

SEWER SYSTEM REPORT

For Property Located
East of Sunrise Way, North of Joyce Drive
And east of Farrell Drive, North of Verona Road
City of Palm Springs, California

PALM SPRINGS COUNTRY CLUB

APN: 669-480-027

APN: 669-5900-066

APN: 501-190-011

City of Palm Springs

Updated June 13, 2014

~~August 22, 2013~~

Job No.: 2152



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Sewer System Analysis for *Palm Springs Country Club*

Project Description

The proposed Palm Springs Country Club project consist of a mix of 441 single family duplex and detached homes located in now the former Palm Springs Country Club golf course parcels. The project is bordered on the northeast by the Whitewater Storm Channel; the northerly parcel surrounds Golden Sands Mobile Home Park and is bordered on the north and west by the Four Seasons at Palm Springs Community, and the southerly parcel surrounds the Whitewater Estates is is bordered on the west and the south by residential homes. The site is approximately 121 acres. The project is within a portion of the SW $\frac{1}{4}$ of Section 36, Township 3 South, Range 4 East and NE $\frac{1}{4}$ of Section 1 Township 4 South, Range 4 East, San Bernardino Base and Meridian (See vicinity map.)

Analysis Objective

The objective of this analysis is to determine if the City of Palm Springs Sewer System has the capacity to convey the proposed project flows. If not, to determine what improvements are necessary to provide capacity.

Palm Springs Sewer Master Plan (PSSMP) Design Parameters

The PSSMP dated February 2009 establishes the sewer system flows as follows:

- Residential: 250 gallons per day (gpd) per Equivalent Dwelling Unit (EDU).
- Peak Factor – max measured in Basin 4 is 2.2, and 1.7 in Basin 2
- Design Pipe Criteria (maximum pipe capacity):
 - Peak flow criteria for smaller than 15-inch pipe is 50% d/D – the allotted pipe capacity is 50% full pipe.
 - Peak flow criteria for 15-inch or larger pipe is 75% d/D – the allotted pipe capacity is 75% full pipe

The PSSMP model separated the service area into several Basing, each basin was metered at key locations to establish a peaking factor. The proposed project will split flows into Basin 2 (POC 1) and Basin 4 (POC 2). The peaking factor for Basin 2 and 4 are 1.7 and 2.2 respectively. POC 1 is anticipating adding 271 residential units into basin 2. POC 2 is anticipating adding 169 residential units into Basin 4.

The PSSMP projects the “ultimate build out” population will occur in year 2025, and as such, the PSSMP model reflects pipe flows and capacities at that population.

Two existing developments currently route sewer through the site. These two developments are the Golden Sands Mobile Home Park (MHP) and the Four Seasons at Palm Springs Community (4SPS).

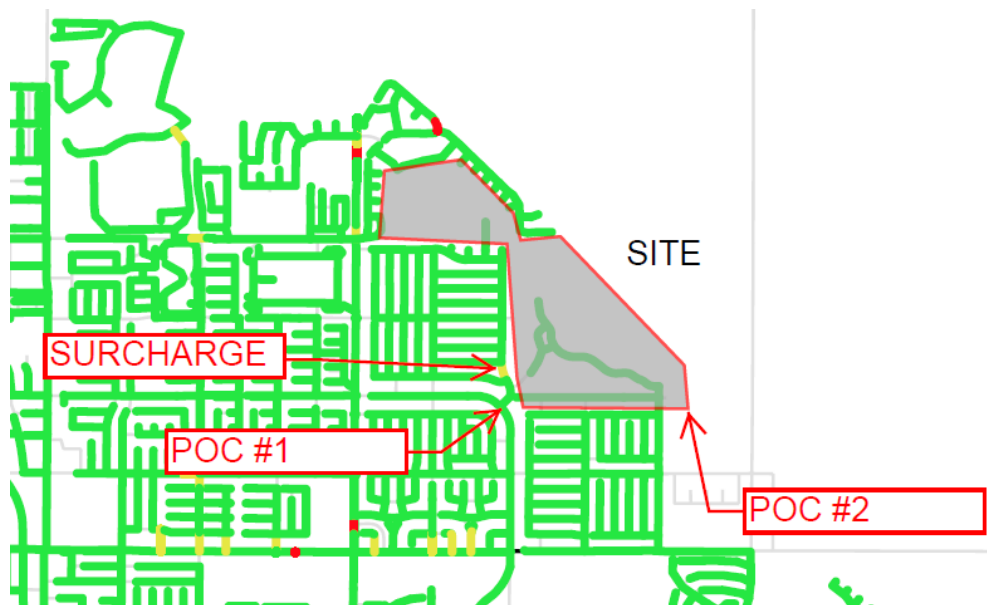
- The MHP has approximately 146 units that are shown on the PSSMP, but the model does not appear to have assigned flow from this development.
- The 4SPS appears to have omitted the pipe section that conveys flows from 243 homes to the sewer main in Farrell Drive. Instead it seems the flows are conveyed to the north and into the Savanna Way main that leads to the Sunrise Sewer Main.

Currently, it is anticipated the MHP sewer main will be redirected and the flows will be conveyed within the proposed sewer in the project. The 4SPS sewer main is anticipated to remain in place.

Sewer System Design Parameters

The proposed project consists of 441 residential units. To reduce the impact of the proposed project on the existing sewer system, the proposed sewer system will separate flows towards two separate sewer systems.

In reviewing the project with Ken Huntzinger, the Collection Systems Manager for Veolia Water, it was determined only one sewer section downstream of the project appears to be surcharged by the year 2025 flows and, as such, would require relief to accommodate the proposed project (see below and Appendix A - 2025 Results).



The sewer line sections are identified as G04091-to-G04089, and G04089-to-G04087 within the PSSMP (See Appendix E – Veolia Water Exhibit 1). However, Ken Huntzinger knowledge of the service history required points to the G04091 to G04089 to G04087 pipe sections as frequent surcharge locations. As we reviewed the PSSMP charts, it seems the flows from the MHP and 4SPS are omitted from the analysis of this pipe section. Adding in the flows from these two sites aligns with the intimate knowledge of the collection system surcharge.

The project is proposing to connect at two locations:

POC 1. Racquet Club Road and Farrell Drive; this connection involves connecting to the existing 12-inch main in Farrell Drive and extending a new 10-inch main along Farrell to Whitewater Club Drive (approximately 400-feet of 10-inch pipe). This new 10-inch main will reduce the pipe surcharge projected by the year 2025 flows (see Appendix A – PSSMP charts and Exhibits).

POC 2. On Whitewater Club Drive north of Verona Road and Los Alamos Road intersection. Year 2025 flows downstream from this point of connection do not appear to have a surcharge.

POC 1 will anticipate 271 new residential units with an Average Wastewater Flow (AWF) of 250 gpd per edu or 67,750 gpd of additional flow.

POC 2 will anticipate 169 new residential units with an AWF at 250 gpd per edu or 42,250 gpd of additional flow.

The MHP sewer flows are added to the on-site sewer system and the capacity will be verified.

Project Sewer System Analysis

The proposed 8” sewer network will collect flow from the proposed residential development in a public sewer system. The public sewer system consists primarily of 8-inch high strength vitrified clay pipe (VCP) with 4-inch VCP sewer laterals to each building and 48-inch diameter concrete manholes (see Appendix C - Site Master Sewer System Plan).

Sewer System Results

The sewer line sections identified as G04091 to G04089 and G04089 to G04087 currently convey 158,129 gpd (See Appendix A – Existing Results charts). However, the charts do not include the MHP and the 4SPS flows. Appendix B shows the existing and future capacities of these pipe sections (see Appendix B – Tables 1-3) The “adjusted tables” reflect the MHP and 4SPS flows in the 8” line (see Appendix B – Tables 1b-3b).

Off-Site sewer - POC 1

- The adjusted tables reflect one pipe section at 106% (Table 1b) of the allotted pipe capacity.
- Table 5b shows that replacing the 8-inch with a 10-inch will still exceed the allotted capacity (115%).
- Table 6b shows that replacing the 8-inch with a 12-inch will reduce the pipe flow level to 45% of the allotted pipe capacity (**Recommended Improvement**).

Within the project:

- Table 7 shows that the on-site pipe capacity with the combined flows from the project and the MHP can be conveyed in an 8-inch pipe (78% of the allotted pipe capacity,)

Off-Site sewer - Farrell Sewer (24-inch pipe):

- Table 8 shows the 2025 Farrell Sewer Capacity (at build out). The sewer main flow is approximately 80% of the pipe's allotted pipe capacity.
- Table 8a adds the Project and the MHP flows. The adjusted flow is approximately 83% of the pipe's allotted pipe capacity.

The PSSMP includes an exhibit and data identified as "CIP 2025 results." The origin of the CIP 2025 and results are not clarified. It appears that, for the same Farrell sewer portion, more than double the projected 2025 flows are part of the 2025 CIP charts (see appendix D- Farrell Sewer charts and exhibits):

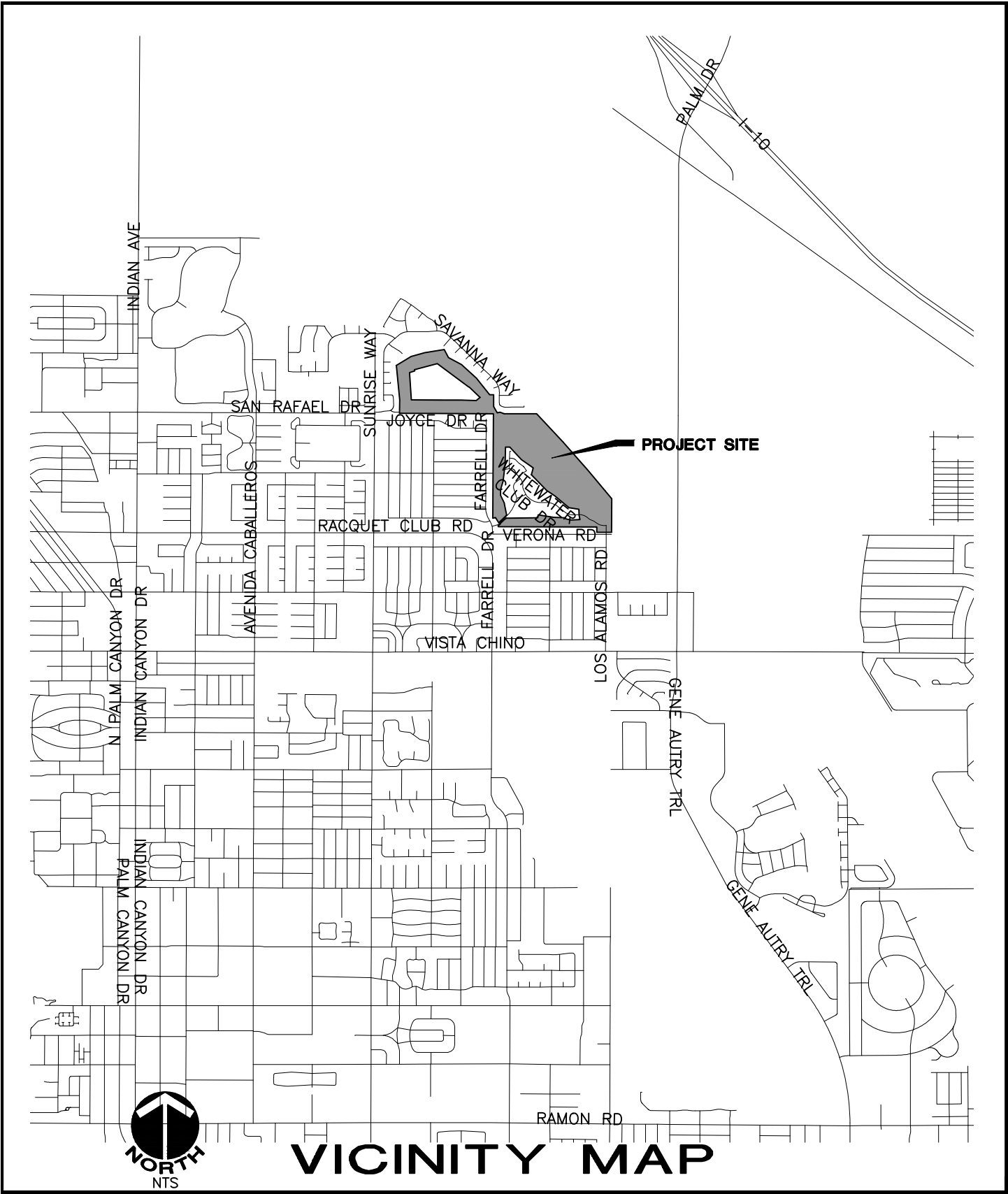
- The "2025 With Planning Area 4" results charts show 3.1 million gallons per day (MGD), applying a 1.7 peaking factor increases the flow to 5.3 MGD.
- The "2025 CIP" charts show 7.5 MGD and increases to 12.8 MGD with the peaking factor.

This flow projection seems to significantly deviate from the other PSSMP data and, as such, is excluded from further analysis (See Appendix D-PSSMP CIP 2015 Charts).

Conclusion

The capacity analysis results indicate the project sewer system combined with the **recommended improvement** at POC 1 will satisfy the City of Palm Springs Sewer Master Plan requirements while also alleviating an existing surcharge condition within the existing Palm Springs sewer Collection system.

VICINITY MAP



VICINITY MAP



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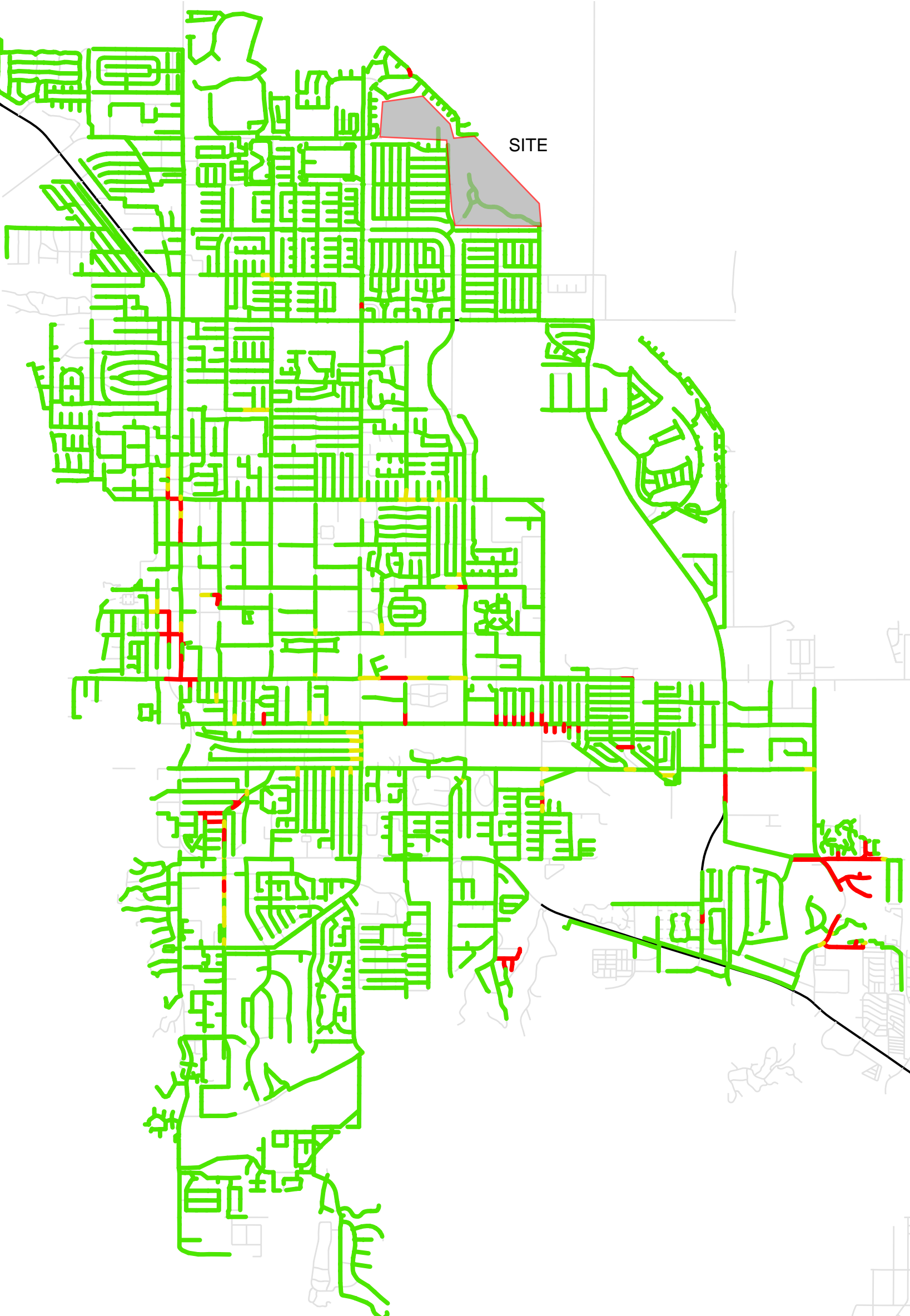
APPENDIX A

