

SANITARY SEWER MEMORANDUM

To: Peter Mateo (Fifth & Sterling, LLC)
From: Davie Cowan, P.E. (Kimley-Horn and Associates, Inc.)
Date: June 12, 2024
Subject: 5th and Sterling, City of San Bernardino, CA

SEWER SUMMARY

The Project plans to discharge the proposed waste generation to the existing East Valley Water District (EVWD) sanitary sewer line located in 6th Street. The existing 21" Vitrified Clay Pipe (VCP) sanitary sewer line is located on the north side of the centerline of 6th street and consists of a series of manholes and pipes.

Based on the project's proposed sewer generation rates compared to the existing sewer capacity, the project's sewer generation would consume approximately 0.069% of the total available capacity of the existing 21" VCP sanitary sewer line in the dry weather condition flow. As such, it is the opinion of the Project Engineer that this utilization of the total capacity of the existing sanitary sewer line is de minimis and would not require any related infrastructure improvements to increase capacity of said line. As a result, a formal sanitary sewer capacity study would not be necessary; refer to the calculations provided below.

EXISTING SEWER LINE STATISTICS

- Diameter = 21-inch
- Material = VCP
- Manning coefficient, $n = 0.012$
- Slope, $S = 0.0082$ ft/ft

EXISTING SEWER LINE CAPACITY CALCULATIONS

- Dry Weather Flow
 - $d/D = 0.75$
 - $d/D = 15.75 \text{ inch} / 21.00 \text{ inch} = 0.75$
 - Existing Dry Weather Flow = 9,160,537 GPD
- Wet Weather Flow
 - $d/D = 1.00$
 - $d/D = 21.0 \text{ inch} / 21.0 \text{ inch} = 1.0$
 - Wet Weather Flow = 10,045,796 GPD

PROJECT SEWER GENERATION RATE AND CAPACITY CONSUMPTION

- Type of Use: Industrial, light manufacturing
- Estimated Sewer Flow Rate per EVWD = 0.04 Gallons per Day/ square foot.
- Project Building Square Footage = 557,000 square feet (ground floor space + mezzanine)
- Office Flow Rate = $10,000 \text{ SF} * 0.09 \text{ GPD/ SF} = 900 \text{ GPD}$
- Warehouse Flow Rate = $547,000 \text{ SF} * 0.01 \text{ GPD/SF} = 5,470 \text{ GPD}$
- Total Project Sewer Flow = 6,370 Gallons per Day
- Dry Weather Flow: $6,370 \text{ GPD} / 9,160,537 \text{ GPD} = \mathbf{0.069\%}$
- Wet Weather Flow: $6,370 \text{ GPD} / 10,045,796 \text{ GPD} = \mathbf{0.063\%}$

Worksheet for d/D = 0.75

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.008 ft/ft
Normal Depth	15.8 in
Diameter	21.0 in
Results	
Discharge	9,160,536.62 gal/day
Flow Area	1.9 ft ²
Wetted Perimeter	3.7 ft
Hydraulic Radius	6.3 in
Top Width	1.52 ft
Critical Depth	16.8 in
Percent Full	75.0 %
Critical Slope	0.007 ft/ft
Velocity	7.32 ft/s
Velocity Head	0.83 ft
Specific Energy	2.15 ft
Froude Number	1.143
Maximum Discharge	10,806,321.0 gal/day
Discharge Full	10,045,795.3 gal/day
Slope Full	0.007 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	75.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.8 in
Critical Depth	16.8 in
Channel Slope	0.008 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for d/D = 1.00

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.008 ft/ft
Normal Depth	21.0 in
Diameter	21.0 in
Discharge	10,045,795.3 ₅ gal/day
Results	
Discharge	10,045,795.3 ₅ gal/day
Normal Depth	21.0 in
Flow Area	2.4 ft ²
Wetted Perimeter	5.5 ft
Hydraulic Radius	5.3 in
Top Width	0.00 ft
Critical Depth	17.5 in
Percent Full	100.0 %
Critical Slope	0.008 ft/ft
Velocity	6.46 ft/s
Velocity Head	0.65 ft
Specific Energy	2.40 ft
Froude Number	(N/A)
Maximum Discharge	10,806,321.0 ₀ gal/day
Discharge Full	10,045,795.3 ₅ gal/day
Slope Full	0.008 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	21.0 in

Worksheet for $d/D = 1.00$

GVF Output Data

Critical Depth	17.5 in
Channel Slope	0.008 ft/ft
Critical Slope	0.008 ft/ft
