REVISED
ANALYSIS OF
DOMESTIC WATER, SEWER
AND STORM DRAIN IMPACTS

PASEO DE LA PLAYA
SITE 2

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Domestic Water Use

Impacts to the existing City water system caused by the development of Site 2 of the Paseo de la Playa project will be analyzed using the American Water Works Association Manual of Water Supply Practices, Sizing Water Service Lines and Meters, Publication AWWA M22.

The domestic water use will be based on the water supply fixture units contained within the Site 2 development. According to the project architect, the site water fixtures based on the preliminary plans are as follows:

	No.	Water Supply Fixture Units (WSFU)	Hot & Cold Water Factor	Total WSFU
Kitchen sink	16	1.5	1.5	36.0
Dishwasher	0	1.5	1.5	0.0
Bathroom Sink	16	1.5	1.5	36.0
Shower Stall	0	4.0	1.5	0.0
Bathtub	0	4.0	1.5	0.0
Comb. Bath/Shower	16	4.0	1.5	96.0
Toilet	16	3.0		0.0
Washing Machine	3	4.0	1.5	18.0
Laundry Sink	0	2.0	1.5	0.0
Hose Bib	9	2.5		22.5
Total				**208.5**

According to Figure 4.4 of AWWA M22, the instantaneous demand at 35 psi is 30 gpm.

Applying a multiplication factor to adjust demand load to the peak load based on existing water pressure (Table 4.2, AWWA M22) will yield the following:

Demand = (2) (30) = 60 gpm

Flow rate in the existing 12" PVC water main in Santa Barbara Street west is 1,463 gpm. The instantaneous demand represents 2.1% of the flow, and peak demand represents 4.1% of the flow. Therefore, there is adequate capacity in the existing 12" PVC water main to serve the project.

Sewer Service

The domestic water flows calculated above will be used to determine the adequacy of the existing City sewer system as the water using fixtures except the hose bibs will drain to the sewer system. The water use for hose bibs will be included in the sewer load, therefore this will create a worst case for both instantaneous and peak load. Using the domestic water use figures, the instantaneous load for sewer will be 30 gpm and the peak

load will be 60 gpm. According to City staff, the existing flow in the 42" HDPE sewer main is 0.795 mgd. The project will add an instantaneous load of 0.043 mgd (30 gpm x 60 min/hr x 24 hr/day / 1,000,000) and a peak load of 0.086 mgd to the existing flow.

As stated previously, the existing flow in the existing 42" HDPE sewer main is 0.795 mgd. Reducing this figure to cubic feet per second (cfs) and applying a 2.5 factor of safety with a 12 hour period will produce the following flow:

$$Q = (.795 \text{ mgd})\ (1{,}000{,}000)\ (1\text{ft}^3 / 7.5 \text{ gal})\ (1/12 \text{ hr})\ (1 \text{ hr} / 60 \text{ min})\ (1 \text{ min} / 60 \text{ sec})\ (2.5)$$

$$= (795{,}000 \text{ gal / day})\ (1\text{ft}^3 / 7.5 \text{ gal})\ (1 / 43{,}200 \text{ sec})\ (2.5)$$

$$= (265{,}000 / 43{,}200)$$

$$Q = 6.1 \text{ cfs}$$

The capacity of the existing 42" HDPE sewer main will be calculated for the pipe flowing one half full based on the Manning equation using the following from the Handbook of Hydraulics, King & Brater:

$$Q = k^1/n\ d^{8/3}\ s^{1/2}$$

d = 42" = 3.5'
S = 0.0016 ft/ft
(City Dwg. No. C-1-3616)

$$= 0.232 / 0.010\ (3.5)^{8/3}\ (.0016)^{1/2}$$

$$= (23.2)\ (28.24)\ (0.040)$$

$$Q = 26.0 \text{ cfs}$$

The remaining capacity is therefore 19.9 cfs (26.0 cfs – 6.1 cfs).

Converting the instantaneous and peak flows of the project to CFS using the same formula as previously shown will yield an instantaneous flow of 0.33 cfs and a peak flow of 0.66 cfs. These flows represent 1.7% and 3.3% respectively of the remaining capacity of the existing sewer main.

Storm Drain System

The proposed Site 2 development will not increase storm water runoff from pre-development levels. This is in accordance with the City's Storm Water Management Program. The proposed project, therefore, will not impact downstream storm drain facilities and it is unnecessary to submit hydraulic calculations.