



May 15, 2024

Chong Woo
Aurora Water – Utilities Division
26711 E Quincy Ave
Aurora, CO 80016

RE: Windler Discovery Park Utility Conformance Letter

Chong Woo,

This letter serves as a utility conformance letter for the Discovery Park proposed amenities located on Denali between E 53rd Ave and 49th Ave, in the City of Aurora.

Reviewing the Master Utility Study done by Olsson on May 2022 Approval #222155, Discovery Park is described as water and sanitary basin PK-2, and OS-27. The majority of these two basins are open space park land, with clubhouse, pool area, playgrounds, dog park, and restroom.

The approved MUS for this area show the sanitary outfall for Discovery Park flowing south with water connections to the surrounding Denali water system. Proposed sanitary for the pool and clubhouse conform to the MUS while reducing the proposed clubhouse size and impact. This event center/clubhouse was reduced from 6.50 acres to 1.0 acre. A restroom has been added to the middle of the park which flows to the northwest to Node A.9 in contrast to the MUS. Calculations have been added to show this additional flow does not impact the sizing of Line A.9

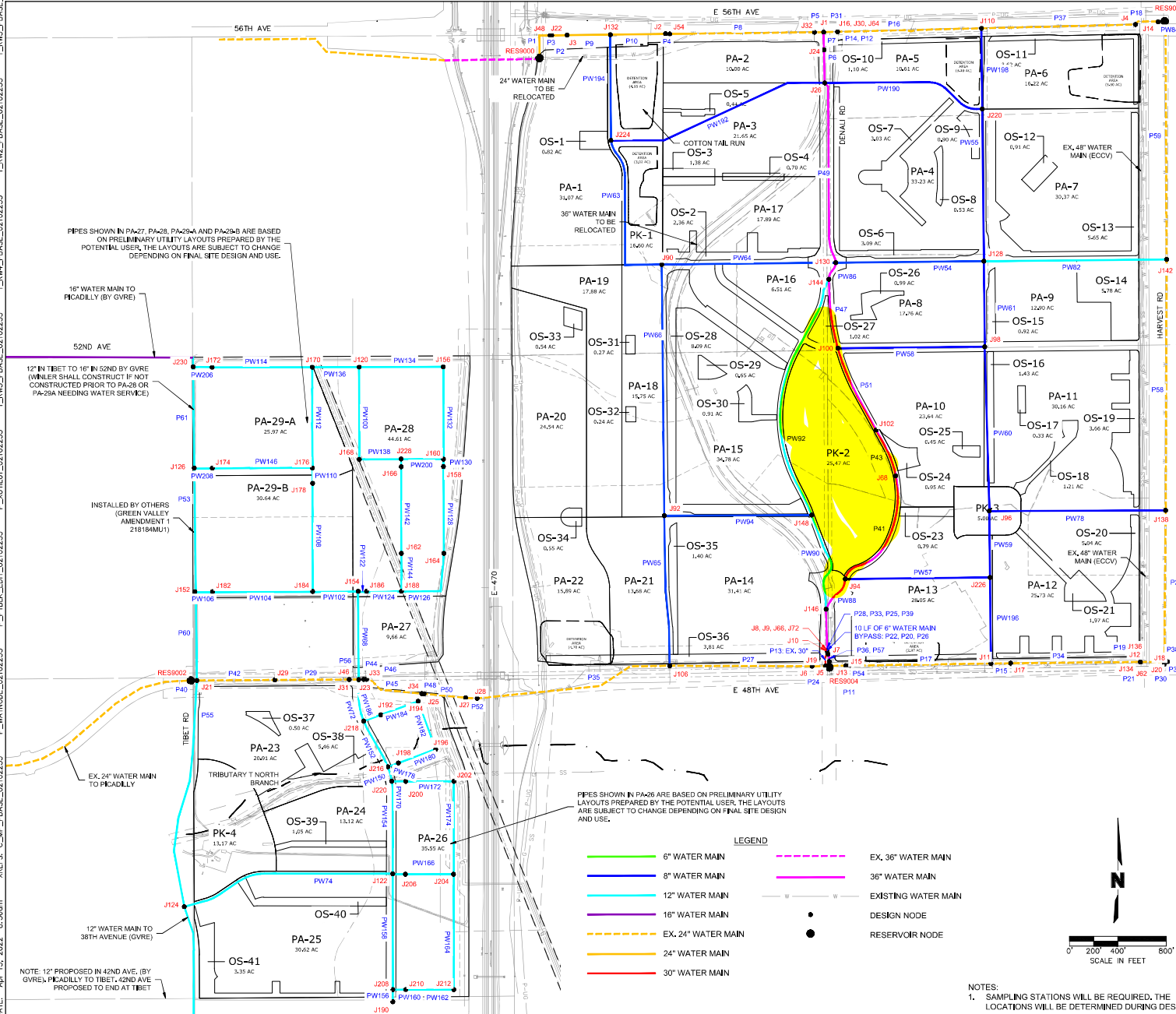
The proposed Discovery Park infrastructure will not adversely impact the proposed design of the water and sanitary system previously approved by the Olsson MUS.

