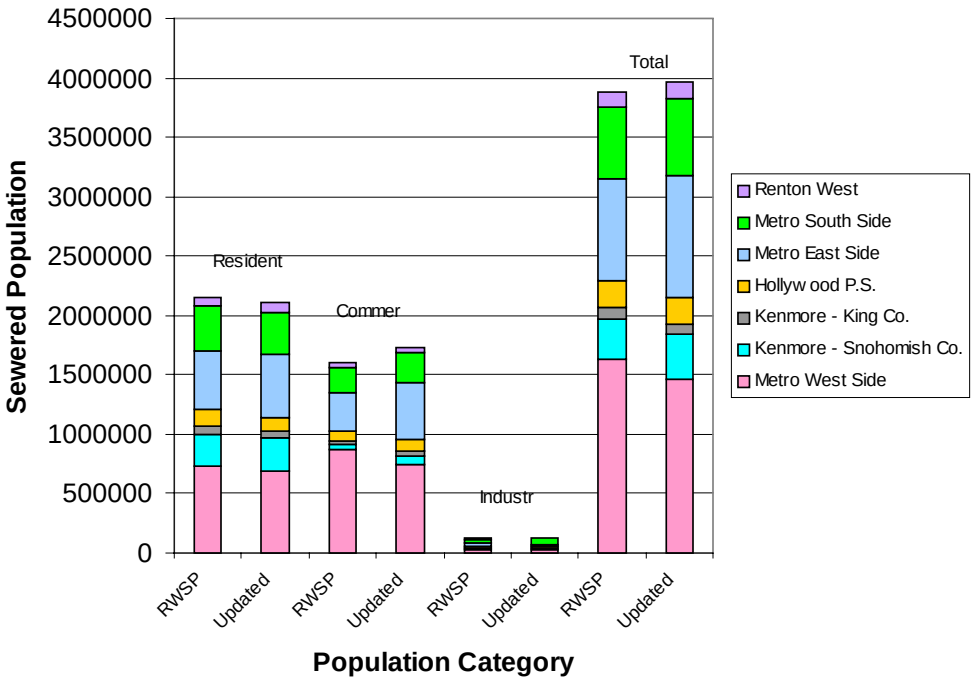

Figure A-10
Year 2050 RWSP and Updated
Average Wet-Weather Flow By Basin

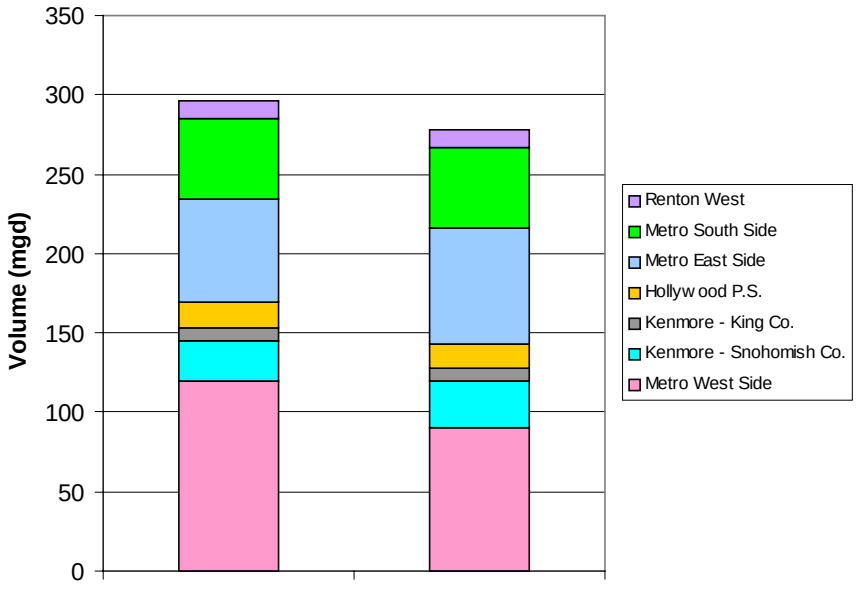

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Metro West Side											
Lake Forest	8,514	1,790	51	10,355	93%	1,205	0.5	0.1	0.5	0.6	1.0
McAleer & Lyon	16,768	4,231	15	21,014	93%	1,881	1.0	0.2	0.8	1.2	1.7
Matthews Park	91,730	47,596	415	139,741	83%	6,585	6.0	3.7	4.5	9.7	10.6
Green Lake	63,361	30,825	348	94,534	100%	4,123	4.1	2.3	2.8	6.4	7.0
Ballard	40,187	17,171	1,540	58,898	100%	2,484	2.6	1.4	1.7	4.0	4.3
University	42,809	32,909	179	75,897	100%	3,213	3.1	1.8	2.2	4.9	5.4
Fremont	41,455	37,699	1,284	80,438	100%	1,819	3.3	1.0	1.3	4.3	4.5
North Interceptor	21,280	10,361	698	32,339	100%	2,297	1.4	1.3	1.6	2.7	3.0
South Magnolia	10,436	5,821	148	16,405	100%	1,257	0.7	0.7	0.9	1.4	1.6
Central Trunk	50,052	121,445	1,370	172,867	100%	1,281	6.2	0.7	0.9	6.9	7.1
Denny	36,469	64,892	1,134	102,495	100%	524	3.8	0.3	0.4	4.1	4.2
Eastlake	53,642	66,746	3,519	123,907	100%	1,371	4.9	0.8	0.9	5.6	5.8
Montlake	30,718	7,301	8	38,027	100%	2,432	1.8	1.4	1.7	3.1	3.4
Connecticut & King	31,557	168,562	789	200,908	100%	996	6.7	0.6	0.7	7.2	7.4
Hanford & Lander	71,314	68,023	2,917	142,254	100%	4,840	5.8	2.7	3.3	8.4	9.1
West Duwamish	59,178	26,146	2,387	87,711	110%	7,411	3.9	4.1	5.1	8.0	9.0
East Duwamish	14,712	34,148	11,919	60,779	108%	4,109	2.4	2.3	2.8	4.6	5.2
Total	**684,182**	**745,666**	**28,721**	**1,458,569**	**99%**	**47,829**	**58.0**	**25.3**	**32.1**	**83.3**	**90.2**

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Kenmore - Snohomish Co.											
Ballinger - Sno.	35,993	15,178	51	51,222	82%	2,674	2.6	0.3	1.1	2.9	3.7
Cross Valley	630	1,790	871	3,291	58%	455	0.1	0.1	0.2	0.2	0.3
North Creek - Sno	131,780	33,280	5,728	170,788	71%	11,159	9.2	1.3	4.6	10.5	13.8
