APPENDIX M.
PRELIMINARY WASTEWATER REPORT

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PRELIMINARY WASTEWATER REPORT

FOR

PIRAEUS POINT

149 UNIT MULTIFAMILY DEVELOPMENT

PIRAEUS STREET, ENCINITAS, CA 92024

OWNER:
PIRAEUS INVESTOR LLC
158 N MELROSE DR
VISTA, CA 92083

APPLICANT:
LENNAR HOMES OF CALIFORNIA LLC
16465 VIA ESPRILLO, SUITE 150
SAN DIEGO, CA 92127

DATE:
JULY 5, 2022

PREPARED BY:
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SAN DIEGO CA, 92110

TYLER G. LAWSON, RCE 80356 DATE

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APPENDECIES

SECTION 1

INTRODUCTION

The Preliminary Wastewater Study for the proposed Piraeus Point development has been prepared to analyze the existing wastewater system downstream of the proposed development down to and including Saxony Pump Station (SAXPS). This report intends to present the methodology and calculations used to determine the existing wastewater infrastructure has the capacity to handle the additional wastewater discharge the proposed development will produce.

PROJECT DESCRIPTION

The Piraeus Point project is located east of Interstate 5 and is geographically settled between Piraeus Street to the east and Plato Place to the south. The site is bordered by single family homes to the east, Interstate 5 to the west, and undeveloped open space to the north and south. The current site is vacant and undeveloped.

The development proposes to construct 149 multi-family homes, amenity space, open space and supporting infrastructure over approximately 7 acres. The development proposes to tie into an existing sewer manhole just north of the intersection of Piraeus Street and Plato Place. Wastewater discharge will then enter the Leucadia Water District (LWD) public sewer system and travel in the northerly direction towards La Costa Ave. Further, wastewater will enter an existing 15" main at La Costa Ave. where it will ultimately discharge into the existing SAXPS.

SECTION 2

PLANNING AND DESIGN CALCULATIONS

The existing sewer system was analyzed at a few critical points as seen on the offsite sewer exhibit in Appendix A. Compliance with depth in pipe as well as velocity within the pipe ensures the existing system has sufficient capacity to convey the addition of the Piraeus Point development.

Associated calculations demonstrating the system compliance are outlined hereon.

SEWER FLOW ESTIMATE

The existing peak sewer flow rate is calculated using EDU quantities as provided by LWD. Sewer flow calculations are based on the LWD Standard Specifications and Procedures dated May 2019.

Existing and proposed sewer flow estimates are shown on the offsite sewer exhibit in Appendix A. Table 2-1 summarizes the existing peak flow calculations at critical points analyzed. Table 2-2 summarizes the peak wastewater flows generated post-development at the same critical points.

Peak wastewater flow rates are generated using the following equation:

$$PEAK\ FLOW\ (gpd) = EDU\ \times AVG.SEWAGE\ GENERATION\ FACTOR\ \times PEAKING\ FACTOR$$

Where EDU is the number of additional dwelling units proposed, average sewage generation factor is 215 gpd/edu based on the Leucadia Water District Standard Specifications and Procedures and the peaking factor in existing conditions is 3.32 while in proposed conditions it is 3.50 for a population less than 5,000 per Table 1-2-1 of the LWD Standard Specifications.

EXISTING SEWER GENERATION CALCULATIONS						
LAND USE	**FROM**	**TO**	**UNITS (EDU) [1]**	**AVERAGE FLOW FACTOR (gpd/edu) [2]**	**PEAK FACTOR [3]**	**PEAK SEWAGE FLOW (gpd)**
Residential	MH NO. 4	MH NO. 3	828	215	3.32	591,026
Residential	MH NO. 1A	SAXPS	973.5	215	3.32	694,884

Table 2-1

PROPOSED SEWER GENERATION CALCULATIONS						
LAND USE	**FROM**	**TO**	**UNITS (EDU) [1]**	**AVERAGE FLOW FACTOR (gpd/edu) [2]**	**PEAK FACTOR [3]**	**PEAK SEWAGE FLOW (gpd)**
Residential	MH NO. 4	MH NO. 3	977	215	3.50	854,875
Residential	MH NO. 1A	SAXPS	1,122.5	215	3.50	844,681.3
TOTAL						

Table 2-2

(1) Provided by Leucadia Water District via email dated March 23, 2022
(2) Per LWD Standard Specifications and Procedures Division 1 Part 2, dated May 2019
(3) Per Table 1-2-1 of LWD Standard Specifications and Procedures Division 1 Part 2, dated May 2019

PIPELINE SIZING

All proposed gravity sewers will be designed to convey the peak sewage flow in accordance with the LWD Standards and Specifications. For new pipes with diameter of smaller than 12-inches, the sewer will be designed to convey the peak flow when half full. For new pipes with diameter of 12-inches and larger sewer will be designed to convey a peak sewage flow at three-quarters full. All proposed public sewer will be designed to maintain a minimum design velocity of 2 ft/s.