Please contact me if you have any questions.

Sincerely,

Tom Odle, PE
Senior Project Manager

DWG: F:\2021\02001-020235\40-Design\AuroraCAD\021-02235_Find Plans\WMP_PLAN01_WAT_02102235.dwg USER: rhickey
DATE: Apr 13, 2022 8:56am XREFS: C:\MP_PHASE_02102235 P:\WATNODE_02102235 P:\UTIL01_02102235 T:\RWD_PHASE_02102235



FACSIMILE
THIS ELECTRONIC PLAN IS A
FACSIMILE OF THE SIGNED
AND SEALED PDF SET

NAME HERE: DATE: 05/11/2022

Approved For One Year From This Date
06/13/2022

drawn by: 06/10/2022
checked by: Date
approved by: 5/18/22
GND: by: Date
project no.:
drawing no.:
date: 06/08/2022
THT: Water Department Date

NOTES:
1. SAMPLING STATIONS WILL BE REQUIRED, THE
LOCATIONS WILL BE DETERMINED DURING DESIGN.

olsson

1525 Raleigh Street
Suite 400
Denver, CO 80204

TEL: 303.237.2072 www.olson.com

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AVAILABLE INFORMATION. IT IS
HOWEVER THE RESPONSIBILITY
OF THE CONTRACTOR TO FIELD
VERIFY THE LOCATION OF ALL
UTILITIES PRIOR TO THE
COMMENCEMENT OF ANY
CONSTRUCTION ACTIVITIES.

REVISIONS DESCRIPTION
DATE
REV. NO.

