

Appendix K1 Wastewater Analysis

Appendices

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MEMO

DATE: September 16, 2016

TO: Jack Haupt, City of Hope

FROM: KPFF Consulting Engineers

RE: **City of Hope Campus Plan: Revised Wastewater Analysis**

KPFF prepared this memorandum to assess the potential impacts to sanitary sewer lines resulting from the proposed City of Hope Campus Plan [the Project]. The proposed Project would involve additions to the existing outpatient [clinic], inpatient [hospital], research, office, industrial, warehouse, and hospitality uses at the City of Hope Campus, as well as new parking structures and surface lots, and open space improvements. The proposed Project anticipates development of the Campus over a period of 20 years, including the replacement of existing outdated and obsolete buildings with modern facilities. Upon full build-out, implementation of the proposed Project would result in an allowable building area [i.e., maximum permitted development] of 2,639,350 gross square feet on the Campus, which represents an overall increase of approximately 1,038,500 net new gross square feet of development [approximately 1,426,000 gross square feet of new construction, minus approximately 387,500 gross square feet of existing facilities proposed for demolition] as compared to existing conditions. A table showing the existing and proposed land uses at the Campus under the Project is provided below.

Land Use Projections for City of Hope Campus Plan

| Land Use | Existing Conditions (GSF) | Proposed Net New Development (GSF) ² | Total Allowable Building Area (GSF) |
|----------------------|---------------------------|---|-------------------------------------|
| Outpatient (Clinic) | 304,322 | 430,000 | 734,322 |
| Inpatient (Hospital) | 425,722 | 139,500 | 565,222 |
| Research | 457,936 | 301,000 | 758,936 |
| Office | 186,296 | 132,000 | 318,296 |
| Hospitality | 18,168 | 57,000 | 75,168 |
| Assembly | 69,295 | -29,000 | 40,295 |
| Warehouse | 59,244 | -48,500 | 10,744 |
| Industrial | 73,909 | 56,500 | 130,409 |
| Housing ¹ | 5,958 | 0 | 5,958 |
| Total | 1,600,850 GSF | 1,038,500 | 2,639,350 |

Notes: GSF = Gross Square Feet

- 1 The existing housing consists of rental units owned by City of Hope along Cinco Robles, which are rented primarily by grad students attending City of Hope's Irell & Manella Graduate School of Biological Sciences.
- 2 The proposed net new development accounts for up to 387,500 square feet of demolition.

1. Introduction

This memorandum is based on research and compiled existing utility maps supplied by the City of Duarte and its utility purveyors. Since the City of Hope Campus is already developed with buildings and other facilities, all required utility systems, including sanitary sewer lines, are already provided to the Campus. Accordingly, this analysis looks at placement and potential relocations of sanitary sewer lines, as well as, future demands. This memorandum addresses the as-built, current conditions of the Campus as well as the accommodation of future developments along with their impacts to sanitary sewer facilities.

2. Sanitary Sewer - Existing Conditions

The Campus is primarily located in the City of Duarte (approximately 89.5 acres), with a smaller portion at its eastern and southern edges located in the City of Irwindale (approximately 26.5 acres). The Campus is generally bounded by Duarte Road to the north; Cinco Robles Drive, the Duarte Flood Control Channel, and Buena Vista Street to the west; and the Santa Fe Flood Control Basin to the east and south.

Sanitary sewer services within the City of Duarte and the City of Irwindale are provided by the Los Angeles County Department of Public Works (LACDPW). The LACDPW operates and maintains Duarte's local wastewater conveyance infrastructure, which connects to the Sanitation Districts of Los Angeles County (LACSD) regional trunk sewer lines. The wastewater generated by City of Hope Campus is conveyed through the LACSD's trunk sewer pipelines and treated at the San Jose Creek Water Reclamation Plant (SJCWRP), located at 1965 Workman Mill Road in unincorporated Los Angeles County, adjacent to the City of Industry.

The following sewer pipelines exist adjacent to the City of Hope Campus (see Attachment A, "*Exhibit A, Sanitary Sewer - Existing Conditions*"):

Duarte Road

A County-owned 12" trunk sewer runs at 1.208% slope east to west from Highland Avenue to Buena Vista Street, which then continues south to the 15" trunk sewer along Buena Vista Street with a grade of 0.736%.

Cinco Robles Drive

An 8" VCP sewer runs north to south, 5' west of centerline. At the end of cul-de-sac, the pipe continues to the west crossing underneath the Duarte Flood Control Channel and connects to a manhole at Buena Vista Street.

Buena Vista Street

A County-owned 15" trunk sewer runs at 0.736% slope north to south from Three Ranch Road to Galen Street, which then continues to the west. Wastewater from

the City of Hope Campus directly discharges at this intersection between Buena Vista Street and Galen Street at the manhole, as designated "LACSD's Joint Outfall B Unit 8G Trunk Sewer", with a 15" VCP sewer line from the Campus.

3. Potential Physical Impacts of Project on Sanitary Sewer Lines

The Campus core is highly packed by existing utility lines. As for the sanitary sewer, there are various sizes, ranging from 4" to 15" of branch pipes around the Campus. The majority of the Campus sewer pipes run east to west, and north to south, which eventually connect to a 15" VCP sewer line at the southwest corner of property adjacent to the Duarte Flood Control Channel. This 15" VCP sewer main crosses under the Channel and directly connects and discharges to the LACSD's manhole at the intersection of Buena Vista Street and Galen Street. A small portion in the northwest area of the Campus, where existing (and proposed) Hospitality uses are located, has its own separate sewer system, which ties into an existing 8" sewer on Duarte Road. This 8" sewer pipe turns to the south and runs along Cinco Robles Drive, which also connects to a County-owned 15" trunk sewer on Buena Vista Street.