PSSMP CHARTS AND EXHIBITS

- CITY OF PALM SPRINGS EXISTING RESULTS MAP
- CITY OF PALM SPRINGS 2015 RESULTS WITHOUT PARCEL 4 FLOW MAP
- CITY OF PALM SPRINGS 2025 RESULTS WITHOUT PARCEL 4 FLOW MAP
- CITY OF PALM SPRINGS CIP 2025 RESULTS MAP






- VIOLIA WATER GIS EXHIBIT 1
- EXISTING RESULTS TABLE (PG 90 AND 93 OF 100)
- 2015 (WITHOUT PARCEL 4) RESULTS TABLE (PG 90 AND 93 OF 100)
- 2025 (WITHOUT PARCEL 4) RESULTS TABLE (PG 90 AND 93 OF 100)

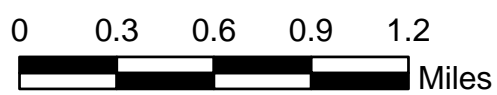
CITY OF PALM SPRINGS EXISTING RESULTS



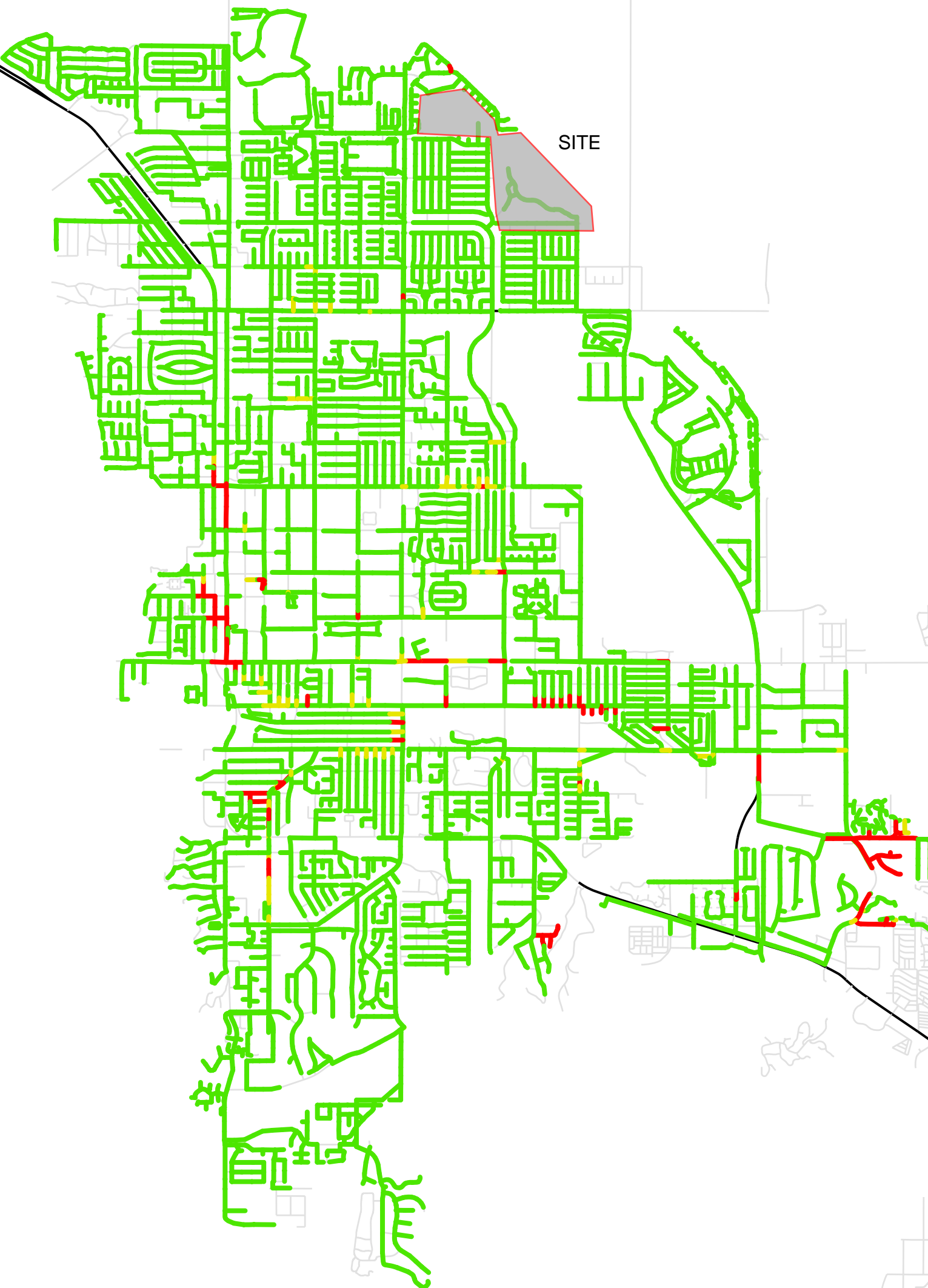
LEGEND

Existing 2008 Model Results

-  Sufficient Capacity
-  Semi-Critical
-  Critical
-  Freeways
-  Streets



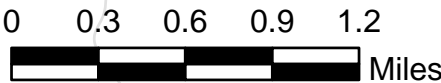
CITY OF PALM SPRINGS 2015 RESULTS WITHOUT PARCEL 4 FLOW



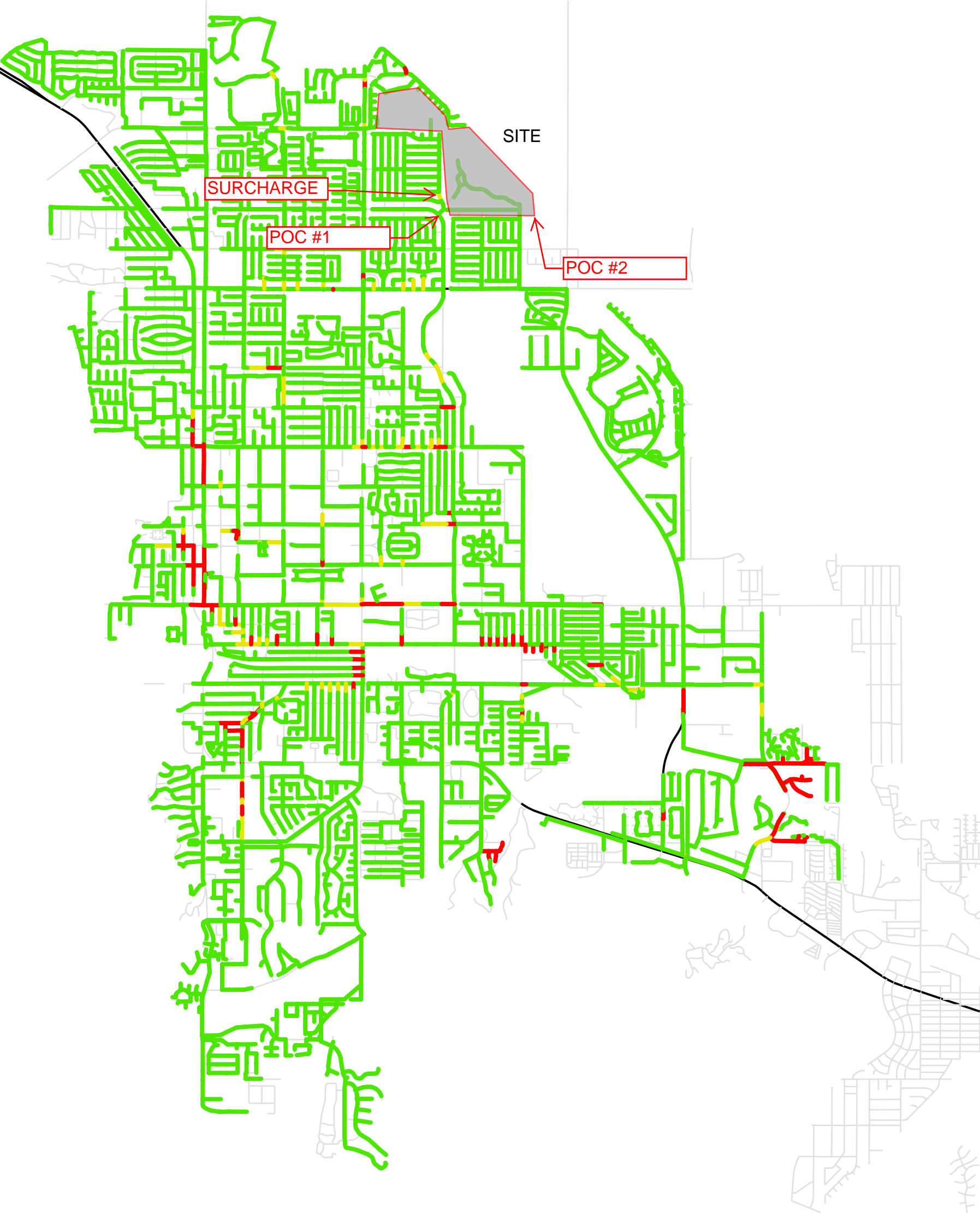
LEGEND

2015 w/o P4 Model Results

- Sufficient Capacity
- Semi-Critical
- Critical
- Freeways
- Streets



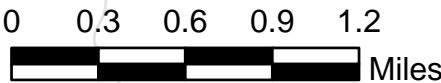
CITY OF PALM SPRINGS 2025 RESULTS WITHOUT PARCEL 4 FLOW



