### **DEXTER WILSON ENGINEERING, INC.**

WATER • WASTEWATER • RECYCLED WATER

CONSULTING ENGINEERS

ADDENDUM NO. 1 TO THE PACIFIC HIGHLANDS RANCH UNITS 8 & 9 PROJECT AND DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE PUBLIC SEWER STUDY, OCTOBER 2003 CITY OF SAN DIEGO

**ADDENDUM NO. 1** TO THE PACIFIC HIGHLANDS RANCH **UNITS 8 & 9 PROJECT** AND DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE **PUBLIC SEWER STUDY, OCTOBER 2003 CITY OF SAN DIEGO** 

January 21, 2020



EXP

1-21-2020

OFCALIFO

Job No. 1525-001

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### EXHIBITS

### EXHIBIT A PUMP STATION 79 SEWER BASIN

DEXTER S. WILSON, P.E. ANDREW M. OVEN, P.E. STEPHEN M. NIELSEN, P.E. NATALIE J. FRASCHETTI, P.E. STEVEN J. HENDERSON, P.E.

January 21, 2020

648-034

City of San Diego Development Services Department Water and Sewer Development Review 1222 First Avenue, 4th Floor San Diego, CA 92101-4101

Attention: Leonard Wilson, P.E., Senior Civil Engineer

Subject: Addendum No. 1 to the Sewer System Analysis for the Pacific Highlands Ranch Units 8 & 9 Project and the Del Mar Highlands Estates Affordable Housing Site in the City of San Diego

#### Introduction

This report is an Addendum to a previous report entitled "Sewer System Analysis for the Pacific Highlands Ranch Units 8 & 9 Project and the Del Mar Highlands Estates Affordable Housing Site in the City of San Diego" dated October 2016 and prepared by Dexter Wilson Engineering, Inc. (2016 Sewer Study). This 2016 Sewer Study calculated the sizing of the gravity sewer lines within Pacific Highlands Ranch Units 8 and 9, analyzed the capacity of the offsite gravity sewer system, and assessed the pumping capacity of Pump Station 79. This addendum will reassess the last two items.

The 2016 Sewer Study presented an analysis consisting of 12 units at the affordable housing site. This Addendum No. 1 will account for the revised unit count of 26 affordable dwelling units. Additionally, as part of this Addendum No. 1, the offsite sewer analysis and Pump Station 79 capacity assessment will be updated to address the modified development layout and updated sewer generation.

### Del Mar Highlands Estates Affordable Housing Sewer Study Addendum No. 1

This Public Sewer Study Addendum No. 1 provides an update to the 2016 Sewer Study for the Del Mar Highlands Estates Affordable Housing development site because of the proposed increased unit count. Where previously the affordable housing site project was proposed to include 12 multi-family residential units, the revised project proposes 26 multi-family residential units on the same 1.80-acre site. This addendum addresses the project sewer generation and the potential offsite impacts of the increased sewer generation.

Because the City of San Diego Public Utilities Department no longer allows public sewer in private streets, the onsite sewer collection system will be privately owned, operated, and maintained. Only the public trunk sewer system capacity is addressed in this Addendum; sizing of the private onsite sewer system will be provided in a separate study.

### **Proposed Land Use Plan**

The proposed site development plan for the Del Mar Highlands Estates Affordable Housing project is provided in Appendix A and the previous land development plan used as a basis for the 2016 Sewer Study is shown in Appendix B. The western portion of the site adjacent to Old El Camino Real contains 24 multi-family residential units which have already been constructed.

### Sewage Generation Projections

Sewage generation projections for the Del Mar Highlands Estates Affordable Housing project are updated as part of this addendum.

The sewer generation for the revised site plan is developed in accordance with the City of San Diego Design Guidelines and Standards. Multi-family residential sewer generation is estimated based on density and a unit sewer generation factor of 80 gpd/person.

**2016 Sewer Study Sewer Generation.** Table 1 below summarizes the average sewage generation for the Del Mar Highlands Affordable Housing project based on the land use plan presented in original 2016 Sewer Study.

The 2016 Sewer Study projected average sewer generation for the project was 3,360 gpd (2.3 gpm).

TABLE 1 DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE 2016 SEWER STUDY SEWER GENERATION				
Land Use Quantity Demand Factor Average Wa				
Residential (<9 DUs/acre)	12 Units	280 gpd/SF DU	3,360	
TOTAL			3,360 gpd = 2.3 gpm	

Addendum No. 1 Sewer Generation. Table 2 summarizes the average sewer generation for the Del Mar Highlands Affordable Housing project based on the revised increased unit site plan. The revised project proposes 26 residential units over 1.80 net acres equaling 14 units per acre. Table 1-1 in the City of San Diego Sewer Design Guide, attached as Appendix C, indicates that 14 units per acre falls in the range of 3.2 persons per dwelling unit. A dwelling unit density of 3.2 persons per dwelling unit and a unit sewer generation factor of 80 gpd/person results in a sewer generation rate of 256 gpd per multi-family dwelling unit at the project.

The projected average sewer generation for the revised project is 6,656 gpd (4.6 gpm).

