East Area One Sanitary Sewer

Technical Report

Santa Paula, CA

Prepared for:

LIMONEIRA COMPANY

AND

PARKSTONE COMPANIES

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Introduction

The proposed East Area One project is a mixture of new residential, commercial, retail, open space and public facilities. Situated in Ventura County, the 501-acre East Area One project is located directly north of Highway 126 at the eastern edge of the City of Santa Paula. The property is bounded by the foothills of the Topatopa Mountains to the north, Main Street and Southern Pacific Railroad to the south, Santa Paula Creek to the east, and Haun Creek to the west. Figure 1 shows the regional location of the project site.

FIGURE 1 - REGIONAL LOCATION MAP

Access to the site is provided by Highway 126 at the Hallock Drive intersection. Figure 2 shows the project location.

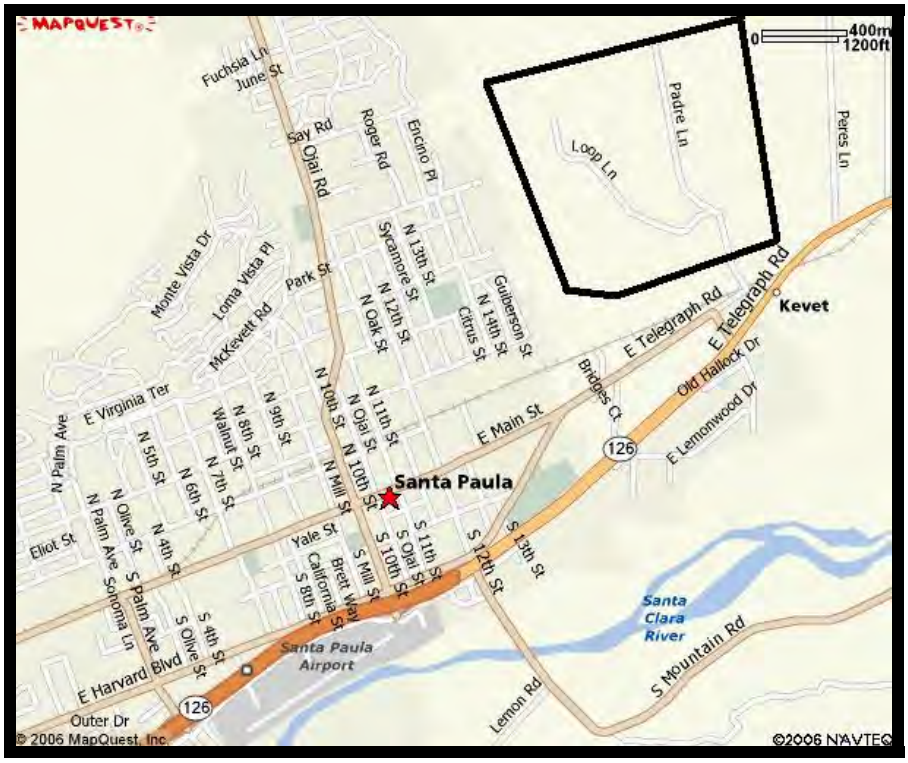

FIGURE 2 – PROJECT LOCATION MAP

Existing Conditions

As the East Area One project is fairly remote from the core of the City of Santa Paula and its associated sewer infrastructure. As the existing land use is mainly agricultural in nature, the existing sewer systems in the area are sparse. The closest sewer system is an 8" line located near Hallock Drive and Telegraph road. The City of Santa Paula commissioned a sewer study for reviewing the City's entire sewer system. This study, "Wastewater System Master Plan" prepared by Boyle Engineering, was subsequently completed in September 2005. The "Wastewater System Master Plan" identifies East Area One as a future expansion area. Once annexed, East Area One will be within the City's sphere of influence and this report will demonstrate anticipated flows from East Area One as well as other notable projects in and around the East Area One project. This report also identifies the main collector in Harvard Blvd. to be in poor condition and currently over capacity. Prior to East Area One's improvements, this capital project of upsizing the main is considered necessary. Recycling water facilities are proposed to be built concurrently with these improvements to upgrade the city's its infrastructure.

Objectives

The objective of this study is to provide a blueprint for the design of the sanitary system within the East Area One project as well as developing conceptual design parameters for a proposed sewer lift station required to service the East Area One and East Area Two[1] projects. The East Area One project will be designed to meet or exceed the City of Santa Paula's sewer design criterion as established in the "Wastewater System Master Plan". Further, points of connection of the East Area One project anticipated in the City's "Wastewater System Master Plan" have been held and therefore, this technical study is in agreement with the City's "Wastewater System Master Plan."

NOTES:
[1] East Area Two currently has not submitted a development application.

Procedure

The East Area One sewer system was developed utilizing the following 6 basic design steps:

1. Define Design Parameters

   Design parameters for the sewer system were developed from the City's Wastewater System Master Plan" as set forth in Chapter 6 – Sewer Flow Model. The criterion used in this analysis follows those set forth in Table 6-1. The design parameters used for this report can be seen in Figure 3.

2. Define Land Use Types

   Land uses were defined utilizing the Specific Plan for East Area One, specifically Chapter 5 – Development Code. The land use types used in this report can be seen in Figure 4.

3. Define Land Use Locations

   Working in conjunction with the land planning team the land use types within the Specific Plan were placed geographically throughout the site in accordance with the Specific Plan Regulating Plan (see Figure 5). A reasonable mix of multi-family homes and single family homes, along with the appropriate commercial, retail, civic, school, and other Specific Plan uses were spread throughout the site on a block by block basis. The mix of residential units was weighted more towards a multi-family unit as these generate more sewage flow. This yields a bit more conservative sewer model, appropriate for an early study of the system. Later on in the development cycle, typically at a tentative map stage, a more definitive sewer model will be developed and processed. The modeling included herein will provide for an upper boundary (most conservative) analysis should the ultimate development of EA 1 proceed.

4. Assign Sewer Generation Factors

   Based on the aforementioned design parameters, specific sewer generation rates were applied to each land use based on type of land use. The sewer generation factors for each land use can be seen in Figure 6.

5. Model Sewer Flows / Link Flows

   After each individual land use received a sewer generation, the resultant sewer flows were logically linked together in a model. The results of this model can be seen in Figure 7.

6. Prepare Summary Graphic

   After flows were logically linked together in a model a resultant sewer system graphic was prepared. The results of this model can be seen in Figure 8.

Proposed Sewer System

The East Area One Specific Plan anticipates a macro phasing of the project as seen in Figure 4-1 of the Specific Plan. Assuming the grading will follow the general slope of the existing land, we assumed 8' difference from finished surface unless design designated otherwise. Keeping this in mind, and taking into the consideration the assumptions of the proposed grading of the project, the following layout of the system is proposed:

Line A (reaches 1-15): Line A serves as the backbone for conveying the flows from the entire development to the lift station. It runs from the lift station northerly along Hallock St.

Line B (reaches 16-34): Line B mainly serves the east side of the development (SE and NE Neighborhoods). It connects into the Line A.

Line C (reaches 35-47): Line C mainly serves the east side of the development (SE and NE Neighborhoods east of Line B). It connects into the Line B.

Line D (reaches 41-44): Line D mainly serves the upper east side of the development (NE Neighborhoods east of Line B). It connects into the Line B.

Line E (reaches 48-60): Line E mainly serves the upper east side of the development (NE Neighborhoods west of Line B). It connects into the Line A.

Line F (reaches 61-76): Line F mainly serves the upper west side of the development (NW Neighborhoods). It connects into the Line A.

Line G (reaches 80-88): Line G mainly serves the upper west side of the development (NW Neighborhoods west of Line F). It connects into the Line A.

Line H (reaches 77-79): Line H mainly serves the upper west side of the development (NW Neighborhoods between Line G and Line H). It connects into the Line F.

Line I (reaches 94-99): Line I mainly serves the upper west side of the development (NW Neighborhoods east of Line F). It connects into the Line A.

Line J (reaches 101-112): Line J mainly serves the lower west side of the development (SW Neighborhoods west of Line A). It connects into the Line A.

The 8" force main will be a buyer's requirement for the development of East Area One.

The proposed sewer system for East Area One can be seen in Figure 8.