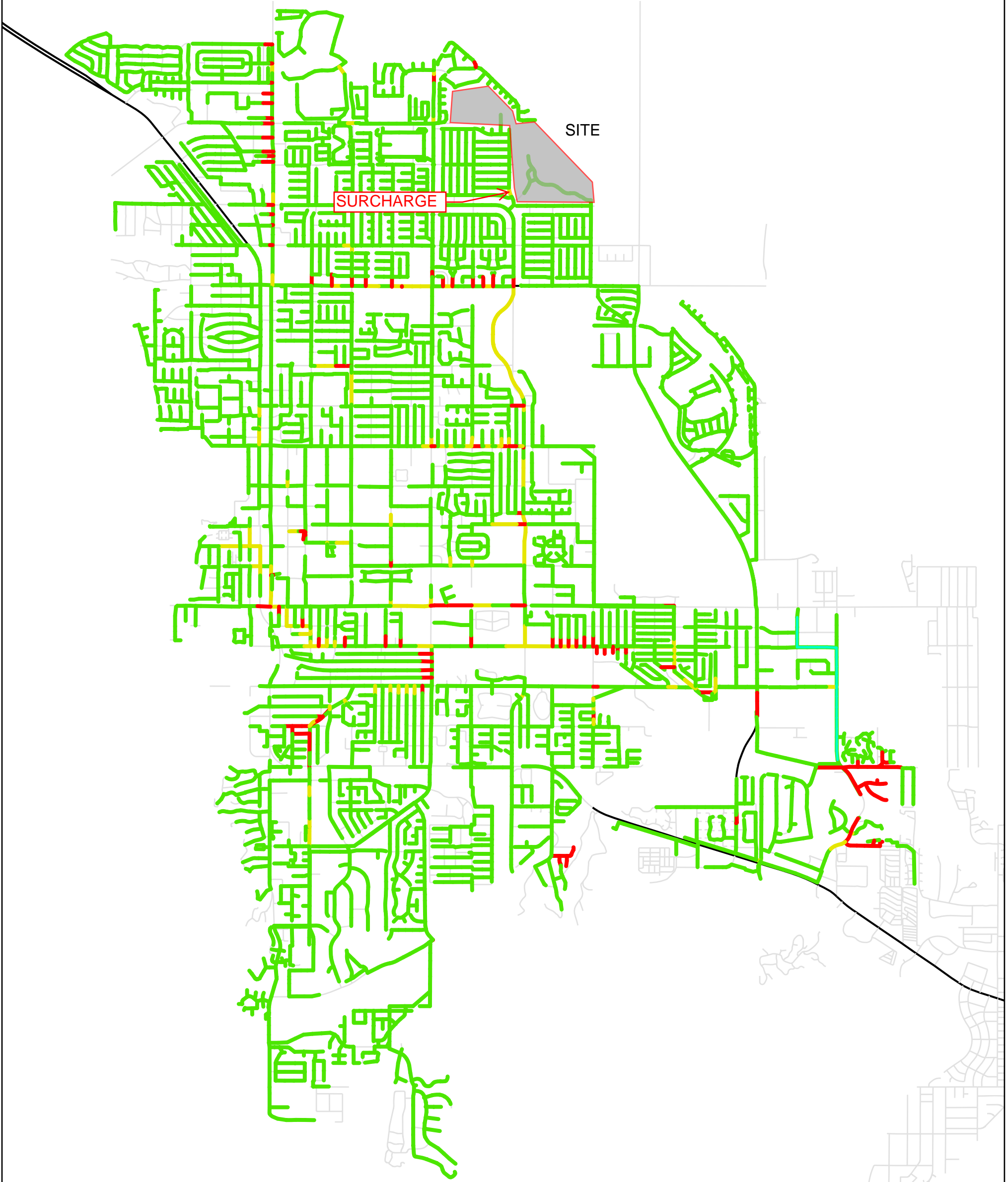
LEGEND

2025 w/o P4 Model Results

- Sufficient Capacity
- Semi-Critical
- Critical
- Freeways
- Streets



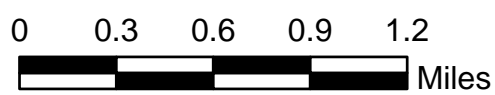
CITY OF PALM SPRINGS CIP 2025 RESULTS

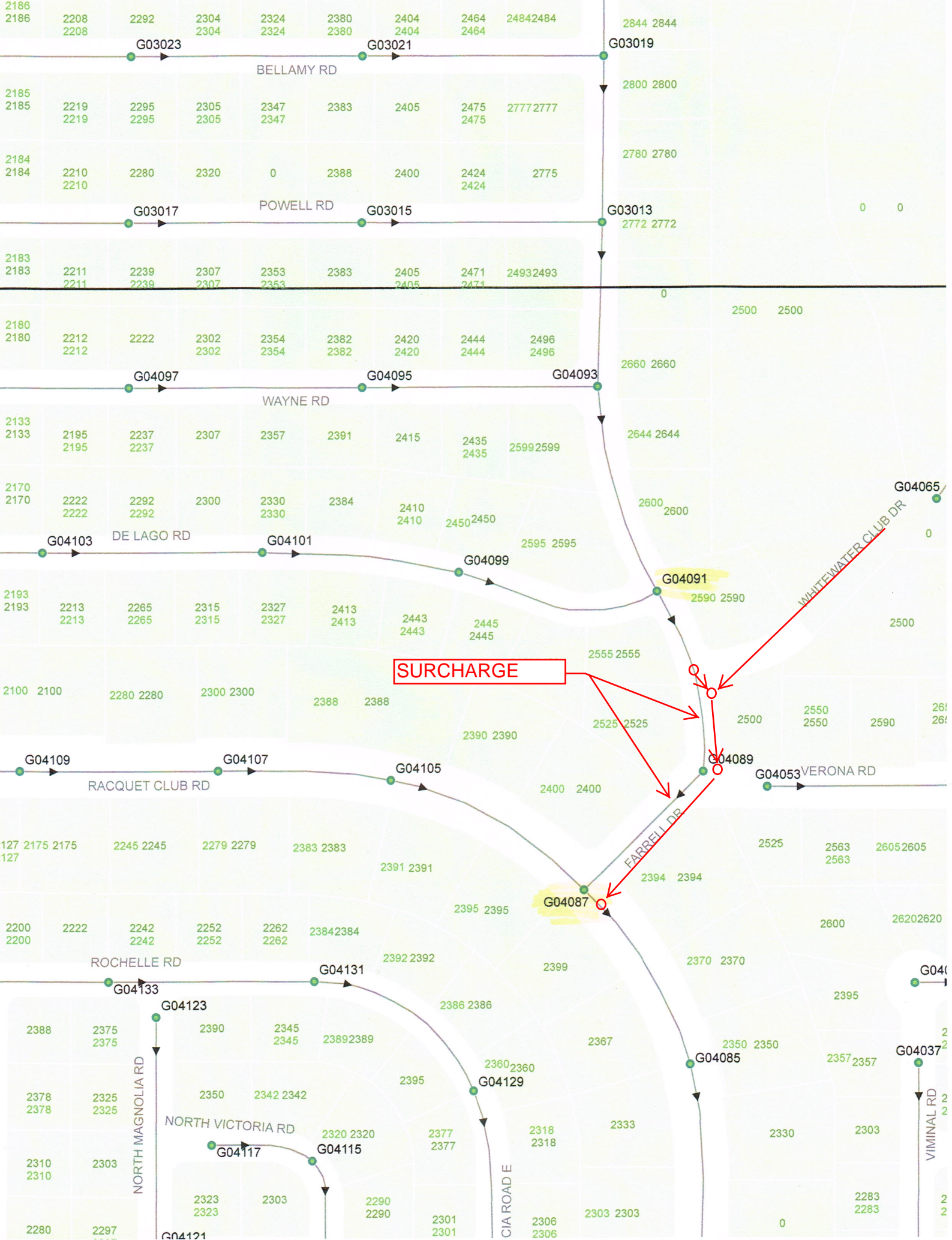


LEGEND

CIP 2025 Model Results

- Sufficient Capacity
- Semi-Critical
- Critical
- Freeways
- Streets





SURCHARGE

G03019

G03023

G03021

BELLAMY RD

G03013

G03017

G03015

POWELL RD

G04093

G04097

G04095

WAYNE RD

G04065

DE LAGO RD

G04103

G04101

G04099

G04091

WHITEWATER CLUB DR

SURCHARGE

G04089

RACQUET CLUB RD

G04109

G04107

G04105

G04053

VERONA RD

G04087

FARRELL DR

ROCHELLE RD

G04133

G04131

G04123

G04057

NORTH VICTORIA RD

G04117

G04115

G04129

G04085

G04121

CIA ROAD E

VIMINAL RD

Existing Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft ²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
E05095-E05089	10	248	0.004	43	408,454.95	2.07	533	532	Vitrified Clay Pipe-Circular-10 inch	0.5	1,062,646.14	3.29
F02169-F02167	8	82	0.027	13.8	19,745.51	1.92	547.13	544.63	Vitrified Clay Pipe-Circular-8 inch	0.3	1,513,269.70	7.80
J14015-J14013	10	249	0.008	21.1	129,771.85	2.06	333	331	Vitrified Clay Pipe-Circular-10 inch	0.5	1,499,787.86	4.64
D02051-D02019	10	315	0.006	15.8	57,835.82	1.34	602	600	Vitrified Clay Pipe-Circular-10 inch	0.5	1,333,442.30	4.13
G12095-G12093	12	133	0.008	18.8	160,679.01	2.06	379	378	Vitrified Clay Pipe-Circular-12 inch	0.8	2,359,601.58	4.56
D15007-D15005	8	12	0.027	12.2	33,301.99	2.07	477.32	477	Vitrified Clay Pipe-Circular-8 inch	0.3	1,507,204.47	7.77
D06109-D06107	8	290	0.017	13.5	47,064.06	2.07	526	521	Vitrified Clay Pipe-Circular-8 inch	0.3	1,211,919.60	6.25
D06119-E06021	8	331	0.012	18	69,256.94	2.08	522	518	Vitrified Clay Pipe-Circular-8 inch	0.3	1,014,620.90	5.23
K11047-K11035	15	177	0.003	29.5	467,279.85	2.09	350	349.5	Vitrified Clay Pipe-Circular-15 inch	1.2	2,622,343.43	3.38
C06029-C06027	8	256	0.043	7.3	15,561.04	2.07	567	556	Vitrified Clay Pipe-Circular-8 inch	0.3	1,913,216.72	9.87
K13053-K13051	12	341	0.006	20.8	197,392.17	2.08	331	329	Vitrified Clay Pipe-Circular-12 inch	0.8	2,084,022.03	4.03
D08055-D08053	12	142	0.035	7.3	39,482.55	2.05	483	478	Vitrified Clay Pipe-Circular-12 inch	0.8	5,106,288.26	9.88
E15015-E15013	15	325	0.012	13.4	180,821.28	2.07	469	465	Vitrified Clay Pipe-Circular-15 inch	1.2	5,473,681.39	7.06
D03055-D03009	15	190	0.005	17.2	231,168.51	1.7	587	586	Vitrified Clay Pipe-Circular-15 inch	1.2	3,579,434.33	4.62
E06021-E06009	8	334	0.012	23	73,321.74	2.1	518	514	Vitrified Clay Pipe-Circular-8 inch	0.3	1,010,053.95	5.21
D10013-D10011	12	336	0.002	77.9	1,037,488.68	2.12	433	432.46	Vitrified Clay Pipe-Circular-12 inch	0.8	1,090,917.07	2.11
C06007-C06005	8	329	0.036	9.7	19,816.36	2.1	552	540	Vitrified Clay Pipe-Circular-8 inch	0.3	1,762,708.43	9.09
J12023-J12007	30	23	0.012	13.4	412,613.52	2.06	358.09	357.81	Vitrified Clay Pipe-Circular-30 inch	4.9	34,566,304.56	10.91
D09035-D09033	8	309	0.006	33.4	125,828.95	2.11	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	742,546.35	3.83
D02015-D02013	12	313	0.006	15.1	96,072.86	1.52	598	596	Vitrified Clay Pipe-Circular-12 inch	0.8	2,175,240.73	4.21
D05001-D06059	8	348	0.011	20	78,137.35	2.1	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	989,528.21	5.10
F03137-F03089	15	182	0.005	12.1	114,801.77	1.45	527	526	Vitrified Clay Pipe-Circular-15 inch	1.2	3,657,257.22	4.72
D02003-D03099	15	175	0.006	15.5	148,605.28	1.61	593	592	Vitrified Clay Pipe-Circular-15 inch	1.2	3,729,685.18	4.81
D06143-D06141	8	16	0.012	18.4	64,623.75	2.11	503.5	503.3	Vitrified Clay Pipe-Circular-8 inch	0.3	1,031,912.36	5.32
F18035-F18033	12	184	0.016	11	79,867.67	2.1	549	546	Vitrified Clay Pipe-Circular-12 inch	0.8	3,474,691.20	6.72
F19011-F19010	12	204	0.031	7.8	34,824.86	2.1	570.27	563.97	Vitrified Clay Pipe-Circular-12 inch	0.8	4,770,433.46	9.23
E10053-E10051	12	274	0.007	19.6	154,161.23	2.1	418	416	Vitrified Clay Pipe-Circular-12 inch	0.8	2,324,899.66	4.50
J08005-J08003	15	291	0.01	16	246,418.78	2.08	401	398	Vitrified Clay Pipe-Circular-15 inch	1.2	5,009,626.32	6.46
K11025-K11023	15	317	0.003	28.1	478,542.08	2.1	347	346	Vitrified Clay Pipe-Circular-15 inch	1.2	2,771,159.79	3.57
E15001-E14021	15	228	0.009	18.9	260,270.56	2.1	455	453	Vitrified Clay Pipe-Circular-15 inch	1.2	4,621,029.85	5.96
D02055-D02053	8	125	0.024	16.6	43,676.37	2.08	606	603	Vitrified Clay Pipe-Circular-8 inch	0.3	1,429,859.71	7.37
D06111-D06109	8	291	0.021	12.7	40,889.82	2.13	532	526	Vitrified Clay Pipe-Circular-8 inch	0.3	1,325,308.36	6.84
G04089-G04087	8	253	0.008	31.5	158,128.55	2.05	495	493	Vitrified Clay Pipe-Circular-8 inch	0.3	820,620.84	4.23
K12033-K12031	15	286	0.003	32.5	597,284.18	2.11	340	339.2	Vitrified Clay Pipe-Circular-15 inch	1.2	2,609,475.22	3.36
D12039-D12037	8	96	0.01	21.3	93,782.63	2.13	447	446	Vitrified Clay Pipe-Circular-8 inch	0.3	942,002.79	4.86
K15033-K15021	8	31	0.008	29	119,114.95	2.12	314.25	314	Vitrified Clay Pipe-Circular-8 inch	0.3	828,851.95	4.27
F11041-F11001	8	353	0.014	60.6	56,005.14	2.12	389	384.15	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,860.65	5.58
D08025-D08023	10	59	0.003	57.7	568,501.85	2.13	478.32	478.15	Vitrified Clay Pipe-Circular-10 inch	0.5	898,282.55	2.78
D11007-D11005	8	251	0.008	23.2	97,225.10	2.13	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	823,883.76	4.25
D06061-D06059	8	248	0.016	17.9	54,997.59	2.12	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	1,172,173.67	6.05
D12025-D12023	8	433	0.009	24.8	119,418.62	2.13	432	428	Vitrified Clay Pipe-Circular-8 inch	0.3	887,102.61	4.58
D03107-D03105	8	351	0.02	15.5	65,785.17	2.12	612	605	Vitrified Clay Pipe-Circular-8 inch	0.3	1,303,416.66	6.72
K13039-K13037	21	315	0.003	22.2	727,408.97	2.11	324	323	Vitrified Clay Pipe-Circular-21 inch	2.4	6,818,842.89	4.40
D13101-D13099	8	289	0.166	3.9	4,029.32	2.16	505	457	Vitrified Clay Pipe-Circular-8 inch	0.3	3,761,486.47	19.40
G13085-G13083	10	116	0.009	22.5	134,753.62	2.12	384	383	Vitrified Clay Pipe-Circular-10 inch	0.5	1,553,765.64	4.81
J14021-J14019	8	130	0.008	27.3	131,293.04	2.13	339	338	Vitrified Clay Pipe-Circular-8 inch	0.3	809,498.65	4.17
E08045-E08043	15	306	0.006	18.6	282,119.63	2.13	459	457.25	Vitrified Clay Pipe-Circular-15 inch	1.2	3,731,208.43	4.81
E06053-E06041	10	302	0.01	18.2	115,146.65	2.15	505	502	Vitrified Clay Pipe-Circular-10 inch	0.5	1,667,906.36	5.16
E13029-E13027	12	199	0.005	33.6	467,654.41	2.13	430	429	Vitrified Clay Pipe-Circular-12 inch	0.8	1,929,025.46	3.73
F16029-F16027	12	54	0.019	14.9	134,271.88	2.09	492	491	Vitrified Clay Pipe-Circular-12 inch	0.8	3,703,118.57	7.16
E03241-E03239	12	241	0.008	3.5	1,521.77	0.52	559	557	Vitrified Clay Pipe-Circular-12 inch	0.8	2,478,968.31	4.79
F14105-F14103	12	212	0.009	21.6	270,056.99	2.12	434	432	Vitrified Clay Pipe-Circular-12 inch	0.8	2,643,087.65	5.11
E16005-E16003	15	34	0.015	12.1	159,031.14	2.11	477.5	477	Vitrified Clay Pipe-Circular-15 inch	1.2	5,983,244.40	7.71
E02021-E02019	8	187	0.012	0	0	0	580.75	578.53	Vitrified Clay Pipe-Circular-8 inch	0.3	1,005,642.20	5.19
C10027-C10025	8	76	0.013	16.6	60,215.25	2.16	509	508	Vitrified Clay Pipe-Circular-8 inch	0.3	1,058,719.74	5.46
D06131-D06125	8	329	0.018	14.3	45,994.35	2.15	534	528	Vitrified Clay Pipe-Circular-8 inch	0.3	1,246,423.08	6.43

Existing Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft ²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
J14031-J14029	8	54	0.019	20.8	60,548.64	2.32	347	346	Vitrified Clay Pipe-Circular-8 inch	0.3	1,256,003.72	6.48
E03235-F03161	12	297	0.01	5.9	18,759.50	1.14	552	549	Vitrified Clay Pipe-Circular-12 inch	0.8	2,734,934.32	5.29
E08061-E08059	8	364	0.014	27.1	101,251.24	2.33	470	465	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,738.08	5.58
D04063-D04061	15	320	0.006	20.2	347,413.86	2.03	569	567	Vitrified Clay Pipe-Circular-15 inch	1.2	3,900,598.13	5.03
E14065-E14063	8	264	0.008	44.1	322,706.98	2.33	443	441	Vitrified Clay Pipe-Circular-8 inch	0.3	803,342.68	4.14
G09041-G09039	8	66	0.015	21.9	84,880.41	2.32	421	420	Vitrified Clay Pipe-Circular-8 inch	0.3	1,136,098.12	5.86
D09065-D10111	12	338	0.006	28.4	248,142.53	2.34	437	435	Vitrified Clay Pipe-Circular-12 inch	0.8	2,093,250.22	4.05
F09045-F09015	18	443	0.005	26.9	852,203.57	2.31	427	425	Vitrified Clay Pipe-Circular-18 inch	1.8	5,390,813.70	4.63
E03237-E03235	12	299	0.01	6	18,873.99	1.16	555	552	Vitrified Clay Pipe-Circular-12 inch	0.8	2,725,772.03	5.27
D09043-D09041	8	95	0.011	21.5	96,404.91	2.36	449	448	Vitrified Clay Pipe-Circular-8 inch	0.3	946,947.72	4.88
K12069-K12067	8	183	0.011	22.2	104,276.50	2.36	350	348	Vitrified Clay Pipe-Circular-8 inch	0.3	964,888.79	4.98
G04091-G04089	8	286	0.01	28.7	157,940.81	2.28	498	495	Vitrified Clay Pipe-Circular-8 inch	0.3	945,290.77	4.88
E15057-E15029	8	418	0.022	24.6	74,870.86	2.33	458	449	Vitrified Clay Pipe-Circular-8 inch	0.3	1,354,318.84	6.98
D12035-D12033	8	282	0.014	22	93,683.98	2.36	440	436	Vitrified Clay Pipe-Circular-8 inch	0.3	1,099,241.84	5.67
D04029-D04027	12	170	0.024	9.6	78,303.37	2.32	604	600	Vitrified Clay Pipe-Circular-12 inch	0.8	4,174,169.04	8.07
J12059-J12053	10	76	0.026	35.6	79,899.39	2.33	361	359	Vitrified Clay Pipe-Circular-10 inch	0.5	2,714,705.42	8.40
D04037-D04035	12	298	0.027	8.5	66,262.47	2.35	631	623	Vitrified Clay Pipe-Circular-12 inch	0.8	4,458,629.24	8.62
D08001-E08005	15	310	0.003	39.1	907,262.26	2.35	451	450	Vitrified Clay Pipe-Circular-15 inch	1.2	2,802,272.42	3.61
E05107-E05105	8	264	0.011	26.5	134,172.14	2.36	541	538	Vitrified Clay Pipe-Circular-8 inch	0.3	983,889.83	5.07
K12019-K13047	15	283	0.004	34	728,551.73	2.35	336	335	Vitrified Clay Pipe-Circular-15 inch	1.2	2,932,904.90	3.78
D10075-D10073	8	340	0.009	26.3	131,733.59	2.37	456	453	Vitrified Clay Pipe-Circular-8 inch	0.3	866,979.79	4.47
F04137-F04135	15	252	0.008	13.4	165,819.98	1.77	513	511	Vitrified Clay Pipe-Circular-15 inch	1.2	4,395,476.14	5.67
F04141-F04139	15	258	0.008	13.3	164,834.51	1.78	518	516	Vitrified Clay Pipe-Circular-15 inch	1.2	4,344,065.29	5.60
E07057-E07055	8	370	0.014	21.2	100,681.14	2.35	479	473.91	Vitrified Clay Pipe-Circular-8 inch	0.3	1,082,544.70	5.58
D11027-D11025	8	220	0.021	14.8	45,138.67	2.37	473.8	469.2	Vitrified Clay Pipe-Circular-8 inch	0.3	1,334,613.10	6.88
E12011-E12009	15	574	0.005	31.4	762,917.61	2.35	413	410	Vitrified Clay Pipe-Circular-15 inch	1.2	3,566,940.63	4.60
G10011-G10009	24	567	0.004	28.8	1,851,099.65	2.32	406	404	Vitrified Clay Pipe-Circular-24 inch	3.1	10,262,061.70	5.12
F15119-F15117	12	195	0.015	16.9	211,166.79	2.33	473	470	Vitrified Clay Pipe-Circular-12 inch	0.8	3,375,264.56	6.53
F12065-F11017	24	276	0.004	28.2	1,800,070.21	2.34	394	393	Vitrified Clay Pipe-Circular-24 inch	3.1	10,400,557.33	5.19
F16013-F15121	12	257	0.016	16.8	208,858.00	2.34	480	476	Vitrified Clay Pipe-Circular-12 inch	0.8	3,394,907.39	6.57
H11033-H11025	39	154	0.001	41.7	8,057,856.81	2.29	369.19	369	Vitrified Clay Pipe-Circular-39 inch	8.3	22,151,504.79	4.13
G08059-G08057	12	82	0.006	34.6	545,258.86	2.36	440	439.5	Vitrified Clay Pipe-Circular-12 inch	0.8	2,124,919.95	4.11
F15121-F15119	12	193	0.016	16.9	210,000.26	2.34	476	473	Vitrified Clay Pipe-Circular-12 inch	0.8	3,392,707.91	6.56
D08033-D08031	10	148	0.007	29.8	265,641.85	2.38	470	469	Vitrified Clay Pipe-Circular-10 inch	0.5	1,375,573.03	4.26
D09045-D09043	8	91	0.011	21.4	96,565.69	2.4	450	449	Vitrified Clay Pipe-Circular-8 inch	0.3	967,535.95	4.99
F07065-F07063	12	334	0.009	22.5	285,624.19	2.37	463	460	Vitrified Clay Pipe-Circular-12 inch	0.8	2,579,003.27	4.99
F07063-F08111	12	328	0.009	22.4	287,286.46	2.38	460	457	Vitrified Clay Pipe-Circular-12 inch	0.8	2,602,484.81	5.03
F03153-F03151	12	259	0.012	7.5	24,356.86	1.26	537	534	Vitrified Clay Pipe-Circular-12 inch	0.8	2,928,702.40	5.66
D04031-D04029	12	121	0.025	9.5	77,797.58	2.36	607	604	Vitrified Clay Pipe-Circular-12 inch	0.8	4,284,818.60	8.29
H12009-H12007	8	145	0.007	46.7	341,341.41	2.37	366	365	Vitrified Clay Pipe-Circular-8 inch	0.3	766,485.26	3.95
F05073-F05071	21	342	0.003	27.7	1,096,996.84	2.1	504	503	Vitrified Clay Pipe-Circular-21 inch	2.4	6,544,144.92	4.22
J14023-J14021	8	164	0.012	24.8	112,304.19	2.39	341	339	Vitrified Clay Pipe-Circular-8 inch	0.3	1,019,250.38	5.26
F10011-F10005	24	292	0.003	28.9	1,836,394.77	2.36	413	412	Vitrified Clay Pipe-Circular-24 inch	3.1	10,111,596.42	5.05
F10001-G10011	24	558	0.004	28.7	1,844,296.71	2.35	408	406	Vitrified Clay Pipe-Circular-24 inch	3.1	10,344,489.22	5.16
F15117-F15101	12	186	0.016	17.8	212,021.06	2.36	470	467	Vitrified Clay Pipe-Circular-12 inch	0.8	3,455,959.57	6.68
D03083-D03107	8	286	0.028	14.7	65,941.92	2.41	620	612	Vitrified Clay Pipe-Circular-8 inch	0.3	1,543,653.37	7.96
F03155-F03153	12	261	0.011	6.4	24,156.31	1.27	540	537	Vitrified Clay Pipe-Circular-12 inch	0.8	2,917,459.74	5.64
D10015-D10013	12	336	0.002	72.3	1,026,834.39	2.43	433.78	433	Vitrified Clay Pipe-Circular-12 inch	0.8	1,311,119.15	2.54
H12035-H12033	12	92	0.022	9	66,572.97	2.4	362	360	Vitrified Clay Pipe-Circular-12 inch	0.8	4,012,227.79	7.76
C04039-C04037	8	296	0.05	7.9	26,737.25	2.42	740.51	725.61	Vitrified Clay Pipe-Circular-8 inch	0.3	2,070,785.36	10.68
D17015-D17013	15	58	0.034	9	89,740.51	2.38	499	497	Vitrified Clay Pipe-Circular-15 inch	1.2	9,162,040.36	11.81
J14017-J14015	10	246	0.012	18.9	130,020.10	2.41	336	333	Vitrified Clay Pipe-Circular-10 inch	0.5	1,848,023.90	5.72
E05053-E05051	8	260	0.015	21.5	91,907.06	2.43	550	546	Vitrified Clay Pipe-Circular-8 inch	0.3	1,144,803.98	5.90
D08021-D08019	10	247	0.004	53.1	588,415.92	2.42	476	475	Vitrified Clay Pipe-Circular-10 inch	0.5	1,064,795.07	3.29
D02013-D02011	12	246	0.008	17.4	133,423.33	1.83	596	594	Vitrified Clay Pipe-Circular-12 inch	0.8	2,453,646.21	4.75
D07105-D07103	8	277	0.018	17.3	75,478.56	2.42	508	503	Vitrified Clay Pipe-Circular-8 inch	0.3	1,240,032.09	6.40