Proposed developments on the City of Hope Campus under the Project may be developed over four (4) phases, although the phasing could change as Project build-out proceeds. Assuming the Project is built as proposed in the conceptual phasing plan (i.e., Illustrative Development Scenario) identified in the draft Specific Plan prepared by City of Hope, some of the potential physical impacts, related to the internal City of Hope Campus sewer system are identified below (refer Attachment A, "*Exhibit B, Sanitary Sewer - Proposed Conditions*"):

- A major utilities corridor, including sewer lines exists under a proposed new 280,000 square foot Outpatient (Clinic) building, which is planned for phase 1 of the Project on the eastern portion of the Campus. All existing utilities may require re-routing around the proposed building footprint. Or, a design/construction of the building with bridge structure over them is considered so that the existing utilities can remain in place.
- Other proposed developments on the Campus could conflict with existing sewer lines elsewhere on the Campus and the re-routing of such sewer lines may be required.
- The existing on-site sewer system does not extend to portions of the southwest corner of the Campus. If new buildings or structures requiring sewer lines are ever constructed in this location, a new sewer main pipe will be required to run along the future fire access/roadway adjacent to the buildings and connect to an existing 15" sewer to the north.

These potential physical impacts of Campus Plan are not significant, and each individual building and project shall be studied more in detail, on a project-by-project basis during the design and preparation of engineering plans to solve any infrastructural conflicts prior to construction.

The calculations of sewer demand and sizing the system are discussed in the section 4 below.

4. Wastewater Generation and Sizing Capacity

To determine the potential impact on sanitary sewer facilities, KPFF used LACSD No. 22's User Categories and Mean Loadings table, a copy of which is attached hereto as Attachment C, to calculate pre- and post- developments average daily wastewater flows. Then, KPFF calculated peak flows using a peaking factor of 2.75 and 2.62 for pre- and post- developments respectively per Figure F235, a copy of which is also attached in Attachment B.

Using the LACSD No. 22 loadings table, KPFF used following flow rates to estimate wastewater generation for the various existing and proposed land uses under the Project:

| Project Land Use Category | LACSD No. 22 User Category¹ | Unit of Measure | Flow (Gallons per Day) |
|---|--|------------------------|-------------------------------|
| Outpatient (Clinic) | Medical, Dental, Veterinary Clinic or Building | 1000 ft ² | 300 |
| Inpatient (Hospital) ² | Medical, Dental, Veterinary Clinic or Building | 1000 ft ² | 300 |
| Research | Medical, Dental, Veterinary Clinic or Building | 1000 ft ² | 300 |
| Office | Office Building | 1000 ft ² | 200 |
| Hospitality ³ | Hotel/Motel/Rooming House | Room | 125 |
| Assembly | Club & Lodge Halls | 1000 ft ² | 125 |
| Warehouse | Warehousing | 1000 ft ² | 25 |
| Industrial | Light Manufacturing | 1000 ft ² | 25 |
| Housing ⁴ | Single Family Home (4 units) | Dwelling Unit | 260 |
| | Multi-Unit Residential (3 units) | | 156 |
| <p>1 LACSD's comment letter on the Project's Notice of Preparation of Draft Environmental Impact Report suggested that the Project use District-wide loading factors to calculate Project wastewater generation. The LACSD No. 22 loading table is consistent with the District-wide loading factors and includes additional uses not listed in the District-wide table.</p> <p>2 Hospital use is not listed on the LACSD No. 22 loading table and is assumed to be equal to that of a Medical, Dental, Veterinary Clinic or Building category.</p> <p>3 COH's current hospitality uses consist of forty (40) rooms in 10 buildings (four units per building). Two (2) of those buildings would be demolished in Phase 2 of the Project, and the remaining eight (8) would be demolished in Phase 3. The proposed hospitality uses under the Project, which would consist of 75,000 square feet of floor area, would contain eighty (80) rooms.</p> <p>4 COH owns four (4) single family homes and one (1) apartment containing 3 dwelling units.</p> | | | |

The table below summarizes the pre- and post- developments sewer generation and demand for the entire Project, including all Phases 1 through 4 [see Attachment B, "Estimated Wastewater Generation Calculation" for details].

Overall Phases I-IV

| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New | Final Total |
|--------------------------|-------------------------|-----------------|-----------------|----------|----------|-------------|
| Outpatient (Clinic) | Medical/Clinic Building | 1000 SF | 300 | 304,322 | 430,000 | 734,322 |
| Inpatient (Hospital) | Medical/Clinic Building | 1000 SF | 300 | 425,722 | 139,500 | 565,222 |
| Research | Medical/Clinic Building | 1000 SF | 300 | 457,936 | 301,000 | 758,936 |
| Office | Office Building | 1000 SF | 200 | 186,296 | 132,000 | 318,296 |
| Hospitality | Hotel | Room | 125 | 40 | 40 | 80 |
| Assembly | Club & Lodge Halls | 1000 SF | 125 | 69,295 | (29,000) | 40,295 |
| Warehouse | Warehousing | 1000 SF | 25 | 59,244 | (48,500) | 10,744 |
| Industrial | Light Manufacturing | 1000 SF | 25 | 73,909 | 56,500 | 130,409 |
| Housing | Single Family Home | Dwelling Unit | 260 | 4 | 0 | 4 |
| | Multi-Unit Residential | Dwelling Unit | 156 | 3 | 0 | 3 |
| TOTAL PHASES I-IV | | | | | | |

Average Daily Wastewater after All Phases I - IV¹

| | | | | Q _{EXIST} | Q _{NET NEW} | Q _{TOTAL} |
|---|--|--|--|--------------------|----------------------|--------------------|
| <i>gallon per day (gpd)</i> | | | | 412,152 | 289,125 | 701,277 |
| <i>cubic ft per sec (cfs)</i> | | | | 0.64 | 0.45 | 1.09 |
| ¹ The calculations in the draft Specific Plan submitted to the City used 300 gpd/1000 sq. ft. gross floor area for both existing and proposed buildings as a conservative assumption; however, this memorandum refines the numbers using specific loading factors for land use type set forth in LACSD No. 22's loading table. | | | | | | |

Peak Daily Wastewater after All Phases I - IV¹

| | | | | Q _{EXIST} | Q _{NET NEW} | Q _{TOTAL} |
|---|--|--|--|--------------------|----------------------|--------------------|
| <i>cubic ft per sec (cfs)</i> | | | | 1.76 | 1.27 | 3.03 |
| <i>gallon per day (gpd)</i> | | | | 1,135,594 | 823,908 | 1,959,502 |
| ¹ Peak dry weather flow is calculated as 2.64 X ADWF ^{0.905} per Section F235 of the City of Los Angeles, Bureau of Engineering Sewer Design Manual - Part F. | | | | | | |

From the calculation results, proposed developments will generate a total wastewater flow of 701,277 gpd, compared to the existing rate of 412,152 gpd. The majority of the Campus wastewater will be conveyed to a 15" VCP at 0.56% slope at the end of the campus sewer conveyance system.