Proposed Sewer Lift Station

The proposed Sewer Master Plan is depicted in Exhibit 8. The City's "Wastewater System Master Plan" identifies several off-site mainline capacity deficiencies that will need addressing prior to implementation of the East Area One project. The main collector in Harvard Boulevard has been identified as in poor condition, segments are over capacity currently, and the addition of the East Area One project will create severe capacity problems from Teague Park easterly to 12th Street. This reach has been identified as a major capital project for the City with a topmost priority. Additionally, this reach, along with a proposed extension of this reach northeasterly in Harvard Boulevard and easterly in Telegraph Road has been identified as the source for future sewering of East Area One. If our project is constructed after the City's capital improvements, the new point of connection (POC) for sewer service of East Area One would be the intersection of Hallock Drive and Telegraph Road. If our project is approved and

constructed prior to capital improvements, our POC will be at 12th Street and Harvard Blvd. In order for the sewer system to connect to the City's Harvard/Telegraph trunk line, the system will need to cross the existing Santa Paula Creek with a force main. The force main would extend from the western side of the Santa Paula Creek/Telegraph Road crossing to the POC at Hallock Drive and Telegraph Road. A new sewer lift station will be created near this intersection to service the East Area One project. In addition to the East Area One project, the City's "Wastewater System Master Plan" contemplates the East Area Two project consisting of 1.6M sf of new commercial/industrial uses. The East Area Two project is contiguous to and southerly of the East Area One project. As such, the East Area Two project suffers from the same lack of existing infrastructure as the East Area One project. Although the sewer lift station required for the East Area One project has been preliminarily sized to accommodate the flows generated from the proposed East Area Two as a worst case scenario, East Area Two will utilize the existing Lemonwood Lift station. Lift stations will be fully redundant, automated and connected to the Scada System at the Wastewater Treatment Plant. Results of the preliminary lift station sizing can be seen in Figure 9.

Conclusions

Based on the modeling prepared by Huitt-Zollars the East Area One sewer system depicted in Figure 8 is in accordance with City of Santa Paula design guidelines. Further, the East Area One sewer system is in agreement with the design flows anticipated within the City's Wastewater Master Plan. The results of the City's anticipated flows and the results of this model can be seen in the following table:

FLOW COMPARISON

City WWSMP vs. EA1 SS Technical Report

	[*CFS*]	[*MGD*]
Anticipated flows from City WWSMP	0.828	**0.5352** (1)
Anticipated flows from EA1 SS modeling	0.673(2)	**0.4350**

(1) From City of Santa Paula Wastewater System Master Plan, Table 3-2, Sheet 3 of 3

(2) From Figure 7, Line A, Reach 1

Further, adding in the flows from the projected EA 2 project area, the proposed lift station would be servicing the following flow amounts:

EA1 / EA2 SEWER LIFT STATION

	Avg. [*MGD*]	Peak (1) [*MGD*]
Anticipated flows from EA 1	**0.4350**(2)	**1.0876**
Anticipated flows from EA 2	**0.0659** (3)	**0.1648**
TOTAL LIFT STATION FLOWS	**0.5009**	**1.2524**

(1) Peaking factor of 2.5 used per Table 6-1 of City WWSMP

(2) From Figure 7, Line A, Reach 1, converted to MGD

(3) From City WWSMP, Table 3-2, Sheet 3 of 3

References

- Boyle Engineering Corporation, September 2005, "City of Santa Paula Wastewater System Master Plan"
- HDR Town Planning, June 2006, "East Area One Specific Plan, Santa Paula, California"

List of Preparers

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FIGURE 3
EAST AREA 1
SUMMARY OF WASTEWATER DESIGN CRITERIA

Peak Flow Equation		
	For average flow less than 2 cfs	Qpeak = 2.5 * Q_{ADWF}
	For average flow between 2 cfs and 8 cfs	Qpeak = 2.25 * Q_{ADWF}
	For average flow over 8 cfs	Qpeak = 2.0 * Q_{ADWF}
Maximum Depth to Diameter Ratio (d/D) for Peaked Dry Weather Flow (PDWF)		
	12-in. sewer and smaller	d/D=50%
	12-in sewer and larger	d/D=67%
Minimum Gravity Sewer Design Slope		
	6-inch	0.0080 ft/ft
	8-inch	0.0044 ft/ft
	10-inch	0.0036 ft/ft
	12-inch	0.0024 ft/ft
	15-inch	0.0016 ft/ft
	18-inch	0.0014 ft/ft
	21-inch and larger	0.0010 ft/ft
Velocity		
	Minimum	2 fps at d/D=50%
	Maximum	8 fps
Manning's "n" Values		
	VCP	0.013
	PVC/HDPE	0.011
Manning's Equation		
	$Q=1.486/n\ AR^{2/3}\ S^{1/2}$	
Manhole Placement		
		Maximum 350'
		Changes of Slope
		Changes in Horizontal Alignment
		Points of reverse curve
		Junctions in mains
		Upstream ends of all mains longer than 200'

FIGURE 4

EAST AREA 1

SEWAGE FLOW PROJECTIONS PER LAND USE TYPE

Planning Area A-Santa Paula Creek Neighborhood		
Residential-NE, NG1-3		
Attached product	3.5 persons, DU[1]	85 gpd/person[4]
Detached product	3.75 persons, DU[1]	85 gpd/person[4]
Open Space-Agricultural Preserve		0[5]
Open Space-Park		0[5]
Open Space-Roads, Medians		0[5]
Planning Area B-Foothill Neighborhood		
Residential-NE, NG1-2		
Attached product	3.5 persons, DU[1]	85 gpd/person[4]
Detached product	3.75 persons, DU[1]	85 gpd/person[4]
Open Space-Agricultural Preserve		0[5]
Open Space-Parks, Greenways		0[5]
Open Space-Roads, Medians		0[5]
Planning Area C-Santa Paula Creek Civic District		
Civic-School		20 gpd/student, 1500 students[3]
Civic-Shared Facilities		41.1 gpd/KSF[2]
Civic-Community College		41.1 gpd/KSF[2]
Open Space-Shared Athletic Fields		0[5]
Open Space-Parks, Greenways		0[5]
Open Space-Roads, Medians		0[5]
Planning Area D-Haun Creek Neighborhood		
Residential-NC, NG2-3		
Attached product	3.5 persons, DU[1]	85 gpd/person[4]
Detached product	3.75 persons, DU[1]	85 gpd/person[4]
Commercial-Assisted Living		41.1 gpd/KSF[2]
Commercial-Office/Retail		41.1 gpd/KSF[2]
Civic-School		20 gpd/student, 1500 students[3]
Open Space-Parks, Greenways		0[5]
Open Space-Roads, Medians		0[5]
Planning Area E-East Santa Paula Railroad District		
Work/Live		
Attached product	3.5 persons, DU[1]	85 gpd/person[4]
Detached product	3.75 persons, DU[1]	85 gpd/person[4]
Work-Light Industrial/Employ.		41.1 gpd/KSF[2]
Commerical-Office/Retail		41.1 gpd/KSF[2]
Open Space-Roads, Medians		0[5]

[1] Discrepancies found btwn Potable Water System MP (Table 3-10, pg. 29, dated Oct.2005 by Boyle Eng.) & Wastewater MP (Table 6-1, pg. 34, dated Sept.2005 by Boyle Eng.), so the conservative values were used from Table 3-10.

[2] Commercial rate of 41.1gpd/KSF derived from Table 3-2 of City of Santa Paula Wastewater MP for Commercial line items in East Area 1.

[3] School generation rate of 20gpd/student derived from River Park's "Water and Wastewater Master Plan Report" dated August 2003, by Huitt-Zollars, Marc J. Haslinger, PE.

[4] Per capita generation from Wastewater Master Plan, Table 6-1, pg. 35.

[5] Assumed Shared Athletic Fields, Parks and Roads are negligible sewer flow.