Swamp Creek - Sno.	107,172	22,573	6,154	135,899	86%	7,379	7.4	0.9	3.0	8.3	10.5
Lake Forest - Sno.	7,807	458	10	8,275	97%	900	0.5	0.1	0.4	0.6	0.9
Lyon	6,641	490	4	7,135	79%	407	0.4	0.0	0.2	0.5	0.6
Total	**290,023**	**73,769**	**12,818**	**376,610**	**77%**	**22,974**	**20.3**	**2.8**	**9.5**	**23.0**	**29.7**
Kenmore-King Co.											
Swamp Ck-King	4,748	2,201	88	7,037	87%	659	0.4	0.1	0.3	0.4	0.6
Bothell	14,552	5,088	13	19,653	84%	1,808	1.0	0.2	0.7	1.2	1.8
Kenmore Sect. 5	5,177	2,326	79	7,582	74%	957	0.4	0.1	0.4	0.5	0.8
North Ck-King	6,865	6,829	96	13,790	76%	827	0.6	0.1	0.3	0.7	1.0
Bear Creek-King	4,981	6,681	868	12,530	91%	1,339	0.5	0.2	0.6	0.7	1.1
Woodinville East	2,297	1,906	185	4,388	94%	823	0.2	0.1	0.3	0.3	0.5
Woodinville	8,092	6,379	1,054	15,525	84%	1,120	0.7	0.1	0.5	0.9	1.2
Inglewood	8,372	2,202	2	10,576	78%	960	0.6	0.1	0.4	0.7	1.0
Total	**55,084**	**33,612**	**2,385**	**91,081**	**83%**	**8,492**	**4.4**	**1.0**	**3.5**	**5.5**	**7.9**

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Ballinger - King	6,271	2,562	10	8,843	80%	580	0.5	0.1	0.2	0.5	0.7
Carkeek Creek	30,653	6,553	76	37,282	99%	2,868	1.7	1.6	2.0	3.3	3.7
Alki	47,244	11,341	133	58,718	100%	4,190	2.7	2.3	2.9	5.0	5.6
Total West Point Plant Basin	**1,113,457**	**873,503**	**44,143**	**2,031,103**	**90%**	**86,933**	**87.6**	**33.0**	**50.2**	**120.6**	**137.8**
Hollywood P.S.											
Redmond North	7,287	13,359	1,709	22,355	57%	1,109	0.9	0.1	0.5	1.1	1.4
Redmond East	35,741	37,045	4,776	77,562	75%	3,593	3.5	0.4	1.5	3.9	5.0
Redmond South	21,010	47,900	46	68,956	77%	1,274	2.7	0.2	0.5	2.9	3.2
Hol-Lake Hills	15,241	4,969	51	20,261	88%	1,339	1.1	0.2	0.6	1.2	1.6
Blakely/North Ridge	4,880	1,888	71	6,839	76%	1,962	0.4	0.2	0.8	0.6	1.2
Northeast Sammamish	19,807	3,758	29	23,594	77%	2,729	1.3	0.3	1.1	1.6	2.4