Pipe design calculations can be found in Appendix B of this report. The pipe calculations show that the proposed development will not negatively impact the existing sewer infrastructure. Appendix B calculates the velocity of waste in the pipe and confirms the depth ratio using the Manning's Equation as stated below.

$$Q = \frac{\mathrm{K}' * D^{\frac{8}{3}} * s^{\frac{1}{2}}}{\mathrm{n}}; \; Q = V * A$$

SAXONY PUMP STATION

Table 2-3 summarizes the existing and proposed average flow into the existing SAXPS basin while Table 2-4 summarizes the existing and proposed peak flows into the SAXPS basin.

EXISTING & PROPOSED SAXSP AVERAGE FLOWS			
BASIN	**UNITS (EDU) [1]**	**FLOW GENERATION FACTOR (gpd/edu) [2]**	**AVERAGE FLOW (gpd)**
Ex. Saxony Basin	1,947	140	272,580
Proposed Development	149	140	20,860
TOTAL			**293,440**

Table 2-3

EXISTING & PROPOSED SAXSP PEAK FLOWS				
BASIN	**UNITS (EDU) [1]**	**FLOW GENERATION FACTOR (gpd/edu) [2]**	**PEAK FACTOR [3]**	**PEAK FLOW (gpd)**
Ex. Saxony Basin	1,947	140	3.32	904,966
Proposed Development	149	140	3.5	73,010
TOTAL				**977,976**

Table 2-4

(1) Provided by Leucadia Water District via email dated March 23, 2022
(2) The Estimated Actual Flow Generation Factor of 140 gpd/edu is based on the Saxony Pump Station Overview provided by LWD.
(3) Per Table 1-2-1 of LWD Standard Specifications and Procedures Division 1 Part 2, dated May 2019

The Saxony Pump Station Overview states that SAXPS consists of two, 40 hp constant speed type pumps. The station operates with two submersible pumps. According to the overview, the rated pump capacity of the station is 900 gpm at 93 ft TDH.

The Saxony Pump Station currently has a total wet well storage volume of 26,595 gal. The Station has an average storage time of 140.5 minutes (2.34 hours) in the existing condition. After the construction of Piraeus Point the average storage time will be 130.5 minutes (2.17 hours).

SECTION 3

CONCLUSION

Using Leucadia Water District guidelines this report coupled with the calculations in the Appendixes shows all existing sewer infrastructure can support the development of Piraeus Point. Existing sewer mains meet the maximum depth and minimum velocity requirements as seen in the calculations in