Figure 5
East Area 1 - Proposed Regulating Plan
Santa Paula, California
04-13-07

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FIGURE 6
EAST AREA 1
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	DETACHED PRODUCT	DU	ATTACHED PRODUCT	DU	ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
PLANNING AREA A - SANTA PAULA CREEK NEIGHBORHOOD									
RESIDENTIAL: NE, NG1-3					33.1				
A1	3.5 Persons/DU 85 gpd/person 300 gpd/DU	9	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			1.9	4.7	0.004
A2	3.5 Persons/DU 85 gpd/person 300 gpd/DU	23	3.75 Persons/DU 85 gpd/person 320 gpd/DU	5			5.9	14.8	0.013
A3	3.5 Persons/DU 85 gpd/person 300 gpd/DU	11	3.75 Persons/DU 85 gpd/person 320 gpd/DU	9			4.3	10.7	0.010
A4	3.5 Persons/DU 85 gpd/person 300 gpd/DU	12	3.75 Persons/DU 85 gpd/person 320 gpd/DU	5			3.6	9.0	0.008
A5	3.5 Persons/DU 85 gpd/person 300 gpd/DU	9	3.75 Persons/DU 85 gpd/person 320 gpd/DU	16			5.4	13.6	0.012
A6	3.5 Persons/DU 85 gpd/person 300 gpd/DU	15	3.75 Persons/DU 85 gpd/person 320 gpd/DU	17			6.9	17.3	0.015
A7	3.5 Persons/DU 85 gpd/person 300 gpd/DU	12	3.75 Persons/DU 85 gpd/person 320 gpd/DU	16			6.1	15.1	0.014
A8	3.5 Persons/DU 85 gpd/person 300 gpd/DU	21	3.75 Persons/DU 85 gpd/person 320 gpd/DU	6			5.7	14.3	0.013
A9	3.5 Persons/DU 85 gpd/person 300 gpd/DU	17	3.75 Persons/DU 85 gpd/person 320 gpd/DU	4			4.4	11.1	0.010
A10	3.5 Persons/DU 85 gpd/person 300 gpd/DU	8	3.75 Persons/DU 85 gpd/person 320 gpd/DU	10			3.9	9.7	0.009
A11	3.5 Persons/DU 85 gpd/person 300 gpd/DU	17	3.75 Persons/DU 85 gpd/person 320 gpd/DU	14			6.7	16.6	0.015
A12	3.5 Persons/DU 85 gpd/person 300 gpd/DU	12	3.75 Persons/DU 85 gpd/person 320 gpd/DU	18			6.5	16.3	0.014
A13	3.5 Persons/DU 85 gpd/person 300 gpd/DU	26	3.75 Persons/DU 85 gpd/person 320 gpd/DU	14			8.5	21.3	0.019
SUBTOTAL		**192**		**134**	**33.1**		**69.8**	**174.4**	**0.16**

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
OPEN SPACE: AGRICULTURAL PRESERVE	0 [1]		14.3				
OPEN SPACE: PARK	0 [1]		5.1				
OPEN SPACE: ROADS, MEDIANS	0 [1]		21.4				
SUBTOTAL		**0**	**40.8**	**0**			
TOTAL		**326**	**73.9**				

FIGURE 6
EAST AREA 1
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	DETACHED PRODUCT	DU	ATTACHED PRODUCT	DU	ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
PLANNING AREA B - FOOTHILL NEIGHBORHOOD									
RESIDENTIAL: NE, NG1-2					66.4				
B1	3.5 Persons/DU 85 gpd/person 300 gpd/DU	20	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			4.2	10.4	0.009
B2	3.5 Persons/DU 85 gpd/person 300 gpd/DU	19	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			4.0	9.9	0.009
B3	3.5 Persons/DU 85 gpd/person 300 gpd/DU	11	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			2.3	5.7	0.005
B4	3.5 Persons/DU 85 gpd/person 300 gpd/DU	21	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			4.4	10.9	0.010
B5	3.5 Persons/DU 85 gpd/person 300 gpd/DU	29	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			6.0	15.1	0.013
B6	3.5 Persons/DU 85 gpd/person 300 gpd/DU	29	3.75 Persons/DU 85 gpd/person 320 gpd/DU	0			6.0	15.1	0.013
B7	3.5 Persons/DU 85 gpd/person 300 gpd/DU	25	3.75 Persons/DU 85 gpd/person 320 gpd/DU	4			6.1	15.2	0.014
B8	3.5 Persons/DU 85 gpd/person 300 gpd/DU	13	3.75 Persons/DU 85 gpd/person 320 gpd/DU	4			3.6	9.0	0.008
B9	3.5 Persons/DU 85 gpd/person 300 gpd/DU	17	3.75 Persons/DU 85 gpd/person 320 gpd/DU	1			3.8	9.4	0.008
B10	3.5 Persons/DU 85 gpd/person 300 gpd/DU	12	3.75 Persons/DU 85 gpd/person 320 gpd/DU	1			2.7	6.8	0.006
B11	3.5 Persons/DU 85 gpd/person 300 gpd/DU	15	3.75 Persons/DU 85 gpd/person 320 gpd/DU	3			3.8	9.5	0.008
B12	3.5 Persons/DU 85 gpd/person 300 gpd/DU	14	3.75 Persons/DU 85 gpd/person 320 gpd/DU	3			3.6	9.0	0.008
B13	3.5 Persons/DU 85 gpd/person 300 gpd/DU	19	3.75 Persons/DU 85 gpd/person 320 gpd/DU	2			4.4	11.0	0.010
B14	3.5 Persons/DU 85 gpd/person 300 gpd/DU	19	3.75 Persons/DU 85 gpd/person 320 gpd/DU	5			5.1	12.7	0.011
B15	3.5 Persons/DU 85 gpd/person 300 gpd/DU	20	3.75 Persons/DU 85 gpd/person 320 gpd/DU	6			5.5	13.8	0.012
B16	3.5 Persons/DU 85 gpd/person 300 gpd/DU	16	3.75 Persons/DU 85 gpd/person 320 gpd/DU	5			4.4	11.1	0.010
B17	3.5 Persons/DU 85 gpd/person 300 gpd/DU	20	3.75 Persons/DU 85 gpd/person 320 gpd/DU	6			5.5	13.8	0.012
SUBTOTAL		**319**		**40**	**66.4**		**75.3**	**188.4**	**0.168**

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
OPEN SPACE: AGRICULTURAL PRESERVE	0 [1]		120.1				
OPEN SPACE: PARKS, GREENWAYS	0 [1]		11.4				
OPEN SPACE: ROADS, MEDIANS	0 [1]		26.0				
SUBTOTAL		**0**	**157.5**	**0**			
TOTAL		**359**	**223.9**				

FIGURE 6
EAST AREA 1
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
PLANNING AREA C - SANTA PAULA CREEK CIVIC DISTRICT							
OPEN SPACE: SHARED FIELDS & PARKS							
C1							
Park	0 [1]		8.0		0.0	0.0	0.000
Athletic Fields	0 [1]		15.3		0.6	1.6	0.001
C2							
Park	0 [1]		4.0		0.0	0.0	0.000
Athletic Fields	0 [1]		7.9		0.3	0.8	0.001
CIVIC: SCHOOL							
C3							
High School	20gpd/student, 1500 students [3]		8.3	110.4	20.8	52.1	0.046
CIVIC: SHARED FACILITIES							
C4							
Civic Facilities	41.1gpd/KSF [2]		5.6	65.0	1.9	4.6	0.004
CIVIC: COMMUNITY COLLEGE							
C5							
Community College	41.1gpd/KSF [2]		11.6	165.0	4.7	11.8	0.011
OPEN SPACE: ROADS, MEDIANS, ETC.	0 [1]		13.1				
SUBTOTAL	**0**	**0**	**73.8**	**340.4**	**28.4**	**70.9**	**0.063**
TOTAL		**0**	**73.8**	**340.4**			

FIGURE 6
EAST AREA 1
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	DETACHED PRODUCT	DU	ATTACHED PRODUCT	DU	ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
PLANNING AREA D - HAUN CREEK NEIGHBORHOOD									
RESIDENTIAL: NC1, NG2-3					28.0				
D1	3.5 Persons/DU 85 gpd/person 300 gpd/DU	3	3.75 Persons/DU 85 gpd/person 320 gpd/DU	83			19.1	47.7	0.043
D2	3.5 Persons/DU 85 gpd/person 300 gpd/DU	0	3.75 Persons/DU 85 gpd/person 320 gpd/DU	95			21.1	52.8	0.047
D4	3.5 Persons/DU 85 gpd/person 301 gpd/DU	3	3.75 Persons/DU 85 gpd/person 320 gpd/DU	164			37.1	92.7	0.083
D5	3.5 Persons/DU 85 gpd/person 302 gpd/DU	3	3.75 Persons/DU 85 gpd/person 320 gpd/DU	125			28.4	71.0	0.063
D6	3.5 Persons/DU 85 gpd/person 303 gpd/DU	3	3.75 Persons/DU 85 gpd/person 320 gpd/DU	60			14.0	34.9	0.031
D7	3.5 Persons/DU 85 gpd/person 304 gpd/DU	6	3.75 Persons/DU 85 gpd/person 320 gpd/DU	37			9.5	23.7	0.021
D8	3.5 Persons/DU 85 gpd/person 305 gpd/DU	6	3.75 Persons/DU 85 gpd/person 320 gpd/DU	37			9.5	23.7	0.021
D9	3.5 Persons/DU 85 gpd/person 307 gpd/DU	14	3.75 Persons/DU 85 gpd/person 320 gpd/DU	18			7.0	17.5	0.016
D10	3.5 Persons/DU 85 gpd/person 309 gpd/DU	14	3.75 Persons/DU 85 gpd/person 320 gpd/DU	18			7.0	17.5	0.016
D11	3.5 Persons/DU 85 gpd/person 309 gpd/DU	20	3.75 Persons/DU 85 gpd/person 320 gpd/DU	7			5.8	14.6	0.013
D12	3.5 Persons/DU 85 gpd/person 309 gpd/DU	21	3.75 Persons/DU 85 gpd/person 320 gpd/DU	8			6.3	15.7	0.014
SUBTOTAL		**93**		**652**	**28.0**		**164.7**	**411.8**	**0.367**

