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SEWER STUDY FOR THE AMBIENT PROJECT IN THE CITY OF SAN DIEGO

April 13, 2023

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FOR THE AMBIENT PROJECT
IN THE CITY OF SAN DIEGO**

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**Prepared by:
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4-13-2023

Job No. 574-020

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Attention: Greg Lang, P.E., Principal

Subject: Sewer Study for the Ambient Project in the City of San Diego

Introduction

This report provides a public sewer study for the Ambient project in the City of San Diego. The project proposes 198 multi-family residential units. The 5.92 gross acre project site is located in the Palm City neighborhood of the City along the east side of Hollister Street approximately 1,000 feet north of Palm Avenue. The project site is presently undeveloped.

Topography of the buildable portion of the site is generally flat. The site will be designed to connect to the existing 8-inch gravity sewer line in Hollister Street west of the project site. Figure 1 provides a Vicinity Map for the project and a conceptual site plan is attached as Appendix A.

\\ARTIC\DWG\574020\REPORT\AP_FIGURE-1_VCMAP.DWG 3/30/2022 9:23:40 AM LAYOUT:8x11 USER:SirJay

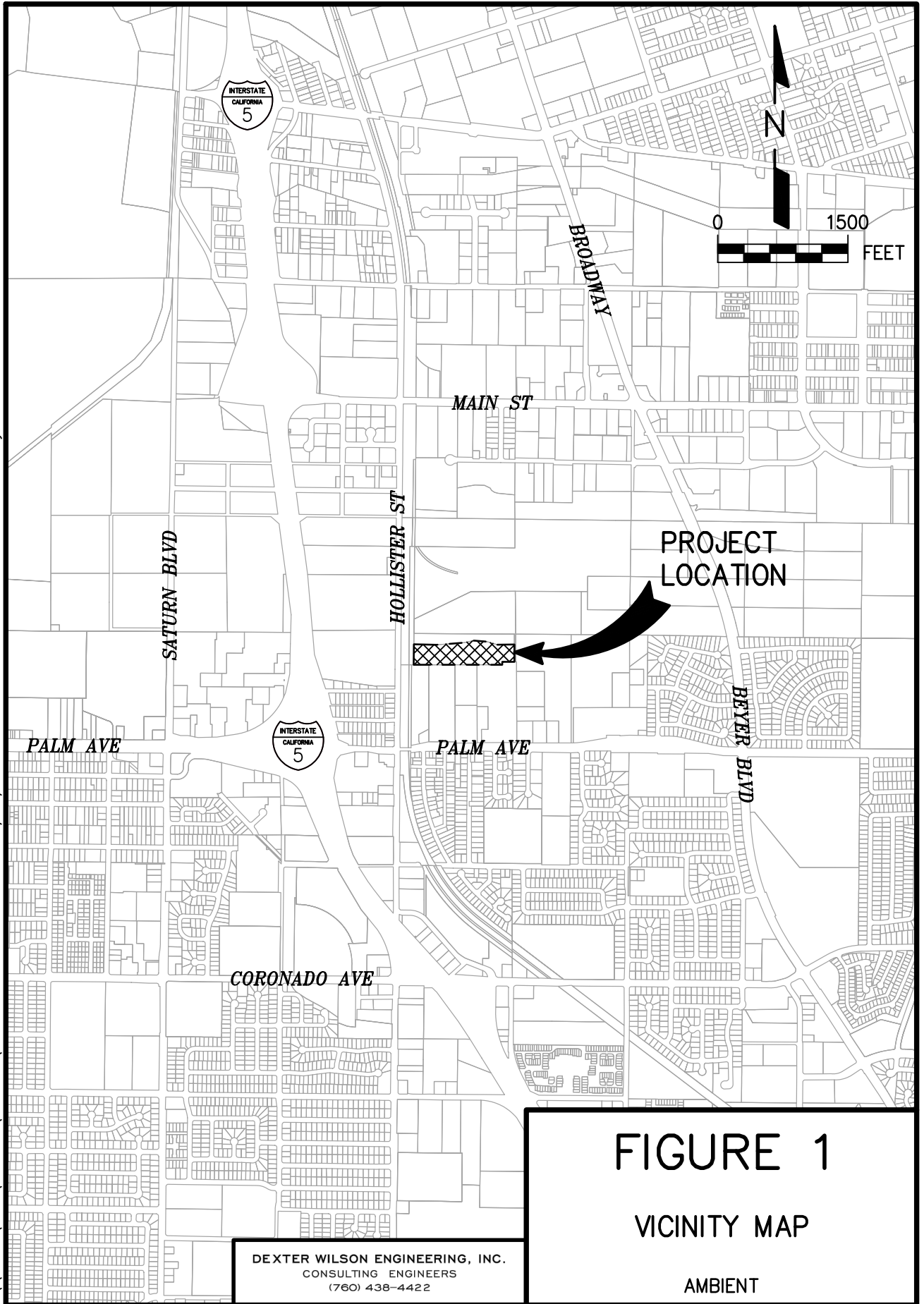


FIGURE 1

VICINITY MAP

AMBIENT

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Purpose of Study

The purpose of this study is to determine if the existing public gravity sewer system is able to provide adequate capacity for the project. This report will address if any offsite (public) sewer system improvements are needed for the development of the project so that the offsite sewer system will be in conformance with the City of San Diego sewer system design standards.

The onsite sewer facilities for the project are proposed to be private. These facilities will be designed in accordance with the City's sewer system design standards.

Study Area

In general, the study area for this sewer study are the sewer lines in the vicinity of the project that are tributary to the San Ysidro Trunk Sewer up to the 42-inch connection at the Elm Avenue and Raedel Drive intersection. From this point the San Ysidro Trunk Sewer conveys sewer westward to the South Metro Interceptor.

Proposed offsite sewer facilities for the Ambient project include private gravity sewer lines. Approximately 100 linear feet of private 8-inch gravity sewer line and a new sewer manhole needs to be constructed between Hollister Street and the project boundary to allow the new connection to the project's private sewer lateral. The project's private 8-inch diameter sewer lateral will be aligned under the existing railroad right-of-way between the project boundary and Hollister Street. The project will construct its lateral through jack and bore trenchless construction.

These existing and proposed offsite sewer facilities in the project area can be seen on Figure 2.

The flow capacity of the existing sewer within the study area was determined through temporary sewer flow monitoring. This temporary sewer flow monitoring is discussed later in this sewer study. The sewer flow monitoring report is included in Appendix C for reference.

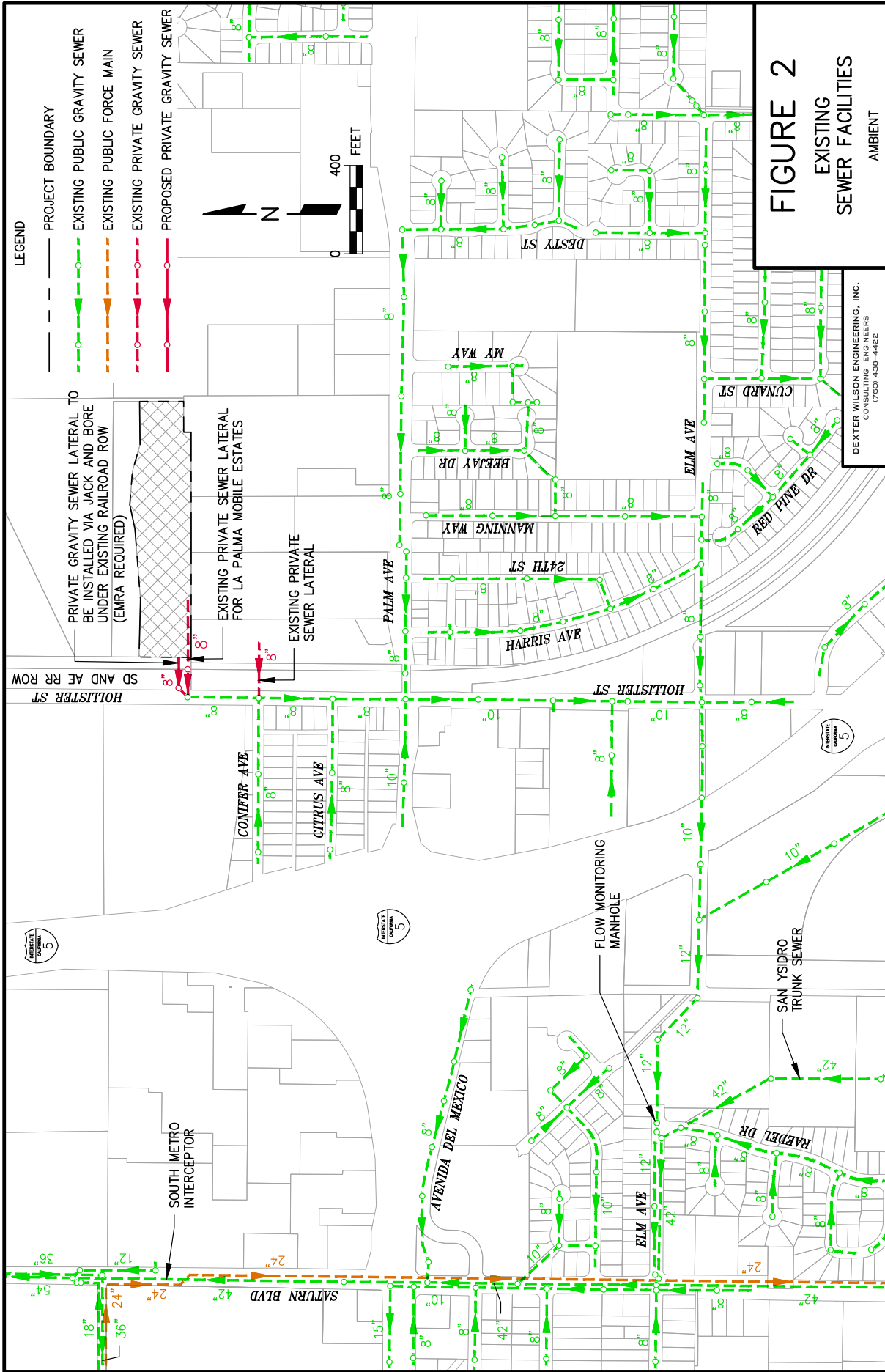


FIGURE 2
EXISTING
SEWER FACILITIES
AMBIENT

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PRIVATE GRAVITY SEWER LATERAL TO BE INSTALLED VIA JACK AND BORE UNDER EXISTING RAILROAD ROW (EMRA REQUIRED)

EXISTING PRIVATE SEWER LATERAL FOR LA PALMA MOBILE ESTATES

EXISTING PRIVATE SEWER LATERAL

HOLLISTER ST SD AND AE RR ROW

SOUTH METRO INTERCEPTOR

FLOW MONITORING MANHOLE

SAN YSIDRO TRUNK SEWER

City of San Diego Sewer Design Criteria

Sewer system analyses criteria are based on the Sewer Design Guide, Revised May 2015, City of San Diego Public Utilities Department. This guideline is used for analysis and sizing of new gravity sewer lines and for analysis of existing gravity sewer lines. A summary of the design criteria from the Sewer Design Guide is presented in Table 1 below.