TABLE 2 DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE ADDENDUM NO. 1 SEWER GENERATION				
Land Use Quantity Demand Factor Average Water U				
Residential (14 DUs/acre)	26 Units	256 gpd/SF DU	6,656	
TOTAL			6,656 gpd = 4.6 gpm	

From the City of San Diego's Sewer Design Guide, Figure 1-1, the peak dry weather flow to average flow ratio is 4.00 based on the population chart presented in the figure, resulting in an estimated peak dry weather flow of 26,624 gpd (18.5 gpm).

Appendix C of this report present the backup data for determining these peaking factors. For estimating the peaking factors, average flow was based on the project's average wastewater generation presented in Table 2.

### Sewage Generation Comparison and Analysis

In comparing the projected sewage generation from Table 1 and Table 2 above, the revised site plan will increase sewage generation projections from the 2016 Sewer Study at the affordable housing site by 3,296 gpd average. This increase in sewage generation is attributable to the increased quantity of multi-family residential units at the affordable housing site.

This increase in sewage flow is not significant enough to result in changing any downstream sewer line impacts. The increase in sewage flow does not change the conclusions and recommendations of the previous sewer study. The downstream sewer will be impacted by less than half of one percent as compared to the offsite analysis in the 2016 Sewer Study. This will be described in more detail later in this addendum.

#### **Proposed Onsite Private Sewer System**

The onsite gravity sewer system for the Del Mar Highlands Estates Affordable Housing project will be a private system. Appendix A presents the proposed onsite gravity sewer system layout for the project. Confirmation of the sizing of the private onsite sewer system will be provided in a separate study.

The private sewer collection system will merge and flow westward into an existing manhole onsite and then conveyed to Old El Camino Real. The existing 8-inch diameter public gravity lines in Old El Camino Real flows south until merging with and into the 15-inch diameter Gonzales Canyon Sewer.

#### Offsite Sewer System Analysis

The offsite sewer analysis in the existing 15-inch diameter and 18-inch diameter Gonzales Canyon Trunk Sewer up to Pump Station 79 was performed to confirm capacity for the additional affordable housing units. This offsite sewer calculation/analysis was presented in the 2016 Sewer Study as well. Peak dry weather sewage flow from the proposed project and existing tributary areas were used in the analysis. The existing sewer flows from the pertinent tributary areas were sourced from the 2016 Sewer Study.

The analysis of the existing offsite gravity sewer system is presented in Appendix D. The sewer analysis manhole diagram is also included in Appendix D.

In the current offsite sewer analysis for the Gonzales Canyon Trunk Sewer there are five (5) reaches of existing offsite sewer downstream of the proposed project that are flowing over the 0.50 d/D design criterion. They are the same reaches as were shown flowing over the design criterion in the 2016 Sewer Study:

Five segments of 15-inch diameter gravity sewer are at 0.54 d/D.

Flow velocities in the existing trunk sewer range from a low of 3.6 fps to a high of 6.0 fps.

The increase in flow in the existing 15-inch diameter and 18-inch diameter offsite sewer segments due to the 14 additional affordable housing dwelling units result in an increase in average sewer flow of 3,296 gpd. This equates to a percentage increase from the current existing flow of less than 0.4 percent. For reference, in the critical 15-inch diameter sewer segments the d/D ratio in the 2016 Sewer Study was 0.54 and the d/D ratio in this Addendum No. 1 is 0.54 as well. Thus, the impact of the incremental larger number of dwelling units in the Del Mar Highlands Estates Affordable Housing site is considered to be not significant.

### Pump Station 79 Capacity

The final aspect of this addendum to the Del Mar Highlands Estates Affordable Housing sewer study is to confirm the pumping capacity of Pump Station 79 which receives the flow from Pacific Highlands Ranch as well as several other developments in the vicinity. Exhibit A shows the basin boundary, or the sewer service collection area, for Pump Station 79.

The 2016 Sewer Study analyzed the capacity for Pump Station 79 in detail. Improvements to Pump Station 79 were performed from 2008 to 2010 and resulted in a pumping capacity of 2.8 mgd. Depending on the methodology of the peaking factor, it was determined that Pump Station 79 would expect a maximum build-out peak dry weather flow of 2.1 mgd (1.78 peak dry weather factor for entire Pump Station 79 tributary area). Thus, an increase of less than 0.01 mgd of peak dry weather flow from the Del Mar Highlands Estates Affordable Housing site is negligible compared to the overall Pump Station 79 sewer service basin. The Pump Station 79 pumping capacity of 2.8 mgd remains greater than the peak flow to the station of 2.11 mgd which includes the additional affordable housing units.

### **Conclusions and Recommendations**

The new proposed site plan for the Del Mar Highlands Affordable Housing project will increase sewage flow generation as compared to the flow projections in the 2016 Sewer Study. That study concluded that no improvements are needed to the sewer system downstream of either the Pacific Highlands Ranch or Del Mar Highlands Affordable Housing project. The sewage generation for the new proposed site plan for the Del Mar Highlands Estates Affordable Housing project increases the overall trunk sewer flow to Pump Station 79 by only 3,296 gpd average (0.35 percent). Therefore, this slight increase in sewage generation does not impact the capacity of the offsite existing sewer lines or the pumping capacity at Pump Station 79.

