

ALAN R. SHORT, P.E.

SEWER & WATER GENERATION ANALYSIS

FOR

CITY OF GARDEN GROVE

12828 NEWHOPE STREET TENTAVIE TRACT No. 19298

PREPARED FOR:

THE OLSON COMPANY
3010 OLD RANCH PARKWAY, SUITE 100
SEAL BEACH, CA. 92740

PREPARED BY:

ALAN R. SHORT, P.E.
RCE 30873, EXPIRES 3/31/24



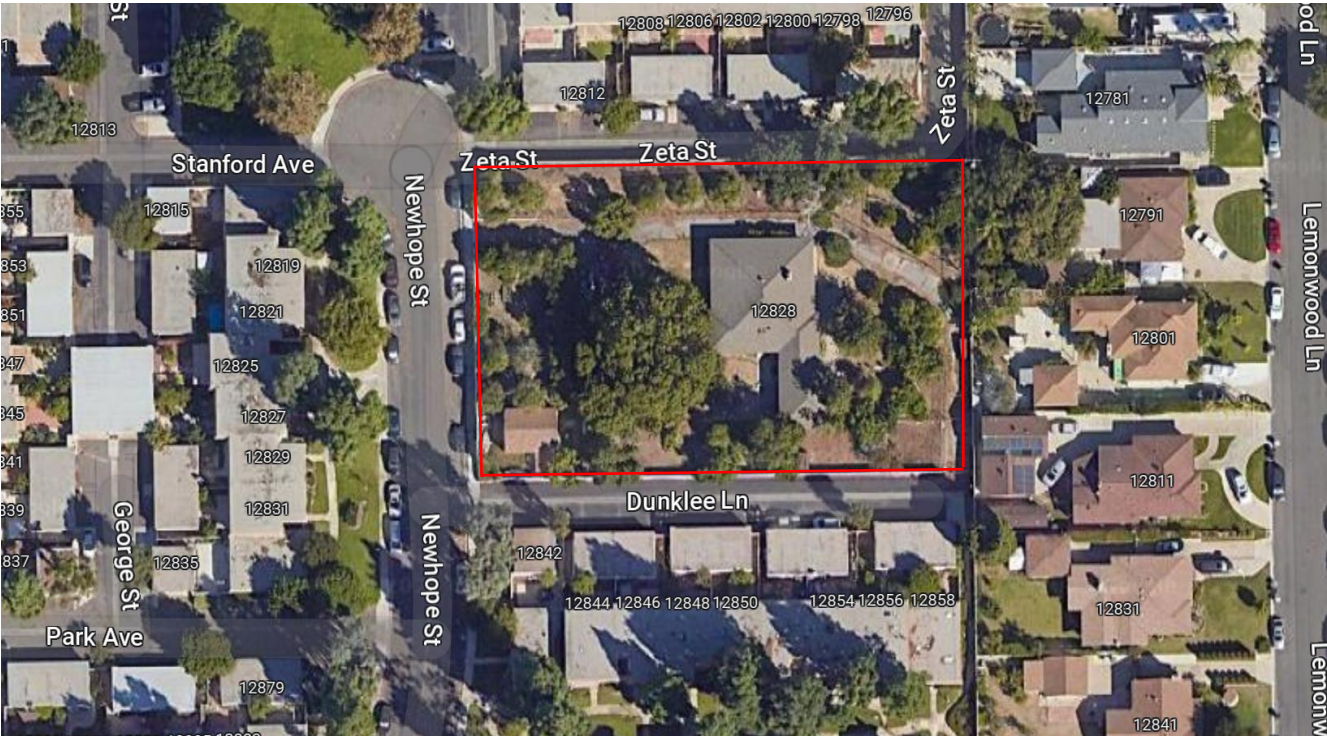
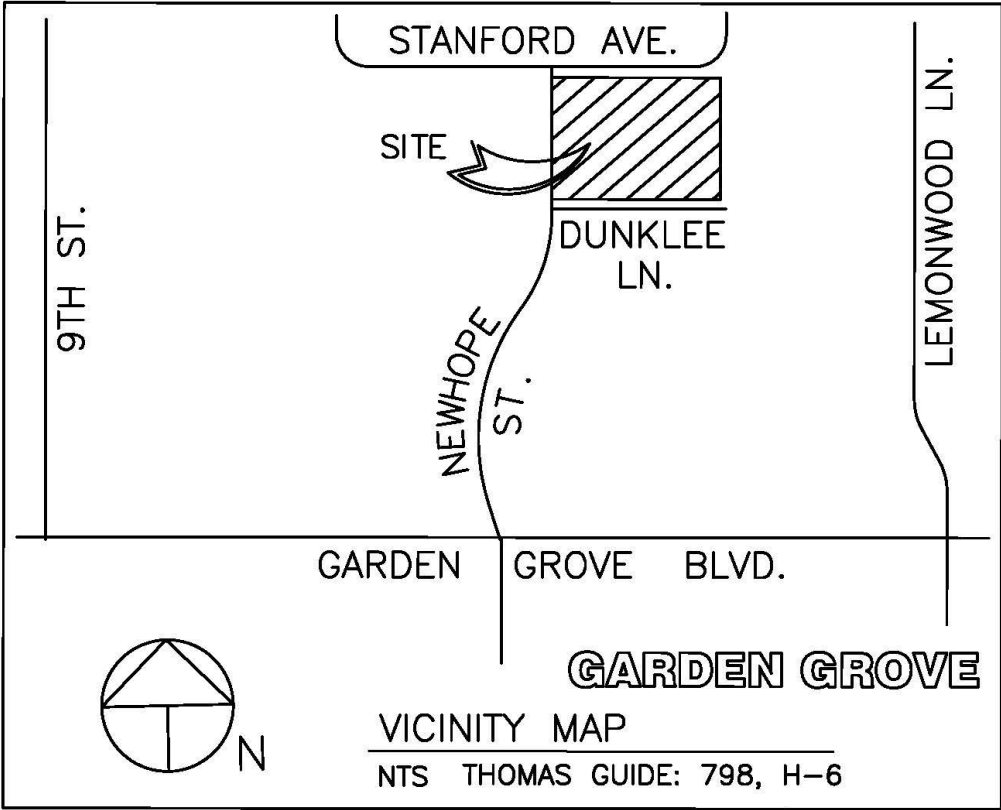
Latest Revision:
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Vicinity Map