TABLE 1 CITY OF SAN DIEGO PUBLIC UTILITIES DEPARTMENT SEWER SYSTEM DESIGN CRITERIA		
Criterion	Design Requirement	Design Guide Reference
Sewage Flow Generation	80 gallons per capita	1.3.2.2
Industrial Sewage Flow Generation	5,000 gpd/net-acre	Table 1-1
Dry Weather Peaking Factor	Figure 1-1 based on population	1.3.2.2
Wet Weather Peaking Factor	Basin specific – determined by City	1.3.2.2
Gravity Flow Hydraulic Formula	Manning’s Equation	1.3.3.1
Manning’s ‘n’	0.013	1.3.3.1
Desirable Gravity Flow Velocity	3 fps to 5 fps	1.3.3.1
Minimum Gravity Flow Velocity	2 fps	1.3.3.1
Where 2 fps is not achievable	Set min. slope at 1%	1.3.3.1
Maximum Gravity Flow Velocity	10 fps	1.3.3.1
Maximum Depth of Flow at Peak Wet Weather		
For 15” Pipe and Smaller	$d/D = 0.50$	1.3.3.3
For 18” and Larger	$d/D = 0.75$	1.3.3.3
Net Acreage	= 0.80 x Gross Acres	Table 1-1

Ambient Project Sewer Generation

The sewer generation for the project was developed in accordance with the City of San Diego Design Guidelines and Standards. Multi-family residential sewer generation is estimated based on dwelling unit density and a sewage generation of 80 gpd/person as presented in Table 1. The project proposes 198 residential units over 5.92 gross-acres. A gross acreage of 5.92 acres equates to 4.74 net acres which equals a net-density for Ambient of 42 units per acre. Table 1-1 in the City’s Sewer Design Guide, attached as Appendix B, indicates that 42 units per net-acre falls in the range of 2.8 persons per dwelling unit (RM-2-6 Zoning). A dwelling unit density of 2.8 persons per dwelling unit and a unit sewage generation of 80 gpd/person results in a sewer generation rate of 224 gpd per multi-family dwelling unit for this project.

Table 2 presents the projected sewer generation for the project.

TABLE 2 AMBIENT SEWER GENERATION			
Land Use	Quantity	Generation Factor	Average Sewer Generation, gpd
Multi-Family Residential (42 DUs/net acre)	198 Units	224 gpd/unit	44,352
TOTAL			44,352 = 31 gpm

From the City of San Diego’s Sewer Design Guide, Figure 1-1, the peak dry weather flow to average flow ratio is approximately 2.70 based on the formula presented in the figure, resulting in an estimated peak dry weather flow of 119,579 gpd (83 gpm). A peaking factor for wet weather flow is assumed to be 1.0.

Appendix B presents the backup data for determining the peaking factors. For estimating the peak flows, average flow was based on the project’s average sewer generation presented in Table 2.

Temporary Sewer Flow Monitoring

Temporary sewer flow monitoring was performed to better assess the sewer generation of the existing non-residential land use downstream of the proposed project. Sewer flow monitoring was conducted every five minutes for two weeks between February 4, 2022 to February 21, 2022. The monitoring manhole is located along the existing 12-inch diameter sewer at the Raedel Drive and Elm Avenue intersection. Appendix C contains a copy of the sewer flow monitoring report and corresponding flow summary graphs.

Results from the temporary sewer flow monitoring measured an average flow of 156,000 gpd and a peak flow of 310,000 gpd at the Elm Avenue and Raedel Drive intersection.

Ambient Offsite Sewer System Analysis

The offsite analysis completed for the project calculated the measured and projected sewer flows through the existing gravity sewer lines downstream from the project connection in Hollister Street and Elm Avenue up to the connection with the existing 42-inch diameter San Ysidro Trunk Sewer. Based on City reference information, the existing gravity sewer lines from MH 96 to MH 11 (Hollister St. and Elm Ave.) are lined. This lining results in a reduced pipe diameter by 1-inch. This reduced diameter is accounted for in the offsite analysis.

These offsite sewer calculations/analyses are presented in Appendix D along with an estimation of existing offsite sewage flows based on the temporary sewer flow monitoring that was conducted. Exhibit A in the back of this report presents the corresponding manhole number diagram.

The sewer system analysis for the Ambient project will need to take into account sewage flows from existing development that is downstream of the project site. The Ambient project will be an upstream development along this particular stretch of gravity sewer leading up to the 42-inch diameter San Ysidro Trunk Sewer in Elm Avenue. Table 3 summarizes the parameters of the existing development and its corresponding sewer flow. Existing sewer flow from the existing land use were taken from the temporary sewer flow monitoring described earlier in this study and then distributed accordingly based on downstream EDUs.

TABLE 3			
EXISTING SEWER FLOWS BETWEEN AMBIENT PROJECT AND SAN YSIDRO TRUNK SEWER			
Sub-Area	Description	Portion of Sub-Total Tributary Sub-Area	Measured Avg. Flow, gpd
92	76 Res. Units	7%	10,920
96	24 Res. Units	2%	3,120
97	34 Res. Units	3%	4,680
94	50 Res. Units & 10 Acres Park (139 EDUs)	13%	20,280
111	242 Res. Units	23%	35,880
172	60 Res. Units	6%	9,360
177	180 Res. Units	17%	26,520
12	48 Res. Units	5%	7,800
3	125 Res. Units & 11 Acres Commercial (263 EDUs)	24%	37,440
TOTAL	1,066 EDUs	100%	156,000

A peaking factor of 1.99 is calculated from the temporary sewer flow monitoring at the Elm Avenue and Raedel Drive intersection (156,000 gpd average; 310,000 gpd peak). For comparison, the City’s peak dry weather flow factor is 2.28 for an average flow of 156,000 gpd. To be conservative in the offsite analysis, the City’s peak dry weather flow factor formula was used in lieu of the measured peaking factor.

Record (“As-Built”) drawings were obtained from the City to accurately model the existing gravity sewer infrastructure (size, slope, location etc.). These are included in Appendix E.

As shown in Model 1 of the spreadsheet calculations in Appendix D, the existing sewer flow within the study area is shown to be below half full in the existing 8-inch, 10-inch, and 12-inch diameter gravity sewer lines with a maximum d/D ratio of 0.40.

Existing Sewage Flow Plus Project Flow. Model 2 of the spreadsheet calculations in Appendix D presents the results of the offsite sewer system analyses when including the estimated flows from the project. The project is proposing to sewer all 198 of its multi-family residential units to the existing 8-inch diameter gravity sewer line running in Hollister Street to the west of the project site. Existing gravity sewer lines were analyzed up to the 42-inch San Ysidro Trunk Sewer.

The maximum d/D ratio increases from 0.40 to 0.49 when the proposed project is added to the existing 8-inch, 10-inch, and 12-inch diameter gravity sewer lines downstream of the project. These depths for the existing 8-inch, 10-inch, and 12-inch diameter gravity sewer lines are below the City design criteria of 0.50 d/D.

Existing Sewage Flow Plus Most Intense Land Use Flow. Model 3 of the spreadsheet calculations in Appendix D presents the results of the offsite sewer system analyses when including the estimated flows from the project under its proposed most intense land use (206 units).

The proposed project requires an amendment to the Otay Mesa-Nestor Community Plan to change the existing land use designation from Open Space to Residential Medium-High Density (20-35 du/nra) and a Rezone to change the existing zone from AR-1-2, RM-1-1, and RS-1-5 to RM-2-6. A Rezone requires the proposed project analyze the most intense use permitted under the new zone. Under the proposed RM-2-6 zone, the project site could be developed to construct up to 206 dwelling units. This equates to an additional eight dwelling units compared to the proposed project, which plans to construct a total of 198 dwelling units. Adding eight dwelling units would not affect the downstream sewer in a significant fashion as compared to Model 2 described above (all downstream sewer lines remain below the City design criteria of 0.50 d/D).

Conclusions and Recommendations

The following conclusions and recommendations are summarized based on the sewer system analysis prepared for the proposed Ambient project.

1. The proposed project consisting of 198 multi-family dwelling units will gravity sewer to the existing 8-inch diameter gravity sewer line located in Hollister Street.
2. The development of the project is projected to result in average sewage flow of 44,352 gpd.
3. Temporary sewer flow monitoring was performed to better assess the sewer generation of the existing land use downstream of the proposed project. Results from the temporary sewer flow monitoring showed an average flow of 156,000 gpd at the Elm Avenue and Raedel Drive intersection. These measured existing flows were utilized in assessing the capacity of the existing sewer collection system downstream of the Ambient project. Appendix C contains a copy of the sewer flow monitoring report and condition assessment of the monitored manholes/sewer lines.
4. Existing gravity sewer lines are currently calculated to have a d/D of approximately 0.40 in the 8-inch, 10-inch, and 12-inch diameter segments. The addition of the project's sewage flow would increase the d/D to 0.49. These depths are below the City design criteria of 0.50 d/D for the 8-inch, 10-inch, and 12-inch diameter segments.
5. Figure 2 presents the existing and proposed sewer system in the immediate project vicinity. A private 8-inch sewer lateral from the project will connect to an existing manhole in Hollister Street. No public sewer improvements are required for the Ambient Project.
6. The sewer system analysis conducted indicates that the existing 8-inch, 10-inch, and 12-inch public gravity sewer lines downstream of the project site up to the 42-inch diameter San Ysidro Trunk Sewer connection can accommodate both existing sewer flow and the sewer flows of the proposed project.

Greg Lang, P.E.
April 13, 2023
Ambient Sewer Study

The proposed private onsite gravity sewer system will be designed according to City of San Diego Sewer Design Guide to comply with all design criteria (depth, velocity, minimum slope, etc.).

If you have any questions regarding the information or conclusions and recommendations presented in this report, please do not hesitate to contact the undersigned.

Dexter Wilson Engineering, Inc.



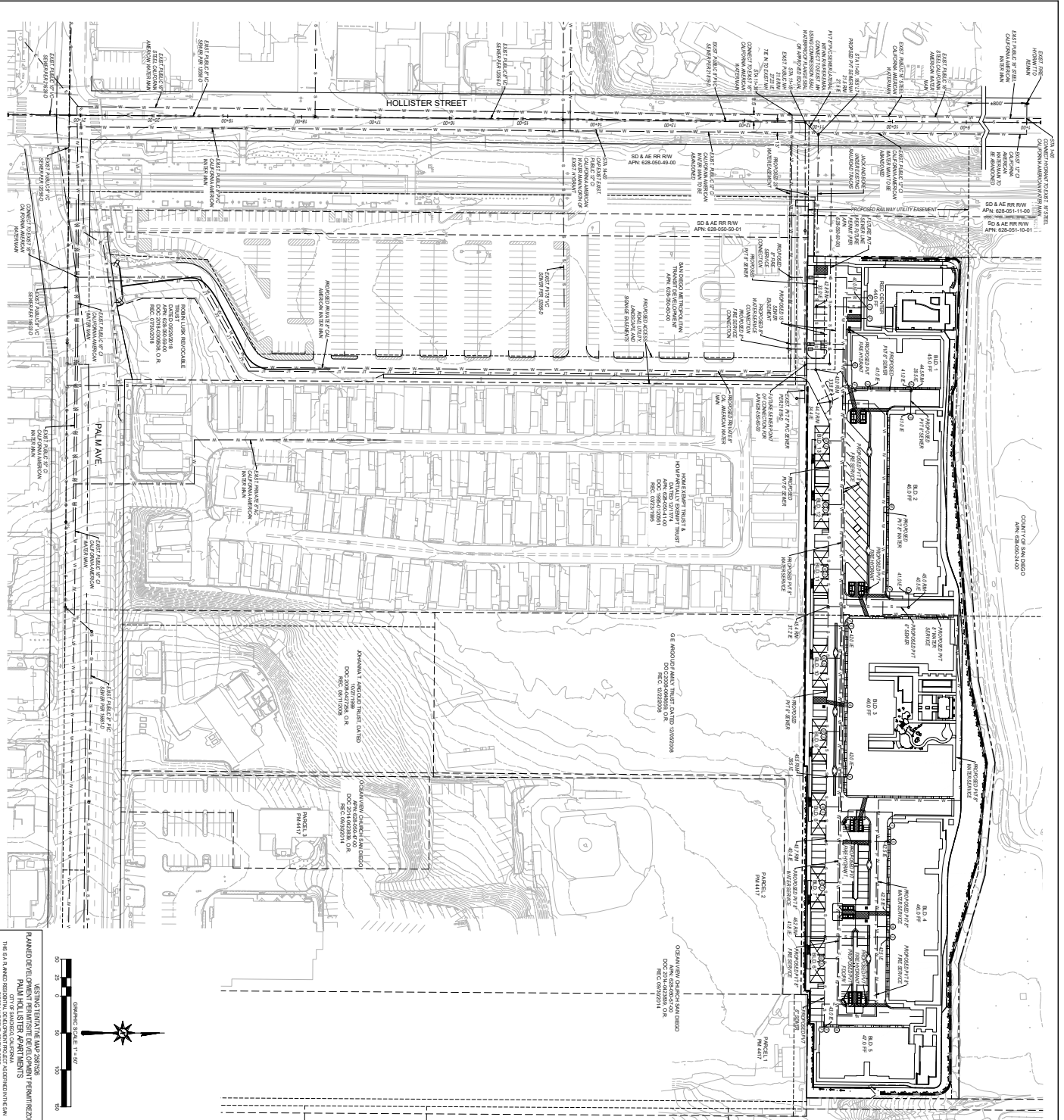
Andrew Owen, P.E.