The site plan for the Del Mar Highlands Estates Affordable Housing project includes private streets thus the onsite sewer system will be private. This sewer system configuration is depicted within Appendix A at the back of this report.

Dexter Wilson Engineering, Inc.

Andrew Oven, P.E.

AO:SH:ps

cc: Maykia Vang, Civil Sense, Inc. Allen Kashani, P.E., Pardee Homes

Attachments

### APPENDIX A

NEW PROPOSED DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE PLAN

D	EVELOPMENT SUMMARY	
1.	SUMMARY OF REQUEST: RESIDENTIAL DEVELOPMENT PERMIT AMENDMENT FOR A PLANNED PERMIT NO. 94–057 PROPOSING AN ADDITIONAL 26 MULTI FAMILY AFFORDABLE DWELLING UNITS.	6 EXIS
2. 3.	STREET ADDRESS: 14163 OLD EL CAMINO REAL SAN DIEGO, CA 92130 SITE AREA TOTAL SITE AREA (GROSS): 1.80 ACRES (78,273 SF) NET SITE AREA: 1.80 ACRES (78,273 SF) (NET SITE AREA EXCLUDES REQUIRED STREET AND PUBLIC DEDICATIONS)	
4. 5. 6. 7.	ZONING: AR-1-1 COMMUNITY PLANNING AREA: PACIFIC HIGHLANDS RANCH EXISTING USE: VACANT PROPOSED USE: MULTI-FAMILY DU COVERAGE DATA	EXTEND WATE PH SERV EXTEND WATE PH SERV
8.	TOTAL LANDSCAPE / OPEN SPACE AREA:25,752 SFTOTAL HARDSCAPE / PAVED AREA:22,837 SFMIN GROSS FLOOR AREA (GFA):1,310 SF NOT INCLUDING GARAGEDENSITY	
٥	MAXIMUM DWELLING UNITS ALLOWED PER ZONE: 1 DU PER 10 ACRE LOT NUMBER OF EXISTING UNITS TO REMAIN ONSITE: NONE NUMBER OF PROPOSED DWELLING UNITS ONSITE: 13 DU TOTAL NUMBER OF UNITS PROVIDED ON THE SITE: 13 DU	
υ.	FRONT SETBACKREQUIRED: 25 FEETPROPOSED: N/ASIDE SETBACKREQUIRED: N/APROPOSED: N/ASTREET SIDE SETBACKREQUIRED: 20 FEETPROPOSED: 8 FEETREAR SETBACKREQUIRED: 25 FEETPROPOSED: N/A	EASEMENT GRANTED TO THE CITY OF SAN DIEGO FOR WATER FACILITIES
10.	EXISTING BRUSH MANAGEMENT ZONE 1 IS 20 FEET PROPOSED BRUSH MANAGEMENT ZONE 1 IS 80 FEET MINIMUM. BUILDING 2 ALONG TH SOUTH SIDE OF PROPERTY HAS A PROPOSED 35 FEET BMZ AND A 45 FEET BUILDING ENVELOPE WITH DUAL TEMPER/DUAL GLAZED GLASS FOR ALTERNATIVE COMPLIANCE.	EXISTING SEWER
11.	UNIT COUNT:BUILDING 1 - 3 UNITSBUILDING 2 - 5 UNITSBUILDING 3 - 6 UNITSBUILDING 4 - 5 UNITSBUILDING 5 - 7 UNITSTOTAL26 UNITS	EXISTING 4 IN PVC SEWER PER DWG 30225-D DWG 30225-D
	EGEND	in the second se
	SLOPES 2:1 MAX         PROPERTY LINE         CURB AND GUTTER/ROLLED CURB         SIDEWALK         STORM DRAIN         POTABLE WATER (PRIVATE)         FIRE MAIN (PRIVATE)         SEWER MAIN (PRIVATE)         WATER SERVICE         FIRE SERVICE         FIRE SERVICE         FIRE SERVICE         FIRE BACKFLOW         ADA PATH OF TRAVEL         PAD XXX         PAD LEVATION         FIRE HYDRANT         TOT LOT	CONNECT TO EXISTING SEWER MANHOLE EXISTING WATER METER AND BACKFLOW EXISTING 8 IM PVC WATER PER DWG 30225-D EXISTING WATER METER AND BACKFLOW EXTEND EXIST WATER AND PRIVATE 8" FIR 20 50 51 51 51 51 51 51 51 51 51 51 51 51 51



PREPARED BY:



HENRY H. PENG R.C.E. 63686



	NAME:	<u>CIVIL SENSE, INC.</u>	. REVI	SION 12:		
	ADDRESS:	13475 DANIELSON STREET, SUITE 150	REVI	SION 11:		
		POWAY, CA 92128	REVI	SION 10:		
	PHONE:	858-843-4253	REVI	SION 9:		
			REVI	SION 8:		
	PROJE	ECT ADDRESS:	REVI	SION 7:		
	14163 OL	D EL CAMINO REAL	REVI	SION 6:		
	SAN DIE	GO, CA 92130	REVI	SION 5:		
		•	REVI	SION 4:		
			REVI	SION 3:		
			REVI	SION 2:		
			- REVI	SION 1:		
	AFFORD	ABLE SITE PDP/SDP				
PROFESSION	FOR AME	ENDMENT TO PRD/RPO	ORIGINAL	DATE	12/	20/19
No. 63686 Exp. 09-30-20 ★	SHEET SITE PLA	ſ TITLE: N	SHEET	3	_OF _	10
ATE OF CALIFORNIE			DEP # _			