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Total	**103,966**	**108,919**	**6,682**	**219,567**	**75%**	**12,006**	**9.8**	**1.4**	**4.9**	**11.3**	**14.8**
Metro East Side											
Juanita PS	64,660	36,694	1,661	103,015	85%	6,472	5.1	0.8	2.7	5.8	7.7
Kirkland North	6,461	2,054	230	8,745	76%	590	0.5	0.1	0.2	0.5	0.7
Juanita Int.	3,597	1,871	148	5,616	86%	344	0.3	0.0	0.1	0.3	0.4
Kirkland PS	12,128	12,910	391	25,429	86%	891	1.1	0.1	0.4	1.2	1.5
Kirkland NE	10,259	3,841	291	14,391	91%	1,115	0.7	0.1	0.5	0.9	1.2
Kirk ESI-14	13,779	8,874	81	22,734	75%	1,440	1.1	0.2	0.6	1.3	1.7
ESI-13	3,402	23,352	964	27,718	73%	651	1.0	0.1	0.3	1.0	1.2
Bellevue	40,463	49,691	3,381	93,535	87%	4,646	4.1	0.6	1.9	4.6	6.0
Medina	5,973	2,137	2	8,112	81%	1,502	0.4	0.2	0.6	0.6	1.0
Yarrow	4,953	8,233	114	13,300	74%	553	0.5	0.1	0.2	0.6	0.8
Lake Hills	14,923	18,224	541	33,688	79%	1,518	1.5	0.2	0.6	1.7	2.1
Bellevue PS	23,108	67,316	652	91,076	92%	1,281	3.4	0.2	0.5	3.6	4.0
Sweyolocken	15,199	49,399	483	65,081	62%	1,133	2.4	0.1	0.5	2.6	2.9
Wilburton	10,340	9,741	211	20,292	71%	1,450	0.9	0.2	0.6	1.1	1.5
Factoria	4,733	12,102	24	16,859	80%	661	0.6	0.1	0.3	0.7	0.9
Eastgate	18,446	3,558	53	22,057	75%	2,340	1.2	0.3	1.0	1.5	2.2
Sunset	10,060	5,123	1,326	16,509	78%	1,220	0.8	0.1	0.5	1.0	1.3
Mercer North	12,393	7,428	0	19,821	80%	1,367	1.0	0.2	0.6	1.1	1.5
Mercer South	13,929	1,871	0	15,800	87%	2,040	0.9	0.2	0.8	1.1	1.7
Hazelwood	10,391	6,905	37	17,333	72%	1,394	0.8	0.2	0.6	1.0	1.4
May Creek	3,541	1,693	21	5,255	85%	809	0.3	0.1	0.3	0.4	0.6

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Coal Creek	18,261	4,220	0	22,481	55%	2,703	1.2	0.3	1.1	1.5	2.3
Issaquah	11,963	14,579	299	26,841	56%	2,883	1.2	0.3	1.2	1.5	2.4
Sammamish Plateau	71,228	38,236	738	110,202	86%	11,010	5.5	1.3	4.5	6.8	10.0
Renton ESI-2	42,543	21,001	6,916	70,460	88%	3,590	3.5	0.4	1.5	4.0	5.0
Renton ESI-1	24,861	45,427	2,660	72,948	75%	2,197	3.0	0.3	0.9	3.3	3.9
Renton Cedar	20,657	4,764	72	25,493	76%	3,321	1.4	0.4	1.4	1.8	2.8
Cedar Mol	7,215	1,278	21	8,514	71%	730	0.5	0.1	0.3	0.6	0.8
Cedar Mad	11,236	2,692	18	13,946	66%	1,330	0.8	0.2	0.5	0.9	1.3
Bryn Mawr	8,989	1,847	3,276	14,112	92%	800	0.8	0.1	0.3	0.9	1.1
Boeing	10	24	6	40	31%	17	0.0	0.0	0.0	0.0	0.0
Soosn	5,069	1,234	0	6,303	81%	555	0.3	0.1	0.2	0.4	0.6
Sooscent (50%)	10,024	1,683	14	11,720	82%	1,011	0.7	0.1	0.4	0.8	1.1
Total	**534,794**	**470,002**	**24,631**	**1,029,426**	**78%**	**63,563**	**47.4**	**7.7**	**26.1**	**55.1**	**73.6**
Metro South Side											
Covington	7,737	1,594	14	9,345	64%	3,278	0.5	0.4	1.3	0.9	1.9
Tukwila South	23,376	76,690	2,872	102,938	81%	2,509	3.8	0.3	1.0	4.1	4.9
Renton	5,025	30,599	6,666	42,290	79%	1,655	1.6	0.2	0.7	1.8	2.2
Ulid/c2	104	6,351	4,541	10,996	90%	1,062	0.4	0.1	0.4	0.6	0.9
Ulid1	181	6,884	2,261	9,326	92%	981	0.3	0.1	0.4	0.4	0.7
250n	481	2,370	1,180	4,031	62%	1,025	0.2	0.1	0.4	0.3	0.6
250s	2,169	2,511	609	5,289	68%	688	0.2	0.1	0.3	0.3	0.5
Kentxval	234	1,080	474	1,788	89%	366	0.1	0.0	0.2	0.1	0.2