AO:SH:ck

Attachments

APPENDIX A

PRELIMINARY SITE PLAN



GENERAL UTILITY NOTES

1. ALL UTILITY EASEMENTS SHALL BE SHOWN IN ACCORDANCE WITH THE CITY ENGINEERING DEPARTMENT'S STANDARD SPECIFICATIONS FOR UTILITY EASEMENTS.

2. THE CITY ENGINEERING DEPARTMENT'S STANDARD SPECIFICATIONS FOR UTILITY EASEMENTS SHALL BE REFERRED TO FOR ALL UTILITY EASEMENTS.

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10. THE CITY ENGINEERING DEPARTMENT'S STANDARD SPECIFICATIONS FOR UTILITY EASEMENTS SHALL BE REFERRED TO FOR ALL UTILITY EASEMENTS.

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY
- PROPOSED SEWER LINE
- PROPOSED WATER LINE
- PROPOSED GAS LINE
- PROPOSED RAILWAY UTILITY EASEMENT
- PROPOSED PRIVATE FIRE HYDRANT
- PROPOSED PRIVATE WATER MAIN
- PROPOSED PRIVATE SANITARY SEWER MAIN
- PROPOSED PRIVATE SANITARY SEWER MANHOLE
- PROPOSED PRIVATE FIRE HYDRANT
- PROPOSED PRIVATE WATER MAIN
- PROPOSED PRIVATE SANITARY SEWER MAIN
- PROPOSED PRIVATE SANITARY SEWER MANHOLE
- PROPOSED PRIVATE FIRE HYDRANT
- PROPOSED PRIVATE WATER MAIN
- PROPOSED PRIVATE SANITARY SEWER MAIN
- PROPOSED PRIVATE SANITARY SEWER MANHOLE
- PROPOSED PRIVATE FIRE HYDRANT
- PROPOSED PRIVATE WATER MAIN
- PROPOSED PRIVATE SANITARY SEWER MAIN
- PROPOSED PRIVATE SANITARY SEWER MANHOLE

BACKFLOW PREVENTION

ALL WATER SERVICES TO THE SITE INCLUDING DOMESTIC, SANITARY AND FIRE, SHALL BE QUANTITATIVE AND QUALITATIVE BACKFLOW PREVENTION PROVIDED BY THE USER OF THE SERVICE. THE USER OF THE SERVICE SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, MAINTENANCE AND REPAIR OF ALL BACKFLOW PREVENTION DEVICES. THE USER OF THE SERVICE SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, MAINTENANCE AND REPAIR OF ALL BACKFLOW PREVENTION DEVICES.

EMBRA NOTE

EMBRA SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, MAINTENANCE AND REPAIR OF ALL BACKFLOW PREVENTION DEVICES.

APPROVAL NUMBERS:

PROJECT NO. 111721

REVISION 10 11/22/21

REVISION 9 11/22/21

REVISION 8 11/22/21

REVISION 7 11/22/21

REVISION 6 11/22/21

REVISION 5 11/22/21

REVISION 4 11/22/21

REVISION 3 11/22/21

REVISION 2 11/22/21

REVISION 1 11/22/21

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APPROVAL NUMBERS:

PROJECT NO. 111721

REVISION 10 11/22/21

REVISION 9 11/22/21

REVISION 8 11/22/21

REVISION 7 11/22/21

REVISION 6 11/22/21

REVISION 5 11/22/21

REVISION 4 11/22/21

REVISION 3 11/22/21

REVISION 2 11/22/21

REVISION 1 11/22/21

APPENDIX B

CITY OF SAN DIEGO SEWER DESIGN CRITERIA

street alignments) and all potential points of entry of sewage from surrounding lands.

1.3.1.3 **Depth of Mains**

The planning study shall clearly identify all existing and/or proposed facilities which will exceed standard depths for sewer mains as defined in Subsection 2.2.1.5. In cases where proposed sewers will exceed 15 feet in depth, a request for design deviation (ATTACHMENT 2) must be submitted to the Water and Sewer Development Review Senior Civil Engineer with the Sewer Planning Study. A design deviation will only be approved in exceptional cases and when adequate justification is provided. Mains more than 20 feet deep shall also require approval from the Wastewater Collection Division Senior Civil Engineer.

1.3.1.4 **Existing Studies**

The City of San Diego maintains an extensive library of sewer planning studies which were prepared for lands throughout the City. These studies are available for review at the Water and Sewer Development Section, Public Utilities Department. All studies are catalogued by subdivision or trunk sewer name. Logs of sewer flow study analyses for recently monitored trunk sewers and a map of sewers which meet the Regional Water Quality Control Board (RWQCB) criteria for being critical or sub-critical may also be viewed. In addition, information regarding proposed CIP projects within the vicinity of a given project may be requested. In many cases, an addendum or reference to one of the existing planning studies may be acceptable in lieu of an independent study. Concurrent with the preparation of planning studies for sewers proposed to connect to existing canyon sewer mains, a study of flow redirection per Council Policy 400-13 and a cost-benefit analysis per Council Policy 400-14 shall be prepared (Refer to ATTACHMENT 1). An existing analysis of redirection of flows and a cost-benefit analysis, as required by Council Policies 400-13 and 400-14 respectively, may be available for reference for various existing canyon sewers.

1.3.2 **Flow Estimation**

1.3.2.1 **Land Use**

Present or future allowable land use, whichever results in higher equivalent population, shall be used to generate potential sewage flows.

1.3.2.2 **Flow Determination**

Flow definitions and calculation procedures are listed below. All calculations shall be tabulated for each sewer main section (manhole to manhole) in the

format shown on Figure 1-2.

Equivalent Population: The equivalent population shall be calculated from zoning information (Ref. Section 1.6). For major new facilities such as high rise apartment buildings, flow rates (assuming one lateral) shall be checked based on the most current, adopted edition of the Uniform Plumbing Code. The most conservative flow rate shall govern.

Daily Per Capita Sewer Flow: The sewer flow for the equivalent population shall be 80 gallons per capita per day (gpcd).

Average Dry Weather Flow (ADWF): Equivalent populations shall be used to calculate the average dry weather flow. The average dry weather flow for each sewer main reach (manhole to manhole) shall be determined by multiplying the total accumulated equivalent population contributing to that reach by 80 gallons per capita per day:

$$\text{Average Dry Weather Flow} = (80 \text{ gpcpd}) \times (\text{Equivalent Population})$$

Peaking Factor for Dry Weather Flow (PFDWF): The peaking factor is the ratio of peak dry weather flow to average dry weather flow. It is dependent upon the equivalent population within a tributary area. The tributary area is the area upstream of, and including, the current reach for the total flow in each reach of pipe. Figure 1-1, consisting of the table prepared by Holmes and Narver in 1960, shall be used to determine peaking factors for each tributary area. In no instance shall the dry weather flow peaking factor be less than 1.5.

Peak Dry Weather Flow (PDWF): The peak dry weather flow for each sewer main reach shall be determined by multiplying the average dry weather flow by the appropriate peaking factor (Note that peak dry weather flows are not algebraically cumulative as routed through the sewer system, i.e. the peak dry weather flow at any point shall be based on the equivalent population in the basin to that point (Ref. Figure 1-2).

$$\text{Peak Dry Weather Flow} = (\text{Average Dry Weather Flow}) \times (\text{Dry Weather Flow Peaking Factor})$$

Peaking Factor for Wet Weather Flow (PFWWF): The peaking factor for wet weather flow is the ratio of peak wet weather flow to peak dry weather flow. It is basin-specific and shall be based on essential information available at the time of the planning study. Information such as historical rainfall/sewage flow data, land use, soil data, pipe/manhole age, materials and conditions, groundwater elevations (post development), inflow and infiltration (I/I) studies, size, slope and densities of the drainage basin, etc., should be utilized in the wet weather analysis to estimate the peaking factor for wet weather. Upward adjustments shall be made in areas with expected high inflow and

infiltration (i.e. high ground water or in areas with lush landscaping schemes). Flow meters are installed throughout the City's sewer system. Flow data collected from these meters are available upon request. The objective of this analysis is to quantify the magnitude of peak wet weather flow with a 10-year return period on a statistical basis.

The Senior Civil Engineer overseeing the preparation of the planning study shall coordinate with the City Sewer Modeling Group for approval of the peaking factors to be used for design.

Peak Wet Weather Flow (PWWF): The peak wet weather flow (or design flow) for a gravity sewer main reach shall be determined by multiplying the peak dry weather flow (ref. Figure 1-2) by the appropriate wet weather peaking factor. The peak wet weather flow is the design flow for a gravity sewer main. It is determined at any point in the system based on the associated upstream average dry weather flow in the basis to that point times the peaking factor for wet weather.

$$\text{Peak Wet Weather Flow} = (\text{Peak Dry Weather Flow}) \times (\text{Wet Weather Peaking Factor})$$

1.3.3 Pipe Sizing Criteria

1.3.3.1 Hydraulic Requirements

Manning's formula for open-channel flows shall be used to calculate flows in gravity sewer mains. Manning's coefficient of roughness "n" shall be assumed to be 0.013 for all types of sewer pipe. Sewer grades shall be designed for velocities of 3 to 5 feet per second (fps) where possible. This is extremely important in areas where peak flow will not be achieved for many years. The minimum allowable velocity is 2 fps at calculated peak dry weather flow, excluding infiltration. Sewer mains that do not sustain 2 fps at peak flows shall be designed to have a minimum slope of 1 percent. Additional slope may be required by the Senior Civil Engineer where fill of varied depth is placed below the pipe in order to provide adequate slope after expected settlement occurs. The maximum allowable velocity shall be 10 fps and shall be avoided by adjusting slopes, by increasing the pipe diameter, or by utilizing a vertical curve transition to lower velocities per subsections 2.2.4 and 2.2.9.4. If the Senior Civil Engineer approves a velocity greater than 10 fps, the pipe shall be upgraded to SDR 18 PVC (standard dimension ratio polyvinyl chloride), concrete-encased VC (vitrified clay), or PVC sheet-lined reinforced concrete pipe.

**TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS**

Zone	Maximum Density (DU/Net Ac)	Population per DU	Equivalent Population (Pop/Net Ac)
AR-1-1, RE-1-1	0.1	3.5	0.4
RE-1-2	0.2	3.5	0.7
AR-1-2, RE-1-3	1	3.5	3.5
RS-1-1, RS-1-8	1	3.5	3.5
RS-1-2, RS-1-9	2	3.5	7.0
RS-1-3, RS-1-10	3	3.5	10.5
RS-1-4, RS-1-11	4	3.5	14.0
RS-1-5, RS-1-12	5	3.5	17.5
RS-1-6, RS-1-13	7	3.5	24.5
RS-1-7, RS-1-14	9	3.5	31.5
RX-1-1	11	3.4	37.4
RT-1-1	12	3.3	39.6
RX-1-2, RT-1-2, RU-1-1	14	3.2	44.8
RT-1-3, RM-1-2	17	3.1	52.7
RT-1-4	20	3.0	60.0
RM-1-3	22	3.0	66.0
RM-2-4	25	3.0	75.0
RM-2-5	29	3.0	87.0
RM-2-6	35	2.8	98.0
RM-3-7, RM-5-12	43	2.6	111.8
RM-3-8	54	2.4	129.6
RM-3-9	73	2.2	160.6
RM-4-10	109	1.8	196.2
RM-4-11	218	1.5	327.0

**TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS (Continued)**

Zone	Maximum Density (DU / Net Ac)	Population Per DU	Equivalent Population (Pop/Net Ac)
Schools/Public	8.9	3.5	31.2
Offices	10.9	3.5	38.2*
Commercial/Hotels	12.5	3.5	43.7*
Industrial	17.9	3.5	62.5*
Hospital	42.9	3.5	150.0*

Figures with asterisk (*) represent equivalent population per floor of the building.

Definitions:

DU = Dwelling Units

Ac = Acreage

Pop = Population

Net Acreage is the developable lot area excluding areas that are dedicated as public streets in acres. Gross Area is the entire area in acres of the drainage basin, including lots, streets, etc.

For undeveloped areas, assume Net Acreage = 0.8 x Gross Area in Acres

For developed areas, calculate actual Net Acreage.

Tabulated figures are for general case. The tabulated figures shall not be used if more accurate figures are available.

Population is based on actual equivalent dwelling units (EDU) or the maximum estimate obtained from zoning.

Conversion of Fixture Units to Equivalent Dwelling Units (EDU): The Water Meter Data Card, maintained by the Development Services Department, contains a table of plumbing fixtures that should be used for determining the equivalent dwelling units (EDU's) for the purpose of estimating the rate of wastewater generation in residential, commercial, or industrial areas. Currently, the basis for conversion is: 20 fixtures = 1 EDU and 1 EDU = 280 gallons of wastewater per day.

In high rise building areas, flow rates shall be based on the most current, adopted edition of the applicable Plumbing Code, assuming one lateral per area. The most conservative flow rate shall govern.

PUBLIC UTILITIES DEPARTMENT
PEAKING FACTOR FOR SEWER FLOWS
(Dry Weather)

Ratio of Peak to Average Flow*
Versus Tributary Population

<u>Population</u>	<u>Ratio of Peak to Average Flow</u>	<u>Population</u>	<u>Ratio of Peak to Average Flow</u>
200	4.00	4,800	2.01
500	3.00	5,000	2.00
800	2.75	5,200	1.99
900	2.60	5,500	1.97
1,000	2.50	6,000	1.95
1,100	2.47	6,200	1.94
1,200	2.45	6,400	1.93
1,300	2.43	6,900	1.91
1,400	2.40	7,300	1.90
1,500	2.38	7,500	1.89
1,600	2.36	8,100	1.87
1,700	2.34	8,400	1.86
1,750	2.33	9,100	1.84
1,800	2.32	9,600	1.83
1,850	2.31	10,000	1.82
1,900	2.30	11,500	1.80
2,000	2.29	13,000	1.78
2,150	2.27	14,500	1.76
2,225	2.25	15,000	1.75
2,300	2.24	16,000	1.74
2,375	2.23	16,700	1.73
2,425	2.22	17,400	1.72
2,500	2.21	18,000	1.71
2,600	2.20	18,900	1.70
2,625	2.19	19,800	1.69
2,675	2.18	21,500	1.68
2,775	2.17	22,600	1.67
2,850	2.16	25,000	1.65
3,000	2.14	26,500	1.64
3,100	2.13	28,000	1.63
3,200	2.12	32,000	1.61
3,500	2.10	36,000	1.59
3,600	2.09	38,000	1.58
3,700	2.08	42,000	1.57
3,800	2.07	49,000	1.55
3,900	2.06	54,000	1.54
4,000	2.05	60,000	1.53
4,200	2.04	70,000	1.52
4,400	2.03	90,000	1.51
4,600	2.02	100,000+	1.50

*Based on formula: Peak Factor = $6.2945 \times (\text{pop})^{-0.1342}$
(Holmes & Narver, 1960)

FIGURE 1-1

APPENDIX C

TEMPORARY SEWER FLOW MONITORING REPORT

Flow Monitor Location Report

IEC Crew EB/DP
Project Name Hollister

Site Name:	Elm	Monitor Type	ISCO 2150	Monitor S/N:	26	Manhole #:	36
Address / Location:	2006 Elm Ave			GPS Coordinates North	NA		
Access:		Type of System:		GPS Coordinates West	NA		
	Drive		Sanitary	Pipe Height	10.425"	11.89"	
				Pipe Width	10.425"	11.89"	



Investigation Data			Manhole Data		
Date/Time of Investigation:	February 4, 2022		Manhole Depth:	7'	
Site Hydraulics:	Smooth, consistent flow		Manhole Material / Condition:	Concrete	Fair
Upstream Input: (L/S, P/S)	NA		Active Connections	No	
Downstream Manhole:	NA		Pipe Material / Condition:	Vitrified Clay Pipe	Fair
			Communication Data		
Depth of Flow (Wet Dof):	+/-		IP Address	NA	
Range (Air Dof):	+/-		Wireless Carrier	NA	
Peak Velocity:	fps		Modem Type	NA	
Silt:	No	Inches	Communication Type	Serial	



Installation Data		Backup	Yes	No	Cause	Distance
Installation Type:	Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	ISCO AV	Lift/Pump Station		X		
Surcharge	No	WWTP		X		
Rain Gauge	No	Other		X		

Additional Site Information / Comments:

Flow Monitor Location Report

IEC Crew EB/DP
Project Name Hollister

Site Name:	Hollister & Elm	Monitor Type	ISCO 2150	Monitor S/N:	23	Manhole #:	177
Address / Location:		Intersection of Hollister St. & Elm Ave.		GPS Coordinates North		NA	
				GPS Coordinates West		NA"	
Access:		Type of System:		Pipe Height		9.5	
Drive		Sanitary		Pipe Width		9.5"	



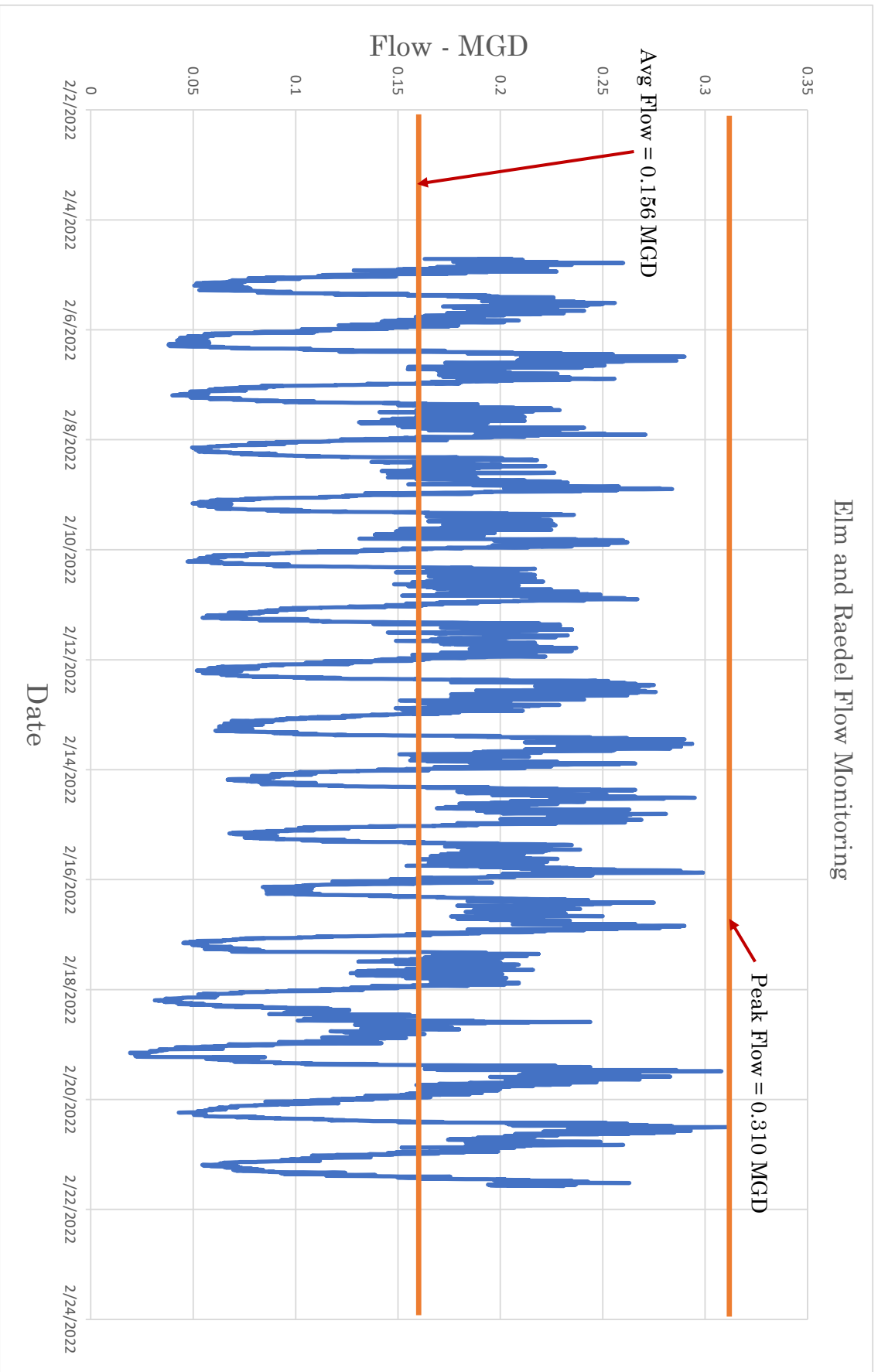
Investigation Data			Manhole Data		
Date/Time of Investigation:	February 4, 2022		Manhole Depth:	18'	
Site Hydraulics:	Slow, consistant flow		Manhole Material / Condition:	Concrete	Fair
			Active Connections	Yes	3:00 & 9:00
Upstream Input: (L/S, P/S)	NA		Pipe Material / Condition:	Vitrified Clay Pipe	
Downstream Manhole:	NA		Communication Data		
Depth of Flow (Wet Dof):	+/-		IP Address	NA	
Range (Air Dof):	+/-		Wireless Carrier	NA	
Peak Velocity:	fps		Modem Type	NA	
Silt:	No	Inches	Communication Type	Serial	