### **APPENDIX B**

PREVIOUSLY APPROVED DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING SITE PLAN



H:\1300\1390.00 - Pardee - PHR VTM-SDP Amendment Units 8\Engineering\Plane\Site Dev Permit Amendment\1390.0 SDP-01 - Cover Sheet.dw 8/23/2016 9:51:41 AM

# DEL MAR HIGHLANDS ESTATES AFFORDABLE SITE PLANNED DEVELOPMENT PERMIT NO. XX-XXXX CITY OF SAN DIEGO

## GRADING

- 1. TOTAL AMOUNT OF SITE TO BE GRADED: 0.96 AC
- 2. PERCENT OF TOTAL SITE GRADED: 53%
- 3. AMOUNT OF SITE WITH 25% SLOPES OR GREATER: 0.08 AC 4. PERCENT OF THE EXIST. SLOPES STEEPER THAN 25% PROPOSED TO BE GRADED: 100%
- 5. PERCENT OF TOTAL SITE WITH 25% SLOPES OR GREATER: 4.4%
- 6. AMOUNT OF CUT: 400 CUBIC YARDS
- 7. AMOUNT OF FILL: 1600 CUBIC YARDS
- 8. MAXIMUM HEIGHT OF FILL SLOPES(S): 4 FEET 2:1 SLOPE RATIO
- 9. MAXIMUM HEIGHT OF CUT SLOPE(S): 0 FEET 2:1 SLOPE RATIO
- 10. AMOUNT OF EXPORT SOIL: 0
- 11. RETAINING/CRIB WALLS: HOW MANY: 0

### MAXIMUM LENGTH: 0

MAXIMUM HEIGHT: 0 NOTE: ADDITIONAL WALLS UNDER 3' IN EIGHT MAY BE REQUIRED IN RESIDENTIAL PAD AREAS BASED ON FINAL HOUSE PLOTTING

ALL RESIDENTIAL LOCAL AND PRIVATE STREETS. WITH GRADE BREAK OF 1% OR GREATER. SHALL HAVE VERTICAL CURVES IN ACCORDANCE WITH THE CITY OF SAN DIEGO STREET DESIGN MANUAL

### DEVELOPMENT SUMMARY

1. SUMMARY OF REQUEST:

RESIDENTIAL DEVELOPMENT PERMIT AMENDMENT FOR A PLANNED PERMIT NO. 94-0576 PROPOSING AN ADDITIONAL 12 MULTI FAMILY AFFORDABLE DWELLING UNITS.

2. STREET ADDRESS

14163 OLD EL CAMINO REAL SAN DIEGO, CA 92130

- 3. SITE AREA:
  - TOTAL SITE AREA (GROSS): 1.80 ACRES (78,273 SQ. FT.)
  - NET SITE AREA: \_\_\_\_\_ (\_\_\_\_\_ SQ. FT.) (NET SITE AREA EXCLUDES REQUIRED STREETS AND PUBLIC DEDICATIONS)
- 4. ZONING: AR-1-1
- . COMMUNITY PLANNING AREA: PACIFIC HIGHLANDS RANCH
- 6. COVERAGE DATA
- TOTAL LANDSCAPE/OPEN SPACE AREA: \_\_\_\_\_
- TOTAL HARDSCAPE/PAVED AREA: \_\_\_\_
- MIN GROSS FLOOR AREA (GFA): 650 SF NOT INCLUDING GARAGE MAX LOT COVERAGE: 10%
- 7. DENSITY

MAXIMUM DWELLING UNITS ALLOWED PER ZONE: <u>1 DU PER LOT</u> NUMBER OF EXISTING UNITS TO REMAIN ON SITE: NONE NUMBER OF PROPOSED DWELLING UNITS ON SITE: 12 TOTAL NUMBER OF UNITS PROVIDED ON THE SITE: 12

8. YARD/SETBACK:

FRONT YARD:	REQUIRED: 25'
STREET SIDE YARD:	REQUIRED: N/A
SIDE YARD(S):	REQUIRED: 20'
REAR YARD:	REQUIRED: 25'

9. BRUSH MANAGEMENT ZONE 1 IS 20'



( IN FEET )

1 inch = 40 ft.

120

20 40

LEGAL DESCRIPTION

PARCEL 1: APN 304-643-09

PARCEL A OF PARCEL MAP 19205 IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, APRIL 9, 2003.

PARCEL 2: APN 304-643-08

LOT U OF DEL MAR HIGHLANDS ESTATES, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 13818, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JULY 2, 1999.