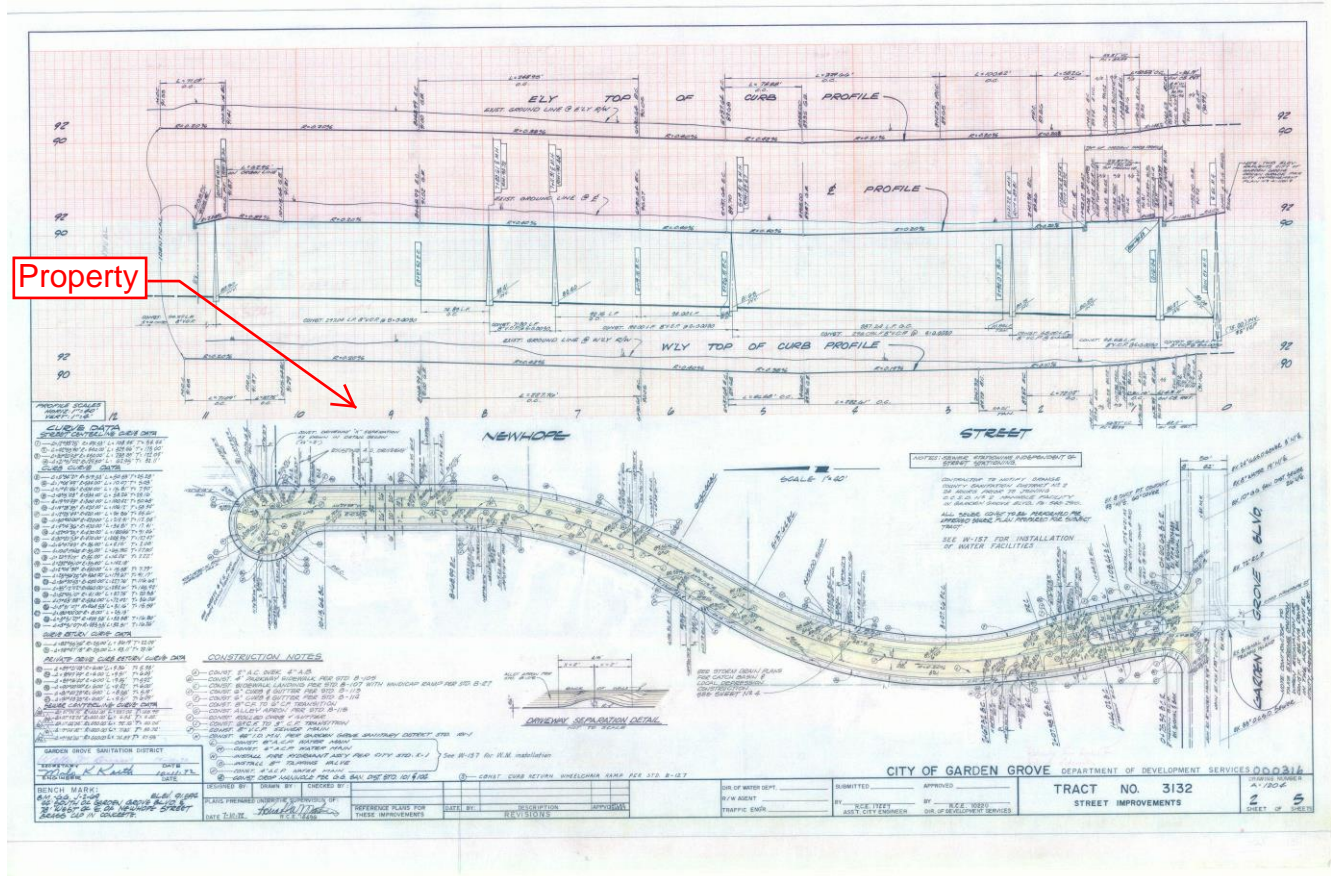
Project Description

Tentative Tract No. 19298 is a proposed 15 Unit single-family detached condominium project located at 12828 Newhope Street in Graden Grove. The project is bounded by an existing single-family detached residential development on the East and an existing attached condominium project on the North, West and South sides.

The project is currently one large single-family lot. The site has an existing 8" public sewer main and an 8" public water main on the West side located in Newhope Street (below). This development is planning to connect to the existing public sewer system using a private 6" connection and to connect to the existing water using a 4" private system.

To address the increase of the additional flows from the proposed project, values for existing flows and design flows were obtained using the Orange County Sanitation District flow generation values as shown on page 6.

Sewer Plan



Sewer Flow Generation Analysis

Flows are determined using the Orange County Sanitation District flow factors (following page):

Existing: 0.88 Acres x 727 gpd/ac (Estate Density) = 640 gpd
 2.0 Peak Factor = 1,280 gpd
 = 0.002 cfs

Proposed: 0.88 Acres x 5,474 gpd/ac (Med-High Density) = 4,817 gpd
 2.0 Peak Factor = 9,636 gpd
 = 0.015 cfs

No data is available for the existing flow in the public sewer line, however the maximum capacity of the pipe at ½ full (0.5d/D) is 0.33 cfs (see below).

Inputs			Results	
Pipe diameter, d_0	0.67	ft	Flow depth, y	0.3350 ft
Manning roughness, n	0.013		Flow area, a	0.1763 ft ²
Pressure slope (possibly ? equal to pipe slope), S_0	0.003	rise/run	Pipe area, a_0	0.3526 ft ²
Relative flow depth, y/d_0	0.5	fraction	Relative area, a/a_0	0.5000 fraction
			Wetted perimeter, P_w	1.0524 ft
			Hydraulic radius, R_h	0.1675 ft
			Top width, T	0.6700 ft
			Velocity, v	1.9023 ft/sec
			Velocity head, h_v	0.0562 ft H ₂ O
			Froude number, F	0.65
			Average shear stress (tractive force), τ	0.0314 psf
			Flow, Q (See notes)	0.3353 cfs
			Full flow, Q_0	0.6707 cfs
			Ratio to full flow, Q/Q_0	0.5000 fraction



ORANGE COUNTY SANITATION DISTRICT

We protect public health and the environment by providing effective wastewater collection, treatment, and recycling.