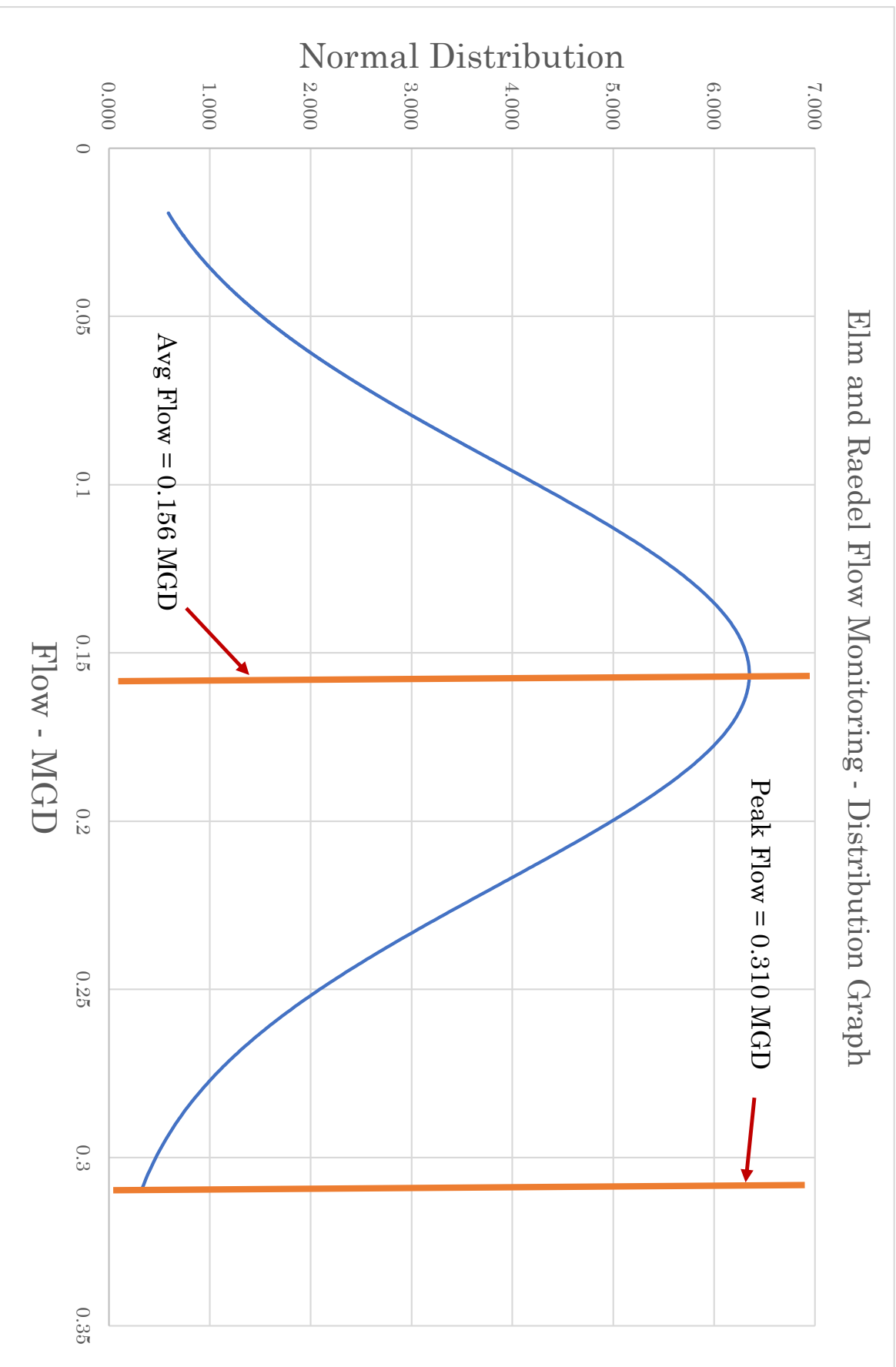
Installation Data		Backup	Yes	No	Cause	Distance
Installation Type:	Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	ISCO AV	Lift/Pump Station		X		
Surcharge	No	WWTP		X		
Rain Gauge	No	Other		X		

Additional Site Information / Comments:

Elm and Raedel Flow Monitoring



Elm and Raedel Flow Monitoring - Distribution Graph



APPENDIX D

OFFSITE SEWER ANALYSIS

The following conditions were modeled for The Ambient Project:

1. Existing Flows
 2. Existing Plus Project Flows (198 units)
 3. Existing Plus Project Flows (206 units)
- Reference Exhibit A for Manhole Diagram

DATE: 1/2/2022
 FOR: Ambient Project City of San Diego Offsite Analysis up to Ex. 42 In. San Ysidro Trunk Sewer (Existing Flows Only) FLOW MONITORING
 JOB NUMBER: 574-020 BY: Dexter Wilson Engineering, Inc.
 SHEET 1 OF 3
 REFER TO PLAN SHEET: Exhibit A

SEWER STUDY SUMMARY

REMARKS (TRIBUTARY AREAS)	FROM	TO	IN-LINE FLOW* (gpd)	POPULATION SERVED		SEWAGE PER CAP/ADAY (gpd/person)	AVG. DRY WEATHER FLOW (gpd)	PEAK DWF FACTOR	PEAK DWF (gpd)	PEAK WWF FACTOR	PEAK WWF (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	EST. SLOPE (%)	DEPTH ⁽¹⁾	dn (feet)	dn/D ⁽²⁾	C _d for Velocity ⁽³⁾	VELOCITY (f.p.s.)
				IN-LINE	TOTAL							M.G.D.	C.F.S.							
76 Mobile Homes	92	96	10,920	136.5	136.5	80	10,920	3.25	35,534	1.00	35,534	0.036	0.055	8	0.40	0.033321	0.12667	0.19	0.1039	1.19
24 EDUs (lined section)	96	97	3,120	39.0	175.5	80	14,040	3.15	44,172	1.00	44,172	0.044	0.068	7	0.40	0.059138	0.14563	0.25	0.1535	1.31
34 EDUs (lined section)	97	94	4,680	58.5	234.0	80	18,720	3.03	56,665	1.00	56,665	0.057	0.088	7	0.40	0.075864	0.16333	0.28	0.1800	1.43
50 EDUs & 10 acres public (lined section)	94	111	20,280	253.5	487.5	80	39,000	2.74	106,979	1.00	106,979	0.107	0.166	9	0.30	0.094613	0.21750	0.29	0.1880	1.56
242 Apartments (Pacific Point) (lined section)	111	117	35,880	448.5	936.0	80	74,880	2.51	188,184	1.00	188,184	0.188	0.291	9	0.32	0.144114	0.29250	0.39	0.2836	1.83
(lined section)	117	172	0	0.0	936.0	80	74,880	2.51	188,184	1.00	188,184	0.188	0.291	9	0.34	0.139811	0.28500	0.38	0.2739	1.89
60 Condos (lined section)	172	174	9,360	117.0	1053.0	80	84,240	2.47	208,387	1.00	208,387	0.208	0.322	9	0.36	0.150458	0.30000	0.40	0.2934	1.95
(lined section)	174	177	0	0.0	1053.0	80	84,240	2.47	208,387	1.00	208,387	0.208	0.322	9	0.36	0.150458	0.30000	0.40	0.2934	1.95
180 EDUs (lined section)	177	175	26,520	331.5	1384.5	80	110,760	2.38	264,109	1.00	264,109	0.264	0.409	9	0.67	0.139779	0.28500	0.38	0.2739	2.65
(lined section)	175	12	0	0.0	1384.5	80	110,760	2.38	264,109	1.00	264,109	0.264	0.409	9	0.67	0.139779	0.28500	0.38	0.2739	2.65
48 Mobile Homes (lined section)	12	2	7,800	97.5	1482.0	80	118,560	2.36	280,138	1.00	280,138	0.280	0.433	9	0.67	0.148283	0.29250	0.39	0.2836	2.72
(lined section)	2	3	0	0.0	1482.0	80	118,560	2.36	280,138	1.00	280,138	0.280	0.433	10	0.69	0.110313	0.28333	0.34	0.2355	2.65
125 Mobile Homes & 11 Acres Commercial	3	1	37,440	468.0	1950.0	80	156,000	2.28	355,274	1.00	355,274	0.355	0.550	11.8	0.25	0.149481	0.39333	0.40	0.2934	1.94
(lined section)	1	5	0	0.0	1950.0	80	156,000	2.28	355,274	1.00	355,274	0.355	0.550	11.8	0.25	0.149481	0.39333	0.40	0.2934	1.94
(lined section)	5	36	0	0.0	1950.0	80	156,000	2.28	355,274	1.00	355,274	0.355	0.550	11.8	0.25	0.149481	0.39333	0.40	0.2934	1.94
(lined section)	36	34	0	0.0	1950.0	80	156,000	2.28	355,274	1.00	355,274	0.355	0.550	11.8	0.25	0.149481	0.39333	0.40	0.2934	1.94
(lined section)	34	33	0	0.0	1950.0	80	156,000	2.28	355,274	1.00	355,274	0.355	0.550	11.8	0.25	0.149481	0.39333	0.40	0.2934	1.94

Total Pop
1950

Min Slope
0.25

Max dn/D
0.40

Min Vel
1.31

Max Vel
1.95

LU = Land Use Area
 * Average Flow Based on Temporary Flow Monitoring

1 K based on n = 0.013
 2 dn/D using K in Brater King Table 7-14
 3 From Brater King Table 7-4 based on dn/D

W:\ARTC\Eng\574020\Sewer Spreadsheets\2022-12-01 FLOW MONITORING Offsite Hollister and Elm (Existing Flows Only) for sewer study.xlsx