2015 (Without Parcel 4) Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft ²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
E05095-E05089	10	248	0.004	45.3	447,909.35	2.13	533	532	Vitrified Clay Pipe-Circular-10 inch	0.5	1,062,646.14	3.29
F02169-F02167	8	82	0.027	14.4	21,630.69	1.97	547.13	544.63	Vitrified Clay Pipe-Circular-8 inch	0.3	1,513,269.70	7.80
J14015-J14013	10	249	0.008	22.1	142,238.21	2.13	333	331	Vitrified Clay Pipe-Circular-10 inch	0.5	1,499,787.86	4.64
D02051-D02019	10	315	0.006	16.6	63,418.43	1.38	602	600	Vitrified Clay Pipe-Circular-10 inch	0.5	1,333,442.30	4.13
G12095-G12093	12	133	0.008	19.7	176,517.05	2.13	379	378	Vitrified Clay Pipe-Circular-12 inch	0.8	2,359,601.58	4.56
D15007-D15005	8	12	0.027	12.7	36,482.36	2.13	477.32	477	Vitrified Clay Pipe-Circular-8 inch	0.3	1,507,204.47	7.77
D06109-D06107	8	290	0.017	14.1	51,596.74	2.14	526	521	Vitrified Clay Pipe-Circular-8 inch	0.3	1,211,919.60	6.25
D06119-E06021	8	331	0.012	18.8	75,912.46	2.14	522	518	Vitrified Clay Pipe-Circular-8 inch	0.3	1,014,620.90	5.23
K11047-K11035	15	177	0.003	30.9	512,120.00	2.15	350	349.5	Vitrified Clay Pipe-Circular-15 inch	1.2	2,622,343.43	3.38
C06029-C06027	8	256	0.043	7.7	17,049.28	2.14	567	556	Vitrified Clay Pipe-Circular-8 inch	0.3	1,913,216.72	9.87
K13053-K13051	12	341	0.006	21.8	216,821.17	2.14	331	329	Vitrified Clay Pipe-Circular-12 inch	0.8	2,084,022.03	4.03
D08055-D08053	12	142	0.035	7.6	43,261.00	2.12	483	478	Vitrified Clay Pipe-Circular-12 inch	0.8	5,106,288.26	9.88
E15015-E15013	15	325	0.012	14	198,201.22	2.13	469	465	Vitrified Clay Pipe-Circular-15 inch	1.2	5,473,681.39	7.06
D03055-D03009	15	190	0.005	18	253,314.04	1.76	587	586	Vitrified Clay Pipe-Circular-15 inch	1.2	3,579,434.33	4.62
E06021-E06009	8	334	0.012	24.1	80,382.67	2.15	518	514	Vitrified Clay Pipe-Circular-8 inch	0.3	1,010,053.95	5.21
D10013-D10011	12	336	0.002	84.2	1,137,736.19	2.17	433	432.46	Vitrified Clay Pipe-Circular-12 inch	0.8	1,090,917.07	2.11
C06007-C06005	8	329	0.036	10.1	21,717.75	2.16	552	540	Vitrified Clay Pipe-Circular-8 inch	0.3	1,762,708.43	9.09
J12023-J12007	30	23	0.012	13.7	453,181.29	2.13	358.09	357.81	Vitrified Clay Pipe-Circular-30 inch	4.9	34,566,304.56	10.91
D09035-D09033	8	309	0.006	35.1	137,879.37	2.16	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	742,546.35	3.83
D02015-D02013	12	313	0.006	15.8	105,362.97	1.57	598	596	Vitrified Clay Pipe-Circular-12 inch	0.8	2,175,240.73	4.21
D05001-D06059	8	348	0.011	21	85,656.51	2.15	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	989,528.21	5.10
F03137-F03089	15	182	0.005	12.7	125,777.56	1.5	527	526	Vitrified Clay Pipe-Circular-15 inch	1.2	3,657,257.22	4.72
D02003-D03099	15	175	0.006	16.2	162,993.49	1.66	593	592	Vitrified Clay Pipe-Circular-15 inch	1.2	3,729,685.18	4.81
D06143-D06141	8	16	0.012	19.2	70,786.06	2.16	503.5	503.3	Vitrified Clay Pipe-Circular-8 inch	0.3	1,031,912.36	5.32
F18035-F18033	12	184	0.016	11.5	87,501.42	2.16	549	546	Vitrified Clay Pipe-Circular-12 inch	0.8	3,474,691.20	6.72
F19011-F19010	12	204	0.031	8.1	38,149.88	2.15	570.27	563.97	Vitrified Clay Pipe-Circular-12 inch	0.8	4,770,433.46	9.23
E10053-E10051	12	274	0.007	20.5	168,901.18	2.16	418	416	Vitrified Clay Pipe-Circular-12 inch	0.8	2,324,899.66	4.50
J08005-J08003	15	291	0.01	16.7	270,307.62	2.14	401	398	Vitrified Clay Pipe-Circular-15 inch	1.2	5,009,626.32	6.46
K11025-K11023	15	317	0.003	29.5	525,128.22	2.17	347	346	Vitrified Clay Pipe-Circular-15 inch	1.2	2,771,159.79	3.57
E15001-E14021	15	228	0.009	19.8	285,276.15	2.16	455	453	Vitrified Clay Pipe-Circular-15 inch	1.2	4,621,029.85	5.96
D02055-D02053	8	125	0.024	17.3	47,868.85	2.14	606	603	Vitrified Clay Pipe-Circular-8 inch	0.3	1,429,859.71	7.37
D06111-D06109	8	291	0.021	13.3	44,825.37	2.19	532	526	Vitrified Clay Pipe-Circular-8 inch	0.3	1,325,308.36	6.84
G04089-G04087	8	253	0.008	33	173,462.40	2.12	495	493	Vitrified Clay Pipe-Circular-8 inch	0.3	820,620.84	4.23
K12033-K12031	15	286	0.003	34.1	654,683.02	2.17	340	339.2	Vitrified Clay Pipe-Circular-15 inch	1.2	2,609,475.22	3.36
D12039-D12037	8	96	0.01	22.3	102,724.06	2.19	447	446	Vitrified Clay Pipe-Circular-8 inch	0.3	942,002.79	4.86
K15033-K15021	8	31	0.008	30.5	130,798.41	2.18	314.25	314	Vitrified Clay Pipe-Circular-8 inch	0.3	828,851.95	4.27
F11041-F11001	8	353	0.014	63.6	61,351.12	2.19	389	384.15	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,860.65	5.58
D08025-D08023	10	59	0.003	61.3	623,133.63	2.19	478.32	478.15	Vitrified Clay Pipe-Circular-10 inch	0.5	898,282.55	2.78
D11007-D11005	8	251	0.008	24.3	106,511.94	2.18	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	823,883.76	4.25
D06061-D06059	8	248	0.016	18.7	60,293.95	2.19	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	1,172,173.67	6.05
D12025-D12023	8	433	0.009	25.9	130,818.54	2.2	432	428	Vitrified Clay Pipe-Circular-8 inch	0.3	887,102.61	4.58
D03107-D03105	8	351	0.02	16.2	72,189.31	2.18	612	605	Vitrified Clay Pipe-Circular-8 inch	0.3	1,303,416.66	6.72
K13039-K13037	21	315	0.003	23.2	797,641.68	2.18	324	323	Vitrified Clay Pipe-Circular-21 inch	2.4	6,818,842.89	4.40
D13101-D13099	8	289	0.166	4	4,413.68	2.21	505	457	Vitrified Clay Pipe-Circular-8 inch	0.3	3,761,486.47	19.40
G13085-G13083	10	116	0.009	23.6	148,070.64	2.18	384	383	Vitrified Clay Pipe-Circular-10 inch	0.5	1,553,765.64	4.81
J14021-J14019	8	130	0.008	28.6	144,213.64	2.19	339	338	Vitrified Clay Pipe-Circular-8 inch	0.3	809,498.65	4.17
E08045-E08043	15	306	0.006	19.5	309,532.83	2.2	459	457.25	Vitrified Clay Pipe-Circular-15 inch	1.2	3,731,208.43	4.81
E06053-E06041	10	302	0.01	19.1	126,286.89	2.21	505	502	Vitrified Clay Pipe-Circular-10 inch	0.5	1,667,906.36	5.16
E13029-E13027	12	199	0.005	35.2	512,544.29	2.2	430	429	Vitrified Clay Pipe-Circular-12 inch	0.8	1,929,025.46	3.73
F16029-F16027	12	54	0.019	15.6	147,143.32	2.19	492	491	Vitrified Clay Pipe-Circular-12 inch	0.8	3,703,118.57	7.16
E03241-E03239	12	241	0.008	3.7	1,671.34	0.54	559	557	Vitrified Clay Pipe-Circular-12 inch	0.8	2,478,968.31	4.79
F14105-F14103	12	212	0.009	22.6	295,978.86	2.19	434	432	Vitrified Clay Pipe-Circular-12 inch	0.8	2,643,087.65	5.11
E16005-E16003	15	34	0.015	12.7	174,306.90	2.2	477.5	477	Vitrified Clay Pipe-Circular-15 inch	1.2	5,983,244.40	7.71
E02021-E02019	8	187	0.012	0	0	0	580.75	578.53	Vitrified Clay Pipe-Circular-8 inch	0.3	1,005,642.20	5.19
C10027-C10025	8	76	0.013	17.3	65,991.45	2.22	509	508	Vitrified Clay Pipe-Circular-8 inch	0.3	1,058,719.74	5.46
D06131-D06125	8	329	0.018	14.9	50,387.79	2.22	534	528	Vitrified Clay Pipe-Circular-8 inch	0.3	1,246,423.08	6.43

