APPENDIX N

SYSTEM ANALYSIS RESULTS

Table N.1 - Valley Service Area Storage Evaluation

	2021	2025	2035
Projected Retail MDD	9.52	10.51	11.41
Available Sources, mgd			
Coal Creek Springs	6.9	8.6	8.6
West Hill Springs	0.9	0.9	0.9
Well 1	3.2	3.2	3.2
Well 2	0.0	0.0	3.5
Well 3A/B	0.0	0.0	4.0
Well 4	3.7	3.7	3.7
Well 6	2.7	2.7	2.7
Well 7	0.0	2.5	5.0
B Street Intertie	1.8	1.8	1.8
132nd Intertie 1	3.32	3.32	3.32
Total Source Capacity	22.54	26.79	29.29
Redundant Source Capacity	15.63	18.15	20.65
Reliable Source Capacity	22.54	26.79	29.29
Offsite MDD Supply			
Academy Service Area	1.29	1.35	1.44
Lakeland Hills Service Area	0.52	0.00	0.00
Lea Hill Service Area	2.50	2.63	2.92
Total Offsite Demands	**4.31**	**3.98**	**4.36**
Net Redundant or Reliable	**11.32**	**14.17**	**16.29**
Required Storage, mg			
Operational	0.24	0.24	0.24
Equalizing	2.38	2.63	2.85
Emergency	7.72	6.85	6.53
Fire Suppression	0.96	0.96	0.96
Total Required Storage	11.30	10.68	10.58
Existing Storage, mg			
Reservoir 1	4.80	4.80	4.80
Reservoir 2	3.43	3.43	3.43
Total Existing Storage	8.23	8.23	8.23
Excess (Deficit) Existing Storage, mg	(3.07)	(2.45)	(2.35)

Table N.2 - Valley Service Area Storage Evaluation with Improvements

	2021	2025	2035
Projected Retail MDD	9.52	10.51	11.41
Available Sources, mgd			
Coal Creek Springs	6.9	8.6	8.6
West Hill Springs	0.9	0.9	0.9
Well 1	3.2	3.2	3.2
Well 2	0.0	0.0	3.5
Well 3A/B	0.0	0.0	4.0
Well 4	3.7	3.7	3.7
Well 6	2.7	2.7	2.7
Well 7	2.5	2.5	5.0
B Street Intertie	1.8	1.8	1.8
132nd Intertie 1	0.8	0.7	0.4
Total Source Capacity	22.54	24.16	26.37
Redundant Source Capacity	15.63	15.52	17.73
Reliable Source Capacity	22.54	24.16	26.37
Offsite MDD Supply			
Academy Service Area	1.29	1.35	1.44
Lakeland Hills Service Area	0.52	0.00	0.00
Lea Hill Service Area	0.00	0.00	0.00
Total Offsite Demands	1.81	1.35	1.44
Net Redundant, Reliable Supply	**13.82**	**14.17**	**16.29**
Required Storage, mg			
Operational	0.24	0.24	0.24
Equalizing	2.38	2.63	2.85
Emergency	5.22	6.85	6.53
Fire Suppression	0.96	0.96	0.96
Total Required Storage	8.80	10.68	10.58
Existing Storage, mg			
Reservoir 1	4.80	4.80	4.80
Reservoir 2	3.43	3.43	3.43
New Storage	0.00	1.00	1.00
Total Existing Storage	8.23	9.23	9.23
Excess (Deficit) Existing Storage, mg	(0.57)	(1.45)	(1.35)
Shared Storage			
Lakeland Hills	0.54	0.53	0.52
Academy	1.21	1.07	0.87
Lea Hill	0.00	0.00	0.00
Net Excess (Deficit) Existing Storage, mg	**1.18**	**0.15**	**0.04**

Table N.3 - Academy Service Area Storage Evaluation

	2013	2021	2025	2035
Projected MDD, mgd	1.23	1.29	1.35	1.44
Available Sources, mgd				
Academy Pump Station 1	0.44	0.44	1.44	1.44
Academy Pump Station 2	1.08	1.08	1.08	1.08
Total Source Capacity	1.52	1.52	2.52	2.52
Redundant Source Capacity	1.52	1.52	2.52	2.52
Reliable Source Capacity	1.52	1.52	2.52	2.52
Required Storage, mg				
Operational	0.07	0.07	0.07	0.07
Equalizing	0.31	0.32	0.34	0.36
Emergency	0.94	1.06	0.18	0.36
Fire Suppression	0.96	0.96	0.96	0.96
Total Required Storage	2.28	2.41	1.55	1.75
Existing Storage, mg				
Reservoir 8A	1.14	1.14	1.14	1.14
Reservoir 8B	1.48	1.48	1.48	1.48
Total	2.62	2.62	2.62	2.62
Excess (Deficit) Existing Storage, mg	0.34	0.21	1.07	0.87