EXCEPTING THEREFROM, UNTIL DECEMBER 31, 2044, AS A MINERAL INTEREST AND NOT AS A ROYALTY INTEREST, ALL OF THE MINERALS OF EVERY KIND, INCLUDING, BUT NOT LIMITED TO, ALL OIL, GAS, HYDROCARBONS AND ASSOCIATED SUBSTANCES IN, UNDER OR THAT MAY BE EXTRACTED. PRODUCED AND SAVED FROM SAID REAL PROPERTY BUT WITHOUT THE RIGHT OF ENTRY TO THE SURFACE OF SAID REAL PROPERTY OR THE TOP 500 FEET OF THE SUBSURFACE OF SAID REAL PROPERTY FOR THE PURPOSES OF EXPLORING FOR, DEVELOPING AND REMOVING SUCH MATERIALS.

PARCEL 3: APN 304-643-10

PARCEL B OF PARCEL MAP 19205 CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY APRIL 9, 2003.

### PARCEL 4:

AN EASEMENT FOR GENERAL UTILITY PURPOSES, TOGETHER WITH THE RIGHT TO REPLACE, MAINTAIN AND ALTERATION OF ANY UTILITY EQUIPMENT OR FACILITY, AND FOR VEHICULAR AND PEDESTRIAN INGRESS, EGRESS ON AND OVER THE DRIVEWAY ON PARCEL A OF PARCEL MAP 19205 CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, APRIL 9, 2003, DELINEATED ON SAID PARCEL MAP AS "GENERAL UTILITY AND ACCESS EASEMENT GRANTED HEREON".

### SHEET INDEX

HEET NUMBER	<b>DESCRIPTION</b>
1	COVER SHEE
2	EXISTING TOP
3	GRADING, UT
4	FIRE ACCESS
5 –	LANDSCAPE

OWNER/DEVELOPER: PARDEE HOMES 13400 SABRE SPRINGS PARKWAY, SUITE 200 SAN DIEGO, CA 92128 (858)794–2500 FAX(858)794–2599

PLANNING: LATITUDE 33 PLANNING & ENGINEERING 9968 HIBERT ST. 2ND FLR SAN DIEGO, CA 92131 (858) 751–0633

9968 HIBERT ST. 2ND FLR SAN DIEGO, CA 92131 (858) 751–0633

LANDSCAPE ARCHITECT: RICK ENGINEERING 5620 FRIARS RD. SAN DIEGO, CA 92110 (619) 291–0707

PREPARED IN THE OFFICE OF:



C. JOHN EARDENSOHN RCE 34584 EXP. 9-30-2003



POGRAPHY AND EASEMENTS TILITY, AND SITE PLAN S PLAN PLAN

**GENERAL NOTES** 

LOT SUMMARY 1. RESIDENTIAL LOTS: WATER QUALITY BASIN LOTS:

- HOA: MONUMENT SIGN LOTS: PUBLIC RIGHT OF WAY:
- 2. TOTAL AREA WITHIN SUBDIVISION IS 1.80 ACRES GROSS.
- 4. GAS AND ELECTRIC: SAN DIEGO GAS & ELECTRIC
- 5. TELEPHONE: TIME WARNER CABLE 6. CABLE TELEVISION: TIME WARNER CABLE
- 7. SEWER AND WATER: CITY OF SAN DIEGO
- 8. DRAINAGE SYSTEM: AS REQUIRED BY CITY ENGINEER
- 9. FIRE: CITY OF SAN DIEGO
- 10: SCHOOL DISTRICT: SAN DIGUITO UNION H.S./SOLANA BEACH ELEMENTARY SCHOOL DISTRICT 11. ALL NEW UTILITIES WILL BE LOCATED UNDERGROUND
- 12. CONTOUR INTERVAL: 2 FEET DATUM: GPS PT. NP. 542 - N 1,927,136.68, E 6,267,611.17, ELEV. = 190.83 SOURCE: SAN-LO AERIAL SURVEYS
- DATE: 1-5-99 13. ALL PROPOSED SLOPES ARE 2:1 UNLESS NOTED OTHERWISE
- 14. GRADING SHOWN HEREON IS PRELIMINARY AND IS SUBJECT TO MODIFICATION IN FINAL DESIGN

