

Prairie Ridge Service Area Storage Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Projected Demands (gpm)				
Average Day Demands of Areas Directly Served via Gravity				
Prairie Ridge 810	573	615	950	
Average Day Demands of Areas Indirectly Served via Pumping				
Bonney Lake 1010	46	49	80	
Bonney Lake 950	43	47	76	
Bonney Lake 860	7	7	12	
Bonney Lake 581	0	0	0	
Projected Total Average Day Demand	669	719	1,118	953
Projected ERUs	5,228	5,618	8,737	7,446
Projected Maximum Day Demand (gpm)	1,137	1,222	1,900	1,619
Projected Peak Hour Demand (gpm)	1,886	2,022	3,107	2,658
Sources (gpm)				
214th Ave E Pump Station	6,000			
198th Avenue E Pump Station	2,400			
Prairie Ridge Springs Pump Station	1,389			
Total Available Sources, All Online	9,789			
Total Available Sources, Largest Offline	3,789			
Required Storage Volumes (MG)				
Operational Storage	0.794	0.794	0.794	0.794
Equalizing Storage	0.000	0.000	0.000	0.000
Standby Storage	1.046	1.124	1.747	1.489
Fire Suppression Storage	0.840	0.840	0.840	0.840
Storage required at 30 psi	0.794	0.794	0.794	0.794
Storage required at 20 psi	1.840	1.918	2.542	2.283
Available Storage Volumes (MG)				
Highest directly served service connection	720 ft			
Existing Storage Greater than 30 psi at highest connection	1.836			
Existing Storage Greater than 20 psi at highest connection	2.283			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	1.042	1.042	1.042	1.042
20 psi Required Storage	0.444	0.366	(0.258)	0.000

Cumberland Service Area Storage Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
<u>Projected Demands (gpm)</u>				
Cumberland 931	10	10	17	58
Projected ERUs	76	82	132	449
Projected Maximum Day Demand (gpm)	16	18	29	98
Projected Peak Hour Demand (gpm)	65	68	92	221
<u>Sources (gpm)</u>				
Cumberland Pump Station				
Pump 1	139			
Pump 2	208			
Total Available Sources, All Online	347			
Total Available Sources, Largest Offline	139			
<u>Required Storage Volumes (MG)</u>				
Operational Storage	0.023	0.023	0.023	0.023
Equalizing Storage	0.000	0.000	0.000	0.000
Standby Storage	0.015	0.016	0.026	0.090
Fire Suppression Storage ¹	0.090	0.090	0.090	0.090
Storage required at 30 psi	0.023	0.023	0.023	0.023
Storage required at 20 psi	0.113	0.113	0.113	0.113
<u>Available Storage Volumes (MG)</u>				
Highest directly served service connection	860 ft			
Existing Storage Greater than 30 psi at highest connection	0.006			
Existing Storage Greater than 20 psi at highest connection	0.113			
<u>Storage Surplus / (Deficiency) (MG)</u>				
30 psi Required Storage	(0.017)	(0.017)	(0.017)	(0.017)
20 psi Required Storage	0.000	0.000	0.000	0.000
<u>Available Storage Volumes (MG)</u>				
Highest directly served service connection	858.68 ft			
Existing Storage Greater than 30 psi at highest connection	0.023			
Existing Storage Greater than 20 psi at highest connection	0.113			
<u>Storage Surplus / (Deficiency) (MG)</u>				
30 psi Required Storage	0.000	0.000	0.000	0.000
20 psi Required Storage	0.000	0.000	0.000	0.000

1. Fire suppression storage assumed to be all available 20 psi storage not taken up by Operational or Equaling Storage. Design fire event is a 1,500 gpm flow for 2 hours. Because the available fire suppression storage is less than this, the remainder is assumed to be provided by the Cumberland Pump Station.

Sunrise Service Area Storage Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Projected Demands (gpm)				
McMillin 706	598	647	1,044	
Sunrise Terrace 519	8	9	14	
Projected Total Average Day Demand	606	656	1,058	553
Projected ERUs	4,735	5,126	8,269	4,324
Projected Maximum Day Demand (gpm)	1,030	1,115	1,798	940
Projected Peak Hour Demand (gpm)	1,714	1,851	2,944	1,572
Sources (gpm)				
McMillin 1 Pump Station	1,944			
McMillin 2 Pump Station	4,931			
Total Available Sources, All Online	6,875			
Total Available Sources, Largest Offline	1,944			
Required Storage Volumes (MG)				
Operational Storage	0.263	0.263	0.263	0.263
Equalizing Storage	0.000	0.000	0.000	0.000
Standby Storage	0.947	1.025	1.654	0.865
Fire Suppression Storage	0.840	0.840	0.840	0.840
Storage required at 30 psi	0.263	0.263	0.263	0.263
Storage required at 20 psi	1.210	1.288	1.917	1.128
Available Storage Volumes (MG)				
Highest directly served service connection	629 ft			
Existing Storage Greater than 30 psi at highest connection	0.259			
Existing Storage Greater than 20 psi at highest connection	1.128			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	(0.004)	(0.004)	(0.004)	(0.004)
20 psi Required Storage	(0.082)	(0.160)	(0.789)	0.000
Available Storage Volumes (MG)				
Assumed highest directly served service connection	626.60 ft			
Existing Storage Greater than 30 psi at highest connection	0.341			
Existing Storage Greater than 20 psi at highest connection	1.210			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	0.078	0.078	0.078	
20 psi Required Storage	0.000	(0.078)	(0.707)	
Available Storage Volumes (MG)				
Assumed highest directly served service connection	624.51 ft			
Existing Storage Greater than 30 psi at highest connection	0.420			
Existing Storage Greater than 20 psi at highest connection	1.289			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	0.157	0.157	0.157	
20 psi Required Storage	0.079	0.000	(0.628)	
Available Storage Volumes (MG)				
Assumed highest directly served service connection	607.79 ft			
Existing Storage Greater than 30 psi at highest connection	1.049			
Existing Storage Greater than 20 psi at highest connection	1.917			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	0.785	0.785	0.785	
20 psi Required Storage	0.707	0.629	0.000	