2021

WATER MASTER PLAN
WINDLER MIXED USE DEVELOPMENT
MASTER UTILITY PLAN
AURORA, CO

SHEET
A.1

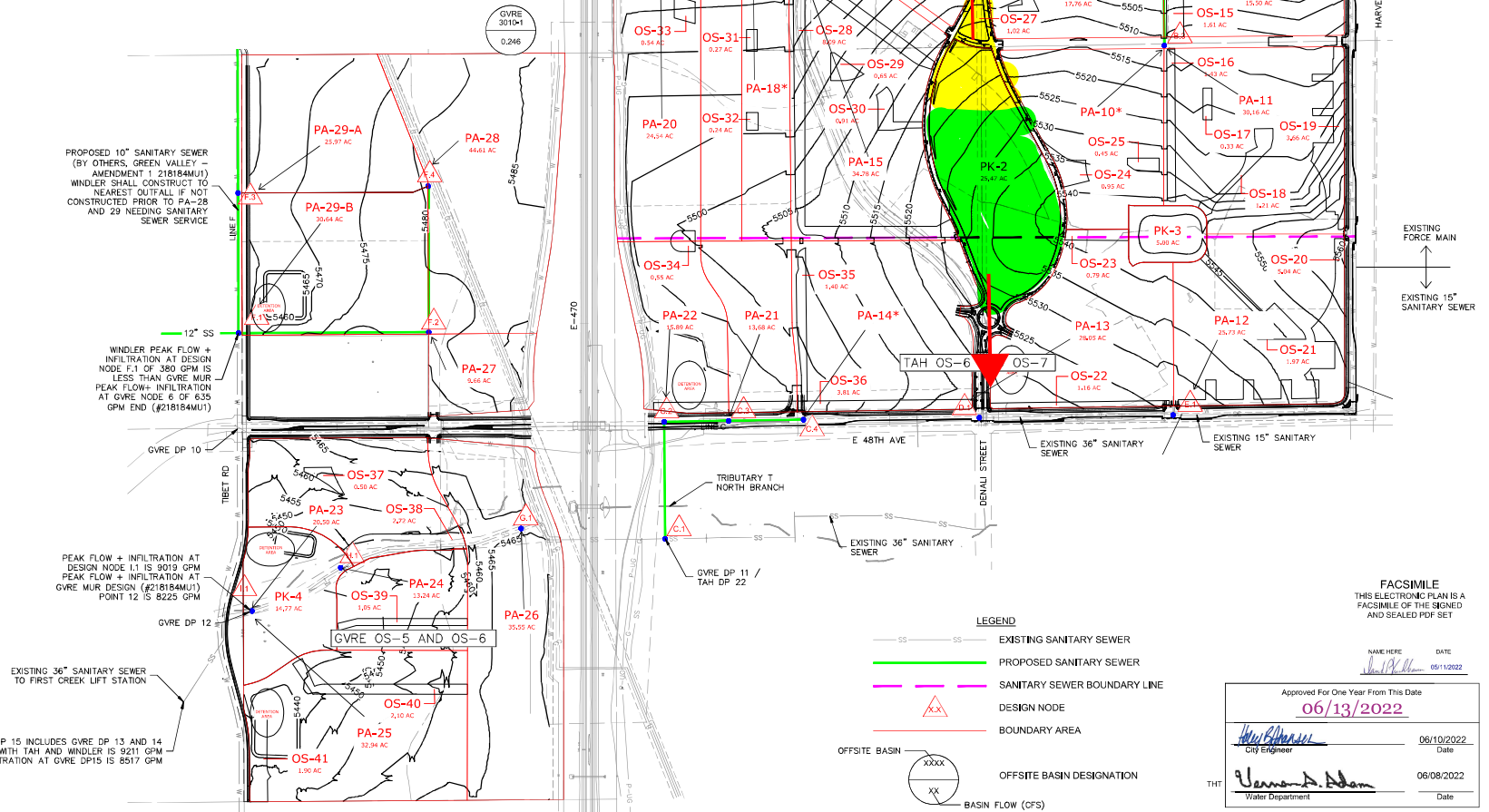
APPROVED ON 06/13/2022

DWG: F:\2021\02001-02500\021-02235_Find Plans\01-06_MP_Sheets\WTPA_P_PLAN\01_SAN_02102235.dwg
DATE: May 11, 2022 9:01am
XREFS: P_MP_Plan\01_02102235 P_XREFS: P_MP_Plan\01_02102235 P_XREFS: P_MP_Plan\01_02102235
USER: gmsd
T_RMW_PHASE_02102235 T_RMW_PHASE_02102235 T_RMW_PHASE_02102235

LINE	From Node	To Node	MAP AREA CODE	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)	Pipe Size (in)	Pipe Percent Full (Peak Flow)	Avg Day Velocity (FT/S)
LINE A	A.9	A.8	PA-16	0.07	0.02	8	3%	2.1
	A.8	A.6	PA-15	0.44	0.12	8	22%	3.2
	A.7	A.6	PA-20	0.23	0.06	8	15%	2.2
	A.6	A.5	PA-18	1.04	0.28	8	73%	3.2
	A.5	A.4	PA-1	1.33	0.36	10	61%	2.9
	A.12	A.11	PA-17	0.19	0.05	8	7%	3.2
	A.11	A.4	PA-3	0.67	0.18	8	33%	3.6
	A.4	A.3	PA-2	2.67	0.77	12	63%	4.1
	A.2	A.2.5	PA-5	2.98	0.87	12	71%	4.2
	A.2.5	A.2	Line B	3.64	1.13	15	57%	3.9
LINE B	A.2	A.1	PA-6	3.86	1.21	15	60%	4.0
	A.10	A.1	PA-7	0.20	0.05	8	10%	2.5
	B.3	B.2	PA-11	0.58	0.16	8	23%	4.0
	B.2	B.1	PA-8, PA-9	0.70	0.19	8	31%	3.9
LINE C	B.1	A.2.5	PA-4	0.97	0.26	10	26%	3.9