December 28, 2011

RECEIVED BY
COMMUNITY
JAN 03 2012
DEVELOPMENT
CITY OF NEWPORT BEACH

Rosalinh Ung, Associate Planner
City of Newport Beach
3300 Newport Blvd.
Newport Beach, CA 92658-8915

SUBJECT: Notice of Preparation and Initial Study for Uptown Newport Project

- Serving
- Atwater
- Brea
- Buena Park
- Cypress
- Fountain Valley
- Fullerton
- Garden Grove
- Huntington Beach
- Irvine
- La Habra
- La Palma
- Los Alamitos
- Newport Beach
- Orange
- Placentia
- Santa Ana
- Seal Beach
- Stanton
- Tustin
- Yorba Linda
- Costa Mesa Sanitary District
- Mickelthwait City Sanitary District
- County of Orange

This letter is in response to the above referenced Notice of Preparation and Initial Study for Uptown Newport Project for a project within the City of Newport Beach (City). The project site is located 0.6 miles from John Wayne Airport. It is bounded by Jamboree Road on the east and is within an area bounded by Birch Street on the north and Von Karman Avenue and MacArthur Blvd. on the west, within the City of Newport Beach.

The proposed project would consist of mixed uses with up to 1,244 residential units, 11,500 square feet of neighborhood serving retail space, and two acres of park space. The project site is within the jurisdiction of the Orange County Sanitation District (OCSD).

Please indicate how the connection to the City sewers will lead into the OCSD system. OCSD is concerned that the existing sewer may not have capacity to serve the project, and requests that a sewer study be performed unless it can be demonstrated that the project will not generate a significant increase in flows. Please indicate if the project will require any modifications to city sewers or if our records on the city sewers are incorrect. This could be done by a figure to display wastewater routing into the OCSD system. Use the following flow factors to estimate current and future flows in the Environmental Impact Report:

Existing

- 727 gpd/acre for estate density residential (0-3 d.u./acre)
- 1488 gpd/acre for low density residential (4-7 d.u./acre)
- 3451 gpd/acre for medium density residential (8-16 d.u./acre)
- 5474 gpd/acre for medium-high density residential (17-25 d.u./acre)
- 7516 gpd/acre for high density residential (26-35 d.u./acre)
- 2262 gpd/acre for commercial/office
- 3167 gpd/acre for industrial
- 2715 gpd/acre for institutional

Proposed



Water Demand Fixture Unit Analysis

The following table summarizes the proposed change in Fixture Units (table follows) for this development.

EXISTING:

Fixture	FU Value	Number	FU Count
Kitchen Sink	2	1	2
Lavatory	1	5	5
Toilet	3	4	12
Tub/Shower	2	3	6
Clothes Washer	3	1	3
Dish Washer	2	1	2
TOTAL			30

PROPOSED:

2 Full Bath – 2 Half Bath Units (8 Total)

Fixture	FU Value	Number	FU Count
Kitchen Sink	2	1	2
Lavatory	1	5	5
Toilet	3	4	12
Tub/Shower	2	2	4
Clothes Washer	3	1	3
Dish Washer	2	1	2
TOTAL			28

3 Full Bath – 1 Half Bath Units (7 Total)

Fixture	FU Value	Number	FU Count
Kitchen Sink	2	1	2
Lavatory	1	5	5
Toilet	3	4	12
Tub/Shower	2	3	6
Clothes Washer	3	1	3
Dish Washer	2	1	2
TOTAL			30

Total Fixture Units 8 x 28 = 224
 7 x 30 = 210
 Total = 434 Fixture Units

Increase = 434 – 30 = 404 Fixture Units

California Plumbing Code:

TABLE 702.1
 DRAINAGE FIXTURE UNIT VALUES (DFU)