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
CIVIC: SCHOOL							
D3							
School	20gpd/student, 600 students [3]		10.8	35.4	8.3	20.8	0.019
COMMERCIAL: OFFICE/RETAIL & ASSIST. LIV.							
D4							
Commercial-Office/Retail	41.1gpd/KSF [2]		5.0	75.0	2.1	5.4	0.005
D5							
Commercial-Assisted Living	41.1gpd/KSF [2]		3.0	75.0	2.1	5.4	0.005
D6							
Commercial-Office/Retail	41.1gpd/KSF [2]		5.0	75.0	2.1	5.4	0.005
OPEN SPACE: PARK, GREENWAYS	0 [1]		37.3				
OPEN SPACE: ROADS, MEDIANS	0 [1]		21.0				
SUBTOTAL		**0**	**82.1**	**260.4**	**14.8**	**36.9**	**0.033**
TOTAL		**745**	**110.1**				

FIGURE 6
EAST AREA 1
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
PLANNING AREA E - EAST SANTA PAULA RAILROAD DISTRICT							
WORK-LIGHT INDUSTRIAL/EMPLOY.							
E1							
WORK-LIGHT INDUSTRIAL/EMPLOY.	41.1gpd/KSF [2]		7.3	150.0	4.3	10.7	0.010
COMMERCIAL: OFFICE/RETAIL							
E1							
Commercial: Office/Retail	41.1gpd/KSF [2]		2.4	60.0	1.7	4.3	0.00
OPEN SPACE-ROADS, MEDIANS	0 [1]		2.4				
SUBTOTAL			**12.1**	**210**	**6.0**	**15.0**	**0.013**

PROPOSED LAND USE	DETACHED PRODUCT	DU	ATTACHED PRODUCT	DU	ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
WORK/LIVE									
E1									
Residential	3.5 Persons/DU 85 gpd/person 313 gpd/DU	0	3.75 Persons/DU 85 gpd/person 320 gpd/DU	70	7.3		15.6	38.9	0.035
SUBTOTAL		**0**		**70**	**7.3**	**0**	**15.6**	**38.9**	**0.035**
TOTAL				**70**	**19.4**				
GRAND TOTAL: EAST AREA 1				**1500**	**501.1**	**810.8**	**304.7**	**761.9**	**0.680**

FIGURE 6
EAST AREA 2 [4]
SUMMARY OF ULTIMATE WASTEWATER FLOWS

PROPOSED LAND USE	GENERATION RATE		ACRES	KSF	AVERAGE DAILY FLOW [GPM]	PEAK DAILY FLOW [GPM]	AVERAGE DAILY FLOW [CFS]
EAST AREA 2 PLANNING AREA							
East Area 2							
Commercial / Industrial	41.1gpd/KSF [2]			1600.83 [5]	45.7	114.2	0.102
SUBTOTAL	**0**		**0.0**	**0.00**	**45.7**	**114.2**	**0.102**
TOTAL							
GRAND TOTAL: EAST AREA 1				**0.0**	**45.7**	**114.2**	**0.102**

NOTES

[1] Assumed parks and roads are negligible sewer flow

[2] Commercial rate of 41.1gpd/KSF derived from Table 3-2 of City of Santa Paula Wastewater Master Plan for Commercial line items in East Area 1.

[3] School generation rate of 20gpd/student derived from River Park's "Water and Wastewater Master Plan Report" dated August 2003, by Huitt-Zollars, Marc J. Haslinger, PE.

[4] Values for East Area 2 derived from City of Santa Paula Wastewater System Master Plan. EA1 and EA2 will share a common sewer lift station.

[5] 1,600,830 SF of Commercial/Industrial uses from City of Santa Paula Wastewater Master Plan Table 3-2, Sheet 3 of 3

[6] Project description, anticipated uses, KSF, and average flows used herein were derived from Table 3-2 of "City of Santa Paula Wastewater Master Plan".
While not being a part of the East Area 1 project, the anticipated sewer lift station for East Area 1 will be sized to accept flows from East Area 2.

EAST AREA 1 SEWER ANALYSIS:

ULTIMATE CONDITION

Hydra Gravity Sewers in operation

Lift Station in operation

LINE	REACH NO.	FROM	TO	LENGTH (FT)	SLOPE (FT / FT)	CUMULATIVE AVG FLOW (CFS)	CUMULATIVE PEAK FLOW (CFS)	CUMULATIVE AVG FLOW (GPM)	CUMULATIVE PEAK FLOW (GPM)	ESTIMATED PIPE DIAM. (IN)	CALCULATED PIPE UTILIZATION (%)	CALCULATED DEPTH OF FLOW (FT)	CALCULATED VELOCITY (FPS)	COMMENTS
EA2	**200**	PROP. LIFT STA.	EA2	-	0.0024	0.102	0.255	45.78	114.45	8	0.50	0.33	1.81	ADD 100% OF EA 2 PROJECT
A	**1**	PROP. LIFT STA.	MH # 101	59	0.0016	0.674	1.684	302.37	755.92	15	0.485	0.61	2.89	
"	**2**	MH # 101	MH # 102	299	0.0054	0.674	1.684	302.37	755.92	15	0.485	0.61	2.89	ADD **REACH 101** SEWER FLOW
"	**3**	MH # 102	MH # 103	141	0.0426	0.575	1.437	257.92	644.81	15	0.455	0.57	2.68	ADD 75% OF **D6** SEWER FLOW
"	**4**	MH # 103	MH # 104	387	0.0158	0.548	1.369	245.83	614.59	15	0.460	0.58	2.48	ADD 35% OF **D6** & 25% OF **D2 & REACH 16** SEWER FLOWS
"	**5**	MH # 104	MH # 105	339	0.0631	0.283	0.706	126.83	317.08	8	0.355	0.24	6.49	ADD 15% OF **D2** & 25% OF **D5** SEWER FLOWS
"	**6**	MH # 105	MH # 106	166	0.0060	0.258	0.646	116.02	290.05	8	0.440	0.29	4.37	ADD 25% OF **D5** SEWER FLOW
"	**7**	MH # 106	MH # 107	200	0.0080	0.241	0.604	108.38	270.94	8	0.430	0.29	4.21	
"	**8**	MH # 107	MH # 108	51	0.0078	0.241	0.604	108.38	270.94	8	0.430	0.29	4.21	
"	**9**	MH # 108	MH # 109	22	0.0045	0.241	0.604	108.38	270.94	8	0.430	0.29	4.21	ADD 5% OF **D1** SEWER FLOW
"	**10**	MH # 109	MH # 110	312	0.0109	0.239	0.598	107.42	268.56	8	0.380	0.25	4.92	ADD 10% OF **D1** SEWER FLOW
"	**11**	MH # 110	MH # 111	304	0.0253	0.235	0.588	105.51	263.78	8	0.340	0.23	5.62	ADD 10% OF **D1** & 25% OF **D3** SEWER FLOWS
"	**12**	MH # 111	MH # 112	304	0.0049	0.226	0.565	101.52	253.80	8	0.335	0.22	5.63	ADD 50% OF **B14** SEWER FLOW
"	**13**	MH # 112	MH # 113	7	0.0143	0.221	0.551	98.98	247.46	8	0.330	0.22	5.49	ADD **REACH 61** SEWER FLOW
"	**14**	MH # 113	MH # 114	117	0.0923	0.076	0.189	34.00	84.99	8	0.160	0.11	5.25	ADD 8% OF **A13** SEWER FLOW
"	**15**	MH # 114	MH # 115	114	0.0254	0.061	0.151	27.17	67.92	8	0.160	0.11	4.20	ADD 7% OF **A13,** 10% OF **B14 & REACH 94 & 48** SEWER FLOWS
B	**16**	MH # 104	MH # 201	226	0.0027	0.241	0.602	108.08	270.19	12	0.405	0.41	2.05	ADD 25% OF **D5** SEWER FLOW
"	**17**	MH # 201	MH # 202	226	0.0027	0.224	0.559	100.43	251.08	12	0.405	0.41	1.91	ADD 25% OF **D5** & 50% OF **D8** SEWER FLOWS5
"	**18**	MH # 202	MH # 203	289	0.0024	0.196	0.490	88.04	220.10	12	0.395	0.40	1.73	ADD 50% OF **D10&D8** SEWER FLOW
"	**19**	MH # 203	MH # 204	280	0.0179	0.178	0.444	79.78	199.46	10	0.300	0.25	3.23	ADD 25% OF **D10** SEWER FLOW
"	**20**	MH # 204	MH # 205	223	0.0072	0.174	0.435	78.03	195.08	10	0.290	0.24	3.31	ADD 25% OF **D10** SEWER FLOW
"	**21**	MH # 205	MH # 206	57	0.0053	0.170	0.425	76.28	190.69	10	0.425	0.35	1.95	ADD **REACH 35** SEWER FLOW
"	**22**	MH # 206	MH # 207	58	0.0052	0.135	0.338	60.64	151.60	8	0.215	0.14	6.39	ADD 50% OF **D7** SEWER FLOW
"	**23**	MH # 207	MH # 208	253	0.0047	0.125	0.311	55.89	139.73	8	0.197	0.13	6.74	ADD 25% OF **D7** & 25% OF **D9** SEWER FLOWS
"	**24**	MH # 208	MH # 209	253	0.0735	0.115	0.288	51.77	129.42	8	0.185	0.12	6.75	ADD 50% OF **D3**, 25% OF **D7,** & 25% OF **D9** SEWER FLOWS
"	**25**	MH # 209	MH # 210	301	0.0080	0.101	0.251	45.14	112.86	8	0.155	0.10	7.66	ADD 25% OF **D3** SEWER FLOW
"	**26**	MH # 210	MH # 211	301	0.0047	0.096	0.240	43.06	107.65	8	0.148	0.10	8.08	ADD 33% OF **B15** SEWER FLOW
"	**27**	MH # 211	MH # 212	291	0.0832	0.092	0.230	41.24	103.11	8	0.120	0.08	9.68	ADD 35% OF **B10, B11&B12,** 67% OF **B15&B16,** 33% OF **B13,** 25% OF **B14,** 50% OF **B17** SEWER FLOWS
"	**28**	MH # 212	MH # 213	304	0.0691	0.057	0.142	25.56	63.91	8	0.088	0.06	10.90	ADD 10% OF **B5**, 50% OF **B7**, 65% OF **B11&B12**, 33% OF **B13**, 25% OF **B8,** 33% OF **B9** SEWER FLOWS
"	**29**	MH # 213	MH # 214	393	0.0509	0.030	0.075	13.51	33.78	8	0.060	0.04	8.82	ADD 10% OF **B5,** 33% OF **B6,** 75% OF **B8** & 34% OF **B9** SEWER FLOWS
"	**30**	MH # 214	MH # 215	374	0.0575	0.015	0.039	6.93	17.32	8	0.040	0.03	8.27	ADD 25% OF **B3**, 10% OF **B5** & 33% OF **B6** SEWER FLOW
"	**31**	MH # 215	MH # 216	112	0.0232	0.008	0.021	3.76	9.39	8	0.040	0.03	4.48	ADD 5% OF **B5** SEWER FLOW
"	**32**	MH # 216	MH # 217	296	0.0240	0.008	0.019	3.45	8.63	8	0.042	0.03	4.12	ADD 10% OF **B5** & 15% OF **B2** SEWER FLOWS
"	**33**	MH # 217	MH # 218	248	0.0242	0.005	0.013	2.25	5.64	8	0.038	0.03	4.09	ADD 10% OF **B5** & 17% OF **B2** SEWER FLOWS
"	**34**	MH # 218	MH # 219	78	0.0244	0.002	0.005	0.98	2.44	8	0.020	0.01	3.31	ADD 5% OF **B5** & 17% OF **B2** SEWER FLOWS
C	**35**	MH # 206	MH # 301	280	0.0046	0.035	0.087	15.64	39.09	8	0.380	0.25	0.72	ADD 50% OF **D9** SEWER FLOW
"	**36**	MH # 301	MH # 302	279	0.0190	0.027	0.068	12.14	30.36	8	0.247	0.16	1.05	ADD 75% OF **D11** & 100% OF **D12** SEWER FLOWS
"	**37**	MH # 302	MH # 303	280	0.0143	0.003	0.008	1.46	3.66	8	0.245	0.16	0.13	ADD 25% OF **D11** SEWER FLOW

EAST AREA 1 SEWER ANALYSIS:

ULTIMATE CONDITION

Hydra Gravity Sewers in operation

Lift Station in operation

LINE	REACH NO.	FROM	TO	LENGTH (FT)	SLOPE (FT / FT)	CUMULATIVE AVG FLOW (CFS)	CUMULATIVE PEAK FLOW (CFS)	CUMULATIVE AVG FLOW (GPM)	CUMULATIVE PEAK FLOW (GPM)	ESTIMATED PIPE DIAM. (IN)	CALCULATED PIPE UTILIZATION (%)	CALCULATED DEPTH OF FLOW (FT)	CALCULATED VELOCITY (FPS)	COMMENTS
D	**41**	MH #211	MH # 307	939	0.0039	0.024	0.060	10.69	26.74	8	0.190	0.13	1.29	ADD 33% OF **B16** & 25% OF **B17** SEWER FLOWS
"	**42**	MH # 307	MH # 308	425	0.0158	0.017	0.044	7.85	19.62	8	0.149	0.10	1.47	ADD 25% OF **B17** SEWER FLOW
"	**43**	MH # 308	MH # 309	352	0.0705	0.014	0.036	6.47	16.18	8	0.099	0.07	2.32	ADD 33% OF **B13** SEWER FLOW
"	**44**	MH # 309	MH # 310	395	0.0532	0.011	0.028	5.02	12.55	8	0.078	0.05	2.60	ADD 75% OF **B3**, 34% OF **B6** & 33% OF **B9** SEWER FLOWS
E	**48**	MH # 115	MH # 401	81	0.0568	0.041	0.103	18.57	46.43	8	0.108	0.07	5.69	
"	**49**	MH # 401	MH # 402	187	0.0503	0.041	0.103	18.57	46.43	8	0.116	0.08	4.95	ADD 15% OF **B14** SEWER FLOW
"	**50**	MH # 402	MH # 403	259	0.0811	0.040	0.099	17.81	44.53	8	0.100	0.07	5.46	ADD 65% OF **B10,** 25% OF **B1** & 25% OF **B7** SEWER FLOWS
"	**51**	MH # 403	MH # 404	290	0.0724	0.030	0.075	13.47	33.68	8	0.087	0.06	5.74	ADD 25% OF **B4,** 75% OF **B1** & 10% OF **B7** SEWER FLOWS
"	**52**	MH # 404	MH # 405	205	0.0098	0.019	0.048	8.64	21.60	8	0.118	0.08	2.30	ADD 10% OF **B4** SEWER FLOW
"	**53**	MH # 405	MH # 406	162	0.0093	0.018	0.046	8.20	20.50	8	0.115	0.08	2.19	ADD 15% OF **B4** & 10% OF **B7** SEWER FLOWS
"	**54**	MH # 406	MH # 407	247	0.0089	0.015	0.039	6.93	17.33	8	0.107	0.07	2.12	ADD 10% OF **B4** & 5% OF **B7** SEWER FLOWS
"	**55**	MH # 407	MH # 408	81	0.0444	0.014	0.034	6.19	15.48	8	0.068	0.05	4.04	
"	**56**	MH # 408	MH # 409	223	0.0439	0.014	0.034	6.19	15.48	8	0.065	0.04	4.04	ADD 10% OF **B4** & 15% OF **B5** SEWER FLOW
"	**57**	MH # 409	MH # 410	221	0.0317	0.011	0.027	4.85	12.11	8	0.065	0.04	3.16	ADD 30% OF **B4** SEWER FLOW
"	**58**	MH # 410	MH # 411	402	0.0045	0.008	0.020	3.53	8.83	8	0.090	0.06	1.26	ADD 10% OF **B5** & 17% OF **B2** SEWER FLOWS
"	**59**	MH # 411	MH # 412	115	0.0070	0.005	0.013	2.25	5.64	8	0.063	0.04	1.47	ADD 5% OF **B5** & 17% OF **B2** SEWER FLOW
"	**60**	MH # 412	MH # 413	269	0.0063	0.003	0.007	1.28	3.20	8	0.042	0.03	1.53	ADD 10% OF **B5** & 17% OF **B2** SEWER FLOWS
F	**61**	MH # 113	MH # 501	42	0.0048	0.145	0.362	64.99	162.47	8	0.390	0.26	2.87	
"	**62**	MH # 501	MH # 502	342	0.0044	0.145	0.362	64.99	162.47	8	0.390	0.26	2.87	ADD 25% OF **D1** & **REACH 80** SEWER FLOWS
"	**63**	MH # 502	MH # 503	54	0.0167	0.047	0.118	21.15	52.87	8	0.223	0.15	2.07	ADD 5% OF **A13 &** 20% OF **A12** SEWER FLOWS
"	**64**	MH # 503	MH # 504	191	0.0152	0.043	0.108	19.42	48.55	8	0.222	0.15	1.90	ADD 10% OF **A13** & 30% OF **A12** SEWER FLOW
"	**65**	MH # 504	MH # 505	226	0.0155	0.037	0.093	16.61	41.53	8	0.153	0.10	2.82	ADD 20% OF **A13** SEWER FLOW
"	**66**	MH # 505	MH # 506	346	0.0150	0.033	0.083	14.91	37.27	8	0.158	0.11	2.53	ADD 5% OF **A13** SEWER FLOW
"	**67**	MH # 506	MH # 507	275	0.0153	0.032	0.081	14.48	36.20	8	0.158	0.11	2.46	ADD 25% OF **A9** & 15% OF **A10** SEWER FLOWS
"	**68**	MH # 507	MH # 508	321	0.0181	0.028	0.071	12.79	31.97	8	0.145	0.10	2.40	ADD 10% OF **A10,** 25% OF **A9** & 10% OF **A7** SEWER FLOWS
"	**69**	MH # 508	MH # 509	185	0.0141	0.024	0.060	10.68	26.71	8	0.140	0.09	2.00	ADD 15% OF **A8** & 20% OF **A7** SEWER FLOWS
"	**70**	MH # 509	MH # 510	285	0.0172	0.019	0.048	8.61	21.53	8	0.138	0.09	1.80	ADD 20% OF **A7&A8** SEWER FLOWS
"	**71**	MH # 510	MH # 511	65	0.0185	0.014	0.035	6.26	15.65	8	0.126	0.08	1.47	ADD 5% OF **A8** & 5% OF **A2** SEWER FLOWS
"	**72**	MH # 511	MH # 512	257	0.0191	0.013	0.032	5.68	14.19	8	0.113	0.08	1.51	ADD 15% OF **A8** & 15% OF **A2** SEWER FLOWS
"	**73**	MH # 512	MH # 513	46	0.0196	0.009	0.022	3.93	9.84	8	0.103	0.07	1.21	ADD 5% OF **A8** & 5% OF **A2** SEWER FLOWS
"	**74**	MH # 513	MH # 514	228	0.0175	0.007	0.019	3.35	8.38	8	0.075	0.05	1.74	ADD 25% OF **A2** SEWER FLOW
"	**75**	MH # 514	MH # 515	336	0.0176	0.004	0.010	1.88	4.69	8	0.072	0.05	0.97	ADD 50% OF **A1** SEWER FLOW
"	**76**	MH # 515	MH # 516	343	0.0175	0.002	0.005	0.94	2.35	8	0.058	0.04	0.80	ADD 50% OF **A1** SEWER FLOW

EAST AREA 1 SEWER ANALYSIS:

ULTIMATE CONDITION

Hydra Gravity Sewers in operation

Lift Station in operation

LINE	REACH NO.	FROM	TO	LENGTH (FT)	SLOPE (FT / FT)	CUMULATIVE AVG FLOW (CFS)	CUMULATIVE PEAK FLOW (CFS)	CUMULATIVE AVG FLOW (GPM)	CUMULATIVE PEAK FLOW (GPM)	ESTIMATED PIPE DIAM. (IN)	CALCULATED PIPE UTILIZATION (%)	CALCULATED DEPTH OF FLOW (FT)	CALCULATED VELOCITY (FPS)	COMMENTS
G	**80**	MH # 502	MH # 601	442	0.0068	0.087	0.218	39.07	97.67	8	0.175	0.12	5.53	ADD 50% OF **A12** & 50% OF **A11** SEWER FLOWS
"	**81**	MH # 601	MH # 602	280	0.0061	0.072	0.181	32.49	81.22	8	0.155	0.10	5.51	ADD **REACH 77** SEWER FLOW
"	**82**	MH # 602	MH # 603	280	0.0054	0.031	0.077	13.75	34.39	8	0.138	0.09	2.87	ADD 25% OF **A6**, 50% OF **A5** & 35% OF **A4** SEWER FLOWS
"	**83**	MH # 603	MH # 604	315	0.0057	0.018	0.045	8.04	20.11	8	0.086	0.06	3.43	ADD 20% OF **A5** SEWER FLOW
"	**84**	MH # 604	MH # 605	238	0.0239	0.016	0.039	6.96	17.39	8	0.078	0.05	3.60	ADD 20% OF **A5** SEWER FLOW
"	**85**	MH # 605	MH # 606	76	0.0237	0.013	0.033	5.87	14.68	8	0.068	0.05	3.83	ADD 10% OF **A5** SEWER FLOW
"	**86**	MH # 606	MH # 607	280	0.0196	0.012	0.030	5.33	13.32	8	0.053	0.04	4.54	ADD 30% OF **A4** SEWER FLOW
"	**87**	MH # 607	MH # 608	280	0.0179	0.009	0.024	4.24	10.61	8	0.039	0.03	7.71	ADD 30% OF **A3** SEWER FLOW
"	**88**	MH # 608	MH # 609	697	0.0176	0.007	0.016	2.95	7.39	8	0.039	0.03	0.26	ADD 50% OF **A2** SEWER FLOW
H	**77**	MH # 602	MH # 701	548	0.0184	0.042	0.104	18.73	46.83	8	0.243	0.16	1.62	ADD 50% OF **A11**, 75% OF **A6**, 35% OF **A3&A4** & 25% OF **A10** SEWER FLOWS
"	**78**	MH # 701	MH # 702	280	0.0089	0.014	0.036	6.48	16.20	8	0.210	0.14	0.68	ADD 50% OF **A10** SEWER FLOW
"	**79**	MH # 702	MH # 703	562	0.0123	0.010	0.025	4.53	11.33	8	0.124	0.08	1.06	ADD 35% OF **A3,** 50% OF **A7** SEWER FLOWS
I	**94**	MH # 115	MH # 801	531	0.0079	0.017	0.042	7.49	18.73	8	0.113	0.08	2.00	ADD 20% OF **A13** SEWER FLOW
"	**95**	MH # 801	MH # 802	246	0.0081	0.013	0.032	5.78	14.46	8	0.105	0.07	1.77	ADD 15% OF **A13** SEWER FLOW
"	**96**	MH # 802	MH # 803	236	0.0081	0.010	0.025	4.50	11.26	8	0.073	0.05	2.33	ADD 25% OF **A9** SEWER FLOW
"	**97**	MH # 803	MH # 804	309	0.0081	0.008	0.019	3.39	8.48	8	0.067	0.04	2.22	ADD 25% OF **A9** SEWER FLOW
"	**98**	MH # 804	MH # 805	457	0.0197	0.005	0.013	2.29	5.71	8	0.074	0.05	1.18	ADD 30% OF **A8** SEWER FLOW
"	**99**	MH # 805	MH # 806	103	0.0214	0.001	0.003	0.57	1.43	8	0.062	0.04	0.37	ADD 10% OF **A8** SEWER FLOW
J	**101**	MH # 102	MH # 901	243	0.0099	0.099	0.248	44.44	111.11	8	0.250	0.17	3.63	ADD 10% OF **E1** & 10% OF **D2** SEWER FLOWS
"	**102**	MH # 901	MH # 902	243	0.0103	0.090	0.224	40.17	100.43	8	0.245	0.16	3.47	ADD 15% OF **E1** & 10% OF **D2** SEWER FLOWS
"	**103**	MH # 902	MH # 903	64	0.0094	0.078	0.194	34.82	87.06	8	0.240	0.16	3.01	ADD 5% OF **E1,** 30% OF **D2** & 25% OF **D1** SEWER FLOWS
"	**104**	MH # 903	MH # 904	261	0.0077	0.050	0.126	22.64	56.59	8	0.300	0.20	1.43	ADD 10% OF **E1** & 25% OF **C5** SEWER FLOW
"	**105**	MH # 904	MH # 905	261	0.0123	0.043	0.108	19.30	48.25	8	0.295	0.20	1.28	ADD 10% OF **E1** & 100% OF **C4,** 75% OF **C5** SEWER FLOW
"	**106**	MH # 905	MH # 906	216	0.0102	0.026	0.065	11.75	29.38	8	0.077	0.05	6.09	ADD 50% OF **C2** &10% OF **E1** SEWER FLOW
"	**107**	MH # 906	MH # 907	216	0.0056	0.021	0.053	9.43	23.58	8	0.070	0.05	4.88	ADD 10% OF **E1** SEWER FLOW
"	**108**	MH # 907	MH # 908	294	0.0041	0.016	0.041	7.27	18.18	8	0.088	0.06	3.10	ADD 15% OF **E1** SEWER FLOW
"	**109**	MH # 908	MH # 909	294	0.0044	0.009	0.022	4.04	10.10	8	0.068	0.05	2.64	ADD 15% OF **E1** SEWER FLOW
"	**110**	MH # 909	MH # 910	274	0.0044	0.002	0.004	0.80	2.01	8	0.048	0.03	0.96	
"	**111**	MH # 910	MH # 911	274	0.0047	0.002	0.004	0.80	2.01	8	0.048	0.03	0.96	ADD 50% OF **C1** & 50% OF **C2** SEWER FLOWS
"	**112**	MH # 911	MH # 912	277	0.0199	0.001	0.002	0.32	0.80	8	0.028	0.02	1.08	ADD 50% OF **C1** SEWER FLOW