NOTE: MINIMUM PIPE SIZE IN PLANNING AREAS (PA) SHALL BE 8-INCH

LINE	From Node	To Node	MAP AREA CODE	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)	Pipe Size (in)	Pipe Percent Full (Peak Flow)	Avg Day Velocity (FT/S)
LINE C	C.4	C.3	PA-14	0.42	0.11	8	29%	2.4
	C.3	C.2	PA-21	0.80	0.21	8	56%	2.9
	C.2	C.1	PA-22	1.24	0.33	8	53%	4.8
LINE D	D.1	EX	PA-13, PK-2	0.52	0.14	8	18%	4.2
	D.1	EX	PA-12	0.28	0.07	8	10%	3.5
	F.3	F.1	PA-29A	1.20	0.32	10	66%	2.5
LINE E	F.4	F.2	PA-28	0.34	0.09	8	28%	2.0
	F.2	F.1	PA-27	0.41	0.11	8	26%	2.6
	F.2	F.1	PA-28	0.41	0.11	8	26%	2.6
LINE F	G.1	EX	PA-26	0.27	0.07	8	19%	2.1
	G.1	EX	PA-24	0.14	0.04	8	8%	2.0
	G.1	EX	PA-23	0.14	0.04	8	8%	2.0
LINE G	L.1	EX	PA-25, PK-4	0.67	0.18	8	47%	2.8
	L.1	EX	PA-25, PK-4	0.67	0.18	8	47%	2.8



APPROVED ON 06/13/2022

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1525 Raleigh Street
Suite 400
Denver, CO 80204

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OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS. HORIZONTAL OR VERTICAL THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REVISIONS

REV	DATE	DESCRIPTION
1		
2		
3		
4		
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2021

SANITARY SEWER MASTER PLAN

WINDLER MIXED USE DEVELOPMENT MASTER UTILITY PLAN

AURORA, CO

SHEET B.1

Windler - Water Demand Projections

Water Distribution Design Criteria

Land Use	Avg Day (gdp/acre)	Max Day (gdp/acre)	Peak Hour (gdp/acre)
Commercial	1,500	4,200	6,750
Industrial (schools)	1,200	3,360	5,400
Parks & Greenbelts	1,800	5,040	N/A

Residential Criteria

People / unit	2.77
Avg day / capita (gpd)	101

Peaking Factors

Max Day	2.8
Max Hour	4.5

Fire Flow

Classification	Demand (gpm)	Time (hrs)
Residential	1500	2
Commercial/Multifamily	2500	2
Industrial	3500	3

Map Area Code	Land Use	Nodes	Total Acres	Proposed Units	Avg Day Demand (gpd)	Avg Day Demand (gpm)	Max Day Demand (gpd)	Max Day Demand (gpm)	Peak Hour Demand (gpd)	Peak Hour Demand (gpm)	Required Fire Flow (gpm)	Max Day Demand + Fire Flow (gpm)
PA-13	MF		6.50	195	54,555	38	152,754	106	245,498	170	1500	1606
PA-13	COMMERCIAL		0.50	N/A	750	1	2,100	1	3,375	2	2500	2501
PA-14	SFD/SFA		17.82	160	44,870	31	125,635	87	201,913	140	1500	1587