15. LOT DIMENSIONS AND SETBACK DIMENSIONS SHOWN HEREON ARE PRELIMINARY AND ARE SUBJECT TO MODIFICATION IN FINAL DESIGN

17. OPEN SPACE LOTS TO BE MAINTAINED BY THE HOME OWNERS ASSOCIATION

OCCUPANCY CLASSIFICATION	ZONING DESIGNATION	TY
MULTI-FAMILY	R-1	

<u>PE OF CONSTRUCTION</u> TYPE V / RATED

TOTAL AREA: \_\_\_\_\_

TOTAL AREA: 0.07 AC

TOTAL AREA: \_\_\_\_\_

TOTAL AREA: \_\_\_\_\_ TOTAL AREA: \_\_\_\_\_

18. ALL RESIDENTIAL LOCAL AND PRIVATE STREETS, WITH A GRADE BREAK OF 1% OR GREATER, SHALL HAVE VERTICAL CURVES IN ACCORDANCE WITH THE CITY STREET DESIGN MANUAL 19. ALL PUBLIC WATER FACILITIES AND ASSOCIATED EASEMENTS WILL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF SAN DIEGO WATER FACILITY DESIGN GUIDELINES AND REGULATIONS, STANDARDS AND PRACTICES PERTAINING THERETO. 20. THIS TENTATIVE MAP INCLUDES MULTIPLE MAP UNITS WHICH MAY BE FILED AS INDIVIDUAL FINAL MAPS AS PERMITTED BY THE CALIFORNIA STATE SUBDIVISION MAP ACT. THE DEVELOPER RESERVES THE RIGHT TO FILE THE FINAL MAPS OUT OF NUMERICAL SEQUENCE. THE CITY ENGINEER SHALL REVIEW SUCH MAP UNITS AND IMPOSE REASONABLE CONDITIONS RELATING TO THE FILING OF SAID MAP UNITS

### SOLAR ACCESS NOTE

THIS IS TO AFFIRM THAT THE DESIGN OF THIS SUBDIVISION PROVIDES, TO THE EXTENT FEASIBLE, FOR FUTURE PASSIVE OR NATURAL HEATING AND COOLING OPPORTUNITIES IN ACCORDANCE WITH THE PROVISION OF SECTION 66473.1 OF THE STATE SUBDIVISION MAP ACT.

ASSESSOR'S PARCEL NO.

304-643-10, 304-643-09, 304-643-08

### LAMBERT COORDINATES

### DESITY

288–1705

MAXIMUM NUMBER OF DWELLING UNITS ALLOWED PER ZONE: \_\_\_\_\_ MAXIMUM NUMBER OF DWELLING UNITS ON SITE: \_\_\_\_\_

### BENCHMARK

LOCATION: OLD EL CAMINO REAL/SAN DIEGUITO ROAD \*SEBP (SOUTHEAST CORNER BRASS PLUG) TOP INLET REFERENCE: CITY OF SAN DIEGO VERTICAL CONTROL BENCHBOOK/OCTOBER 04. 2011 INDEX: NORTHING 295499 EASTING 1699630 ELEVATION: 22.473 DATUS IS: M.S.L

\*ELEVATION UP-DATED PER U.S.C.G.S. ADJUSTMENT OF 1970, MAY DIFFER FROM PREVIOUS ELEVATION

### GEOLOGIC HAZARD CATEGORY

53 – LEVEL OR SLOPING TERRAIN, UNFAVORABLE GEOLOGIC STRUCTURE, LOW TO MODERATE RISK.

CIVIL ENGINEER: LATITUDE 33 PLANNING & ENGINEERING

DATE

LATITUDE 33 PLANNING & ENGINEERING Name:

Address: <u>9968 HIBERT ST. 2ND FLR</u> SAN DIEGO, CA 92131 Phone #: (858) 751-0633 <u>(858) 751–0634</u> Fax #:

Project Address: 14163 OLD EL CAMINO REAL

Project Name:

DEL MAR HIGHLANDS ESTATES AFFORDABLE HOUSING

Sheet Title: SITE DEVELOPMENT PERMIT COVER SHEET

Revision	14:
Revision	13:
Revision	12:
Revision	11:
Revision	10:
Revision	9:
Revision	8:
Revision	7:
Revision	6:
Revision	5:
Revision	4:
Revision	3:
Revision	2:
Revision	1:
Original	Date:
Sheet	1ofXXX

DEP#

### APPENDIX C

### EXCERPT FROM CITY OF SAN DIEGO SEWER DESIGN GUIDE

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.

<u>Equivalent Population</u>: 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.

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

<u>Average Dry Weather Flow (ADWF)</u>: 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:

Average Dry Weather Flow = (80 gpcpd) x (Equivalent Population)

<u>Peaking Factor for Dry Weather Flow (PFDWF):</u> 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.

<u>Peak Dry Weather Flow (PDWF)</u>: 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).

Peak Dry Weather Flow = (Average Dry Weather Flow) x (Dry Weather Flow Peaking Factor)

<u>Peaking Factor for Wet Weather Flow (PFWWF)</u>: 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.

<u>Peak Wet Weather Flow (PWWF)</u>: 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.

Peak Wet Weather Flow = (Peak Dry Weather Flow) x (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.

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

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*				

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

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

### **Definitions:**

DU = Dwelling UnitsAc = 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 =  $0.8 \times \text{Gross}$  Area in Acres

For developed areas, calculate actual Net Acreage.