2015 (Without Parcel 4) Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft ²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
J14031-J14029	8	54	0.019	21.8	66,486.56	2.38	347	346	Vitrified Clay Pipe-Circular-8 inch	0.3	1,256,003.72	6.48
E03235-F03161	12	297	0.01	6.2	20,575.49	1.18	552	549	Vitrified Clay Pipe-Circular-12 inch	0.8	2,734,934.32	5.29
E08061-E08059	8	364	0.014	28.5	111,094.13	2.4	470	465	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,738.08	5.58
D04063-D04061	15	320	0.006	21.1	380,779.10	2.1	569	567	Vitrified Clay Pipe-Circular-15 inch	1.2	3,900,598.13	5.03
E14065-E14063	8	264	0.008	46.4	353,701.44	2.4	443	441	Vitrified Clay Pipe-Circular-8 inch	0.3	803,342.68	4.14
G09041-G09039	8	66	0.015	23	93,017.53	2.39	421	420	Vitrified Clay Pipe-Circular-8 inch	0.3	1,136,098.12	5.86
D09065-D10111	12	338	0.006	29.8	271,978.08	2.41	437	435	Vitrified Clay Pipe-Circular-12 inch	0.8	2,093,250.22	4.05
F09045-F09015	18	443	0.005	28.2	933,901.10	2.39	427	425	Vitrified Clay Pipe-Circular-18 inch	1.8	5,390,813.70	4.63
E03237-E03235	12	299	0.01	6.2	20,698.07	1.2	555	552	Vitrified Clay Pipe-Circular-12 inch	0.8	2,725,772.03	5.27
D09043-D09041	8	95	0.011	22.6	105,604.27	2.42	449	448	Vitrified Clay Pipe-Circular-8 inch	0.3	946,947.72	4.88
K12069-K12067	8	183	0.011	23.2	114,218.45	2.42	350	348	Vitrified Clay Pipe-Circular-8 inch	0.3	964,888.79	4.98
G04091-G04089	8	286	0.01	30.1	173,246.04	2.36	498	495	Vitrified Clay Pipe-Circular-8 inch	0.3	945,290.77	4.88
E15057-E15029	8	418	0.022	25.7	82,028.19	2.41	458	449	Vitrified Clay Pipe-Circular-8 inch	0.3	1,354,318.84	6.98
D12035-D12033	8	282	0.014	23	102,618.76	2.43	440	436	Vitrified Clay Pipe-Circular-8 inch	0.3	1,099,241.84	5.67
D04029-D04027	12	170	0.024	10.1	85,829.53	2.39	604	600	Vitrified Clay Pipe-Circular-12 inch	0.8	4,174,169.04	8.07
J12059-J12053	10	76	0.026	36.1	87,626.64	2.44	361	359	Vitrified Clay Pipe-Circular-10 inch	0.5	2,714,705.42	8.40
D04037-D04035	12	298	0.027	8.9	72,618.39	2.42	631	623	Vitrified Clay Pipe-Circular-12 inch	0.8	4,458,629.24	8.62
D08001-E08005	15	310	0.003	41.2	994,017.47	2.42	451	450	Vitrified Clay Pipe-Circular-15 inch	1.2	2,802,272.42	3.61
E05107-E05105	8	264	0.011	27.8	147,013.30	2.43	541	538	Vitrified Clay Pipe-Circular-8 inch	0.3	983,889.83	5.07
K12019-K13047	15	283	0.004	35.7	798,745.84	2.42	336	335	Vitrified Clay Pipe-Circular-15 inch	1.2	2,932,904.90	3.78
D10075-D10073	8	340	0.009	27.6	144,371.50	2.43	456	453	Vitrified Clay Pipe-Circular-8 inch	0.3	866,979.79	4.47
F04137-F04135	15	252	0.008	14	181,757.20	1.83	513	511	Vitrified Clay Pipe-Circular-15 inch	1.2	4,395,476.14	5.67
F04141-F04139	15	258	0.008	13.9	180,656.24	1.83	518	516	Vitrified Clay Pipe-Circular-15 inch	1.2	4,344,065.29	5.60
E07057-E07055	8	370	0.014	22.2	110,436.86	2.43	479	473.91	Vitrified Clay Pipe-Circular-8 inch	0.3	1,082,544.70	5.58
D11027-D11025	8	220	0.021	15.5	49,452.63	2.44	473.8	469.2	Vitrified Clay Pipe-Circular-8 inch	0.3	1,334,613.10	6.88
E12011-E12009	15	574	0.005	32.9	836,227.26	2.42	413	410	Vitrified Clay Pipe-Circular-15 inch	1.2	3,566,940.63	4.60
G10011-G10009	24	567	0.004	30.2	2,030,560.24	2.41	406	404	Vitrified Clay Pipe-Circular-24 inch	3.1	10,262,061.70	5.12
F15119-F15117	12	195	0.015	17.7	231,413.00	2.42	473	470	Vitrified Clay Pipe-Circular-12 inch	0.8	3,375,264.56	6.53
F12065-F11017	24	276	0.004	29.5	1,973,356.87	2.43	394	393	Vitrified Clay Pipe-Circular-24 inch	3.1	10,400,557.33	5.19
F16013-F15121	12	257	0.016	17.6	228,877.63	2.44	480	476	Vitrified Clay Pipe-Circular-12 inch	0.8	3,394,907.39	6.57
H11033-H11025	39	154	0.001	44.8	9,164,894.87	2.4	369.19	369	Vitrified Clay Pipe-Circular-39 inch	8.3	22,151,504.79	4.13
G08059-G08057	12	82	0.006	36.3	598,942.38	2.44	440	439.5	Vitrified Clay Pipe-Circular-12 inch	0.8	2,124,919.95	4.11
F15121-F15119	12	193	0.016	17.7	230,132.42	2.43	476	473	Vitrified Clay Pipe-Circular-12 inch	0.8	3,392,707.91	6.56
D08033-D08031	10	148	0.007	31.2	291,344.37	2.45	470	469	Vitrified Clay Pipe-Circular-10 inch	0.5	1,375,573.03	4.26
D09045-D09043	8	91	0.011	22.4	105,776.42	2.46	450	449	Vitrified Clay Pipe-Circular-8 inch	0.3	967,535.95	4.99
F07065-F07063	12	334	0.009	23.5	313,427.06	2.45	463	460	Vitrified Clay Pipe-Circular-12 inch	0.8	2,579,003.27	4.99
F07063-F08111	12	328	0.009	23.5	315,281.58	2.45	460	457	Vitrified Clay Pipe-Circular-12 inch	0.8	2,602,484.81	5.03
F03153-F03151	12	259	0.012	7.8	26,722.00	1.3	537	534	Vitrified Clay Pipe-Circular-12 inch	0.8	2,928,702.40	5.66
D04031-D04029	12	121	0.025	9.9	85,272.02	2.43	607	604	Vitrified Clay Pipe-Circular-12 inch	0.8	4,284,818.60	8.29
H12009-H12007	8	145	0.007	49.4	375,129.36	2.45	366	365	Vitrified Clay Pipe-Circular-8 inch	0.3	766,485.26	3.95
F05073-F05071	21	342	0.003	33.1	1,550,564.21	2.39	504	503	Vitrified Clay Pipe-Circular-21 inch	2.4	6,544,144.92	4.22
J14023-J14021	8	164	0.012	26	123,356.53	2.46	341	339	Vitrified Clay Pipe-Circular-8 inch	0.3	1,019,250.38	5.26
F10011-F10005	24	292	0.003	30.3	2,013,831.96	2.44	413	412	Vitrified Clay Pipe-Circular-24 inch	3.1	10,111,596.42	5.05
F10001-G10011	24	558	0.004	30.1	2,022,866.79	2.44	408	406	Vitrified Clay Pipe-Circular-24 inch	3.1	10,344,489.22	5.16
F15117-F15101	12	186	0.016	18.7	232,351.70	2.46	470	467	Vitrified Clay Pipe-Circular-12 inch	0.8	3,455,959.57	6.68
D03083-D03107	8	286	0.028	15.4	72,354.27	2.48	620	612	Vitrified Clay Pipe-Circular-8 inch	0.3	1,543,653.37	7.96
F03155-F03153	12	261	0.011	6.7	26,499.46	1.31	540	537	Vitrified Clay Pipe-Circular-12 inch	0.8	2,917,459.74	5.64
D10015-D10013	12	336	0.002	79	1,125,945.62	2.5	433.78	433	Vitrified Clay Pipe-Circular-12 inch	0.8	1,311,119.15	2.54
H12035-H12033	12	92	0.022	9.4	73,039.43	2.47	362	360	Vitrified Clay Pipe-Circular-12 inch	0.8	4,012,227.79	7.76
C04039-C04037	8	296	0.05	8.3	29,294.59	2.49	740.51	725.61	Vitrified Clay Pipe-Circular-8 inch	0.3	2,070,785.36	10.68
D17015-D17013	15	58	0.034	9.4	98,343.22	2.47	499	497	Vitrified Clay Pipe-Circular-15 inch	1.2	9,162,040.36	11.81
J14017-J14015	10	246	0.012	19.8	142,503.96	2.48	336	333	Vitrified Clay Pipe-Circular-10 inch	0.5	1,848,023.90	5.72
E05053-E05051	8	260	0.015	22.5	100,671.77	2.49	550	546	Vitrified Clay Pipe-Circular-8 inch	0.3	1,144,803.98	5.90
D08021-D08019	10	247	0.004	56.2	644,963.08	2.49	476	475	Vitrified Clay Pipe-Circular-10 inch	0.5	1,064,795.07	3.29
D02013-D02011	12	246	0.008	18.2	146,323.97	1.88	596	594	Vitrified Clay Pipe-Circular-12 inch	0.8	2,453,646.21	4.75
D07105-D07103	8	277	0.018	18.1	82,750.48	2.5	508	503	Vitrified Clay Pipe-Circular-8 inch	0.3	1,240,032.09	6.40

2025 (Without Parcel 4) Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
E05095-E05089	10	248	0.004	49.6	525,059.30	2.23	533	532	Vitrified Clay Pipe-Circular-10 inch	0.5	1,062,646.14	3.29
F02169-F02167	8	82	0.027	16.8	33,202.94	2.23	547.13	544.63	Vitrified Clay Pipe-Circular-8 inch	0.3	1,513,269.70	7.80
J14015-J14013	10	249	0.008	23.8	166,450.99	2.24	333	331	Vitrified Clay Pipe-Circular-10 inch	0.5	1,499,787.86	4.64
D02051-D02019	10	315	0.006	32.6	295,552.12	2.24	602	600	Vitrified Clay Pipe-Circular-10 inch	0.5	1,333,442.30	4.13
G12095-G12093	12	133	0.008	21.3	207,220.32	2.24	379	378	Vitrified Clay Pipe-Circular-12 inch	0.8	2,359,601.58	4.56
D15007-D15005	8	12	0.027	13.7	42,655.19	2.24	477.32	477	Vitrified Clay Pipe-Circular-8 inch	0.3	1,507,204.47	7.77
D06109-D06107	8	290	0.017	15.2	60,404.81	2.24	526	521	Vitrified Clay Pipe-Circular-8 inch	0.3	1,211,919.60	6.25
D06119-E06021	8	331	0.012	20.3	88,835.79	2.24	522	518	Vitrified Clay Pipe-Circular-8 inch	0.3	1,014,620.90	5.23
K11047-K11035	15	177	0.003	33.6	599,186.27	2.25	350	349.5	Vitrified Clay Pipe-Circular-15 inch	1.2	2,622,343.43	3.38
C06029-C06027	8	256	0.043	8.2	19,939.65	2.25	567	556	Vitrified Clay Pipe-Circular-8 inch	0.3	1,913,216.72	9.87
K13053-K13051	12	341	0.006	23.6	254,635.50	2.25	331	329	Vitrified Clay Pipe-Circular-12 inch	0.8	2,084,022.03	4.03
D08055-D08053	12	142	0.035	8.2	50,593.96	2.25	483	478	Vitrified Clay Pipe-Circular-12 inch	0.8	5,106,288.26	9.88
E15015-E15013	15	325	0.012	15.2	231,939.90	2.25	469	465	Vitrified Clay Pipe-Circular-15 inch	1.2	5,473,681.39	7.06
D03055-D03009	15	190	0.005	26.2	538,716.19	2.25	587	586	Vitrified Clay Pipe-Circular-15 inch	1.2	3,579,434.33	4.62
E06021-E06009	8	334	0.012	26.1	94,096.52	2.25	518	514	Vitrified Clay Pipe-Circular-8 inch	0.3	1,010,053.95	5.21
D10013-D10011	12	336	0.002	100	1,332,101.98	2.26	433	432.46	Vitrified Clay Pipe-Circular-12 inch	0.8	1,090,917.07	2.11
C06007-C06005	8	329	0.036	10.9	25,409.23	2.26	552	540	Vitrified Clay Pipe-Circular-8 inch	0.3	1,762,708.43	9.09
J12023-J12007	30	23	0.012	14.3	531,902.73	2.26	358.09	357.81	Vitrified Clay Pipe-Circular-30 inch	4.9	34,566,304.56	10.91
D09035-D09033	8	309	0.006	38.2	161,281.24	2.26	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	742,546.35	3.83
D02015-D02013	12	313	0.006	27.4	343,822.94	2.26	598	596	Vitrified Clay Pipe-Circular-12 inch	0.8	2,175,240.73	4.21
D05001-D06059	8	348	0.011	22.7	100,279.22	2.26	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	989,528.21	5.10
F03137-F03089	15	182	0.005	24.6	486,843.73	2.27	527	526	Vitrified Clay Pipe-Circular-15 inch	1.2	3,657,257.22	4.72
D02003-D03099	15	175	0.006	25.1	437,255.30	2.27	593	592	Vitrified Clay Pipe-Circular-15 inch	1.2	3,729,685.18	4.81
D06143-D06141	8	16	0.012	20.7	82,745.89	2.27	503.5	503.3	Vitrified Clay Pipe-Circular-8 inch	0.3	1,031,912.36	5.32
F18035-F18033	12	184	0.016	12.4	102,319.47	2.27	549	546	Vitrified Clay Pipe-Circular-12 inch	0.8	3,474,691.20	6.72
F19011-F19010	12	204	0.031	8.7	44,604.02	2.27	570.27	563.97	Vitrified Clay Pipe-Circular-12 inch	0.8	4,770,433.46	9.23
E10053-E10051	12	274	0.007	22.2	197,514.18	2.28	418	416	Vitrified Clay Pipe-Circular-12 inch	0.8	2,324,899.66	4.50
J08005-J08003	15	291	0.01	18.1	316,694.68	2.28	401	398	Vitrified Clay Pipe-Circular-15 inch	1.2	5,009,626.32	6.46
K11025-K11023	15	317	0.003	32.1	616,820.48	2.28	347	346	Vitrified Clay Pipe-Circular-15 inch	1.2	2,771,159.79	3.57
E15001-E14021	15	228	0.009	21.5	333,817.96	2.28	455	453	Vitrified Clay Pipe-Circular-15 inch	1.2	4,621,029.85	5.96
D02055-D02053	8	125	0.024	31	56,007.25	2.28	606	603	Vitrified Clay Pipe-Circular-8 inch	0.3	1,429,859.71	7.37
D06111-D06109	8	291	0.021	14.4	52,473.08	2.28	532	526	Vitrified Clay Pipe-Circular-8 inch	0.3	1,325,308.36	6.84
G04089-G04087	8	253	0.008	38	227,750.09	2.28	495	493	Vitrified Clay Pipe-Circular-8 inch	0.3	820,620.84	4.23
K12033-K12031	15	286	0.003	37.1	766,148.65	2.28	340	339.2	Vitrified Clay Pipe-Circular-15 inch	1.2	2,609,475.22	3.36
D12039-D12037	8	96	0.01	24.1	120,076.93	2.29	447	446	Vitrified Clay Pipe-Circular-8 inch	0.3	942,002.79	4.86
K15033-K15021	8	31	0.008	33.1	153,515.29	2.29	314.25	314	Vitrified Clay Pipe-Circular-8 inch	0.3	828,851.95	4.27
F11041-F11001	8	353	0.014	69.1	71,727.51	2.29	389	384.15	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,860.65	5.58
D08025-D08023	10	59	0.003	68.4	729,549.64	2.29	478.32	478.15	Vitrified Clay Pipe-Circular-10 inch	0.5	898,282.55	2.78
D11007-D11005	8	251	0.008	26.3	124,538.19	2.29	446	444	Vitrified Clay Pipe-Circular-8 inch	0.3	823,883.76	4.25
D06061-D06059	8	248	0.016	20.2	70,579.86	2.29	561	557	Vitrified Clay Pipe-Circular-8 inch	0.3	1,172,173.67	6.05
D12025-D12023	8	433	0.009	28.1	152,943.86	2.3	432	428	Vitrified Clay Pipe-Circular-8 inch	0.3	887,102.61	4.58
D03107-D03105	8	351	0.02	17.5	84,637.22	2.3	612	605	Vitrified Clay Pipe-Circular-8 inch	0.3	1,303,416.66	6.72
K13039-K13037	21	315	0.003	25.2	934,085.94	2.3	324	323	Vitrified Clay Pipe-Circular-21 inch	2.4	6,818,842.89	4.40
D13101-D13099	8	289	0.166	4.4	5,159.66	2.3	505	457	Vitrified Clay Pipe-Circular-8 inch	0.3	3,761,486.47	19.40
G13085-G13083	10	116	0.009	25.6	173,856.67	2.3	384	383	Vitrified Clay Pipe-Circular-10 inch	0.5	1,553,765.64	4.81
J14021-J14019	8	130	0.008	31.1	169,363.97	2.31	339	338	Vitrified Clay Pipe-Circular-8 inch	0.3	809,498.65	4.17
E08045-E08043	15	306	0.006	21.1	362,813.05	2.31	459	457.25	Vitrified Clay Pipe-Circular-15 inch	1.2	3,731,208.43	4.81
E06053-E06041	10	302	0.01	20.6	147,940.99	2.32	505	502	Vitrified Clay Pipe-Circular-10 inch	0.5	1,667,906.36	5.16
E13029-E13027	12	199	0.005	38.3	599,690.16	2.32	430	429	Vitrified Clay Pipe-Circular-12 inch	0.8	1,929,025.46	3.73
F16029-F16027	12	54	0.019	16.8	172,131.80	2.32	492	491	Vitrified Clay Pipe-Circular-12 inch	0.8	3,703,118.57	7.16
E03241-E03239	12	241	0.008	21.7	255,449.36	2.32	559	557	Vitrified Clay Pipe-Circular-12 inch	0.8	2,478,968.31	4.79
F14105-F14103	12	212	0.009	24.4	346,298.11	2.32	434	432	Vitrified Clay Pipe-Circular-12 inch	0.8	2,643,087.65	5.11
E16005-E16003	15	34	0.015	13.7	203,960.78	2.32	477.5	477	Vitrified Clay Pipe-Circular-15 inch	1.2	5,983,244.40	7.71
E02021-E02019	8	187	0.012	20.9	96,148.49	2.32	580.75	578.53	Vitrified Clay Pipe-Circular-8 inch	0.3	1,005,642.20	5.19
C10027-C10025	8	76	0.013	18.8	77,206.80	2.32	509	508	Vitrified Clay Pipe-Circular-8 inch	0.3	1,058,719.74	5.46
D06131-D06125	8	329	0.018	16.1	58,915.58	2.32	534	528	Vitrified Clay Pipe-Circular-8 inch	0.3	1,246,423.08	6.43