SEWER MANHOLE DEPTHS
ULTIMATE CONDITION

MH NO.	FS ELEV. (FT)	INVERT ELEV. (FT)	DEPTH TO INVERT (FT)	COMMENTS
101	307.3	299.3	8.0	> 8.0' MIN.
102	308.9	300.9	8.0	> 8.0' MIN.
103	314.9	306.9	8.0	> 8.0' MIN.
104	321.0	298.1	22.9	> 8.0' MIN.
105	327.5	319.5	8.0	> 8.0' MIN.
106	328.5	320.5	8.0	> 8.0' MIN.
107	330.1	322.1	8.0	> 8.0' MIN.
108	330.5	322.5	8.0	> 8.0' MIN.
109	330.6	322.6	8.0	> 8.0' MIN.
110	334.0	326.0	8.0	> 8.0' MIN.
111	341.7	333.7	8.0	> 8.0' MIN.
112	351.5	335.2	16.3	> 8.0' MIN.
113	351.6	335.3	16.3	> 8.0' MIN.
114	354.1	346.1	8.0	> 8.0' MIN.
115	357.0	349.0	8.0	> 8.0' MIN.
201	317.8	298.7	19.1	> 8.0' MIN.
202	314.5	299.3	15.2	> 8.0' MIN.
203	308.0	300.0	8.0	> 8.0' MIN.
204	313.0	305.0	8.0	> 8.0' MIN.
205	317.8	306.6	11.2	> 8.0' MIN.
206	319.0	306.9	12.1	> 8.0' MIN.
207	320.3	307.2	13.1	> 8.0' MIN.
208	326.0	308.4	17.6	> 8.0' MIN.
209	335.0	327.0	8.0	> 8.0' MIN.
210	343.5	329.4	14.1	> 8.0' MIN.
211	352.0	330.8	21.2	> 8.0' MIN.
212	363.0	355.0	8.0	> 8.0' MIN.
213	384.0	376.0	8.0	> 8.0' MIN.
214	404.0	396.0	8.0	> 8.0' MIN.
215	425.5	417.5	8.0	> 8.0' MIN.
216	428.1	420.1	8.0	> 8.0' MIN.
217	435.2	427.2	8.0	> 8.0' MIN.
218	441.2	433.2	8.0	> 8.0' MIN.
219	443.1	435.1	8.0	> 8.0' MIN.
301	317.7	309.7	8.0	> 8.0' MIN.
302	323.0	315.0	8.0	> 8.0' MIN.
303	327.0	319.0	8.0	> 8.0' MIN.

SEWER MANHOLE DEPTHS
ULTIMATE CONDITION

MH NO.	FS ELEV. (FT)	INVERT ELEV. (FT)	DEPTH TO INVERT (FT)	COMMENTS
307	342.5	330.8	11.7	> 8.0' MIN.
308	349.2	334.5	14.7	> 8.0' MIN.
309	374.0	341.2	32.8	> 8.0' MIN.
310	395.0	366.0	29.0	> 8.0' MIN.
401	361.6	353.6	8.0	> 8.0' MIN.
402	371.0	363.0	8.0	> 8.0' MIN.
403	392.0	384.0	8.0	> 8.0' MIN.
404	413.0	405.0	8.0	> 8.0' MIN.
405	415.0	407.0	8.0	> 8.0' MIN.
406	416.5	408.5	8.0	> 8.0' MIN.
407	418.7	410.7	8.0	> 8.0' MIN.
408	422.3	414.3	8.0	> 8.0' MIN.
409	432.1	424.1	8.0	> 8.0' MIN.
410	441.8	431.1	10.7	> 8.0' MIN.
411	440.9	432.9	8.0	> 8.0' MIN.
412	441.7	433.7	8.0	> 8.0' MIN.
413	443.4	435.4	8.0	> 8.0' MIN.
501	350.9	335.5	15.4	> 8.0' MIN.
502	345.0	337.0	8.0	> 8.0' MIN.
503	345.9	337.9	8.0	> 8.0' MIN.
504	348.8	340.8	8.0	> 8.0' MIN.
505	352.3	344.3	8.0	> 8.0' MIN.
506	357.5	349.5	8.0	> 8.0' MIN.
507	361.7	353.7	8.0	> 8.0' MIN.
508	367.5	359.5	8.0	> 8.0' MIN.
509	370.1	362.1	8.0	> 8.0' MIN.
510	375.0	367.0	8.0	> 8.0' MIN.
511	376.2	368.2	8.0	> 8.0' MIN.
512	381.1	373.1	8.0	> 8.0' MIN.
513	382.0	374.0	8.0	> 8.0' MIN.
514	386.0	378.0	8.0	> 8.0' MIN.
515	391.9	383.9	8.0	> 8.0' MIN.
516	397.9	389.9	8.0	> 8.0' MIN.

SEWER MANHOLE DEPTHS
ULTIMATE CONDITION

MH NO.	FS ELEV. (FT)	INVERT ELEV. (FT)	DEPTH TO INVERT (FT)	COMMENTS
601	348.0	340.0	8.0	> 8.0' MIN.
602	349.7	341.7	8.0	> 8.0' MIN.
603	351.2	343.2	8.0	> 8.0' MIN.
604	353.0	345.0	8.0	> 8.0' MIN.
605	358.7	350.7	8.0	> 8.0' MIN.
606	360.5	352.5	8.0	> 8.0' MIN.
607	366.0	358.0	8.0	> 8.0' MIN.
608	371.0	363.0	8.0	> 8.0' MIN.
609	383.3	375.3	8.0	> 8.0' MIN.
701	359.8	351.8	8.0	> 8.0' MIN.
702	362.3	354.3	8.0	> 8.0' MIN.
703	369.2	361.2	8.0	> 8.0' MIN.
801	361.2	353.2	8.0	> 8.0' MIN.
802	363.2	355.2	8.0	> 8.0' MIN.
803	365.1	357.1	8.0	> 8.0' MIN.
804	367.6	359.6	8.0	> 8.0' MIN.
805	376.6	368.6	8.0	> 8.0' MIN.
806	378.8	370.8	8.0	> 8.0' MIN.
901	311.3	303.3	8.0	> 8.0' MIN.
902	313.8	305.8	8.0	> 8.0' MIN.
903	314.4	306.4	8.0	> 8.0' MIN.
904	316.4	308.4	8.0	> 8.0' MIN.
905	319.6	311.6	8.0	> 8.0' MIN.
906	321.8	313.8	8.0	> 8.0' MIN.
907	324.0	315.0	9.0	> 8.0' MIN.
908	326.9	316.2	10.7	> 8.0' MIN.
909	330.3	317.5	12.8	> 8.0' MIN.
910	329.1	318.7	10.4	> 8.0' MIN.
911	328.0	320.0	8.0	> 8.0' MIN.
912	333.5	325.5	8.0	> 8.0' MIN.