PA-14	MF		3.59	108	30,131	21	84,367	59	135,591	94	1500	1559
PA-14	COMMERCIAL		10.00	N/A	15,000	10	42,000	29	67,500	47	2500	2529
PA-15	SFD/SFA FLEX		34.78	313	87,574	61	245,206	170	394,081	274	1500	1670
PA-16			6.51	59	16,392	11	45,897	32	73,763	51	1500	1532
PA-17			16.89	152	42,528	30	119,078	83	191,375	133	1500	1583
PA-17	COMMERCIAL		1.00	N/A	1,500	1	4,200	3	6,750	5	2500	2503
PA-18	SFD/SFA FLEX		15.75	142	39,657	28	111,041	77	178,458	124	1500	1577
PA-19	SFA		17.88	161	45,021	31	126,058	88	202,593	141	1500	1588
PA-2	MF		23.70	711	198,916	138	556,966	387	895,124	622	1500	1887
PA-20	MIXED COMM		24.54	N/A	36,810	26	103,068	72	165,645	115	2500	2572
PA-21			4.10	N/A	6,156	4	17,237	12	27,702	19	2500	2512
PA-21	MF		9.58	287	80,372	56	225,043	156	361,675	251	1500	1656
PA-22			11.12	334	93,356	65	261,398	182	420,104	292	1500	1682
PA-22	MIXED COMM		4.77	N/A	7,151	5	20,021	14	32,177	22	2500	2514
PA-23	SFD/SFA FLEX		20.50	209	58,472	41	163,721	114	263,124	183	1500	1614
PA-24			13.24	118	33,013	23	92,436	64	148,558	103	1500	1564
PA-25			32.94	276	77,217	54	216,206	150	347,474	241	1500	1650
PA-26	IND-3.3.5.Y, IND-3.3.5.Z		35.55	N/A	42,660	30	119,448	83	191,970	133	3500	3583
PA-27			9.66	N/A	11,592	8	32,458	23	52,164	36	3500	3523
PA-28			44.61	N/A	53,532	37	149,890	104	240,894	167	3500	3604
PA-29			56.61	N/A	67,932	47	190,210	132	305,694	212	3500	3632
PA-3	SFA		6.95	76	21,388	15	59,888	42	96,248	67	1500	1542
PA-3	COMMERCIAL		1.00	N/A	1,500	1	4,200	3	6,750	5	2500	2503
PA-4	SFD/SFA-FLEX		33.23	316	88,319	61	247,294	172	397,436	276	1500	1672
PA-5	MF		10.61	228	63,871	44	178,840	124	287,422	200	1500	1624
PA-6	MF		16.22	322	89,974	62	251,927	175	404,883	281	1500	1675
PA-7	SFD/SFA-FLEX		29.87	269	75,211	52	210,590	146	338,448	235	1500	1646
PA-7	COMMERCIAL		0.50	N/A	750	1	2,100	1	3,375	2	2500	2501
PA-8	SFD/SFA-FLEX		17.76	160	44,718	31	125,212	87	201,233	140	1500	1587
PA-9	SCHOOL		15.50	N/A	18,600	13	52,080	36	83,700	58	3500	3536
PK-1	NEIGHBORHOOD		16.60	N/A	29,880	21	83,664	58	N/A	N/A		58
PK-2												
Park			18.97	N/A	34,146	24	95,609	66	N/A	N/A		66
Event Center			6.50	N/A	9,750	7	27,300	19	43,875	N/A	2500	2519
PK-3			5.00	N/A	9,000	6	25,200	18	N/A	N/A		18
PK-4			14.77	N/A	41,586	29	141,941	99	67,500	N/A	2500	2599