For the on-site sewer lines, to understand Campus pipe sizing, KPFF ran a FlowMaster to check the capacity of the Campus discharge outlet pipe. A 15" VCP with 0.56% slope can convey 4.83 cubic feet per second [cfs], which is greater than the anticipated wastewater flow of 701,277 gpd equal to 1.09 cfs [see Attachment B, "FlowMaster Result"]. Therefore, the existing Campus sewer system with a 15"

discharge pipe at the end is adequate to accommodate the proposed developments under the Project; however, depending on the conditions of existing sewer pipes and fixtures as well as any potential conflicts with proposed improvements that may occur during each phase of individual building project, relocation and/or upgrading of existing pipelines may be required.

Based on the Comment Letter for City of Hope Campus Plan, prepared by County Sanitation Districts of Los Angeles County [see Attachment C, "*LACSD Comment Letter for City of Hope Campus Plan*"], "the wastewater flow originating from the proposed project site is discharging directly to the Districts' Joint Outfall B Unit 8G Trunk Sewer, located in Galen Street at Buena Vista Street. This 15-inch diameter trunk sewer has a design capacity of 3.5 million gallons per day [mgd] and conveyed a peak flow of 0.9 mgd when last measured in 2014".

In response to the LACSD's letter, the total additional average daily wastewater flow increased by the Project build-out is 289,125 gpd, which is only 8.3% of the design capacity and 11.1% of the remaining capacity of the 15" trunk sewer. With the additional average daily flow, the demand-capacity ratio of 15" trunk sewer will be increased from 25.7% to 34.0%. Using the additional peak daily wastewater flow, the increased flow amount is calculated to be 823,908 gpd, which is 23.5% of the design capacity and 31.7% of the remaining capacity of the 15" trunk sewer. With the additional peak daily flow, the demand-capacity ratio of 15" trunk sewer will be increased from 25.7% to 49.3%.

Also from the LACSD's letter, the design capacity of San Jose Creek Water Reclamation Plan [WRP] is "100 mgd and currently processes an average flow of 69.4 mgd". Again, the total additional average daily wastewater flow increased by the Campus build-out is 289,125 gpd, which is only 0.3% of the design capacity and 0.9% of the remaining capacity of the SJCWRP. Using the additional peak daily wastewater flow, the increased flow amount is calculated to be 823,908 gpd, which is 0.8% of the design capacity and 2.7% of the remaining capacity of the SJCWRP.

5. Conclusion - Sanitary Sewer Impacts

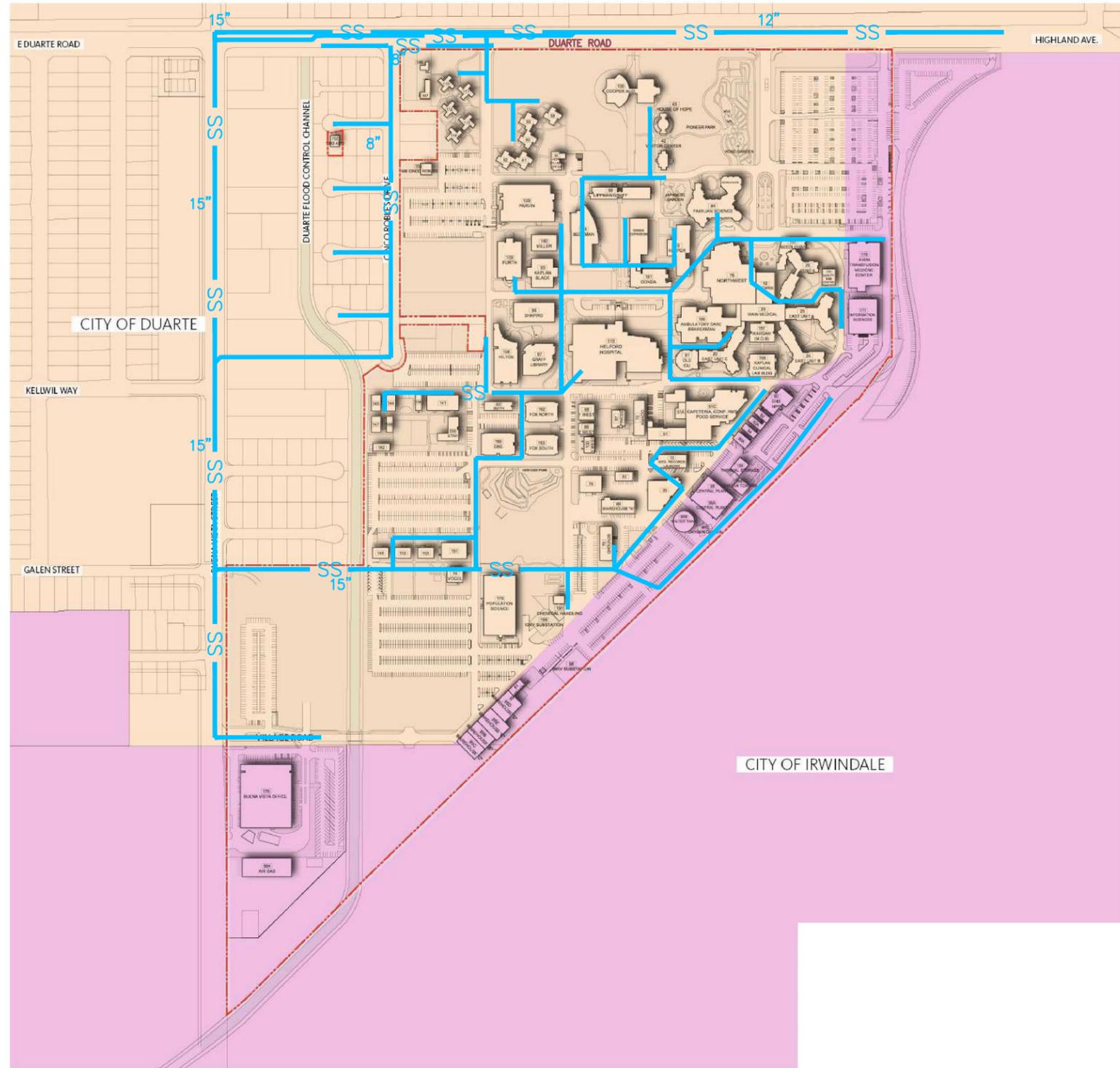
Based on the sewer capacity study presented herein, KPFF finds that the existing local/public sewer facilities downstream will not be detrimentally affected by the additional flow. The existing sewer system have sufficient capacity to handle effluent from the proposed developments.