PLUMBING APPLIANCES, APPURTENANCES, OR FIXTURES	MINIMUM SIZE TRAP AND TRAP ARM ⁷ (inches)	PRIVATE
Bathtub or Combination Bath/Shower	1½	2.0
Bidet	1¼	1.0
Bidet	1½	2.0
Clothes Washer, domestic, standpipe ⁵	2	3.0
Dental Unit, cuspidor	1¼	—
Dishwasher, domestic, with independent drain ²	1½	2.0
Drinking Fountain or Water Cooler	1¼	0.5
Food Waste Disposer, commercial	2	—
Floor Drain, emergency	2	—
Floor Drain (for additional sizes see Section 702.0)	2	2.0
Shower, single-head trap	2	2.0
Multi-head, each additional	2	1.0
Lavatory	1¼	1.0
Lavatories in sets	1½	2.0
Washfountain	1½	—
Washfountain	2	—
Mobilehome or Manufactured Home, trap ⁹	3	6.0
Receptor, indirect waste ^{1,3}	1½	—
Receptor, indirect waste ^{1,4}	2	—
Receptor, indirect waste ¹	3	—
Sinks	—	—
Bar	1½	1.0
Bar ²	1½	—
Clinical	3	—
Commercial with food waste ²	1½	—
Exam Room	1½	—
Special Purpose ²	1½	2.0
Special Purpose	2	3.0
Special Purpose	3	—
Kitchen, domestic ² (with or without food waste disposer, dishwasher, or both)	1½	2.0
Laundry ² (with or without discharge from a clothes washer)	1½	2.0
Service or Mop Basin	2	—
Service or Mop Basin	3	—
Service, flushing rim	3	—
Wash, each set of faucets	—	—
Urinal, Hybrid	2	1.0
Urinal, integral trap 1.0 GPF ²	2	2.0
Urinal, integral trap greater than 1.0 GPF	2	2.0
Urinal, exposed trap ²	1½	2.0
Water Closet, 1.6 GPF Gravity Tank ⁶	3	3.0
Water Closet, 1.6 GPF Flushometer Tank ⁶	3	3.0
Water Closet, 1.6 GPF Flushometer Valve ⁶	3	3.0
Water Closet, greater than 1.6 GPF Gravity Tank ⁶	3	4.0
Water Closet, greater than 1.6 GPF Flushometer Valve ⁶	3	4.0

Water Demand Factor = 1.0 gpm per FU

Existing = 30 fu x 1.0 gpm/fu = 30 gpm

Proposed = 434 fu x 1.0 gpm/fu = 434 gpm

Fire Flow Demand

The following California Fire Code table indicates the required water demand for this project = 1,000 gpm.

**CFC TABLE B105.1(2):
Minimum Required Fire Flow and Flow Duration
for Buildings in OCFA Jurisdiction**

FIRE FLOW CALCULATION AREA (square feet)					DETACHED SINGLE-FAMILY RESIDENCE/DUPLEX			OTHER BUILDINGS		
					FIRE FLOW (gallons per minute at 20 psi residual)		DURATION (hours)	FIRE FLOW (gallons per minute at 20 psi residual)		DURATION (hours)
Type IA/IB	Type IIA/IIIA	Type IV/VA	Type IIB/IIIB	Type VB	NS	S		NS	S	
0-22700	0-12700	0-8200	0-5900	0-3600	1000	1000	1	1500	1500	
22701-30200	12701-17000	8201-10900	5901-7900	3601-4800	1750	1000		1750	1500	
30201-38700	17001-21800	10901-12900	7901-9800	4801-6200	2000	1000		2000	1500	

Existing measured flow = 4,370 gpm.

Water Department/District: City of Garden Grove - Water Services Division

Test location (indicate address or cross-streets & provide reference map): 12828 Newhope St.

Hydrant number(s) (if applicable): 15623

Elevation of test hydrant: - feet above sea level

Date of Test¹: 9/12/2023 Time of test¹: 7:56 am pm

¹ Test to be performed as close as possible to the time that the lowest flows and pressures are expected (e.g., M-F, 6:00 – 9:00 am and 5:00 - 9:00 pm)


FLOW TEST RESULTS			
TEST INFORMATION IS VALID FOR 6 MONTHS FROM DATE TEST IS PERFORMED			
Static pressure:	<u>57</u>	psi	Residual pressure:
Observed flow:	<u>1126</u>	gpm	Flow calc'd at 20 psi:
			<u>4370</u>
			gpm

Check the box if the test information above was obtained in a manner other than an actual flow test (i.e. by computer modeling).