2025 (Without Parcel 4) Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
J14031-J14029	8	54	0.019	23.6	78,033.71	2.51	347	346	Vitrified Clay Pipe-Circular-8 inch	0.3	1,256,003.72	6.48
E03235-F03161	12	297	0.01	21.5	276,268.38	2.52	552	549	Vitrified Clay Pipe-Circular-12 inch	0.8	2,734,934.32	5.29
E08061-E08059	8	364	0.014	30.9	130,217.56	2.52	470	465	Vitrified Clay Pipe-Circular-8 inch	0.3	1,081,738.08	5.58
D04063-D04061	15	320	0.006	28.4	687,844.27	2.52	569	567	Vitrified Clay Pipe-Circular-15 inch	1.2	3,900,598.13	5.03
E14065-E14063	8	264	0.008	50.9	413,866.19	2.52	443	441	Vitrified Clay Pipe-Circular-8 inch	0.3	803,342.68	4.14
G09041-G09039	8	66	0.015	24.8	108,813.87	2.52	421	420	Vitrified Clay Pipe-Circular-8 inch	0.3	1,136,098.12	5.86
D09065-D10111	12	338	0.006	51.5	318,255.28	2.53	437	435	Vitrified Clay Pipe-Circular-12 inch	0.8	2,093,250.22	4.05
F09045-F09015	18	443	0.005	30.5	1,092,468.17	2.53	427	425	Vitrified Clay Pipe-Circular-18 inch	1.8	5,390,813.70	4.63
E03237-E03235	12	299	0.01	21.5	276,994.28	2.53	555	552	Vitrified Clay Pipe-Circular-12 inch	0.8	2,725,772.03	5.27
D09043-D09041	8	95	0.011	24.4	123,461.19	2.53	449	448	Vitrified Clay Pipe-Circular-8 inch	0.3	946,947.72	4.88
K12069-K12067	8	183	0.011	25.1	133,513.03	2.53	350	348	Vitrified Clay Pipe-Circular-8 inch	0.3	964,888.79	4.98
G04091-G04089	8	286	0.01	34.7	227,521.49	2.54	498	495	Vitrified Clay Pipe-Circular-8 inch	0.3	945,290.77	4.88
E15057-E15029	8	418	0.022	27.9	95,923.07	2.54	458	449	Vitrified Clay Pipe-Circular-8 inch	0.3	1,354,318.84	6.98
D12035-D12033	8	282	0.014	24.9	119,959.26	2.54	440	436	Vitrified Clay Pipe-Circular-8 inch	0.3	1,099,241.84	5.67
D04029-D04027	12	170	0.024	10.8	100,445.97	2.54	604	600	Vitrified Clay Pipe-Circular-12 inch	0.8	4,174,169.04	8.07
J12059-J12053	10	76	0.026	37	102,644.21	2.54	361	359	Vitrified Clay Pipe-Circular-10 inch	0.5	2,714,705.42	8.40
D04037-D04035	12	298	0.027	9.6	84,958.28	2.54	631	623	Vitrified Clay Pipe-Circular-12 inch	0.8	4,458,629.24	8.62
D08001-E08005	15	310	0.003	44.9	1,162,414.03	2.54	451	450	Vitrified Clay Pipe-Circular-15 inch	1.2	2,802,272.42	3.61
E05107-E05105	8	264	0.011	30.1	171,945.31	2.55	541	538	Vitrified Clay Pipe-Circular-8 inch	0.3	983,889.83	5.07
K12019-K13047	15	283	0.004	38.8	935,094.94	2.55	336	335	Vitrified Clay Pipe-Circular-15 inch	1.2	2,932,904.90	3.78
D10075-D10073	8	340	0.009	29.9	168,904.38	2.55	456	453	Vitrified Clay Pipe-Circular-8 inch	0.3	866,979.79	4.47
F04137-F04135	15	252	0.008	24.1	551,578.76	2.55	513	511	Vitrified Clay Pipe-Circular-15 inch	1.2	4,395,476.14	5.67
F04141-F04139	15	258	0.008	24	550,483.88	2.55	518	516	Vitrified Clay Pipe-Circular-15 inch	1.2	4,344,065.29	5.60
E07057-E07055	8	370	0.014	24	129,385.71	2.55	479	473.91	Vitrified Clay Pipe-Circular-8 inch	0.3	1,082,544.70	5.58
D11027-D11025	8	220	0.021	16.7	57,826.54	2.55	473.8	469.2	Vitrified Clay Pipe-Circular-8 inch	0.3	1,334,613.10	6.88
E12011-E12009	15	574	0.005	35.8	978,523.32	2.55	413	410	Vitrified Clay Pipe-Circular-15 inch	1.2	3,566,940.63	4.60
G10011-G10009	24	567	0.004	32.7	2,378,979.45	2.56	406	404	Vitrified Clay Pipe-Circular-24 inch	3.1	10,262,061.70	5.12
F15119-F15117	12	195	0.015	19.2	270,716.93	2.56	473	470	Vitrified Clay Pipe-Circular-12 inch	0.8	3,375,264.56	6.53
F12065-F11017	24	276	0.004	32	2,309,761.84	2.57	394	393	Vitrified Clay Pipe-Circular-24 inch	3.1	10,400,557.33	5.19
F16013-F15121	12	257	0.016	19	267,741.67	2.57	480	476	Vitrified Clay Pipe-Circular-12 inch	0.8	3,394,907.39	6.57
H11033-H11025	39	154	0.001	50.6	11,292,427.51	2.57	369.19	369	Vitrified Clay Pipe-Circular-39 inch	8.3	22,151,504.79	4.13
G08059-G08057	12	82	0.006	39.6	703,396.74	2.57	440	439.5	Vitrified Clay Pipe-Circular-12 inch	0.8	2,124,919.95	4.11
F15121-F15119	12	193	0.016	19.1	269,214.94	2.57	476	473	Vitrified Clay Pipe-Circular-12 inch	0.8	3,392,707.91	6.56
D08033-D08031	10	148	0.007	34	341,294.33	2.57	470	469	Vitrified Clay Pipe-Circular-10 inch	0.5	1,375,573.03	4.26
D09045-D09043	8	91	0.011	24.3	123,653.18	2.58	450	449	Vitrified Clay Pipe-Circular-8 inch	0.3	967,535.95	4.99
F07065-F07063	12	334	0.009	25.5	367,482.91	2.58	463	460	Vitrified Clay Pipe-Circular-12 inch	0.8	2,579,003.27	4.99
F07063-F08111	12	328	0.009	25.5	369,715.84	2.58	460	457	Vitrified Clay Pipe-Circular-12 inch	0.8	2,602,484.81	5.03
F03153-F03151	12	259	0.012	21.4	281,978.91	2.59	537	534	Vitrified Clay Pipe-Circular-12 inch	0.8	2,928,702.40	5.66
D04031-D04029	12	121	0.025	10.6	99,788.67	2.59	607	604	Vitrified Clay Pipe-Circular-12 inch	0.8	4,284,818.60	8.29
H12009-H12007	8	145	0.007	54.4	440,775.96	2.59	366	365	Vitrified Clay Pipe-Circular-8 inch	0.3	766,485.26	3.95
F05073-F05071	21	342	0.003	38.5	2,054,472.39	2.59	504	503	Vitrified Clay Pipe-Circular-21 inch	2.4	6,544,144.92	4.22
J14023-J14021	8	164	0.012	28.3	144,874.08	2.59	341	339	Vitrified Clay Pipe-Circular-8 inch	0.3	1,019,250.38	5.26
F10011-F10005	24	292	0.003	32.9	2,358,293.11	2.59	413	412	Vitrified Clay Pipe-Circular-24 inch	3.1	10,111,596.42	5.05
F10001-G10011	24	558	0.004	32.7	2,369,543.66	2.59	408	406	Vitrified Clay Pipe-Circular-24 inch	3.1	10,344,489.22	5.16
F15117-F15101	12	186	0.016	20.2	271,819.61	2.59	470	467	Vitrified Clay Pipe-Circular-12 inch	0.8	3,455,959.57	6.68
D03083-D03107	8	286	0.028	16.6	84,817.63	2.6	620	612	Vitrified Clay Pipe-Circular-8 inch	0.3	1,543,653.37	7.96
F03155-F03153	12	261	0.011	21	281,618.66	2.6	540	537	Vitrified Clay Pipe-Circular-12 inch	0.8	2,917,459.74	5.64
D10015-D10013	12	336	0.002	100	1,318,100.24	2.6	433.78	433	Vitrified Clay Pipe-Circular-12 inch	0.8	1,311,119.15	2.54
H12035-H12033	12	92	0.022	10.1	85,593.17	2.61	362	360	Vitrified Clay Pipe-Circular-12 inch	0.8	4,012,227.79	7.76
C04039-C04037	8	296	0.05	8.9	34,257.25	2.61	740.51	725.61	Vitrified Clay Pipe-Circular-8 inch	0.3	2,070,785.36	10.68
D17015-D17013	15	58	0.034	10.1	115,041.82	2.61	499	497	Vitrified Clay Pipe-Circular-15 inch	1.2	9,162,040.36	11.81
J14017-J14015	10	246	0.012	21.4	166,749.55	2.61	336	333	Vitrified Clay Pipe-Circular-10 inch	0.5	1,848,023.90	5.72
E05053-E05051	8	260	0.015	24.3	117,683.09	2.62	550	546	Vitrified Clay Pipe-Circular-8 inch	0.3	1,144,803.98	5.90
D08021-D08019	10	247	0.004	62.2	754,789.31	2.62	476	475	Vitrified Clay Pipe-Circular-10 inch	0.5	1,064,795.07	3.29
D02013-D02011	12	246	0.008	30.7	415,590.42	2.62	596	594	Vitrified Clay Pipe-Circular-12 inch	0.8	2,453,646.21	4.75
D07105-D07103	8	277	0.018	19.6	96,878.42	2.62	508	503	Vitrified Clay Pipe-Circular-8 inch	0.3	1,240,032.09	6.40

APPENDIX B

TABLES

Table 1

Existing (2010)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	157,940.81 gpd	945,290.77 gpd	472,645.39 gpd	1.7	268,499.38 gpd	56.81%
G04089 to G04087	8	253	0.008	158,128.55 gpd	820,620.84 gpd	410,310.42 gpd	1.7	268,818.54 gpd	65.52%

Table 2

2015									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	173,246.04 gpd	945,290.77 gpd	472,645.39 gpd	1.7	294,518.27 gpd	62.31%
G04089 to G04087	8	253	0.008	173,462.40 gpd	820,620.84 gpd	410,310.42 gpd	1.7	294,886.08 gpd	71.87%

Table 3

2025									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	227,521.49 gpd	945,290.77 gpd	472,645.39 gpd	1.7	386,786.53 gpd	81.83%
G04089 to G04087	8	253	0.008	227,750.09 gpd	820,620.84 gpd	410,310.42 gpd	1.7	387,175.15 gpd	94.36%

Table 4

2025 (with project flows)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	280,271.49 gpd	945,290.77 gpd	472,645.39 gpd	1.7	476,461.53 gpd	100.81%
G04089 to G04087	8	253	0.008	300,000.09 gpd	820,620.84 gpd	410,310.42 gpd	1.7	510,000.15 gpd	124.30%

Table 5

2025 (with sewer pipe upgrade)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	10	286	0.01	280,271.49 gpd	1,416,001.92 gpd	708,000.96 gpd	1.7	476,461.53 gpd	67.30%
G04089 to G04087	10	253	0.008	330,000.09 gpd	1,266,510.62 gpd	633,255.31 gpd	1.7	561,000.15 gpd	88.59%

Table 1b

Existing (2010) - with MHP and Four Seasons									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	255,190.81 gpd	945,290.77 gpd	472,645.39 gpd	1.7	433,824.38 gpd	91.79%
G04089 to G04087	8	253	0.008	255,378.55 gpd	820,620.84 gpd	410,310.42 gpd	1.7	434,143.54 gpd	105.81%

Table 2b

2015									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	270,496.04 gpd	945,290.77 gpd	472,645.39 gpd	1.7	459,843.27 gpd	97.29%
G04089 to G04087	8	253	0.008	270,712.40 gpd	820,620.84 gpd	410,310.42 gpd	1.7	460,211.08 gpd	112.16%

Table 3b

2025									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	324,771.49 gpd	945,290.77 gpd	472,645.39 gpd	1.7	552,111.53 gpd	116.81%
G04089 to G04087	8	253	0.008	325,000.09 gpd	820,620.84 gpd	410,310.42 gpd	1.7	552,500.15 gpd	134.65%

Table 4b

2025 (with project flows)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	8	286	0.01	377,521.49 gpd	945,290.77 gpd	472,645.39 gpd	1.7	641,786.53 gpd	135.79%
G04089 to G04087	8	253	0.008	397,250.09 gpd	820,620.84 gpd	410,310.42 gpd	1.7	675,325.15 gpd	164.59%

Table 5b

2025 (with sewer pipe upgrade)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	10	286	0.01	377,521.49 gpd	1,416,001.92 gpd	708,000.96 gpd	1.7	641,786.53 gpd	90.65%
G04089 to G04087	10	253	0.008	427,250.09 gpd	1,266,510.62 gpd	633,255.31 gpd	1.7	726,325.15 gpd	114.70%

Table 6b

2025 (with sewer pipe upgrade)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
G04091 to G04089	12	286	0.01	377,521.49 gpd	3,634,932.00 gpd	1,817,466.00 gpd	1.7	641,786.53 gpd	35.31%
G04089 to G04087	12	253	0.008	427,250.09 gpd	3,251,182.02 gpd	1,625,591.01 gpd	1.7	726,325.15 gpd	44.68%

Table 7

On-site Pipe Capacity check									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (50%)	Peak Factor	Max Flow with Peak	Max Flow vs 50% Capacity
POC 1	8	300	0.0035	104,250.00 gpd	456,377.82 gpd	228,188.91 gpd	1.7	177,225.00 gpd	77.67%

Table 8

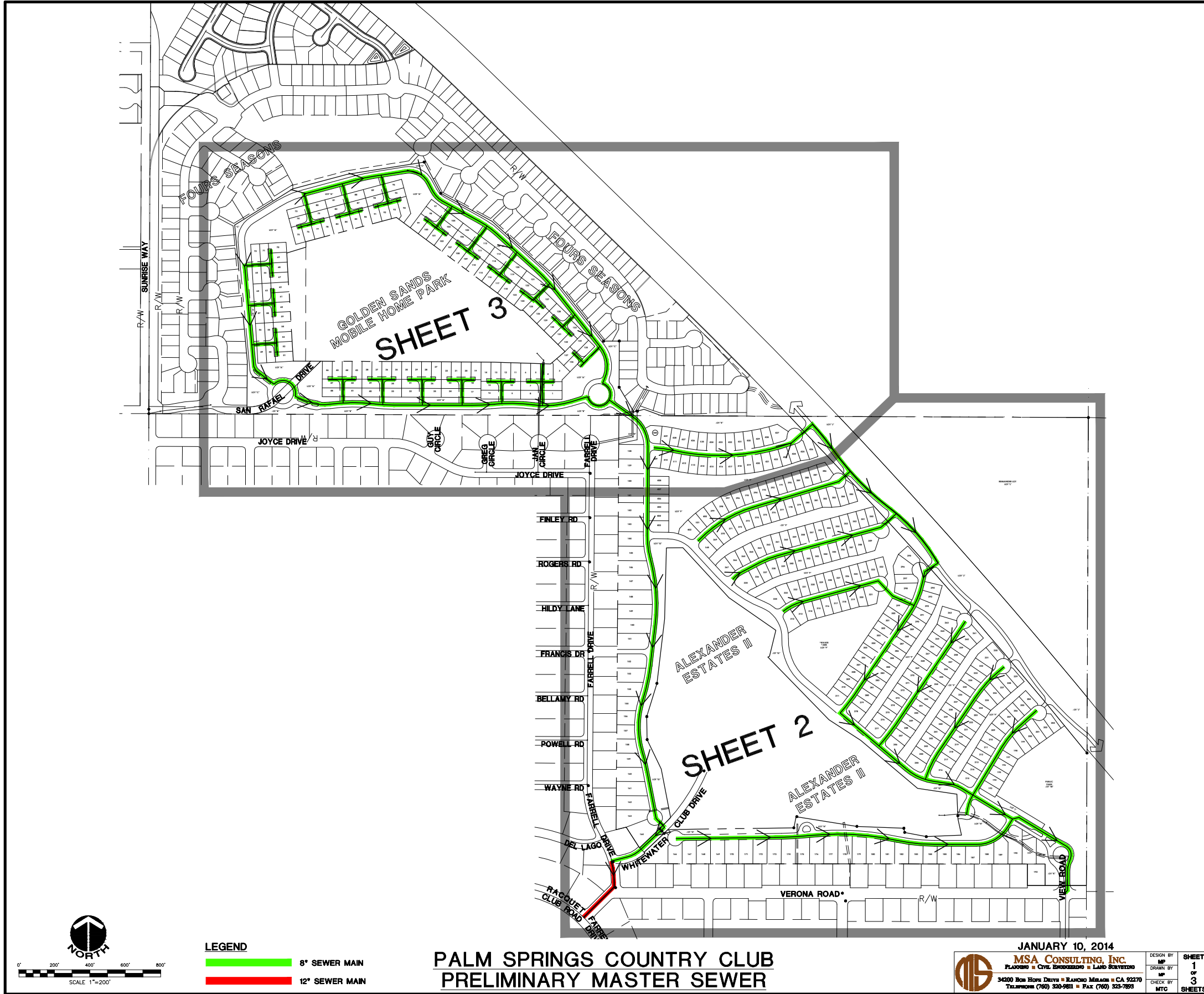
2025 Farrell Sewer Capacity									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (75%)	Peak Factor	Max Flow with Peak	Max Flow vs 75% Capacity
G05089 to G06013	24	866	0.003	3,090,704.28 gpd	8,826,863.83 gpd	6,620,147.87 gpd	1.7	5,254,197.28 gpd	79.37%

