PASCO LARET SUITER & ASSOCIATES

CIVIL ENGINEERING + LAND PLANNING + LAND SURVEYING

February 21, 2022

City of San Diego
Development Services Department
505 So. Vulcan Avenue
Encinitas, CA 92024

RE: HYDROLOGY AND HYDRAULICS ANALYSIS FOR VACANT LOT, EL AMIGO ROAD, DEL MAR, CA (APN: 300-294-26)

The purpose of this letter is to address the hydrology and hydraulics of the improvements associated with the above-mentioned proposed development.

HYDROLOGY

The proposed development will consist of the construction of one structure, PCC custom pervious pavers, concrete patios, and landscaping. The project site is currently vacant. Approximately 3,895 ft^2 of impervious area is proposed as part of this development. The required stormwater detention volume to mitigate for the proposed improvements along with the structure will be 452 ft^3 minimum. Mitigation for the detention volume may be achieved using storage tanks, below grade gravel storage, or a biofiltration basin. Drainage patterns onsite in the existing condition generally flow north, south, and west. There are existing cross-lot drainage concerns to the north and west. Drainage in the proposed condition will generally drain predominately south to El Amigo Road via surface drainage as well as a pipe system with inlets throughout the site design. The proposed drainage inlets shall improve the onsite drainage condition and eliminate the cross-lot drainage issue to the west. There will still be a cross-lot drainage concern to the north, but will be reduced as part of the proposed development. Runoff from the site reaches La Amatista Road and El Amigo Road. Runoff from the site drains west and ultimately reaches Camino Del Mar, then the Pacific Ocean.

HYDRAULICS

The drainage system within the development area appears to have been designed to adequately convey and contain Q_{100} and has greatly reduced the cross-lot drainage concerns.

Based on the discussion in this letter it is the professional opinion of Pasco Laret Suiter & Associates, Inc. that the proposed drainage system on the corresponding Architectural Site Plan will function to adequately intercept, contain and convey flow from a 100 year storm to the appropriate points of discharge.

Please call if you have any questions.

Sincerely,

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Project Location: 32°57'02.7"N 117°15'21.1"W

$Q = CIA$
$I = 7.44\ x\ P_6\ x\ D^{-0.645}$ $P_{6(100)} = 2.5"$
$I = 7.44\ x\ P_{6(100)}\ x\ D^{-0.645}$ $D = T_c = 5\,\text{min}\ \ (assumed)$
= 7.44 * 2.5 * $(5)^{-.645}$
= 6.59 *in/hr*

Existing and proposed conditions for all three basins

C (Table 3.1) – Soil Group "D"
$C_p = 0.35$
$C_{IMP} = 0.9$

Basin 1

Basin 1 Existing conditions
A_{TOTAL} = 18,495 SF = 0.42 AC
$A_{PERVIOUS}$ = 18,495 SF = 0.42 AC
A_{IMP} = 0 SF = 0 AC

$$C_{EX} = C_{IMP}(\%\ IMP) + C_p(1 - \%\ IMPERVIOUS)$$

C_{EX} = 0.9 (0/ 7,739) + 0.35 (1 – (0/ 7,739))
C_{EX} = 0.35

$Q = CIA$
Q = (0.35)(6.59)(0.18) = 0.42 CFS

Basin 1 Proposed Condition:
A_{TOTAL} = 7,739 SF = 0.18 AC
$A_{PERVIOUS}$ = 3,844 SF = 0.09 AC
A_{IMP} = 3,895 SF = 0.09 AC

$$C_{PR} = C_{IMP}(\%\ Impervious) + C_p(\%\ Pervious)$$
C_{PR} = 0.9 (3,895/ 7,739) + 0.35 (1 – (3,844/ 7,739))
C_{PR} = 0.9 (0.50) + 0.35 (0.50)
C_{PR} = 0.63

$Q = CIA$
Q = (0.63)(6.59)(0.18) = 0.75 CFS

Detention Volume:

$V_{EX} = P_{6(100)}AC_{EX}$ = (2.5 in / 12 in/ft) (7,739 sf * 0.35) = 564 cf

$V_{PR} = P_{6(100)}AC_{PR}$ = (2.5 in / 12 in/ft) (7,739 sf * 0.63) = 1,016 cf

Storage Volume Required = 452 cf