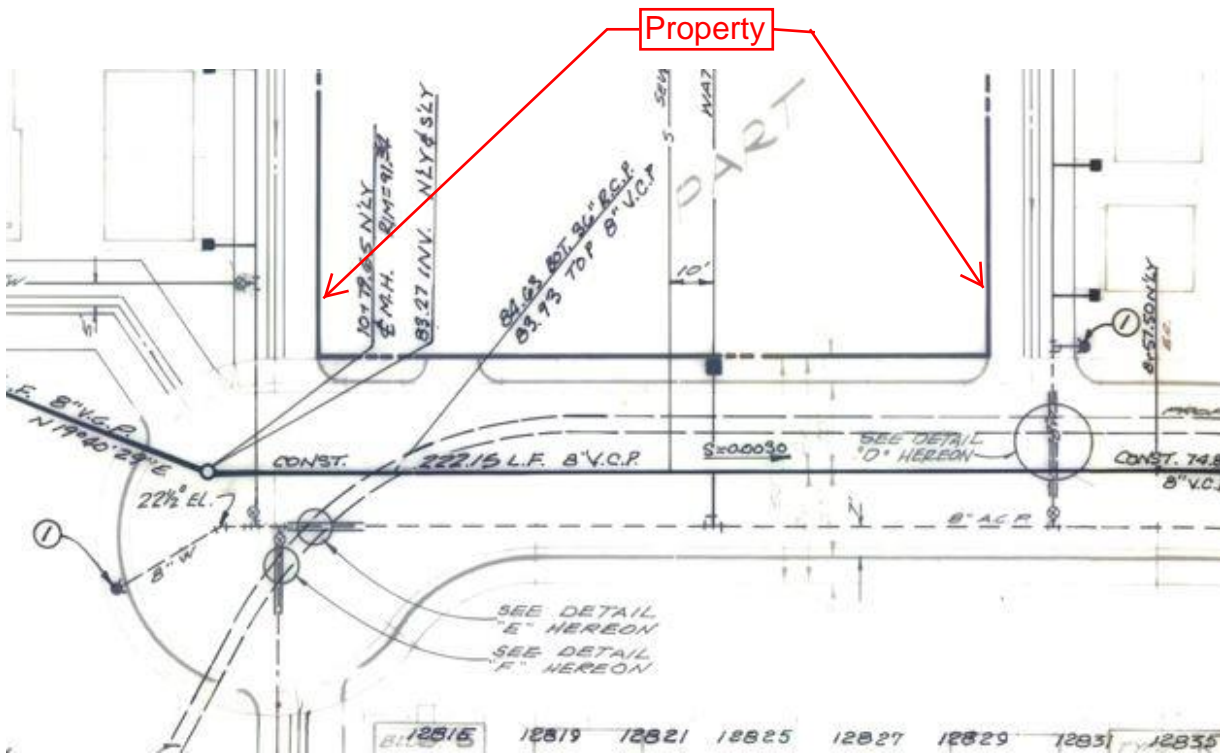
Based on fluctuations known to exist at the site of the test, provide estimated values for the following:			
Maximum static pressure	<u>58</u>	psi	Minimum static pressure
Minimum residual pressure	<u>-</u>	psi	Minimum residual flow
			<u>-</u>
			gpm

I have witnessed and/or reviewed this water flow information and by personal knowledge and/or on-site observation certify that the above information is correct.

Name: Tommy Son Company/Agency: City of Garden Grove

Signature:  Title: Senior Engineering Technician

Date: 9/12/2023



Summary

The proposed project will add additional demands as follows:

Sewer > Increase from 0.002 cfs to 0.015 cfs (1,280 gpd to 9,636 gpd)

Domestic Water > Increase from 30 gpm to 434 gpm

Fire > 1,000 gpm

Existing Water Flow > 4,370 gpm

The proposed development should not have significant impact on the existing sewer and water facilities.