***Assume park & greebelt demand plus 15,000 gpd in PK-4 to account for planned restaurant and education venues.

APPROVED

REVISED EVENT
CENTER DEMAND

Map Area Code	Land Use	Nodes	Total Acres	Proposed Units	Avg Day Demand (gpd)	Avg Day Demand (gpm)	Max Day Demand (gpd)	Max Day Demand (gpm)	Peak Hour Demand (gpd)	Peak Hour Demand (gpm)	Required Fire Flow (gpm)	Max Day Demand + Fire Flow (gpm)
PK2_ Event Center	NEIGHBORHOOD PARK		1.00	N/A	1,500	1	4,200	3	-	-	2500	2,503

Windler - Projected Sanitary Sewer Demands

Non-Residential Criteria

Land Use	Avg Day (gdp/ac)	Equivalent Pop / Ac
Commercial	1,500	22
Industrial (schools)	1,200	18

Residential Criteria

People / unit	Avg day / capita (gpd)
2.77	68

Peaking Factors

MIN	1.7
MAX	4
Peaking Factor = $5 \div p^{0.167}$	
p= population in thousands	

INFILTRATION

AVG * 10% of average, do not peak I&I

Based on Windler Land Use Summary - 03/24/2022

Map Area Code	Land Use	Total Acres	Proposed DUs	Population	Avg Daily Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Infiltration (GPD)	Avg Day + Infiltration (GPD)	Avg Day + Infiltration (CFS)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPD)	Peak Flow + Infiltration (CFS)	Peak Flow + Infiltration (GPM)
PA-27	IND-3.3.5.Y, IND-3.3.5.Z	10		174	11,592	4.0	46,368	1,159	12,751	0.020	9	47,527	0.074	33
PA-28	IND-3.3.5.Y, IND-3.3.5.Z	45		803	53,532	4.0	214,128	5,353	58,885	0.091	41	219,481	0.340	152
PA-29	IND-3.3.5.Y, IND-3.3.5.Z													
PA-29A		26		464	30,900	4.00	123,600	3,090	33,990	0.053	24	126,690	0.196	88
PA-29B		31		555	37,032	4.00	148,128	3,703	40,735	0.063	28	151,831	0.235	105
PA-3	SFA	7	76	212	14,400	4.0	57,600	1,440	15,840	0.025	11	59,041	0.091	41
PA-3	COMMERCIAL	1		22	1,500	4.0	6,000	150	1,650	0.003	1	6,150	0.010	4
PA-4	SFD/SFA-FLEX	33	316	874	59,462	4.0	237,850	5,946	65,409	0.101	45	243,796	0.377	169
PA-5	MF	10.61	228	632	43,003	4.0	172,010	4,300	47,303	0.073	33	176,311	0.273	122
PA-6	MF	16.22	322	891	60,577	4.0	242,306	6,058	66,634	0.103	46	248,364	0.384	172
PA-7	SFD/SFA-FLEX	29.87	269	745	50,637	4.0	202,547	5,064	55,701	0.086	39	207,611	0.321	144
PA-7	COMMERCIAL	0.50		11	750	4.0	3,000	75	825	0.001	1	3,075	0.005	2
PA-8	SFD/SFA-FLEX	17.76	160	443	30,107	4.0	120,430	3,011	33,118	0.051	23	123,441	0.191	86
PA-9	SCHOOL	15.50		279	18,600	4.0	74,400	1,860	20,460	0.032	14	76,260	0.118	53
PK-2	Event Center	6.50		143	9,750	4.0	39,000	975	10,725	0.017	7	39,975	0.062	28
PK-4	NEIGHBORHOOD PARK	14.77			15,000	4.0	60,000	1,500	16,500	0.026	11	61,500	0.095	43
***Assume 15,000 gpd in PK-4 to account for planned restaurant and education venues.														
		707	5,494	19,980	1,370,102			137,010	1,507,113		1,047			
Residential		446	5,494	15,218	1,034,815			103,481	1,138,296					
Commercial		99	-	1,848	140,972			14,097	155,069					
Industrial (School)		162		2,915	194,316			19,432	213,748					
		707	5,494	19,980	1,370,102			137,010	1,507,113					
Second Creek		358	3,392	10,954	744,719	3.35	2,496,635	74,472	819,191		569	2,571,107	3.98	1,785
First Creek		349	2,102	9,026	625,384	3.46	2,165,438	62,538	687,922		478	2,227,976	3.45	1,547
		707	5,494	19,980	1,370,102		4,662,072	137,010	1,507,113		1047	4,799,083	7.42	3,333
												4,799,083		3,333

APPROVED

REVISED EVENT CENTER DEMAND & ADDED BATHROOM

Map Area Code	Land Use	Total Acres	Proposed Dus	Population	Avg Daily Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Infiltration (GPD)	Avg Day + Infiltration (GPD)	Avg Day + Infiltration (CFS)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPD)	Peak Flow + Infiltration (CFS)	Peak Flow + Infiltration (GPM)
PK-2 (NORTH)	Bathroom (NEW)	1	0	22	1,500	4.0	6,000	150	1,650	0.003	1	6,150	0.010	4
PK-2	Event Center (REDUCED)	1	0	22	1,500	4.0	6,000	150	1,650	0.003	1	6,150	0.010	4