Table 8b

2025 Farrell Sewer Capacity (with project and MHP flows)									
Section	Diameter	length	slope	Max Flow	Pipe Capacity (full)	Pipe Capacity (75%)	Peak Factor	Max Flow with Peak	Max Flow vs 75% Capacity
G05089 to G06013	24	866	0.003	3,237,204.28 gpd	8,826,863.83 gpd	6,620,147.87 gpd	1.7	5,503,247.28 gpd	83.13%

APPENDIX C

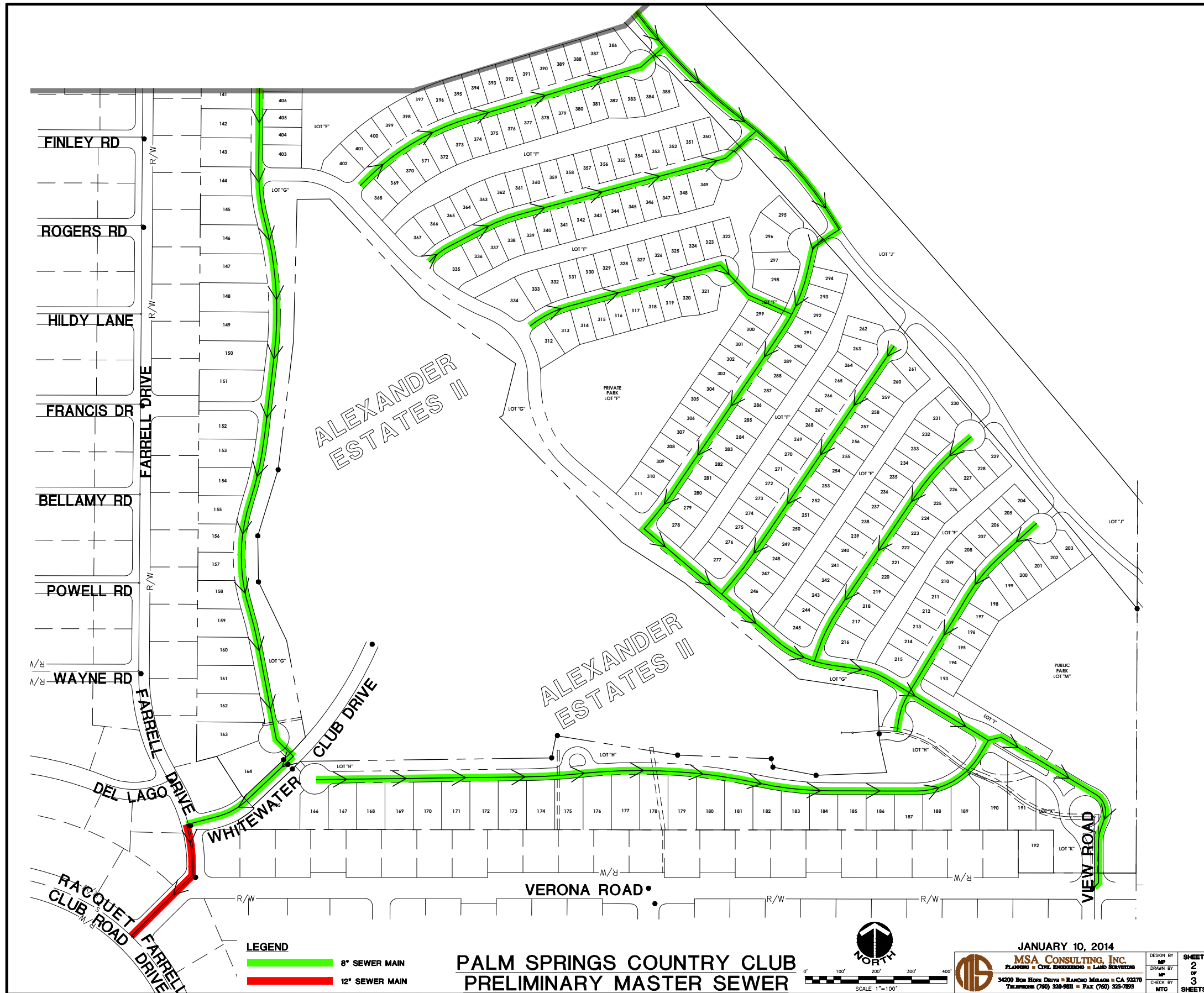
PROJECT MASTER SEWER SYSTEM PLAN



**PALM SPRINGS COUNTRY CLUB
PRELIMINARY MASTER SEWER**

JANUARY 10, 2014

	MSA CONSULTING, INC.		DESIGN BY MP DRAWN BY MP CHECK BY MTG	SHEET 1 of 3 SHEETS
	PLANNING ■ CIVIL ENGINEERING ■ LAND SURVEYING			
	34200 New Hope Drive ■ Rancho Mirage ■ CA 92270			
	Telephone (760) 320-5811 ■ Fax (760) 323-7828			



FINLEY RD

ROGERS RD

HILDY LANE

FRANCIS DR

BELLAMY RD

POWELL RD

WAYNE RD

DEL LAGO DRIVE

RACQUET CLUB ROAD

FARRELL DRIVE

FARRELL DRIVE

ALEXANDER ESTATES II

ALEXANDER ESTATES II

VERONA ROAD

VIEW ROAD

LEGEND

- 8" SEWER MAIN
- 12" SEWER MAIN

**PALM SPRINGS COUNTRY CLUB
PRELIMINARY MASTER SEWER**

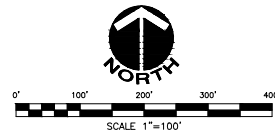
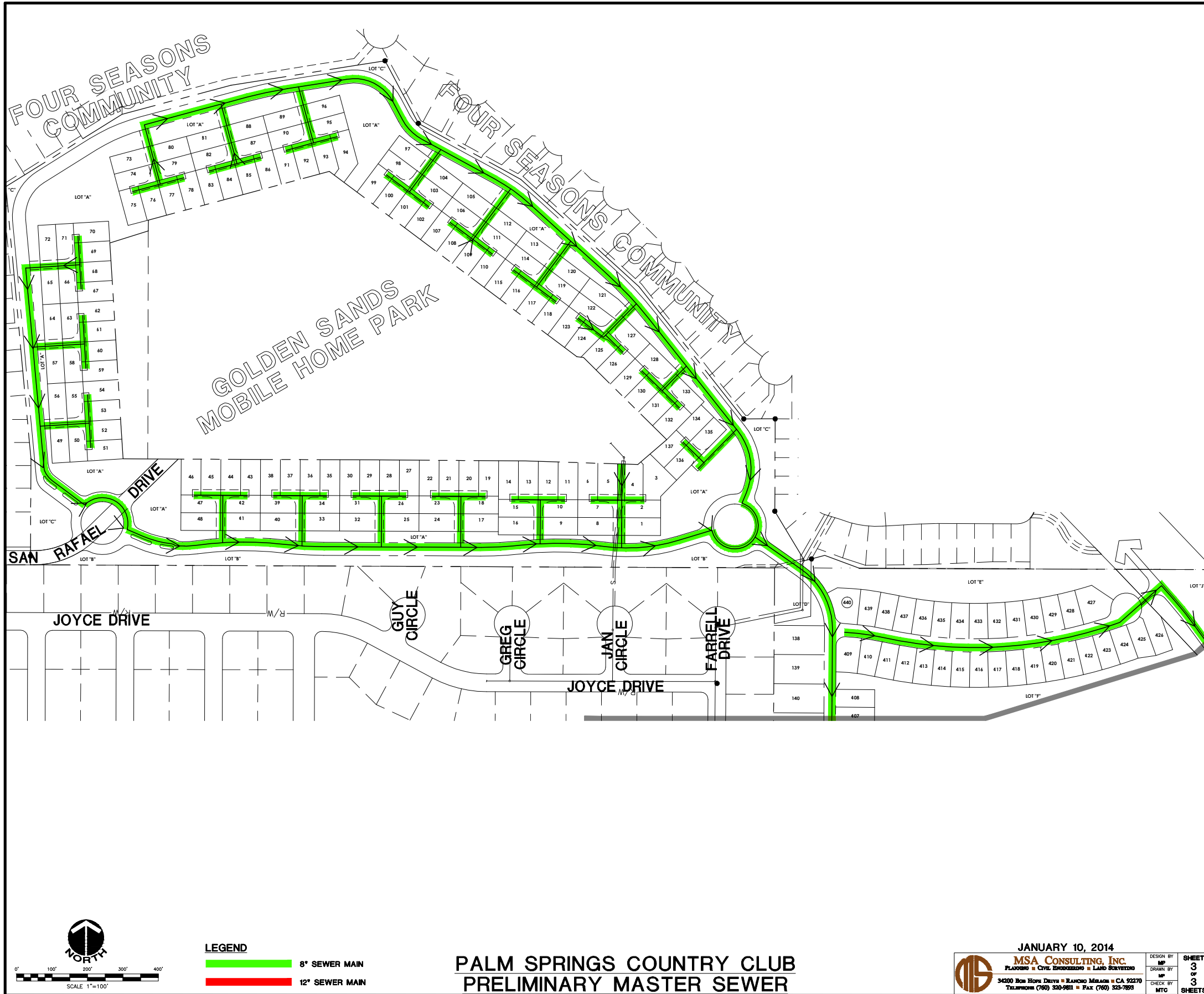


SCALE: 1"=100'



JANUARY 10, 2014

MSA CONSULTING, INC.
PLANNING • CIVIL ENGINEERING • LAND SURVEYING
34200 New Hope Drive • Rancho Mirage • CA 92270
Telephone (760) 320-5811 • Fax (760) 323-7893

DESIGN BY	MP	SHEET 2 of 3 SHEETS
DRAWN BY	MP	
CHECK BY	MTG	



LEGEND

	8" SEWER MAIN
	12" SEWER MAIN

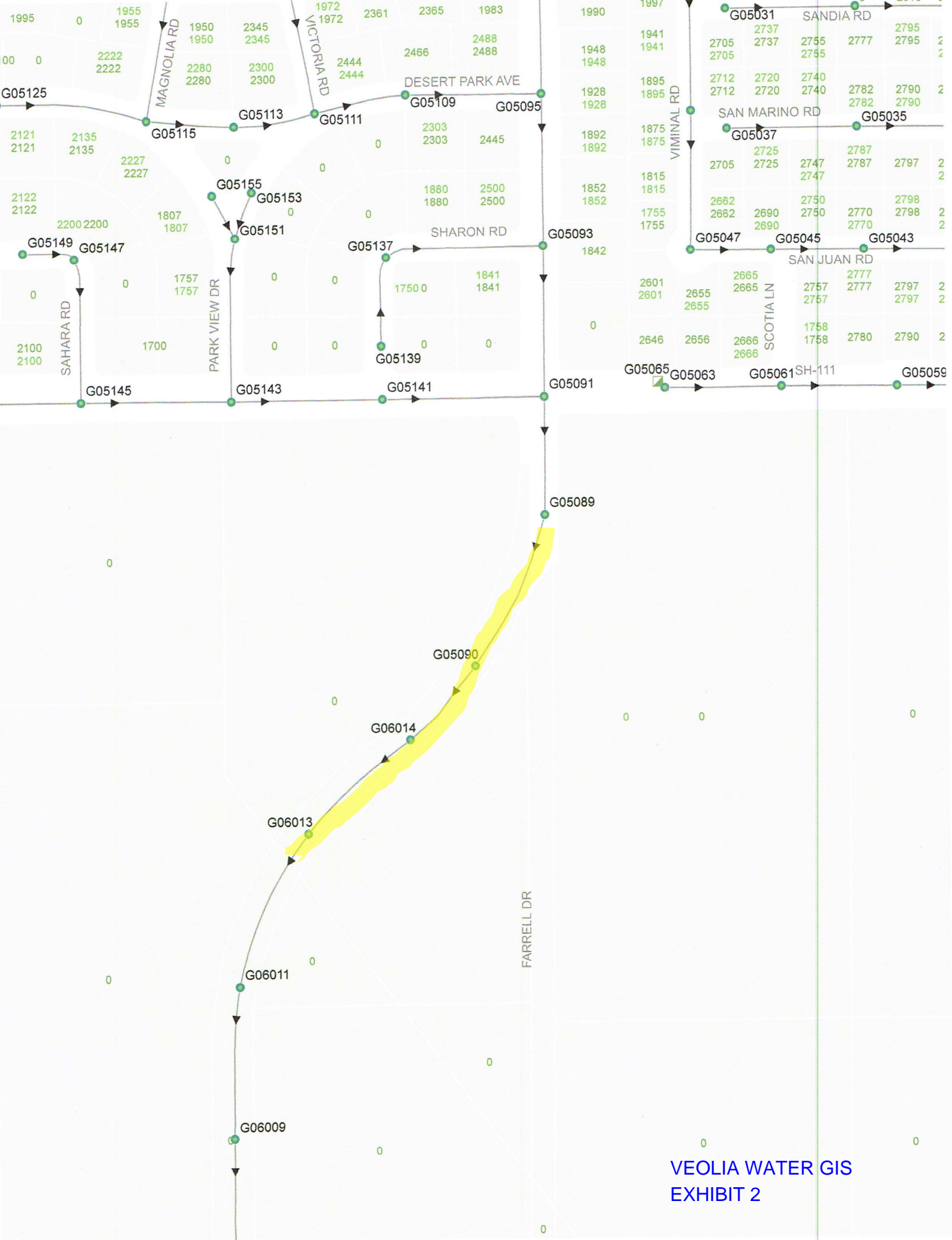
**PALM SPRINGS COUNTRY CLUB
PRELIMINARY MASTER SEWER**

JANUARY 10, 2014		<table border="0"> <tr> <td>DESIGN BY</td> <td>MP</td> <td rowspan="4"> <table border="0"> <tr> <td>SHEET</td> <td>3</td> </tr> <tr> <td>OF</td> <td>3</td> </tr> <tr> <td>SHEETS</td> <td></td> </tr> </table> </td> </tr> <tr> <td>DRAWN BY</td> <td>MP</td> </tr> <tr> <td>CHECK BY</td> <td>MTG</td> </tr> <tr> <td></td> <td></td> </tr> </table>	DESIGN BY	MP	<table border="0"> <tr> <td>SHEET</td> <td>3</td> </tr> <tr> <td>OF</td> <td>3</td> </tr> <tr> <td>SHEETS</td> <td></td> </tr> </table>	SHEET	3	OF	3	SHEETS		DRAWN BY	MP	CHECK BY	MTG		
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MSA CONSULTING, INC. PLANNING ■ CIVIL ENGINEERING ■ LAND SURVEYING 34200 New Hope Drive ■ Rancho Mirage ■ CA 92270 Telephone (760) 320-5811 ■ Fax (760) 323-7893																	

APPENDIX D

FARREL SEWER
PSSMP CHARTS – CIP 2015 CHARTS

- VEOLIA GIS EXHIBIT 2
- CIP 2025 RESULTS TABLE (PG 97 OF 100)