All new developments included in the Project shall be reviewed on a project-by-project basis by the City of Duarte and/or City of Irwindale, as applicable, as well as the LACSD.

ATTACHMENT A

Exhibit A, Sanitary Sewer - Existing Conditions

Exhibit B, Sanitary Sewer - Proposed Conditions



LEGEND:

EXISTING SANITARY SEWER — SS —

kpff

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 Los Angeles, CA 90045
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STAMP

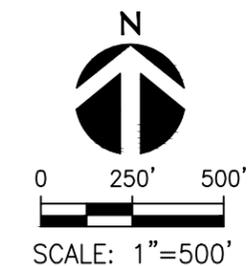
| DATE | △ | ISSUED FOR |
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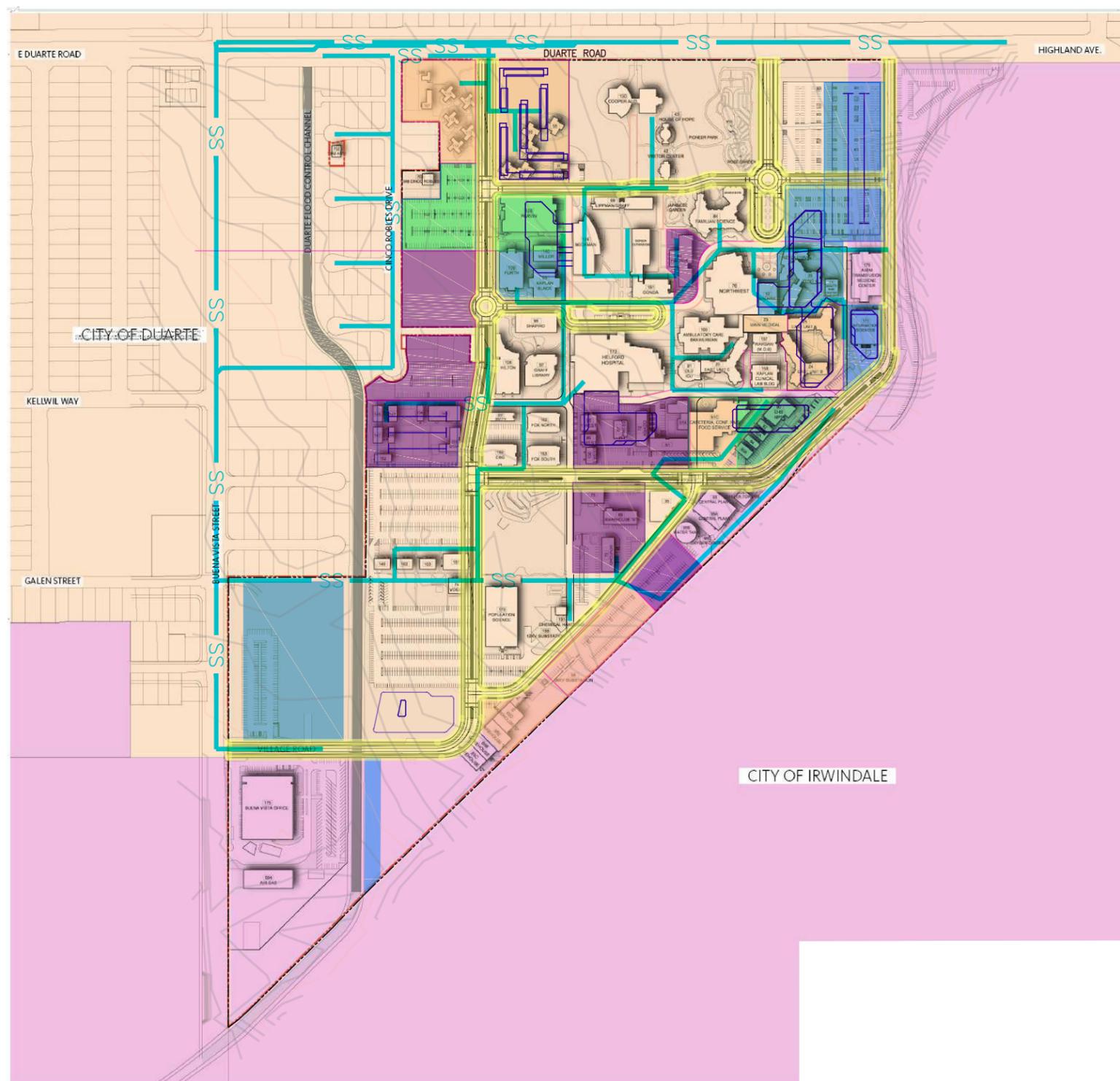
| | |
|----------------|----------------|
| DATE | March 16, 2016 |
| PROJECT NUMBER | 114186 |
| DESIGNED BY | KP |
| DRAWN BY | CJ |
| CHECKED BY | KP |

PROJECT DESCRIPTION
**CITY OF HOPE
 CAMPUS PLAN**

DRAWING TITLE
**SANITARY SEWER
 - EXISTING
 CONDITIONS**
 SHEET NUMBER (EXHIBIT NUMBER)

EXH-A

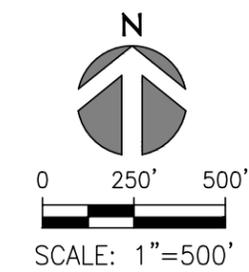




LEGEND:

EXISTING SANITARY SEWER — SS —

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- FIRE ACCESS/ROADWAY (PHASE 2)



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STAMP

| DATE | △ | ISSUED FOR |
|------|---|------------|
| | | |
| | | |
| | | |

| | |
|----------------|--------------------|
| DATE | September 16, 2016 |
| PROJECT NUMBER | 114186 |
| DESIGNED BY | KP |
| DRAWN BY | CJ |
| CHECKED BY | KP |

PROJECT DESCRIPTION
**CITY OF HOPE
 CAMPUS PLAN**

DRAWING TITLE
**SANITARY SEWER
 - PROPOSED
 CONDITIONS**
 SHEET NUMBER (EXHIBIT NUMBER)

EXH-B

ATTACHMENT B

Estimated Wastewater Generation Calculation

Figure F235: Average Dry Weather Flow - Peak Dry Weather Flow Chart

FlowMaster Result

Estimated Wastewater Generation

The unit wastewater flow is based on the LACSD No.22 User Categories and Mean Loading Table.

Peak Dry Weather Flow $Q_{PDWF} = 2.64(Q_{ADWF})^{0.905}$ per Section F235 of LABOE Sewer Design Manual - Part F.

Conversion Factor 1 cfs = 646,316.88 gpd

Phase I Master Plan (2015-2020)

| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New (Construction minus Demo) | Final Total (including conversion) |
|----------------------|-------------------------|-----------------|-----------------|----------|-----------------------------------|------------------------------------|
| Outpatient (Clinic) | Medical/Clinic Building | 1000 SF | 300 | 304,322 | 250,000 | 554,322 |
| Research | Medical/Clinic Building | 1000 SF | 300 | 457,936 | 156,500 | 614,436 |
| Office | Office Building | 1000 SF | 200 | 186,296 | 15,500 | 201,796 |
| Parking Structure #1 | | | | | | 1750 spaces |
| TOTAL PHASE I | | | | | | |

Average Daily Wastewater after Phase I

| Flow Units | | | | | $Q_{NET\ NEW}$ | |
|----------------------------------|--|--|--|--|----------------|--|
| <i>gallon per day (gpd)</i> | | | | | 125,050 | |
| <i>cubic ft per second (cfs)</i> | | | | | 0.19 | |

Phase II Master Plan (2020-2025)

| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New (Construction minus Demo) | Final Total (including conversion) |
|-----------------------|-------------------------|-----------------|-----------------|----------|-----------------------------------|------------------------------------|
| Inpatient (Hospital) | Medical/Clinic Building | 1000 SF | 300 | 425,722 | 210,000 | 635,722 |
| Research (Lab) | Medical/Clinic Building | 1000 SF | 300 | 614,436 | 43,500 | 657,936 |
| Office | Office Building | 1000 SF | 200 | 201,796 | (60,500) | 141,296 |
| Hospitality | Hotel | Room | 125 | 40 | (8) | 32 |
| Industrial | Light Manufacturing | 1000 SF | 25 | 73,909 | 16,500 | 90,409 |
| Warehouse | Warehousing | 1000 SF | 25 | 59,244 | (22,000) | 37,244 |
| Parking Structure # 2 | | | | | | 1230 spaces |
| TOTAL PHASE II | | | | | | |

Average Daily Wastewater after Phase II

| Flow Units | | | | | $Q_{NET\ NEW}$ | |
|----------------------------------|--|--|--|--|----------------|--|
| <i>gallon per day (gpd)</i> | | | | | 62,813 | |
| <i>cubic ft per second (cfs)</i> | | | | | 0.10 | |

Phase III Master Plan (2025-2030)

| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New (Construction minus Demo) | Final Total (including conversion) |
|------------------------|-------------------------|-----------------|-----------------|----------|-----------------------------------|------------------------------------|
| Outpatient (Clinic) | Medical/Clinic Building | 1000 SF | 300 | 554,322 | 180,000 | 734,322 |
| Inpatient (Hospital) | Medical/Clinic Building | 1000 SF | 300 | 635,722 | (70,500) | 565,222 |
| Assembly | Club & Lodge Halls | 1000 SF | 125 | 69,295 | (29,000) | 40,295 |
| Office | Office Building | 1000 SF | 200 | 141,296 | 57,000 | 198,296 |
| Hospitality | Hotel | Room | 125 | 32 | 48 | 80 |
| Industrial | Light Manufacturing | 1000 SF | 25 | 90,409 | 40,000 | 130,409 |
| Warehouse | Warehousing | 1000 SF | 25 | 37,244 | (26,500) | 10,744 |
| TOTAL PHASE III | | | | | | |

Average Daily Wastewater after Phase III

| Flow Units | | | | | $Q_{NET\ NEW}$ | |
|----------------------------------|--|--|--|--|----------------|--|
| <i>gallon per day (gpd)</i> | | | | | 46,963 | |
| <i>cubic ft per second (cfs)</i> | | | | | 0.07 | |

Phase IV Master Plan (2030-2035)

| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New (Construction minus Demo) | Final Total (including conversion) |
|-----------------------|-------------------------|-----------------|-----------------|----------|---|--|
| Research | Medical/Clinic Building | 1000 SF | 300 | 657,936 | 101,000 | 758,936 |
| Office | Office Building | 1000 SF | 200 | 198,296 | 120,000 | 318,296 |
| TOTAL PHASE IV | | | | | | |

Average Daily Wastewater after Phase IV

| Flow Units | | | | | Q _{NET NEW} | |
|----------------------------------|--|--|--|--|----------------------|--|
| <i>gallon per day (gpd)</i> | | | | | 54,300 | |
| <i>cubic ft per second (cfs)</i> | | | | | 0.08 | |