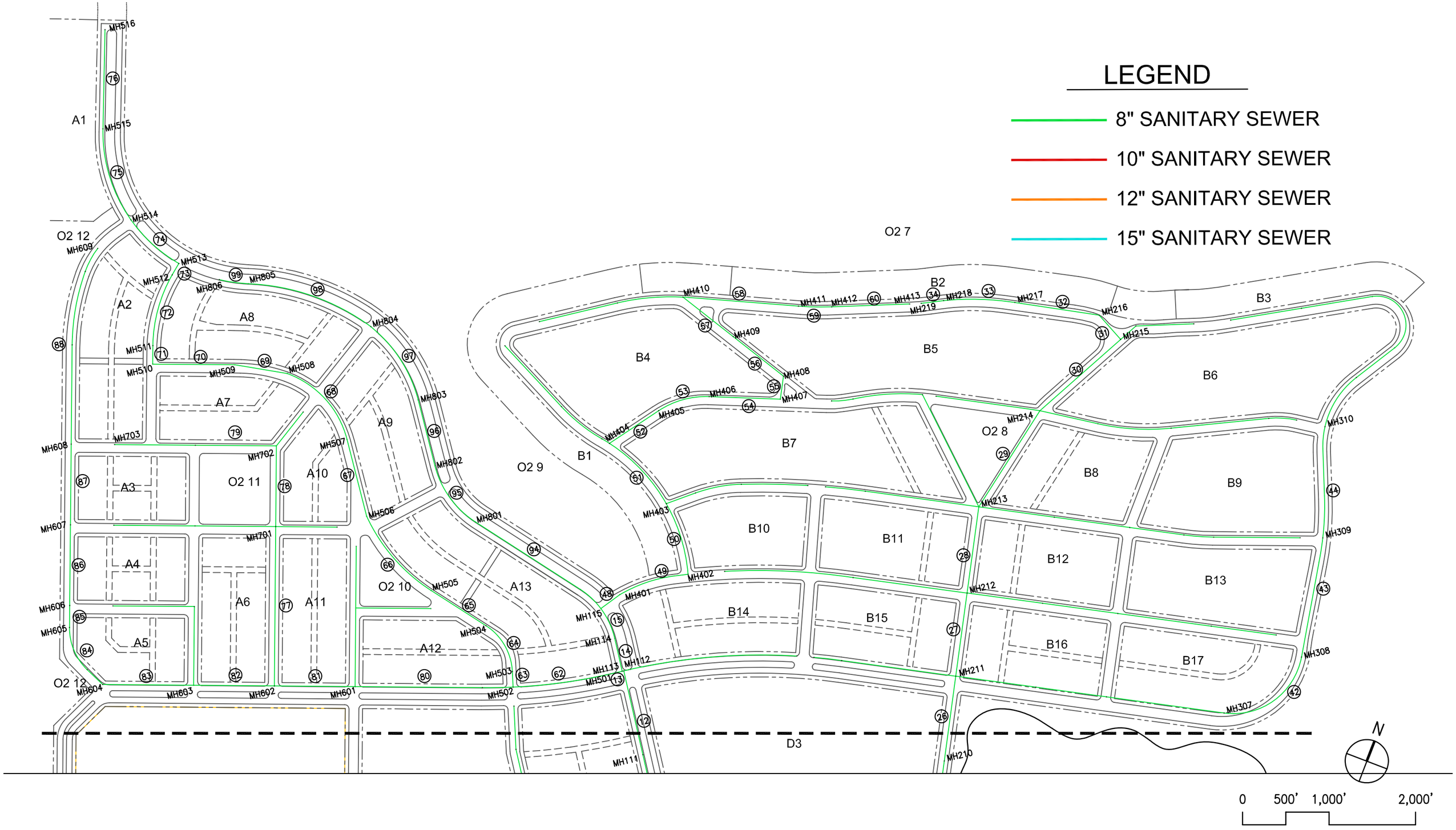

FIGURE 8

EAST AREA 1 SANITARY SEWER TECHNICAL REPORT

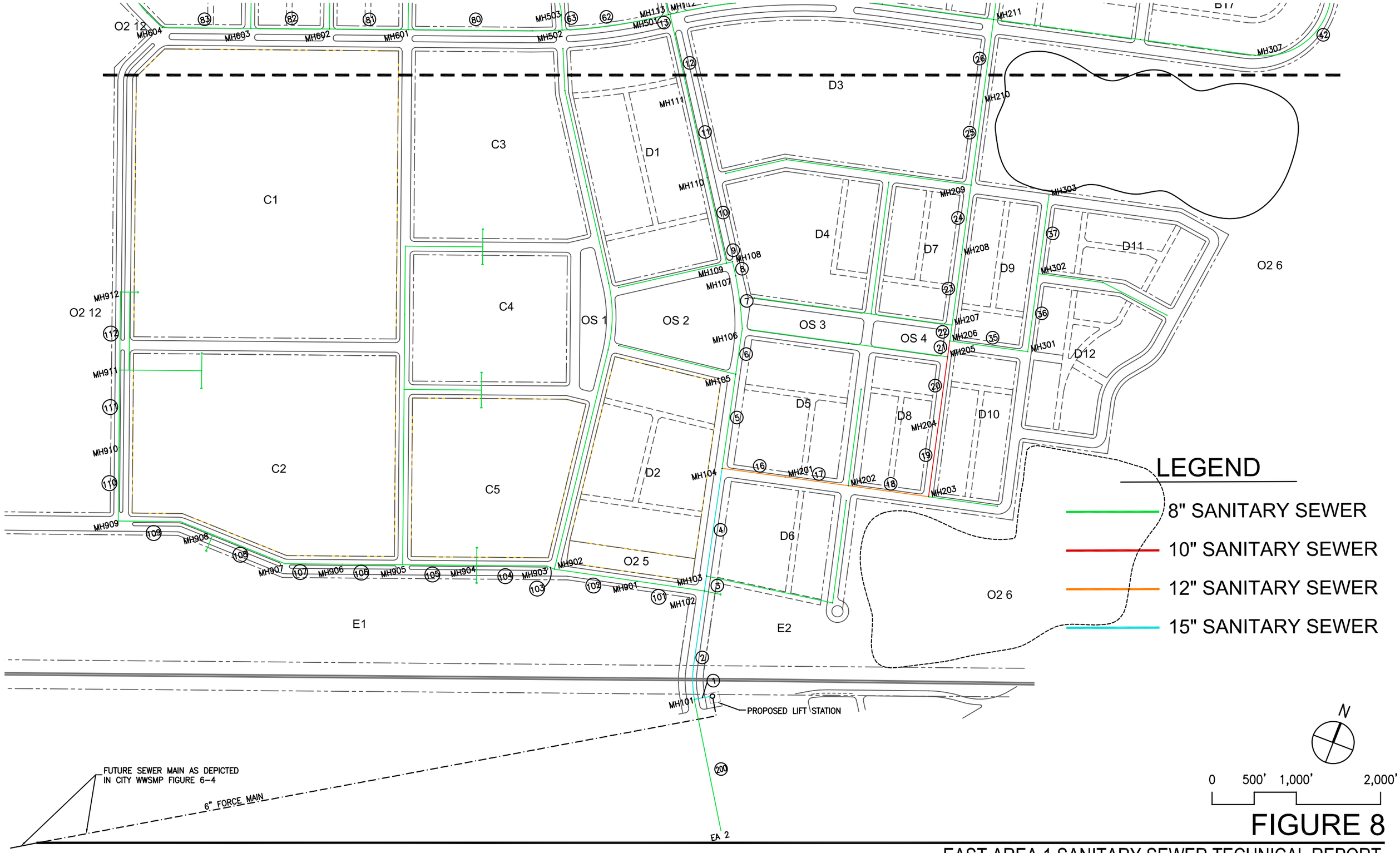

FIGURE 8

EAST AREA 1 SANITARY SEWER TECHNICAL REPORT