SEWER STUDY SUMMARY

REMARKS (TRIBUTARY AREAS)	FROM	TO	IN-LINE FLOW* (gpd)	POPULATION SERVED		SEWAGE PER CAP/PERSON (gpd/person)	AVG. DRY WEATHER FLOW (gpd)	PEAK DWF FACTOR	PEAK DWF (gpd)	PEAK WWF FACTOR	PEAK WWF (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	EST. SLOPE (%)	DEPTH ⁽¹⁾	dn (feet)	dnD ⁽²⁾	C _s for Velocity ⁽³⁾	VELOCITY (f.p.s.)
				IN-LINE	TOTAL							M.G.D.	C.F.S.							
PRO. PROJECT (pro. pvt. sewer lateral)	201	91	44,352	554.4	554.4	80	44,352	2.70	119,579	1.00	119,579	0.120	0.185	8	0.60	0.091555	0.20667	0.31	0.2074	2.01
Pro. Public Sewer Section	91	92	0	0.0	554.4	80	44,352	2.70	119,579	1.00	119,579	0.120	0.185	8	0.60	0.091555	0.20667	0.31	0.2074	2.01
76 Mobile Homes	92	96	10,920	136.5	690.9	80	55,272	2.62	144,683	1.00	144,683	0.145	0.224	8	0.40	0.136672	0.25333	0.38	0.2739	1.84
24 EDUs (lined section)	96	97	3,120	39.0	729.9	80	58,392	2.60	151,728	1.00	151,728	0.152	0.235	7	0.40	0.203135	0.27417	0.47	0.3627	1.90
34 EDUs (lined section)	97	94	4,680	58.5	788.4	80	63,072	2.57	162,201	1.00	162,201	0.162	0.251	7	0.40	0.217157	0.28563	0.49	0.3827	1.93
50 EDUs & 10 acres public (lined section)	94	111	20,280	253.5	1041.9	80	83,352	2.48	206,483	1.00	206,483	0.206	0.319	9	0.30	0.163314	0.31650	0.42	0.3130	1.81
242 Apartments (Pacific Point) (lined section)	111	117	35,880	448.5	1490.4	80	119,232	2.36	281,512	1.00	281,512	0.282	0.436	9	0.32	0.215586	0.36000	0.48	0.3727	2.08
(lined section)	117	172	0	0.0	1490.4	80	119,232	2.36	281,512	1.00	281,512	0.282	0.436	9	0.34	0.209149	0.36000	0.48	0.3727	2.08
60 Caridos (lined section)	172	174	9,360	117.0	1607.4	80	128,592	2.34	300,548	1.00	300,548	0.301	0.465	9	0.36	0.217000	0.36750	0.49	0.3827	2.16
(lined section)	174	177	0	0.0	1607.4	80	128,592	2.34	300,548	1.00	300,548	0.301	0.465	9	0.36	0.217000	0.36750	0.49	0.3827	2.16
180 EDUs (lined section)	177	175	26,520	331.5	1938.9	80	155,112	2.28	353,522	1.00	353,522	0.354	0.547	9	0.67	0.187102	0.33750	0.45	0.3428	2.84
(lined section)	175	12	0	0.0	1938.9	80	155,112	2.28	353,522	1.00	353,522	0.354	0.547	9	0.67	0.187102	0.33750	0.45	0.3428	2.84
48 Mobile Homes (lined section)	12	2	7,800	97.5	2036.4	80	162,912	2.26	368,863	1.00	368,863	0.369	0.571	9	0.67	0.195221	0.34500	0.46	0.3527	2.88
(lined section)	2	3	0	0.0	2036.4	80	162,912	2.26	368,863	1.00	368,863	0.369	0.571	10	0.69	0.145251	0.32500	0.39	0.2836	2.90
125 Mobile Homes & 11 Acres Commercial	3	1	37,440	468.0	2504.4	80	200,352	2.20	441,214	1.00	441,214	0.441	0.683	11.8	0.25	0.185640	0.44250	0.45	0.3428	2.06
(lined section)	1	5	0	0.0	2504.4	80	200,352	2.20	441,214	1.00	441,214	0.441	0.683	11.8	0.25	0.185640	0.44250	0.45	0.3428	2.06
(lined section)	5	36	0	0.0	2504.4	80	200,352	2.20	441,214	1.00	441,214	0.441	0.683	11.8	0.25	0.185640	0.44250	0.45	0.3428	2.06
(lined section)	36	34	0	0.0	2504.4	80	200,352	2.20	441,214	1.00	441,214	0.441	0.683	11.8	0.25	0.185640	0.44250	0.45	0.3428	2.06
(lined section)	34	33	0	0.0	2504.4	80	200,352	2.20	441,214	1.00	441,214	0.441	0.683	11.8	0.25	0.185640	0.44250	0.45	0.3428	2.06

Total Pop	2,504
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Min Slope	0.25
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Max dnD	0.49
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Min Vel	1.81
Max Vel	2.16

LU = Land Use Area
 * Average Flow Based on Temporary Flow Monitoring

1. K based on n = 0.013
 2. dnD using K in Brater King Table 7-14
 3. From Brater King Table 7-4 based on dn/D

SEWER STUDY SUMMARY

REMARKS (TRIBUTARY AREAS)	FROM	TO	IN-LINE FLOW* (gpd)	POPULATION SERVED		SEWAGE PER CAP/PERSON (gpd/person)	AVG. DRY WEATHER FLOW (gpd)	PEAK DWF FACTOR	PEAK DWF (gpd)	PEAK WWF FACTOR	PEAK WWF (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	EST. SLOPE (%)	DEPTH ⁽¹⁾	dn (feet)	dn/D ⁽²⁾	C _s for Velocity ⁽³⁾	VELOCITY (f.p.s.)
				IN-LINE	TOTAL							M.G.D.	C.F.S.							
PRO. PROJECT (pro. pvt. sewer lateral)	201	91	46,144	576.8	576.8	80	46,144	2.68	123,750	1.00	123,750	0.124	0.191	8	0.60	0.094749	0.20667	0.31	0.2074	2.08
Pro. Public Sewer Section	91	92	0	0.0	576.8	80	46,144	2.68	123,750	1.00	123,750	0.124	0.191	8	0.60	0.094749	0.20667	0.31	0.2074	2.08
76 Mobile Homes	92	96	10,920	136.5	713.3	80	57,064	2.61	148,735	1.00	148,735	0.149	0.230	8	0.40	0.139473	0.25333	0.38	0.2729	1.89
24 EDUs (lined section)	96	97	3,120	39.0	752.3	80	60,184	2.59	155,751	1.00	155,751	0.156	0.241	7	0.40	0.208521	0.28000	0.48	0.3727	1.90
34 EDUs (lined section)	97	94	4,680	58.5	810.8	80	64,864	2.56	166,184	1.00	166,184	0.166	0.257	7	0.40	0.222489	0.28583	0.49	0.3827	1.97
50 EDUs & 10 acres public (lined section)	94	111	20,280	253.5	1064.3	80	85,144	2.47	210,321	1.00	210,321	0.210	0.325	9	0.30	0.166349	0.31650	0.42	0.3130	1.85
242 Apartments (Pacific Point) (lined section)	111	117	35,880	448.5	1512.8	80	121,024	2.36	285,171	1.00	285,171	0.285	0.441	9	0.32	0.218388	0.36750	0.49	0.3827	2.05
(lined section)	117	172	0	0.0	1512.8	80	121,024	2.36	285,171	1.00	285,171	0.285	0.441	9	0.34	0.211888	0.36000	0.48	0.3727	2.10
60 Caridos (lined section)	172	174	9,360	117.0	1629.8	80	130,384	2.33	304,171	1.00	304,171	0.304	0.471	9	0.36	0.219816	0.36750	0.49	0.3827	2.19
(lined section)	174	177	0	0.0	1629.8	80	130,384	2.33	304,171	1.00	304,171	0.304	0.471	9	0.36	0.219816	0.36750	0.49	0.3827	2.19
180 EDUs (lined section)	177	175	26,520	331.5	1961.3	80	156,904	2.28	357,056	1.00	357,056	0.357	0.552	9	0.67	0.188972	0.33750	0.45	0.3428	2.87
(lined section)	175	12	0	0.0	1961.3	80	156,904	2.28	357,056	1.00	357,056	0.357	0.552	9	0.67	0.188972	0.33750	0.45	0.3428	2.87
48 Mobile Homes (lined section)	12	2	7,800	97.5	2058.8	80	164,704	2.26	372,373	1.00	372,373	0.372	0.576	9	0.67	0.197078	0.34500	0.46	0.3527	2.90
(lined section)	2	3	0	0.0	2058.8	80	164,704	2.26	372,373	1.00	372,373	0.372	0.576	10	0.69	0.146653	0.32500	0.39	0.2836	2.93
125 Mobile Homes & 11 Acres Commercial	3	1	37,440	468.0	2526.8	80	202,144	2.20	444,628	1.00	444,628	0.445	0.688	11.8	0.25	0.187077	0.44250	0.45	0.3428	2.08
(lined section)	1	5	0	0.0	2526.8	80	202,144	2.20	444,628	1.00	444,628	0.445	0.688	11.8	0.25	0.187077	0.44250	0.45	0.3428	2.08
(lined section)	5	36	0	0.0	2526.8	80	202,144	2.20	444,628	1.00	444,628	0.445	0.688	11.8	0.25	0.187077	0.44250	0.45	0.3428	2.08
(lined section)	36	34	0	0.0	2526.8	80	202,144	2.20	444,628	1.00	444,628	0.445	0.688	11.8	0.25	0.187077	0.44250	0.45	0.3428	2.08
(lined section)	34	33	0	0.0	2526.8	80	202,144	2.20	444,628	1.00	444,628	0.445	0.688	11.8	0.25	0.187077	0.44250	0.45	0.3428	2.08

Total Pop 2,527

Min Slope 0.25

Max dn/D 0.49

Min Vel 1.85

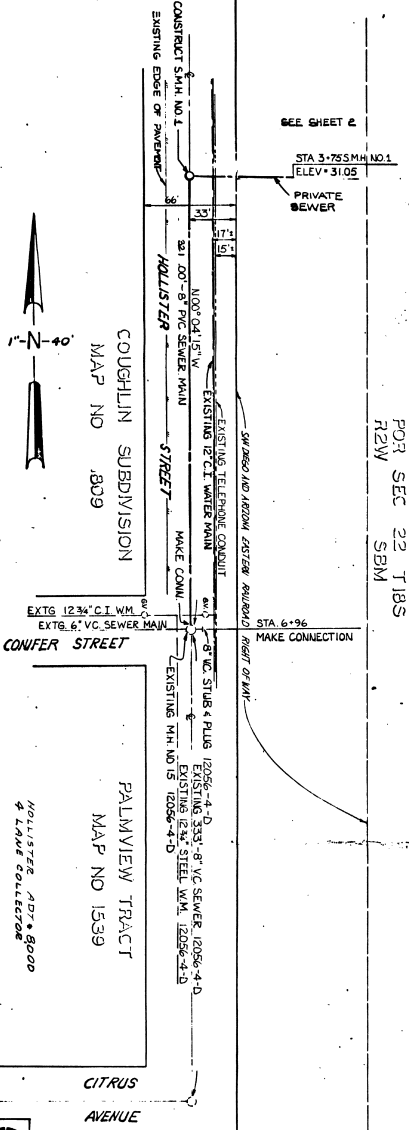
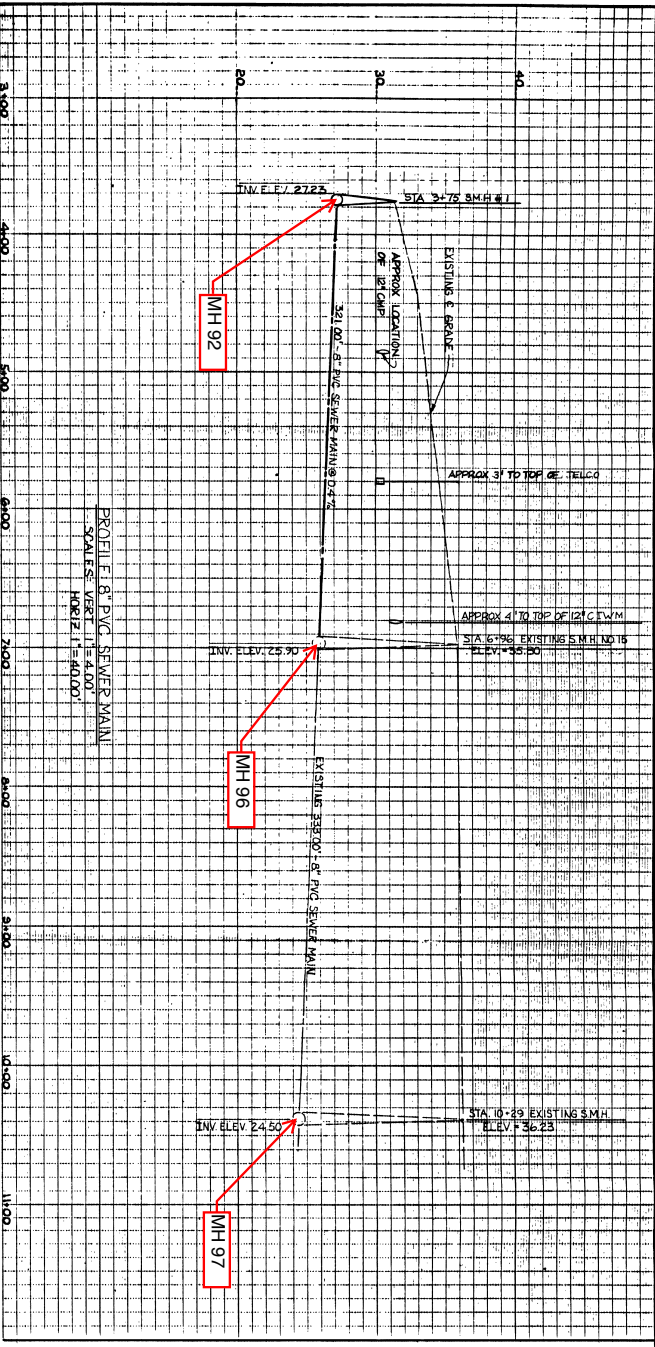
LU = Land Use Area
 Average Flow Based on Temporary Flow Monitoring