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Ulid/c5e	253	3,436	893	4,582	91%	288	0.2	0.0	0.1	0.2	0.3
Garrison	17,837	4,185	222	22,244	94%	1,672	1.2	0.2	0.7	1.4	1.9
Whill	10,525	1,708	8	12,241	61%	1,215	0.7	0.1	0.5	0.8	1.2
Ulid4	12,193	9,791	2,171	24,155	63%	437	1.1	0.1	0.2	1.2	1.3
Aub2	8,611	11,785	2,535	22,931	43%	1,396	1.0	0.2	0.6	1.2	1.6
Aub3	8,590	7,371	841	16,802	69%	2,557	0.8	0.3	1.1	1.1	1.8
Fwaub3	2,409	745	66	3,220	66%	658	0.2	0.1	0.3	0.2	0.4
Fwne	2,345	1,296	132	3,773	59%	1,197	0.2	0.1	0.5	0.3	0.7
Msttrk	66,374	18,484	7,747	92,605	79%	4,705	4.9	0.6	1.9	5.5	6.9
Wint	6,379	9,749	7,791	23,919	76%	1,472	1.1	0.2	0.6	1.2	1.7
Algona	6,773	7,260	1,247	15,280	78%	902	0.7	0.1	0.4	0.8	1.1
Pacific	9,212	4,895	1,305	15,412	81%	823	0.8	0.1	0.3	0.9	1.1
Segreen	1,154	136	1	1,291	76%	346	0.1	0.0	0.1	0.1	0.2
Mill	47,246	15,218	724	63,188	90%	3,543	3.3	0.4	1.5	3.8	4.8
Jenkins	28,805	8,947	34	37,786	79%	5,267	2.0	0.6	2.2	2.6	4.2
Soosrent	8,031	7,110	4	15,145	95%	611	0.7	0.1	0.3	0.8	0.9
Ulid1/c2	14,954	3,772	238	18,964	88%	1,483	1.0	0.2	0.6	1.2	1.6
Soosmill	22,415	5,534	38	27,987	73%	2,438	1.5	0.3	1.0	1.8	2.5
Sooscent (50%)	10,024	1,683	14	11,720	82%	1,011	0.7	0.1	0.4	0.8	1.1
Soose	1,785	343	0	2,128	65%	378	0.1	0.0	0.2	0.2	0.3
Southern soos	5,879	714	35	6,628	90%	1,623	0.4	0.2	0.7	0.6	1.0
White River	21,133	1,736	161	23,030	66%	2,354	1.3	0.3	1.0	1.6	2.3
Total	**352,234**	**253,977**	**44,824**	**651,034**	**74%**	**47,938**	**31.0**	**5.8**	**19.7**	**36.8**	**50.7**

Renton West

Table A-5. Year 2050 Updated Population and Flow Projections by Basin

Basin	Sewered Residential Population	Commercial Population	Industrial Population	Total Sewered Population	% Land Sewered	Sewered Area (ac)	Base Flow (mgd)	ADWF I/I (mgd)	AW WF I/I (mgd)	ADWF (mgd)	AWWF (mgd)
Norfolk	69,558	11,914	246	81,718	99%	4,885	3.8	2.3	4.6	6.1	8.4
Tukwila North	17,890	23,589	650	42,129	87%	1,356	1.8	0.2	0.6	2.0	2.4
Interurban	3,788	5,077	160	9,025	62%	642	0.4	0.1	0.3	0.5	0.7
Total	**91,236**	**40,580**	**1,056**	**132,872**	**91%**	**6,883**	**6.0**	**2.5**	**5.4**	**8.5**	**11.4**
Total Renton Plant Basin	**1,082,229**	**873,478**	**77,192**	**2,032,899**	**77%**	**130,390**	**94.3**	**17.4**	**56.2**	**111.7**	**150.5**
Metro System	**2,195,686**	**1,746,981**	**121,335**	**4,064,002**	**82%**	**217,323**	**181.9**	**50.4**	**106.4**	**232.3**	**288.3**