Indian Hill Reservoir Storage Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Projected Demands (gpm)				
Average Day Demands of Areas Directly Served via Gravity				
NE Tacoma 549	595	644	1,040	
Twin Lakes 411	154	167	270	
NE Tacoma 346	54	59	95	
Lakota Beach 186	9	10	16	
Dash Point High 411	9	9	15	
Harbor View 426	9	10	16	
Browns & Dash Point 346	41	45	72	
Dash Point Low 226	5	5	9	
Hayada 226	34	37	60	
Beverly Heights 486	17	18	30	
Overlook 370	29	31	50	
Fife Heights Low 411	21	23	37	
Average Day Demands of Areas Indirectly Served via Pumping				
Indian Hill 649	110	119	192	
Projected Total Average Day Demand	1,088	1,178	1,900	2,475
Projected ERUs	8,503	9,206	14,854	19,346
Projected Maximum Day Demand (gpm)	1,849	2,002	3,230	4,208
Projected Peak Hour Demand (gpm)	3,026	3,270	5,236	6,799
Sources (gpm)				
356th Street Pump Station	4,028			
Marine View Drive Pump Station	6,319			
Total Available Sources, All Online	10,347			
Total Available Sources, Largest Offline	4,028			
Required Storage Volumes (MG)				
Operational Storage	0.848	0.848	0.848	0.848
Equalizing Storage	0.000	0.000	0.000	0.000
Standby Storage	1.701	1.841	2.971	3.869
Fire Suppression Storage	0.840	0.840	0.840	0.840
Storage required at 30 psi	0.848	0.848	0.848	0.848
Storage required at 20 psi	2.548	2.689	3.819	4.717
Available Storage Volumes (MG)				
Highest directly served service connection	463 ft			
Existing Storage Greater than 30 psi at highest connection	4.280			
Existing Storage Greater than 20 psi at highest connection	4.717			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	3.432	3.432	3.432	3.432
20 psi Required Storage	2.169	2.028	0.899	0.000

McMillin Gravity Storage Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Projected Demands (gpm)				
High 478	4,870	5,274	8,508	
Portland Ave 346	76	82	133	
Old Town 346	25	27	43	
Grandview 351	22	24	38	
Sunset Beach 155	1.4	1.5	2.5	
Narrows 328	116	126	203	
Titlow 226	45	49	79	
Day Island 202	13	14	23	
Chambers Bay 290	0.4	0.4	0.6	
Middle 446	342	370	598	
Low 251	12,524	12,637	13,549	
Fletcher Heights 581	44	48	78	
University Place 531	442	479	772	
North End 446	373	404	651	
Salmon Beach 350	0	0	0	
Park Royal 556	38	41	66	
Westgate 538	318	344	555	
Fletcher 538	99	108	174	
SE Tacoma 581	1,170	1,267	2,044	
Frederickson 588	13	14	23	
S Summit High 669	130	141	227	
80th Ave E 626	7	8	13	
Alder Lane 626	2	3	4	
SE Tacoma 520	204	221	356	
Woodland 426	20	21	34	
Canyon 581	458	496	800	
Woodland 581	83	90	145	
South Hill 581	201	218	351	
Highland 621	89	97	156	
Projected Total Average Day Demand	21,726	22,604	29,627	81,593
Projected ERUs	169,823	176,688	231,587	637,794
Projected Maximum Day Demand (gpm)	36,933	38,426	50,366	138,709
Projected Peak Hour Demand (gpm)	59,160	61,549	80,653	222,001
Sources (gpm)				
Pipeline 1 Finished Water Pump Station	50,700			
South Tacoma Wellfield	27,778			
Gravity Pipeline Wells	5,208			
Portland Avenue Well	1,200			
Southeast Tacoma Wellfield	2,431			
Total Available Sources, All Online	87,317			
Total Available Sources, Largest Offline	36,617			
Required Storage Volumes (MG)				
Operational Storage	39.4	39.4	39.4	39.4
Equalizing Storage	0.0	0.0	0.0	20.2
Standby Storage	34.0	35.3	46.3	129.5
Fire Suppression Storage	22.4	22.4	22.4	22.4
Storage required at 30 psi	39.4	39.4	39.4	59.7
Storage required at 20 psi	73.4	74.8	85.8	189.2
Available Storage Volumes (MG) ¹				
Existing Storage Greater than 30 psi at highest connection	85.40			
Existing Storage Greater than 20 psi at highest connection	189.18			
Storage Surplus / (Deficiency) (MG)				
30 psi Required Storage	46.0	46.0	46.0	25.8
20 psi Required Storage	115.8	114.4	103.4	0.0

Notes:

1. Available storage volumes are based on maintaining either a 20 psi or 30 psi pressure for pressure zone(s) that are directly served by each reservoir included in the McMillin Gravity Service Area. Storage facilities include: Alaska Street, Bismark, Fletcher Heights, Hood Street, McMillin, North End (reservoir and standpipe), Portland Avenue, South Tacoma, and University Place.