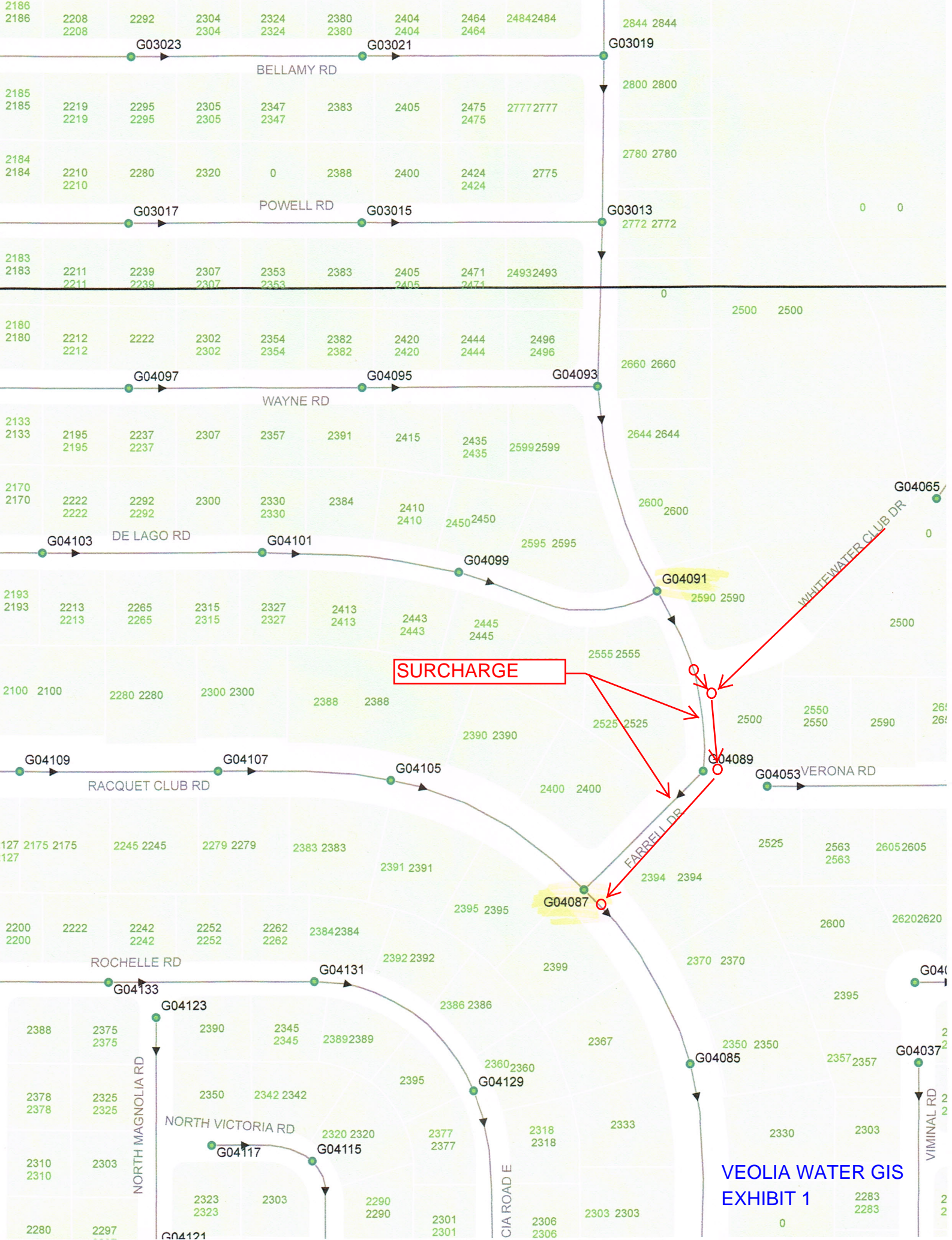
CIP 2025 Results Table

Label	Diam (in)	Length (ft)	Slope	Max. Depth/Diam (%)	Max Flow (gpd)	Avg Velocity (ft/s)	Start Invert (ft)	Stop Invert (ft)	Material and Diameter	Area - Full Flow (ft²)	Capacity (gpd)	Velocity - Full Flow (ft/s)
K12031-K12029	18	22	0.009	21.4	767,066.20	3.36	339.2	339	Vitrified Clay Pipe-Circular-18 inch	1.8	7,649,707.80	6.58
F11001-G11019	27	537	0.004	36.9	4,123,890.34	3.36	384.15	382	Vitrified Clay Pipe-Circular-27 inch	4	14,967,524.12	5.79
E09039-E09037	15	267	0.007	39	1,175,859.11	3.37	441	439	Vitrified Clay Pipe-Circular-15 inch	1.2	4,270,223.11	5.51
J12049-J12037	39	824	0.002	52.7	16,121,867.52	3.37	361	359.19	Vitrified Clay Pipe-Circular-39 inch	8.3	29,557,144.55	5.51
H11019-H11017	39	467	0.002	52	15,596,087.87	3.37	368	367	Vitrified Clay Pipe-Circular-39 inch	8.3	29,182,893.73	5.44
E09085-E09083	15	253	0.008	35.4	1,177,912.42	3.37	431	429	Vitrified Clay Pipe-Circular-15 inch	1.2	4,386,780.83	5.66
F14051-F14049	15	126	0.016	23.5	702,948.25	3.37	424	422	Vitrified Clay Pipe-Circular-15 inch	1.2	6,216,141.97	8.01
D08023-D08021	12	249	0.009	41.7	745,732.05	3.37	478.15	476	Vitrified Clay Pipe-Circular-12 inch	0.8	2,528,622.83	4.89
E05081-E05079	10	155	0.013	37.4	539,067.98	3.38	529	527	Vitrified Clay Pipe-Circular-10 inch	0.5	1,900,919.20	5.88
E05089-E05087	10	77	0.013	36.7	531,530.94	3.38	532	531	Vitrified Clay Pipe-Circular-10 inch	0.5	1,907,081.03	5.90
E06007-E06005	8	194	0.015	34.3	289,229.93	3.39	510	507	Vitrified Clay Pipe-Circular-8 inch	0.3	1,147,750.71	5.92
G08049-G09073	24	339	0.003	72	8,148,546.65	3.39	429	428	Vitrified Clay Pipe-Circular-24 inch	3.1	9,384,503.57	4.68
E08005-E08003	15	268	0.007	35.7	1,162,686.78	3.4	450	448	Vitrified Clay Pipe-Circular-15 inch	1.2	4,262,248.83	5.50
E07043-E07041	10	286	0.01	40.3	569,469.18	3.41	485	482	Vitrified Clay Pipe-Circular-10 inch	0.5	1,713,926.21	5.30
E06005-E06003	8	189	0.016	34.7	289,728.00	3.42	507	504	Vitrified Clay Pipe-Circular-8 inch	0.3	1,162,833.49	6.00
F05069-F05039	24	386	0.003	63.8	6,483,915.93	3.42	502	501	Vitrified Clay Pipe-Circular-24 inch	3.1	8,794,628.54	4.39
E09083-E09081	15	240	0.008	34.9	1,179,587.88	3.42	429	427	Vitrified Clay Pipe-Circular-15 inch	1.2	4,504,022.76	5.81
F08101-F08099	12	14	0.014	36.1	383,300.43	3.42	450	449.8	Vitrified Clay Pipe-Circular-12 inch	0.8	3,232,486.32	6.29
G05089-G06013	24	866	0.003	70.9	7,508,809.59	3.44	472.8	470.54	Vitrified Clay Pipe-Circular-24 inch	3.1	8,826,863.83	4.41
H11015-J11025	39	633	0.002	50.4	15,550,744.80	3.45	365	363.5	Vitrified Clay Pipe-Circular-39 inch	8.3	30,699,448.13	5.72
E09057-E09009	15	468	0.009	34.8	1,072,175.61	3.45	437	433	Vitrified Clay Pipe-Circular-15 inch	1.2	4,561,401.16	5.88
E09081-E09079	15	232	0.009	38.4	1,182,861.37	3.45	427	425	Vitrified Clay Pipe-Circular-15 inch	1.2	4,581,020.18	5.91
G08081-G08079	12	36	0.014	39.4	657,978.63	3.46	445.29	444.78	Vitrified Clay Pipe-Circular-12 inch	0.8	3,238,905.94	6.26
D01005-D01003	8	232	0.022	88.4	239,816.78	3.46	610	605	Vitrified Clay Pipe-Circular-8 inch	0.3	1,354,967.31	6.99
E07005-E07003	12	356	0.011	32.7	641,967.49	3.49	474	470	Vitrified Clay Pipe-Circular-12 inch	0.8	2,884,493.04	5.58
E08035-E08015	15	472	0.008	32.6	1,045,862.84	3.49	449	445	Vitrified Clay Pipe-Circular-15 inch	1.2	4,542,032.06	5.86
J11023-J11021	39	648	0.002	51.3	16,074,764.08	3.49	363	361.46	Vitrified Clay Pipe-Circular-39 inch	8.3	30,743,949.03	5.73
D10123-D10121	8	306	0.033	19.7	116,364.79	3.51	468	458	Vitrified Clay Pipe-Circular-8 inch	0.3	1,668,503.39	8.61
D08031-D08015	10	61	0.016	38.9	341,003.83	3.51	469	468	Vitrified Clay Pipe-Circular-10 inch	0.5	2,142,641.89	7.63
D06059-D06057	8	283	0.025	26.4	180,966.43	3.51	557	550	Vitrified Clay Pipe-Circular-8 inch	0.3	1,451,588.80	6.49
D06023-D06021	10	268	0.015	28.9	372,902.62	3.52	532	528	Vitrified Clay Pipe-Circular-10 inch	0.5	2,044,452.89	6.33
D08013-D08011	15	325	0.008	34.5	1,105,434.10	3.52	465.5	463	Vitrified Clay Pipe-Circular-15 inch	1.2	4,327,325.09	5.58
C11007-C11005	8	172	0.052	11.8	57,210.90	3.53	556	547	Vitrified Clay Pipe-Circular-8 inch	0.3	2,111,275.16	10.89
G11017-G11013	27	616	0.005	54.3	4,126,256.92	3.53	380	377	Vitrified Clay Pipe-Circular-27 inch	4	16,507,760.18	6.39
D09015-D09013	12	347	0.009	40.9	658,449.84	3.54	441	438	Vitrified Clay Pipe-Circular-12 inch	0.8	2,530,232.26	4.89
D05119-D05117	24	332	0.003	52.8	5,202,360.31	3.54	556	555	Vitrified Clay Pipe-Circular-24 inch	3.1	9,482,920.53	4.73
G11013-G11011	39	909	0.002	51.6	15,619,243.87	3.55	377	375	Vitrified Clay Pipe-Circular-39 inch	8.3	29,581,476.71	5.51
E09059-E09057	15	442	0.009	32.7	1,070,959.81	3.55	441	437	Vitrified Clay Pipe-Circular-15 inch	1.2	4,693,643.07	6.05
K12035-K12033	18	96	0.01	24.7	763,592.46	3.56	341	340	Vitrified Clay Pipe-Circular-18 inch	1.8	8,188,522.98	7.04
D04111-D04075	24	355	0.003	53.5	5,132,101.17	3.56	576	575	Vitrified Clay Pipe-Circular-24 inch	3.1	9,170,583.65	4.58
K12029-K12027	18	46	0.011	27.3	766,976.06	3.57	339	338.5	Vitrified Clay Pipe-Circular-18 inch	1.8	8,364,640.40	7.19
K12013-J12021	21	387	0.015	31.6	791,786.49	3.59	365	359.06	Vitrified Clay Pipe-Circular-21 inch	2.4	14,993,523.38	9.67
F05073-F05071	24	342	0.003	61.3	6,481,811.01	3.6	504	503	Vitrified Clay Pipe-Circular-24 inch	3.1	9,343,252.81	4.66
D07081-D07067	10	130	0.015	32.7	408,802.20	3.61	514	512	Vitrified Clay Pipe-Circular-10 inch	0.5	2,075,667.71	6.42
D08015-D08013	15	304	0.008	34.2	1,106,248.71	3.63	468	465.5	Vitrified Clay Pipe-Circular-15 inch	1.2	4,474,292.91	5.77
E05031-E05029	24	325	0.003	56.7	5,892,908.93	3.65	520	519	Vitrified Clay Pipe-Circular-24 inch	3.1	9,584,500.24	4.78
E08003-E09043	15	326	0.009	33.9	1,168,946.38	3.65	448	445	Vitrified Clay Pipe-Circular-15 inch	1.2	4,733,071.08	6.10
E08037-E08035	15	413	0.01	32	1,033,443.10	3.66	453	449	Vitrified Clay Pipe-Circular-15 inch	1.2	4,855,636.52	6.26
D12037-D12035	8	150	0.04	19.8	120,016.74	3.66	446	440	Vitrified Clay Pipe-Circular-8 inch	0.3	1,845,940.94	9.52
E08039-E08037	15	413	0.01	31.2	1,018,341.58	3.66	457	453	Vitrified Clay Pipe-Circular-15 inch	1.2	4,855,636.52	6.26
D08009-D08007	15	337	0.009	35.1	1,103,836.37	3.67	459	456	Vitrified Clay Pipe-Circular-15 inch	1.2	4,655,184.27	6.00
D10125-D10123	8	27	0.037	17.6	116,398.57	3.67	469	468	Vitrified Clay Pipe-Circular-8 inch	0.3	1,776,257.50	9.16
H11035-H11033	39	273	0.003	55.3	15,618,549.83	3.68	369.92	369.19	Vitrified Clay Pipe-Circular-39 inch	8.3	32,611,209.05	6.08
K12015-K12013	21	181	0.017	15.5	791,786.49	3.7	368	365	Vitrified Clay Pipe-Circular-21 inch	2.4	15,580,712.04	10.04
C11001-C10031	8	294	0.048	13.8	77,830.65	3.71	527	513	Vitrified Clay Pipe-Circular-8 inch	0.3	2,014,086.69	10.39
C04041-C04039	8	319	0.166	7.6	28,811.93	3.72	793.54	740.51	Vitrified Clay Pipe-Circular-8 inch	0.3	3,763,165.16	19.41

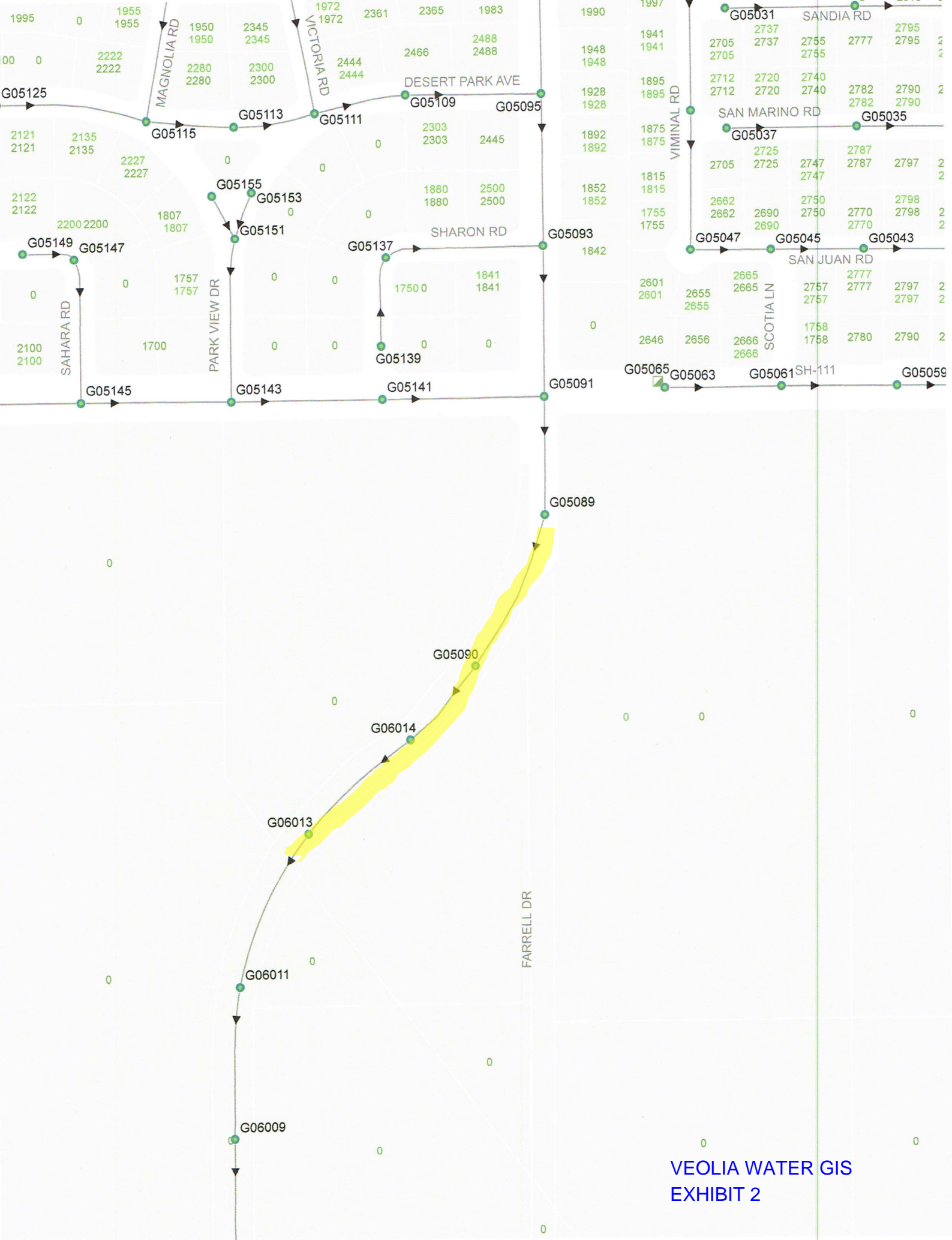
APPENDIX E

VEOLIA WATER - GIS EXHIBITS

- VEOLIA WATER GIS EXHIBIT 1
- VEOLIA WATER GIS EXHIBIT 2



SURCHARGE



VEOLIA WATER GIS
EXHIBIT 2