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

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\* <u>Versus Tributary Population</u>

	<u>Ratio of Peak to</u>		<u>Ratio of Peak to</u>			
<b>Population</b>	<b>Average Flow</b>	<b>Population</b>	<b>Average Flow</b>			
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 x (pop)<sup>-0.1342</sup> (Holmes & Narver, 1960)

### FIGURE 1-1

#### **APPENDIX D**

### OFFSITE GONZALES TRUNK SEWER ANALYSIS AND SEWER MANHOLE DIAGRAM

DATE:	DATE: 10/4/2016					SEWER STUDY SUMMARY														
					-	FOR:		Offsite Se	ewer Analysis	Basins A-J	- PHR Uni	ts 8 & 9			SHT	1	OF	2	_	
JOB NI	JMBER:		598-007		-	BY:			Dexter Wils	on Engineer	ring, Inc.				REFE	R TO PLAN S	HEET:			-
r		r			1	1		1	r	r		r		r	r	1	r	r	T	1
				POP.	IN-LINE	POPU		SEWAGE PER	AVG. DRY	PEAKING	PEAK	PEAK FLO	W (DESIGN	LINE SIZE	DESIGN	D D D D D D (1)		(2)	C <sub>a</sub> for	VELOCITY
LINE	FROM	10	LENGTH (ft)	PER	EDUs	SEI	TOTAL	(and/person)	FLOW (and)	FACTOR	(apd)		000)	(inches)	SLOPE (%)	DEPTH K' '''	dn (feet)	dn/D <sup>(2)</sup>	Velocity <sup>(3)</sup>	(f.p.s.)
55	8D-100	R-10		3.5	1 764 00	IN-LINE 6174.0	6174.0	(gpu/person) 80	493 920	1 941	958 847	M.G.D.	C.F.S. 1 484	12	9.20	0.063589	0.25	0.25	0 1538	9.65
177	R-10	R-11		3.5	0.00	0.0	6174.0	80	493,920	1.941	958 847	0.959	1.484	12	2 30	0.127178	0.36	0.36	0.2528	5.87
178	R-11	R-12		3.5	0.00	0.0	6174.0	80	493,920	1.941	958.847	0.959	1.484	12	2.80	0.115265	0.34	0.34	0.2354	6.30
179	R-12	R-13		3.5	0.00	0.0	6174.0	80	493.920	1.941	958.847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
180	R-13	R-14		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
181	R-14	R-15		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
182	R-15	R-16		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
183	R-16	R-17		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
184	R-17	R-18		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.70	0.230530	0.50	0.50	0.3912	3.79
185	R-18	MH15-3		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	4.50	0.090922	0.30	0.30	0.1985	7.47
	MH15-3	MH15-4		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.65	0.239233	0.51	0.51	0.4033	3.68
	MH15-4	MH15-5		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.65	0.239233	0.51	0.51	0.4033	3.68
	MH15-5	MH15-6		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.65	0.239233	0.51	0.51	0.4033	3.68
	MH15-6	MH15-7		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.65	0.239233	0.51	0.51	0.4033	3.68
	MH15-7	MH15-8		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	1.19	0.176809	0.43	0.43	0.3214	4.62
	MH15-8	MH15-9		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	0.80	0.215641	0.48	0.48	0.3722	3.99
	MH15-9	MH15		3.5	0.00	0.0	6174.0	80	493,920	1.941	958,847	0.959	1.484	12	11.10	0.057892	0.24	0.24	0.1438	10.31
	MH15	MH16		3.5	482.00	1687.0	7861.0	80	628,880	1.878	1,181,016	1.181	1.827	12	1.10	0.226510	0.49	0.49	0.3861	4.73
	MH16	MH17		3.5	0.00	0.0	7861.0	80	628,880	1.878	1,181,016	1.181	1.827	12	1.10	0.226510	0.49	0.49	0.3861	4.73
	MH17	DM72		3.5	0.00	0.0	7861.0	80	628,880	1.878	1,181,016	1.181	1.827	12	2.97	0.137850	0.37	0.37	0.2680	6.82
700	G-8	G-9		3.5	254.00	889.0	889.0	80	71,120	2.617	186,085	0.186	0.288	8	1.00	0.110361	0.22	0.33	0.2282	2.84
600	G-9	DM72		3.5	41.00	143.5	1032.5	80	82,600	2.490	205,695	0.206	0.318	8	10.80	0.037121	0.13	0.19	0.1049	6.82
	DM 70	D1470		0.5	0.00		0000 5		711.100	1.0.40	4 0 4 0 0 0 4	1.010	0.000	10	4.00	0.004470	0.54	0.54	0.40.45	4.00
D72	DM72	DM73		3.5	0.00	0.0	8893.5	80	711,480	1.846	1,313,321	1.313	2.032	12	1.00	0.264179	0.54	0.54	0.4345	4.68
D73	DM73	DM74		3.5	0.00	0.0	8893.5	80	711,480	1.846	1,313,321	1.313	2.032	12	1.00	0.264179	0.54	0.54	0.4345	4.68
D74	DM74	DM75		3.5	0.00	0.0	8893.5 9902 E	80	711,480	1.846	1,313,321	1.313	2.032	12	1.00	0.264179	0.54	0.54	0.4345	4.68
D75	DIVI75	DIVI76		3.5	0.00	0.0	0093.3 8803.5	80	711,400	1.040	1,313,321	1.313	2.032	12	1.00	0.264179	0.54	0.54	0.4345	4.00
D76	DM77	DM78		3.5	0.00	0.0	8893.5	80	711,400	1.846	1 313 321	1 313	2.032	12	1.00	0.204179	0.54	0.54	0.4345	4.00
D77	DM78	DM70		3.5	0.00	0.0	8893.5	80	711,480	1.846	1 313 321	1 313	2.032	12	1.00	0.204179	0.54	0.54	0.4345	4.00
D70	DM79	DM80		3.5	0.00	0.0	8893.5	80	711,480	1.846	1,313,321	1.313	2.002	12	1.00	0.264179	0.54	0.54	0.4345	4.68
D13	DM80	DM52		3.5	0.00	0.0	8893.5	80	711 480	1.846	1 313 321	1.313	2.032	12	1.00	0.264179	0.54	0.54	0 4345	4 68
D81	DM52	MH6		3.5	101.00	353.5	9247.0	80	739,760	1.837	1.358.984	1.359	2.103	12	1.55	0.219572	0.48	0.48	0.3773	5.57
OF1	MH6	MH5		3.5	418.00	1463.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF2	MH5	MH4		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF3	MH4	MH3		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF4	MH3	MH2		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF5	MH2	MH1		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF6	MH1	MH146		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF7	MH146	MH26		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	1.20	0.157107	0.50	0.40	0.2948	5.21
OF8	MH26	MH25		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	2.76	0.103594	0.40	0.32	0.2180	7.05
OF9	MH25	MH24		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.65	0.213467	0.60	0.48	0.3695	4.16
OF10	MH24	MH5		3.5	0.00	0.0	10710.0	80	856,800	1.811	1,551,265	1.551	2.400	15	0.80	0.192416	0.56	0.45	0.3422	4.49
OF11	MH5	MH4		3.5	56.00	196.0	10906.0	80	872,480	1.808	1,577,374	1.577	2.441	15	0.80	0.195655	0.57	0.45	0.3464	4.51
OF12	MH4	MH3		3.5	168.00	588.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	1.10	0.175089	0.53	0.43	0.3191	5.14
OF13	MH3	MH2		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.80	0.205310	0.58	0.47	0.3589	4.57
OF14	MH2	MH1		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.80	0.205310	0.58	0.47	0.3589	4.57