Overall Phases I-IV

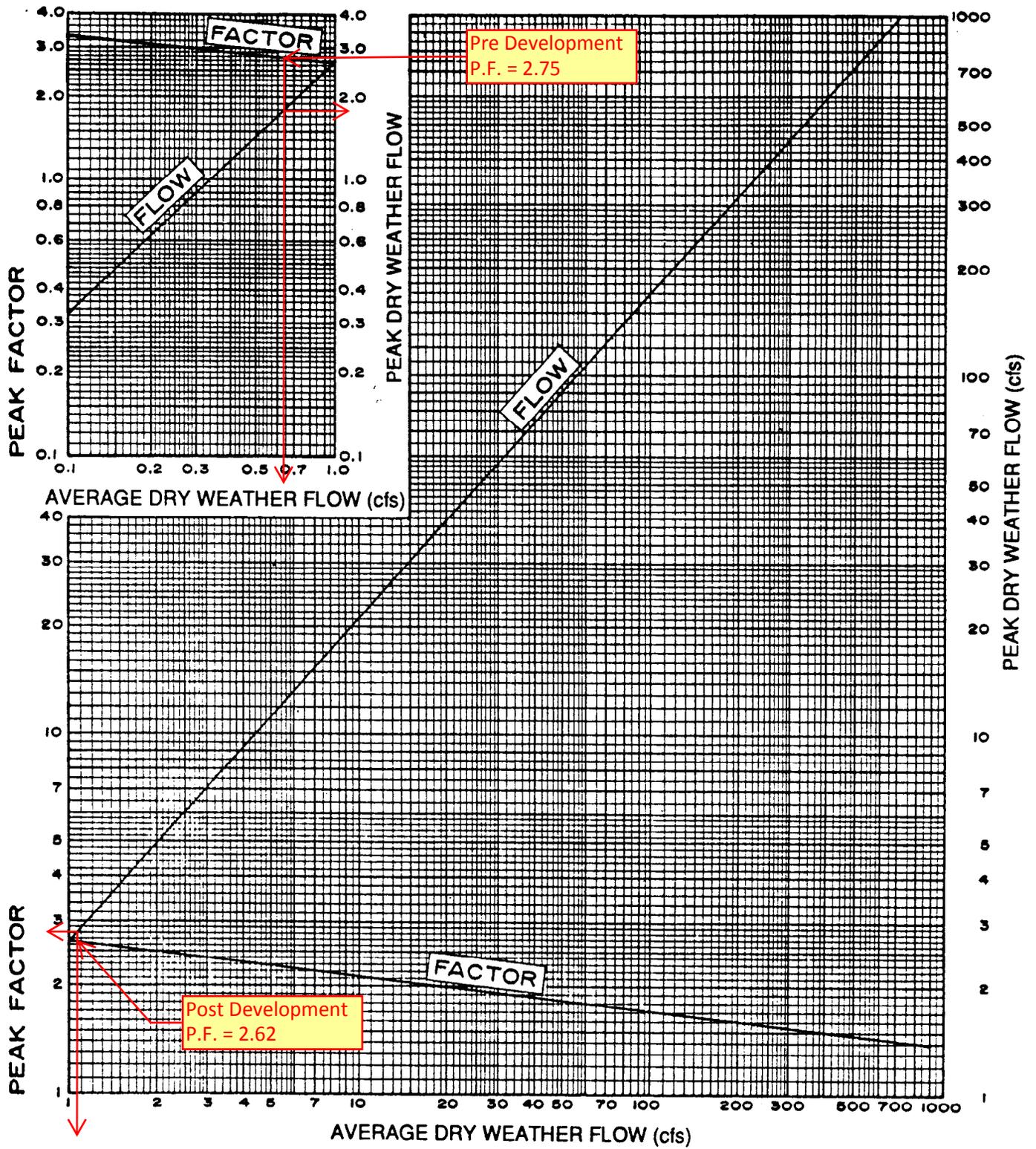
| Building Use | User Category | Unit of Measure | Unit Flow (GPD) | Starting | Net New (Construction minus Demo) | Final Total (including conversion) |
|--------------------------|-------------------------|-----------------|-----------------|----------|---|--|
| Outpatient (Clinic) | Medical/Clinic Building | 1000 SF | 300 | 304,322 | 430,000 | 734,322 |
| Inpatient (Hospital) | Medical/Clinic Building | 1000 SF | 300 | 425,722 | 139,500 | 565,222 |
| Research | Medical/Clinic Building | 1000 SF | 300 | 457,936 | 301,000 | 758,936 |
| Office | Office Building | 1000 SF | 200 | 186,296 | 132,000 | 318,296 |
| Hospitality | Hotel | Room | 125 | 40 | 40 | 80 |
| Assembly | Club & Lodge Halls | 1000 SF | 125 | 69,295 | (29,000) | 40,295 |
| Warehouse | Warehousing | 1000 SF | 25 | 59,244 | (48,500) | 10,744 |
| Industrial | Light Manufacturing | 1000 SF | 25 | 73,909 | 56,500 | 130,409 |
| Housing | Single Family Home | Dwelling Unit | 260 | 4 | 0 | 4 |
| | Multi-Unit Residential | Dwelling Unit | 156 | 3 | 0 | 3 |
| TOTAL PHASES I-IV | | | | | | |

Average Daily Wastewater after All Phases I - IV (ADWF)

| Flow Units | | | | Q _{EXIST} | Q _{NET NEW} | Q _{TOTAL} |
|----------------------------------|--|--|--|--------------------|----------------------|--------------------|
| <i>gallon per day (gpd)</i> | | | | 412,152 | 289,125 | 701,277 |
| <i>cubic ft per second (cfs)</i> | | | | 0.64 | 0.45 | 1.09 |

Peak Daily Wastewater after All Phases I - IV (PDWF)

| Flow Units | | | | Q _{EXIST} | Q _{NET NEW} | Q _{TOTAL} |
|----------------------------------|--|--|--|--------------------|----------------------|--------------------|
| <i>cubic ft per second (cfs)</i> | | | | 1.76 | 1.27 | 3.03 |
| <i>gallon per day (gpd)</i> | | | | 1,135,594 | 823,908 | 1,959,502 |



Average Dry Weather Flow - Peak Dry Weather Flow Chart
Figure F235

15" VCP @ 0.56%

Project Description

| | |
|-----------------|--------------------|
| Friction Method | Manning Formula |
| Solve For | Full Flow Capacity |