Max Vel 2.19

1. K based on n = 0.013
 2. dn/D using K in Brater King Table 7-14
 3. From Brater King Table 7-4 based on dn/D
 \ART\C\Eng\574020\Sewer Spreadsheets\2022-12-01 FLOW MONITORING Offsite Hollister and Elm (Existing plus Ambient Project Flows 206 units) for sewer study.xlsx
 Full layout

APPENDIX E

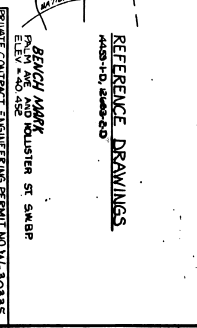
AS-BUILT DRAWINGS



ENGINEER OF WORK
Pacific Southwest
 ENGINEERING
 1001 Commercial Avenue, San Diego, CA 92101 (619) 291-4102

DATE	10-22-83
PROJECT NO.	21819-1-D
DATE	10-22-83
PROJECT NO.	21819-1-D

CITY OF SAN DIEGO, CALIFORNIA
 DEPARTMENT OF PUBLIC WORKS
 1500 LA JOLLA VILLAGE DRIVE, SAN DIEGO, CA 92161
 DATE: 10-22-83
 PROJECT NO.: 21819-1-D



REFERENCE DRAWINGS
 4483-TD-2400-80
 BENCH MARK
 PLAN AND HOUSTON ST SWMB
 PERMITS CONTRACT ENGINEERING PERMIT NO. 10-10-00335

IMPROVEMENT PLAN FOR THE INSTALLATION OF THE 8" PVC SEWER IN HOLLISTER ST. AND A PORTION OF SEC. 22 T. 18S R. 2W. SBM

DATE: 10-22-83
 PROJECT NO.: 21819-1-D

DATE: 10-22-83
 PROJECT NO.: 21819-1-D

DATE: 10-22-83
 PROJECT NO.: 21819-1-D

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 PROJECT NO.: 21819-1-D

DATE: 10-22-83
 PROJECT NO.: 21819-1-D

DATE: 10-22-83
 PROJECT NO.: 21819-1-D

WORK TO BE DONE
 THE IMPROVEMENTS LISTED IN THE FOLLOWING WORK TO BE DONE DRAWINGS SHALL BE CONSIDERED AS PART OF THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS
 1 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1982 EDITION)
 2 STANDARD SPECIAL PROVISIONS, AND
 3 CITY OF SAN DIEGO STANDARD SPECIAL PROVISIONS, (EXCEPT AS NOTED)
 4 STANDARD SPECIAL PROVISIONS AND PLAN REVISIONS TO STREET LIGHTING, DOCUMENT NO. 74444, 11/11/81, R. 1983.
 5 SAN DIEGO DEPARTMENT OF TRANSPORTATION MAINTENANCE WORK ZONES, 1983 EDITION, DOCUMENT NO. 76959, FILED APRIL 16, 1985.

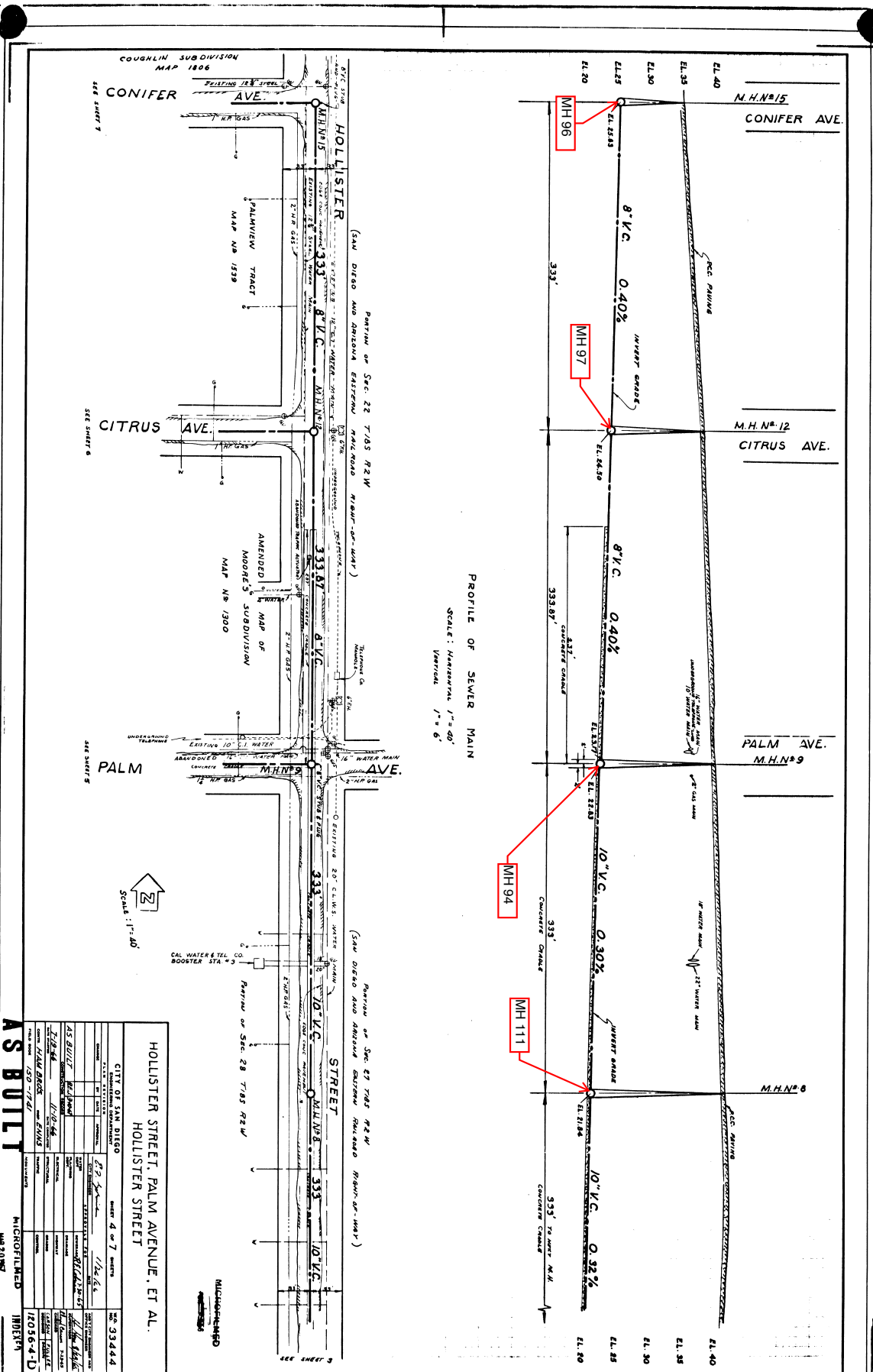
STANDARD DRAWINGS
 1 SAN DIEGO REGIONAL STANDARD DRAWINGS, (1982 EDITION), AND
 2 CITY OF SAN DIEGO STANDARD DRAWINGS, DOCUMENT NO. 76970, FILED JUNE 22, 1983.

LEGEND

ITEM	SID. DWA.	SYMBOL
8" PVC SEWER	S-41	(Symbol)
SEWER MANHOLE	S-41	(Symbol)
TREATMENT RESERVOIR	S-105, 107	(Symbol)

NOTES
 1 THERE WILL BE NO SITE DEVELOPMENT AS PART OF THIS PROJECT. SHOULD SITE DEVELOPMENT BE REQUIRED AT AN OTHER DATE, A SEPARATE SET OF DRAWINGS SHALL BE SUBMITTED TO THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION ON THIS PROJECT.
 2 CONTRACT UNDERGROUND SERVICE ALERT (800) 422-4173
 3 COMMUNICATIONS DIVISION
 4 BUILDING DEPARTMENT
 5 SAN DIEGO REGIONAL STANDARD DRAWINGS, (1982 EDITION), AND
 6 CITY OF SAN DIEGO STANDARD DRAWINGS, DOCUMENT NO. 76970, FILED JUNE 22, 1983.

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT AND I HAVE EXERCISED RESPONSIBILITY FOR THE DESIGN OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. PROJECT DRAWINGS AND SPECIFICATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF SAN DIEGO AND DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.
 JERRY D. HELMS, P.E. & 26544 DATE: 10-22-83
 1927 ADAMS AVENUE - SAN DIEGO, CA 92116 - (619) 295-4107