LINE FROM	FROM	TO	LENGTH (ft)	t) POP.	IN-LINE EDUs	POPULATION SERVED		SEWAGE PER CAPITA/DAY (apd/parrop)	AVG. DRY WEATHER	PEAKING FACTOR	PEAK FLOW	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)		DEPTH K' <sup>(1)</sup>	dn (feet)	dn/D <sup>(2)</sup>	C <sub>a</sub> for Velocity <sup>(3)</sup>	VELOCITY (f.p.s.)
			D.0.		IN-LINE	TOTAL	(gpu/person)	FLOW (gpu)		(gpu)	M.G.D.	C.F.S.		(70)					-	
OF15	MH1	MH41		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.89	0.194652	0.57	0.45	0.3451	4.75
OF16	MH41	MH56		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.89	0.194652	0.57	0.45	0.3451	4.75
OF17	MH56	MH40		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.89	0.194652	0.57	0.45	0.3451	4.75
OF18	MH40	MH40A		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.50	0.259698	0.67	0.54	0.4289	3.82
OF19	MH40A	MH39		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.50	0.259698	0.67	0.54	0.4289	3.82
OF20	MH39	MH55		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.50	0.259698	0.67	0.54	0.4289	3.82
OF21	MH55	MH38		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.50	0.259698	0.67	0.54	0.4289	3.82
OF22	MH38	MH36		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.50	0.259698	0.67	0.54	0.4289	3.82
OF23	MH36	MH35		3.5	0.00	0.0	11494.0	80	919,520	1.800	1,655,210	1.655	2.561	15	0.76	0.210643	0.59	0.47	0.3658	4.48
OF24	MH35	MH34		3.5	105.00	367.5	11861.5	80	948,920	1.795	1,703,482	1.703	2.636	18	0.68	0.140940	0.57	0.38	0.2724	4.30
OF25	MH34	MH33		3.5	0.00	0.0	11861.5	80	948,920	1.795	1,703,482	1.703	2.636	18	0.40	0.183763	0.66	0.44	0.3306	3.54
OF26	MH33	MH51		3.5	0.00	0.0	11861.5	80	948,920	1.795	1,703,482	1.703	2.636	18	0.48	0.167752	0.62	0.42	0.3093	3.79
OF27	MH51	MH52		3.5	0.00	0.0	11861.5	80	948,920	1.795	1,703,482	1.703	2.636	18	0.50	0.164363	0.62	0.41	0.3046	3.85
OF28	MH52	PS79		3.5	0.00	0.0	11861.5	80	948,920	1.795	1,703,482	1.703	2.636	18	1.73	0.088362	0.44	0.30	0.1945	6.02
						_		_								_			_	

Total EDUS Total Pop. 3,389.0 11,862

Min Slope 0.40

Max dn/D 0.54



Values in RED are adjustments made by Denter Wilson Engineering, Inc. based on a review of existing and proposed development in the Pung Station 79 sewer service areq. June 30, 2016



LEGEND ----- DRAINAGE BASIN BOUNDARY ------ EXISTING GRAVITY SEWER ------ EXISTING FORCE MAIN ------- SUBAREA BOUNDARY PACIFIC HIGHLANDS RANCH PIPE NUMBER 52
FLOW DIRECTION AND EDUS

#### OFFSITE SEWER SYSTEM

FIGURE 7