Input Data

| | |
|-----------------------|-------------------------|
| Roughness Coefficient | 0.013 |
| Channel Slope | 0.56 % |
| Normal Depth | 15.00 in |
| Diameter | 15.00 in |
| Discharge | 4.83 ft ³ /s |

Results

| | |
|-------------------|-------------------------|
| Discharge | 4.83 ft ³ /s |
| Normal Depth | 15.00 in |
| Flow Area | 1.23 ft ² |
| Wetted Perimeter | 3.93 ft |
| Hydraulic Radius | 3.75 in |
| Top Width | 0.00 ft |
| Critical Depth | 0.89 ft |
| Percent Full | 100.0 % |
| Critical Slope | 0.00761 ft/ft |
| Velocity | 3.94 ft/s |
| Velocity Head | 0.24 ft |
| Specific Energy | 1.49 ft |
| Froude Number | 0.00 |
| Maximum Discharge | 5.20 ft ³ /s |
| Discharge Full | 4.83 ft ³ /s |
| Slope Full | 0.00560 ft/ft |
| Flow Type | SubCritical |

GVF Input Data

| | |
|------------------|---------|
| Downstream Depth | 0.00 in |
| Length | 0.00 ft |
| Number Of Steps | 0 |

GVF Output Data

| | |
|-----------------------------|---------|
| Upstream Depth | 0.00 in |
| Profile Description | |
| Profile Headloss | 0.00 ft |
| Average End Depth Over Rise | 0.00 % |

15" VCP @ 0.56%

GVF Output Data

| | | |
|------------------------|----------|-------|
| Normal Depth Over Rise | 100.00 | % |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 15.00 | in |
| Critical Depth | 0.89 | ft |
| Channel Slope | 0.56 | % |
| Critical Slope | 0.00761 | ft/ft |

ATTACHMENT C

LACSD Comment Letter for City of Hope Campus Plan

LACSD No.22 User Categories and Mean Loadings Table



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

November 16, 2015

Ref File No.: 3485831

Mr. Jason Golding
Senior Planner
Planning Division
City of Duarte
1600 Huntington Drive
Duarte, CA 91010-2592

RECEIVED

NOV 23 2015

CITY OF DUARTE

Dear Mr. Golding:

Comment Letter for City of Hope Campus Plan

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on October 16, 2015. The proposed development is located within the jurisdictional boundaries of District No. 22. We offer the following comments regarding sewerage service:

1. The proposed project expansion may require an amendment to a Districts' permit for Industrial Wastewater Discharge. Project developers should contact the Districts' Industrial Waste Section at (562) 908-4288, extension 2900, in order to reach a determination on this matter. If this update is necessary, project developers will be required to forward copies of final plans and supporting information for the proposed project to the Districts for review and approval before beginning project construction.
2. The wastewater flow originating from the proposed project site is discharging directly to the Districts' Joint Outfall B Unit 8G Trunk Sewer, located in Galen Street at Buena Vista Street. This 15-inch diameter trunk sewer has a design capacity of 3.5 million gallons per day (mgd) and conveyed a peak flow of 0.9 mgd when last measured in 2014. Modifications to the existing sewer connection will require submittal of Sewer Plans for review and approval by the Districts. For additional information, please contact the Districts' Engineering Counter at (562) 908-4288, extension 1205.
3. The wastewater generated by the proposed project will be treated at the San Jose Creek Water Reclamation Plant (WRP) located adjacent to the City of Industry, which has a design capacity of 100 mgd and currently processes an average flow of 69.4 mgd. All biosolids and wastewater flows that exceed the capacity of the San Jose Creek WRP are diverted to and treated at the Joint Water Pollution Control Plant in the City of Carson.

4. In order to estimate the volume of wastewater the project will generate, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the [Table 1, Loadings for Each Class of Land Use](#) link for a copy of the Districts' average wastewater generation factors.
5. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System or for increasing the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is imposed in an amount sufficient to construct an incremental expansion of the Sewerage System to accommodate the proposed project. Payment of a connection fee will be required before a permit to connect to the sewer is issued. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and search for the appropriate link. In determining the impact to the Sewerage System and applicable connection fees, the Districts' Chief Engineer will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel or facilities on the parcel. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at (562) 908-4288, extension 2727.
6. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the design capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,



Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: L. Smith
M. Sullivan
M. Tatalovich

**AN ORDINANCE PRESCRIBING THE CONNECTION FEE RATE
AND MEAN LOADINGS PER UNIT OF USAGE FOR
COUNTY SANITATION DISTRICT NO. 22 OF LOS ANGELES COUNTY**

THE BOARD OF DIRECTORS OF COUNTY SANITATION DISTRICT NO. 22 OF LOS ANGELES COUNTY ORDAINS AS FOLLOWS:

SECTION 1.0 - USER CATEGORIES AND MEAN LOADINGS

Pursuant to Section 3.04(2) of the Master Connection Fee Ordinance of County Sanitation District No. 22 of Los Angeles County, the following shall constitute the user categories and mean loadings per unit of usage for flow, chemical oxygen demand (COD), and suspended solids:

| <u>DESCRIPTION</u> | <u>UNIT OF MEASURE</u> | <u>FLOW (Gallons per Day)</u> | <u>COD (Pounds per Day)</u> | <u>SUSPENDED SOLIDS (Pounds per Day)</u> |
|---|------------------------|-------------------------------|-----------------------------|--|
| RESIDENTIAL | | | | |
| Single Family Home | Dwelling Unit | 260 | 1.22 | 0.59 |
| Condominiums | Dwelling Unit | 195 | 0.92 | 0.44 |
| Multi-Unit Residential | Dwelling Unit | 156 | 0.73 | 0.35 |
| Mobile Home Parks | No. of Spaces | 156 | 0.73 | 0.35 |
| COMMERCIAL | | | | |
| Hotel/Motel/Rooming House | Room | 125 | 0.54 | 0.28 |
| Store | 1000 ft ² | 100 | 0.43 | 0.23 |
| Supermarket | 1000 ft ² | 150 | 2.00 | 1.00 |
| Shopping Center | 1000 ft ² | 325 | 3.00 | 1.17 |
| Regional Mall | 1000 ft ² | 150 | 2.10 | 0.77 |
| Office Building | 1000 ft ² | 200 | 0.86 | 0.45 |
| Medical, Dental, Veterinary Clinic or Building | 1000 ft ² | 300 | 1.29 | 0.68 |
| Restaurant | 1000 ft ² | 1,000 | 16.68 | 5.00 |
| Indoor Theatre | 1000 ft ² | 125 | 0.54 | 0.28 |
| Car Wash | | | | |
| Tunnel - No Recycling | 1000 ft ² | 3,700 | 15.86 | 8.33 |
| Tunnel - Recycling | 1000 ft ² | 2,700 | 11.74 | 6.16 |
| Wand | 1000 ft ² | 700 | 3.00 | 1.58 |
| Bank, Credit Union | 1000 ft ² | 100 | 0.43 | 0.23 |
| Service Shop, Vehicle Maintenance & Repair Shop | 1000 ft ² | 100 | 0.43 | 0.23 |
| Animal Kennels | 1000 ft ² | 100 | 0.43 | 0.23 |
| Gas Station | 1000 ft ² | 100 | 0.43 | 0.23 |
| Auto Sales | 1000 ft ² | 100 | 0.43 | 0.23 |
| Wholesale Outlet | 1000 ft ² | 100 | 0.43 | 0.23 |
| Nursery/Greenhouse | 1000 ft ² | 25 | 0.11 | 0.06 |
| Light Manufacturing | 1000 ft ² | 25 | 0.23 | 0.09 |
| Lumber Yard | 1000 ft ² | 25 | 0.23 | 0.09 |
| Warehousing | 1000 ft ² | 25 | 0.23 | 0.09 |
| Open Storage | 1000 ft ² | 25 | 0.23 | 0.09 |
| Drive-in Theatre | 1000 ft ² | 20 | 0.09 | 0.05 |

| <u>DESCRIPTION</u> | <u>UNIT OF MEASURE</u> | <u>FLOW (Gallons per Day)</u> | <u>COD (Pounds per Day)</u> | <u>SUSPENDED SOLIDS (Pounds per Day)</u> |
|--|--------------------------|-------------------------------|-----------------------------|--|
| COMMERCIAL | | | | |
| Night Club | 1000 ft ² | 350 | 1.50 | 0.79 |
| Bowling/Skating | 1000 ft ² | 150 | 1.76 | 0.55 |
| Club & Lodge Halls | 1000 ft ² | 125 | 0.54 | 0.27 |
| Auditorium, Amusement | 1000 ft ² | 350 | 1.50 | 0.79 |
| Golf Course and Park (Structures and Improvements) | 1000 ft ² | 100 | 0.43 | 0.23 |
| Campground, Marina, and Recreational Vehicle Park | Sites, Slips, or Spaces | 55 | 0.34 | 0.14 |
| Convalescent Home | Bed | 125 | 0.54 | 0.28 |
| Laundromat | 1000 ft ² | 3,825 | 16.40 | 8.61 |
| Mortuary, Funeral Home | 1000 ft ² | 100 | 1.33 | 0.67 |
| Health Spa, Gymnasium With Showers | 1000 ft ² | 600 | 2.58 | 1.35 |
| Without Showers | 1000 ft ² | 300 | 1.29 | 0.68 |
| Convention Center, Fairground, Racetrack, Sports Stadium/Arena | Average Daily Attendance | 10 | 0.04 | 0.02 |
| INSTITUTIONAL | | | | |
| College/University | Student | 20 | 0.09 | 0.05 |
| Private School | 1000 ft ² | 200 | 0.86 | 0.45 |
| Library, Museum | 1000 ft ² | 100 | 0.43 | 0.23 |
| Post Office (Local) | 1000 ft ² | 100 | 0.43 | 0.23 |
| Post Office (Regional) | 1000 ft ² | 25 | 0.23 | 0.09 |
| Church | 1000 ft ² | 50 | 0.21 | 0.11 |

SECTION 2.0 - CONNECTION FEE RATE

Pursuant to Section 3.03 of the Master Connection Fee Ordinance of County Sanitation District No. 22 of Los Angeles County, the following, to be effective on the dates given, shall constitute the Connection Fee Rate per capacity unit:

| <u>July 1, 2011</u> | <u>July 1, 2012</u> | <u>July 1, 2013</u> |
|---------------------|---------------------|---------------------|
| \$4,190 | \$4,320 | \$4,450 |

SECTION 3.0 - COST ALLOCATION FACTORS

Pursuant to Section 3.04(1) of the Master Connection Fee Ordinance of County Sanitation District No. 22 of Los Angeles County, the proportions of the total capital costs required to construct an incremental expansion of the sewerage system of the next anticipated configuration for conveyance, treatment, and disposal of wastewater which are attributable to flow, COD, and suspended solids, designated as X, Y, and Z, respectively, to be effective on the dates given, shall be:

X = 0.6645 Y = 0.1275 Z = 0.2080

SECTION 4.0 - VALIDITY

If any part, section, subsection, paragraph, sentence, clause, or phrase of this Ordinance is held invalid or unconstitutional for any reason by any court, that decision does not affect the validity or constitutionality of the remainder of this Ordinance. The Board of Directors declares that it would have adopted each provision of this Ordinance irrespective of the validity of any other provision.

SECTION 5.0 - EFFECTIVE DATE

This Ordinance shall become effective 30 days after its adoption.

ATTEST:

Rimbury S. Compton
Clerk, Board of Directors
County Sanitation District No. 22
of Los Angeles County

Michael Touhey
Chairperson pro tem, Board of Directors
County Sanitation District No. 22
of Los Angeles County

PASSED AND ADOPTED by the Board of Directors of County Sanitation District No. 22 of Los Angeles County on May 25, 2011 by the following vote:

AYES: Directors Harbicht, Rocha, Lozano, Barakat, Paras-Caracci, Manuel Garcia, Kendrick, Joe Garcia, Morris, Cartagena, Antonovich, and Touhey

NOES: None

ABSENT: Directors J. King and Tessitor

ABSTAIN: None

Rimbury S. Compton
Secretary of the Board of Directors
County Sanitation District No. 22
of Los Angeles County