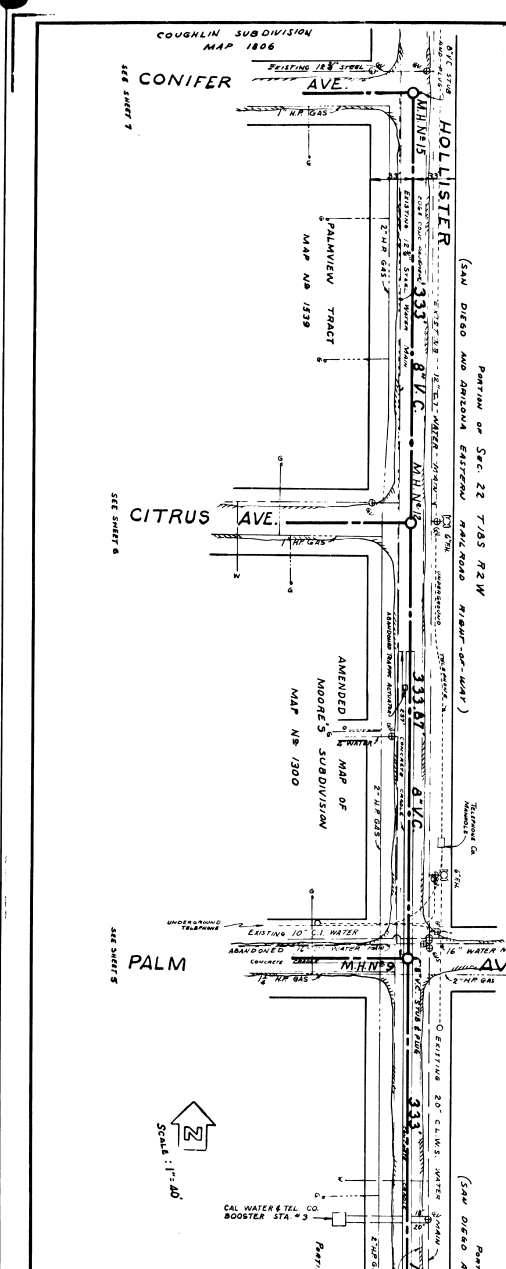
AS BUILT

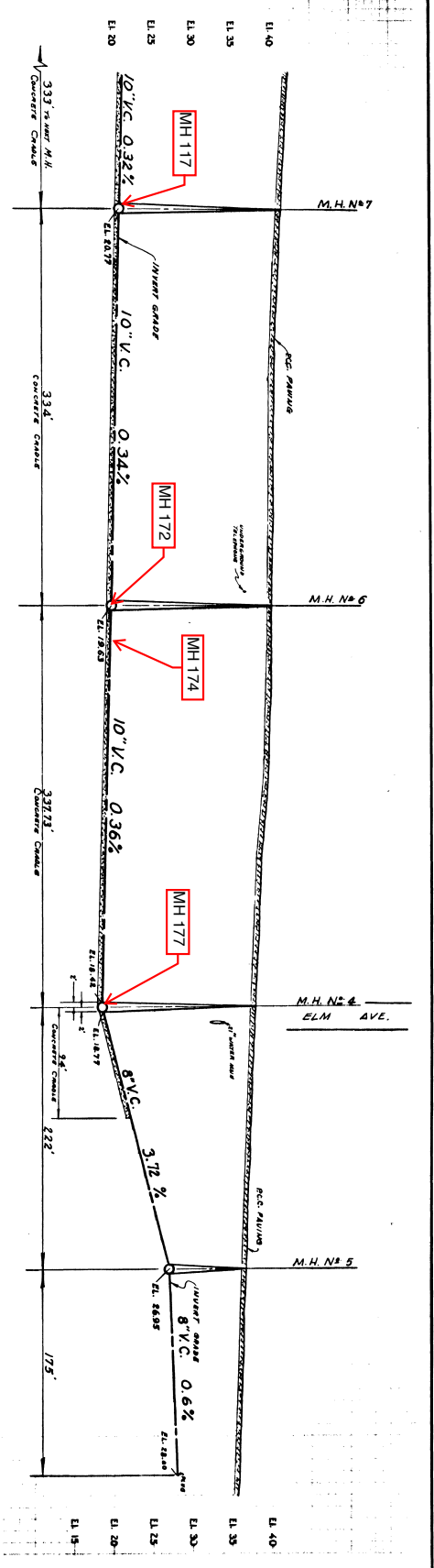
HOLLISTER STREET, PALM AVENUE, ET AL.

CITY OF SAN DIEGO
 ENGINEER: [Signature]
 SHEET 4 OF 7 SHEETS
 NO. 33444

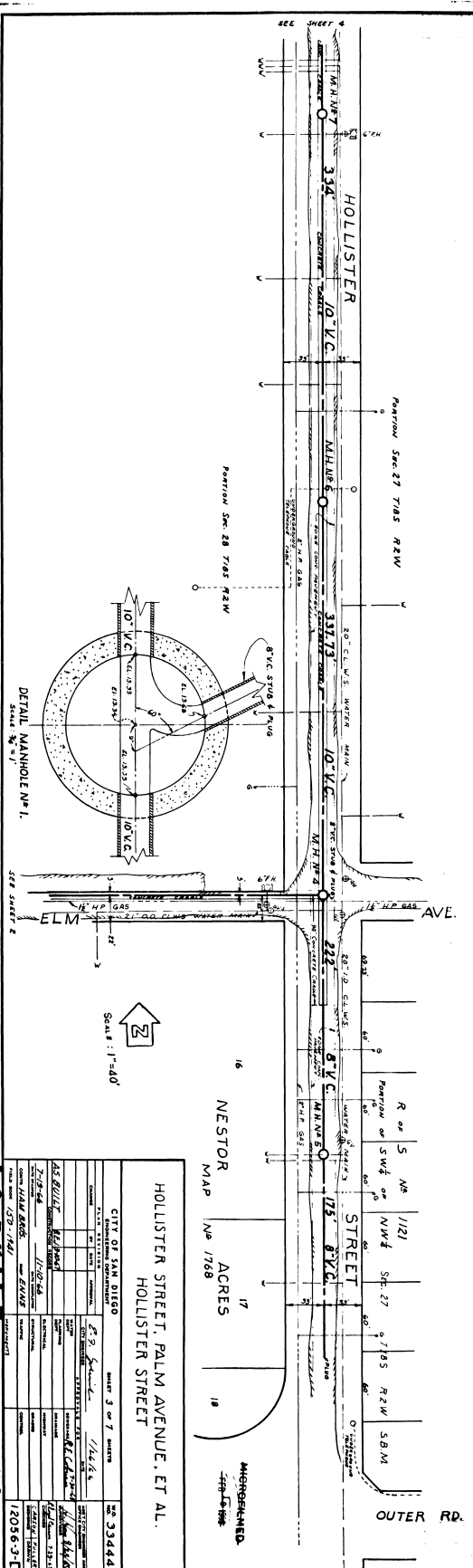
DATE	1/24/64
BY	[Signature]
CHECKED	[Signature]
APPROVED	[Signature]
PROJECT	120564-D
INDEX	[Signature]

MICROFILMED





PROFILE OF SEWER MAIN
SCALE: Horizontal 1" = 40'
Vertical 1" = 4'

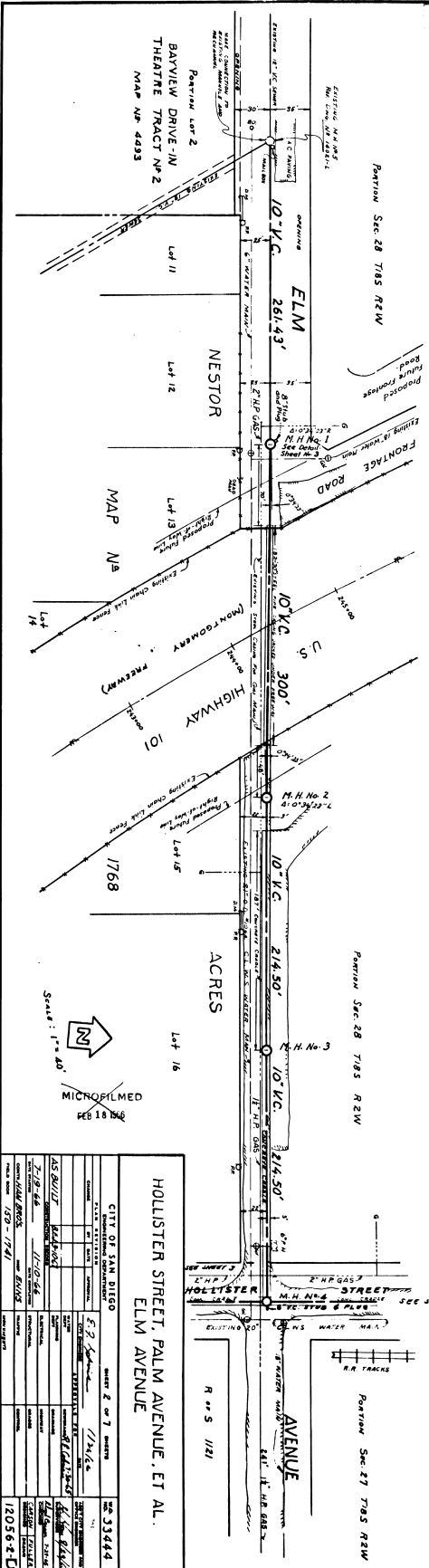


AS BUILT

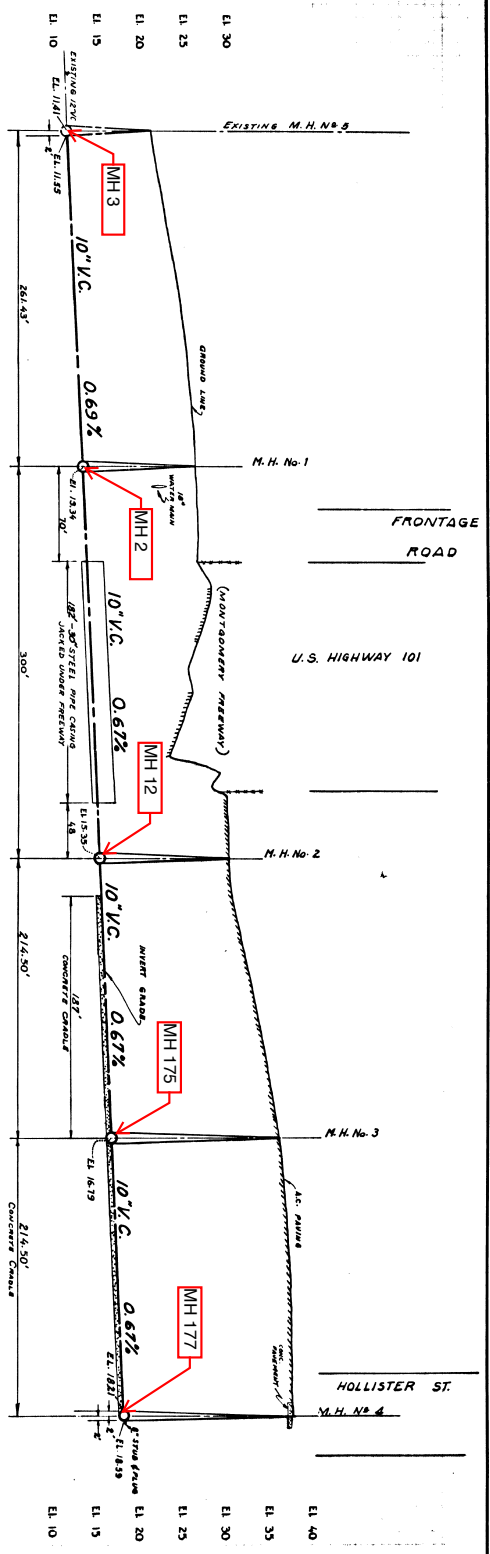
CITY OF SAN DIEGO
ENGINEERING DEPARTMENT

PROJECT: HOLLISTER STREET, PALM AVENUE, ET AL.
MAP No. 1768
ACRES: 17
MICROFILMED INDEXED

NO.	DATE	DESCRIPTION	BY	CHECKED
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99	1/14/88	AS BUILT	AS BUILT	AS BUILT
100	1/14/88	AS BUILT	AS BUILT	AS BUILT



PROFILE OF SEWER MAIN
SCALE: HORIZONTAL 1"=40'
VERTICAL 1"=6'



BENCH MARK: USC&GS New 40'x14' & PALM
440 TO CITY OF MAIN TRACK 5.0 & 4.18
E.L. = 44.55 (M.L.)

CITY OF SAN DIEGO
ENGINEERING DEPARTMENT

HOLLISTER STREET, PALM AVENUE, ET AL.
ELM AVENUE

DATE	DESCRIPTION	BY	CHECKED
12-10-44	DESIGNED	E. J. SULLIVAN	
1-10-45	DRAWN	J. W. BROWN	
1-10-45	CHECKED	E. J. SULLIVAN	
1-10-45	APPROVED	E. J. SULLIVAN	

AS BUILT
MICROFILMED
INDEXED