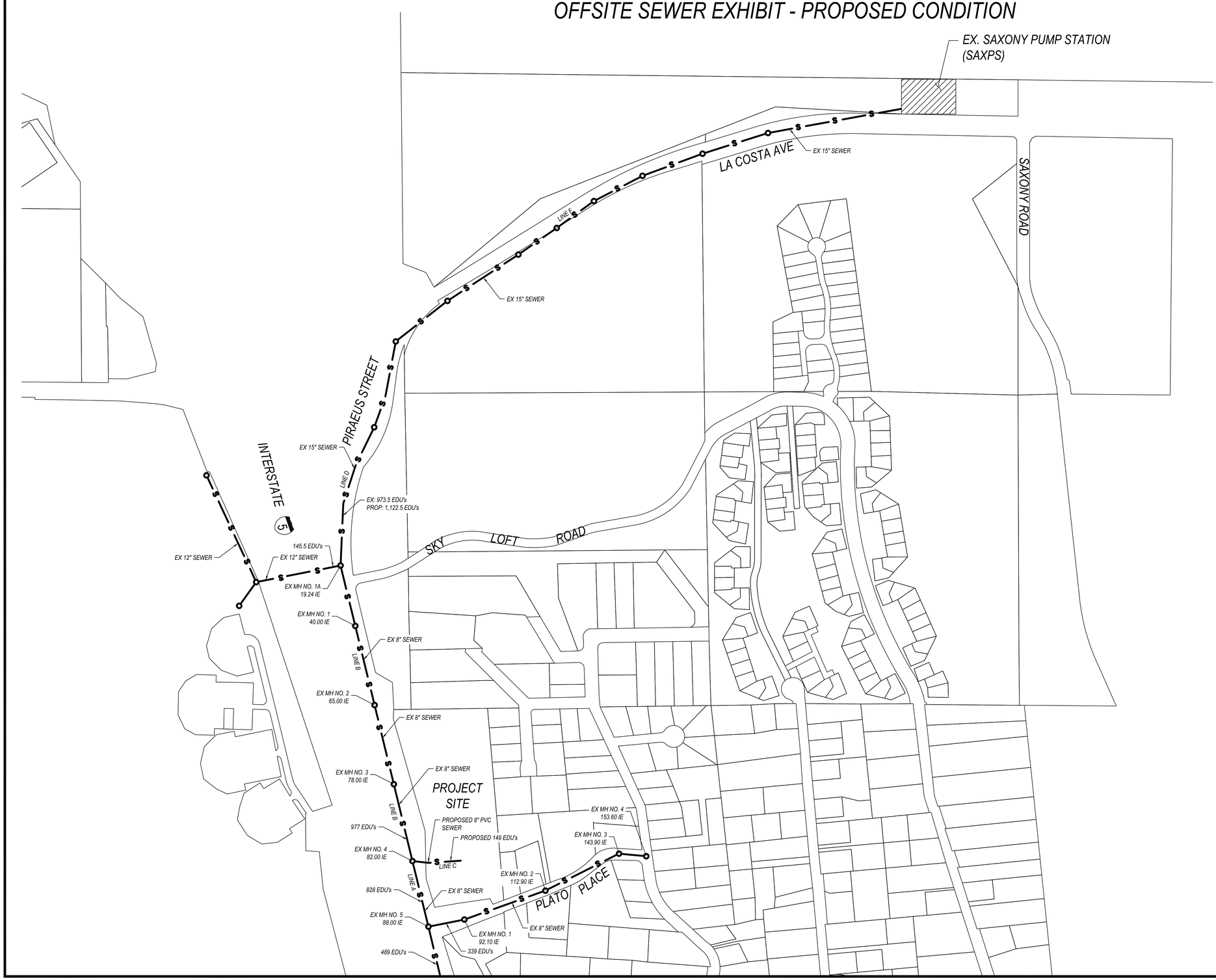
Appendix B. Additionally, Saxony Pump Station has the capacity to treat the additional sewage generated by Piraeus Point.

APPENDIX A

OFFSITE SEWER EXHIBIT

PIRAEUS POINT

OFFSITE SEWER EXHIBIT - PROPOSED CONDITION



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APPENDIX B

CALCULATIONS

SEWER STUDY SUMMARY

LINE	FROM	TO	TOTAL EDU'S	AVERAGE FLOW FACTOR (gpd/EDU) (1)	AVG. DRY WEATHER FLOW (gpd)	PEAKING FACTOR (2)	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (in)	DESIGN SLOPE (%)	DEPTH K'	dn (ft)	dn/D	Ca for Velocity	AREA	VELOCITY (ft/s)	DEPTH IN MAIN MEETS DESIGN GUIDELINES?	VELOCITY IN MAIN MEETS DESIGN GUIDELINES?
								M.G.D.	C.F.S										
PROPOSED DEVELOPMENT																			
A	MH NO. 5	MH NO. 4	828	215	178,020	3.32	591,026	0.59	0.91	8	2.0	0.2478	0.347	0.521	0.414	0.184	4.97	YES	YES
C	PROJECT SITE	MH NO. 4	149	215	32,035	3.5	112,123	0.11	0.17	8	5.6	0.0281	0.11	0.17	0.09	0.04	4.52	YES	YES
B	MH NO. 4	MH NO. 3	977	215	210,055	VARIES	703,149	0.70	1.09	8	1.18	0.3839	0.463	0.695	0.582	0.259	4.20	YES	YES
D (EXISTING)	MH NO. 1A	SAXPS	973.5	215	209,303	3.32	694,884	0.69	1.08	15	0.15	0.1990	0.573	0.458	0.343	0.536	2.01	YES	YES
D (PROPOSED)	MH NO. 1A	SAXPS	1,122.5	215	241,338	VARIES	807,007	0.81	1.25	15	0.15	0.2312	0.624	0.499	0.393	0.614	2.03	YES	YES

(1) PER SECTION 2.02.C-1 (DIVISION 1 PART 2) OF LEUCADIA WASTEWATER DISTRICT STANDARD SPECIFICATIONS AND PROCEDURES

(2) PER TABLE 1-2-1, PEAK FACTORS OF LEUCADIA WASTEWATER DISTRICT STANDARD SPECIFICAITONS AND PROCEDURES