Windler - Projected Sanitary Sewer Demands

Based on Windler Land Use Summary - 03/24/2022

	Node	Map Area Code	Population	Sum Population	Avg Day (GPD)	Sum Avg Day (GPD)	Peaking Factor	Avg Day (GPM)	Infiltration (GPM)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPM)	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)
Tributary to Second Creek	Line A												
	A.9	PA-16	162	162	11,036	11,036	4.00	8	1	8	31	0.070	0.019
	A.8	PA-15	867	1,029	58,960	69,996	4.00	49	5	53	199	0.444	0.119
	A.7	PA-20	540	540	36,810	36,810	4.00	26	3	28	105	0.234	0.063
	A.6	PA-18, PA-19	838	2,408	57,011	163,817	4.00	114	11	125	466	1.039	0.279
	A.5	PA-1	684	3,091	46,605	210,422	4.00	146	15	161	599	1.335	0.358
	A.12	PA-17	443	443	30,133	30,133	4.00	21	2	23	86	0.191	0.051
	A.11	PA-3	234	677	75,363	105,495	4.00	73	7	81	300	0.669	0.180
	A.4	PA-2	1,969	5,737	133,924	449,841	3.73	312	31	344	1198	2.669	0.766
	A.3	PA-5	632	6,370	60,577	510,418	3.67	354	35	390	1336	2.977	0.869
	A.2.5	Line B		9,307	103,579	663,225	3.44	461	46	507	1633	3.638	1.129
	A.2	PA-6	891	10,198	50,637	713,861	3.39	496	50	545	1731	3.858	1.215
	A.10	PA-7	756	756	30,857	30,857	4.00	21	2	24	88	0.196	0.053
	A.1			10,954		744,719	3.35	517	52	569	1785	3.978	1.267
	Line B												
	B.3	PA-10, PA-11	1,341	1,341	91,204	91,204	4.00	63	6	70	260	0.579	0.155
	B.2	PA-8, PA-9	722	2,063	18,600	109,804	4.00	76	8	84	313	0.697	0.187
	B1	PA-4	874	2,937	43,003	152,807	4.00	106	11	117	435	0.969	0.260
	Total Contribution to Second Creek Lift Station			10,954	744,719	744,719	3.35	517	52	569	1785	3.978	1.267
Tributary to First Creek										0.82	MGD		
	Line C												
	C.4	PA-14	963	963	65,496	65,496	4.00	45	5	50	186	0.415	0.111
	C.3	PA-21	886	1,849	60,268	125,764	4.00	87	9	96	358	0.798	0.214
	C.2	PA-22	1,029	2,878	70,004	195,768	4.00	136	14	150	557	1.242	0.333
	C.1			2,878	195,768	195,768	4.00	136	14	150	557	1.242	0.333
	D.1	PA-13, PK-2	1,201	1,201	81,700	81,700	4.00	57	6	62	233	0.518	0.139
	E.1	PA-12	641	641	43,619	43,619	4.00	30	3	33	124	0.277	0.074

REVISED
NODE
DEMANDS
WITH REVISED
EVENT
CENTER AND
ADDED
BATHROOM

TRIBUTARY	NODE	Map Area Code	Population	Sum Population	Avg Daily Flow (GPD)	Sum Avg Day (GPD)	Peaking Factor	Avg Day (GPM)	Infiltration (GPM)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPM)	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)
SECOND CREEK	A.9	PA-16, PK2 (NORTH)	184	184	12,536	12,536	4.0	9	1	10	36	0.080	0.021
FIRST CREEK	D.1	PA-13, PK-2	1,080	1,080	73,450	73,450	4.0	51	5	56	209	0.466	0.125