Table N.4 - Academy Service Area Storage Evaluation with Improvements

	2021	2025	2035
Projected MDD, mgd	1.29	1.35	1.44
Available Sources, mgd			
Academy Pump Station 1	1.44	1.44	1.44
Academy Pump Station 2	1.08	1.08	1.08
Total Source Capacity	2.52	2.52	2.52
Redundant Source Capacity	2.52	2.52	2.52
Reliable Source Capacity	2.52	2.52	2.52
Required Storage, mg			
Operational	0.07	0.07	0.07
Equalizing	0.32	0.34	0.36
Emergency	0.06	0.18	0.36
Fire Suppression	0.96	0.96	0.96
Total Required Storage	1.41	1.55	1.75
Existing Storage, mg			
Reservoir 8A	1.14	1.14	1.14
Reservoir 8B	1.48	1.48	1.48
Total	2.62	2.62	2.62
Excess (Deficit) Existing Storage, mg	1.21	1.07	0.87
Shared Storage			
Valley	-1.21	-1.07	-0.87
Net Excess (Deficit) Existing Storage, mg	**0.00**	**0.00**	**0.00**

Table N.5 - Lea Hill Service Area Storage Evaluation

	2021	2025	2035
Projected MDD, mgd	2.50	2.63	2.92
Available Sources, mgd			
Green River Pump Station	5.05	5.05	5.05
Lea Hill Pump Station	1.73	1.73	0.00
132nd Ave SW Intertie	3.32	3.32	3.32
Total Source Capacity	10.10	10.10	8.37
Redundant Source Capacity	10.10	10.10	8.37
Reliable Source Capacity	10.10	10.10	8.37
Required Storage, mg			
Operational	0.06	0.06	0.06
Equalizing	0.63	0.66	0.73
Emergency	0.00	0.00	0.00
Fire Suppression	0.96	0.96	0.96
Total Required Storage	1.65	1.68	1.75
Existing Storage, mg			
Reservoir 4A	0.59	0.59	0.59
Reservoir 4B	0.88	0.88	0.88
Total	1.47	1.47	1.47
Excess (Deficit) Existing Storage, mg	(0.18)	(0.21)	(0.28)

Table N.6 - Lea Hill Service Area Storage Evaluation with Improvements

	2021	2025	2035
Projected MDD, mgd	2.50	2.63	2.92
Available Sources, mgd			
Green River Pump Station	5.05	5.05	5.05
Lea Hill Pump Station	1.73	1.73	0.00
132nd Ave SW Intertie	3.32	3.32	3.32
Total Source Capacity	10.10	10.10	10.10
Redundant Source Capacity	10.10	10.10	8.38
Reliable Source Capacity	8.38	8.38	8.38
Required Storage, mg			
Operational	0.06	0.06	0.06
Equalizing	0.63	0.66	0.73
Emergency	0.00	0.00	0.00
Fire Suppression	0.96	0.96	0.96
Total Required Storage	1.65	1.68	1.75
Existing Storage, mg			
Reservoir 4A	0.83	0.83	0.83
Reservoir 4B	0.88	0.88	0.92
Total	1.71	1.71	1.75
Excess (Deficit) Existing Storage, mg	0.06	0.03	0.00

Table N.7 - Lakeland Hills Service Area Storage Evaluation

	2021	2025	2035
Projected MDD, mgd	0.78	0.83	0.89
Available Sources, mgd			
Well 5	0.94	0.94	0.94
Well 5A	0.26	0.26	0.26
Terrace View BPS	1.58	1.58	1.58
Total Source Capacity	2.78	2.78	2.78
Redundant Source Capacity	2.78	2.78	2.78
Reliable Source Capacity	1.84	2.78	2.78
Required Storage			
Operational	0.03	0.03	0.03
Equalizing	0.20	0.21	0.22
Emergency	0.00	0.00	0.00
Fire Suppression	0.56	0.56	0.56
Total Required Storage	0.79	0.80	0.81
Existing Storage			
Reservoir 5, mg	0.93	0.93	0.93
Reservoir 6[(1)], mg	0.70	0.70	0.70
Algona Storage	0.30	0.30	0.30
Total	1.33	1.33	1.33
Excess (Deficit) Existing Storage, mg	0.54	0.53	0.52

Notes:

[(1)] Excludes 0.15 MG of storage owned by Algona.

Table N.8 - Lakeland Hills Service Area Storage Evaluation with Improvements

	2021	2025	2035
Projected MDD, mgd	0.78	0.83	0.89
Available Sources, mgd			
Well 5	0.94	0.94	0.94
Well 5A	0.26	0.26	0.26
Terrace View BPS	1.58	1.58	1.58
Total Source Capacity	2.78	2.78	2.78
Redundant Source Capacity	2.78	2.78	2.78
Reliable Source Capacity	1.84	2.78	2.78
Required Storage			
Operational	0.03	0.03	0.03
Equalizing	0.20	0.21	0.22
Emergency	0.00	0.00	0.00
Fire Suppression	0.56	0.56	0.56
Total Required Storage	0.79	0.80	0.81
Existing Storage			
Reservoir 5, mg	0.93	0.93	0.93
Reservoir 6[1], mg	0.70	0.70	0.70
Algona Storage	0.30	0.30	0.30
Total	1.33	1.33	1.33
Excess (Deficit) Existing Storage, mg	0.54	0.53	0.52
Shared Storage			
Valley	-0.54	-0.53	-0.52
Net Excess (Deficit) Existing Storage, mg	**0.00**	**0.00**	**0.00**

Notes:

[1] Excludes 0.15 MG of storage owned by Algona.