Windler - Sanitary Sewer Pipe Sizing

Windler - Sanitary Pipe Profile

	From	To	Sum Peak Flow + Infiltration (CFS)	Sum Avg Day + Infiltration (CFS)	Pipe Diameter (in)	Mannings 'n'	Pipe Slope (ft/ft)	Full Capacity (cfs)	Meets Peak Flow Capacity	Peak Flow / Capacity	Avg Day Flow Area (ft^2)	Vel @ Avg Day Flow (fps)	Meets Requirement (2 fps Min.)	Ground Start	Ground End	Length	Invert Start	Invert End	Depth End
Tributary to Second Creek	Line A																		
	A.9	A.8	0.070	0.019	8	0.011	0.0325	2.58	YES	3%	0.009	2.1	YES	5485.0	5470.0	470	5471.00	5455.73	14.27
	A.8	A.6	0.444	0.119	8	0.011	0.0200	2.03	YES	22%	0.038	3.2	YES	5470.0	5470.0	245	5455.73	5450.83	19.17
	A.7	A.6	0.234	0.063	8	0.011	0.0125	1.60	YES	15%	0.028	2.2	YES	5472.0	5470.0	630	5462.00	5454.13	15.88
	A.6	A.5	1.039	0.279	8	0.011	0.0100	1.43	YES	73%	0.088	3.2	YES	5470.0	5458.0	1935	5450.83	5431.48	26.52
	A.5	A.4	1.335	0.358	10	0.011	0.0070	2.17	YES	61%	0.122	2.9	YES	5458.0	5453.0	1810	5431.48	5418.81	34.19
	A.12	A.11	0.191	0.051	8	0.011	0.0400	2.86	YES	7%	0.016	3.2	YES	5480.0	5458.0	755	5470.00	5439.80	18.20
	A.11	A.4	0.669	0.180	8	0.011	0.0200	2.03	YES	33%	0.050	3.6	YES	5458.0	5453.0	435	5439.80	5431.10	21.90
	A.4	A.3	2.669	0.766	12	0.011	0.0100	4.22	YES	63%	0.188	4.1	YES	5453.0	5446.0	900	5418.81	5409.81	36.19
	A.3	A.2.5	2.977	0.869	12	0.011	0.0100	4.22	YES	71%	0.205	4.2	YES	5446.0	5443.0	400	5409.81	5405.81	37.19
	A.2.5	A.2	3.638	1.129	15	0.011	0.0070	6.40	YES	57%	0.287	3.9	YES	5443.0	5435.0	675	5405.81	5401.08	33.92
	A.2	A.1	3.858	1.215	15	0.011	0.0070	6.40	YES	60%	0.303	4.0	YES	5435.0	5427.0	595	5401.08	5396.92	30.09
	A.10	A.1	0.196	0.053	8	0.011	0.0200	2.03	YES	10%	0.021	2.5	YES	5440.0	5427.0	695	5430.00	5416.10	10.90
	Line B																		
	B.3	B.2	0.579	0.155	8	0.011	0.0300	2.48	YES	23%	0.039	4.0	YES	5515.0	5490.0	745	5500.00	5477.65	12.35
	B.2	B.1	0.697	0.187	8	0.011	0.0250	2.26	YES	31%	0.048	3.9	YES	5490.0	5455.0	1230	5472.65	5441.90	13.10
	B.1	A.2.5	0.969	0.260	10	0.011	0.0200	3.67	YES	26%	0.067	3.9	YES	5455.0	5443.0	690	5441.90	5428.10	14.90
Tributary to First Creek	Line C																		
	C.4	C.3	0.415	0.111	8	0.011	0.0100	1.43	YES	29%	0.046	2.4	YES	5493.5	5490.0	475	5483.50	5478.75	11.25
	C.3	C.2	0.798	0.214	8	0.011	0.0100	1.43	YES	56%	0.073	2.9	YES	5490.0	5490.0	400	5478.75	5474.75	15.25
	C.2	C.1	1.242	0.333	8	0.011	0.0272	2.36	YES	53%	0.070	4.8	YES	5490.0	5472.0	850	5474.75	5451.63	20.37
	D.1	EX 36"	0.518	0.139	8	0.011	0.0400	2.86	YES	18%	0.033	4.2	YES	5515.0	5514.0	100	5505.00	5501.00	13.00
	E.1	EX 36"	0.277	0.074	8	0.011	0.0400	2.86	YES	10%	0.021	3.5	YES	5527.5	5528.0	100	5517.50	5513.50	14.50
	F.3	F.1	1.205	0.323	10	0.011	0.0050	1.84	YES	66%	0.127	2.5	YES	5465.0	5465.0	990	5455.00	5450.05	14.95
	F.4	F.2	0.340	0.091	8	0.011	0.0070	1.20	YES	28%	0.045	2.0	YES	5480.0	5475.0	1390	5472.00	5462.27	12.73
	F.2	F.1	0.413	0.111	8	0.011	0.0120	1.57	YES	26%	0.043	2.6	YES	5475.0	5465.0	990	5462.27	5450.39	14.61
	F.1	GVRE 12"	1.760	0.497	12	0.011	0.0050	2.99	YES	59%	0.176	2.8	YES	5465.0	5465.0	100	5450.05	5449.55	15.45
	G.1	EX 36"	0.271	0.073	8	0.011	0.0100	1.43	YES	19%	0.034	2.1	YES	5493.5	5490.0	475	5483.50	5478.75	11.25
	H.1	EX 36"	0.141	0.038	8	0.011	0.0150	1.75	YES	8%	0.019	2.0	YES	5493.5	5490.0	475	5483.50	5476.38	13.63
	I.1	EX 36"	0.675	0.181	8	0.011	0.0100	1.43	YES	47%	0.064	2.8	YES	5493.5	5490.0	475	5483.50	5478.75	11.25

FlowMaster output included for verifying calculations

TRIBUTARY	FROM	TO	Sum Peak Day + Infiltration (CFS)	Sum Avg Day + Infiltration (CFS)	Ppipe Diameter (in)	Mannings 'n'	Pipe Slope (ft/ft)	Full Capacity (cfs)	Meets Peak Flow Capacity	Peak Flow/ Capacity	Avg Day flow Area (ft^2)	Vel @ Avg Day flow (fps)	Meets Requirement (2 fps Min.)	Ground Start	Ground End	Length	Invert Start	Invert End	Depth End
Second Creek	A.9	A.8	0.080	0.021	8	0.011	0.0325	2.58	YES	3%	0.009	2.2	YES	5485.0	5470.0	470	5471.00	5455.73	14.27