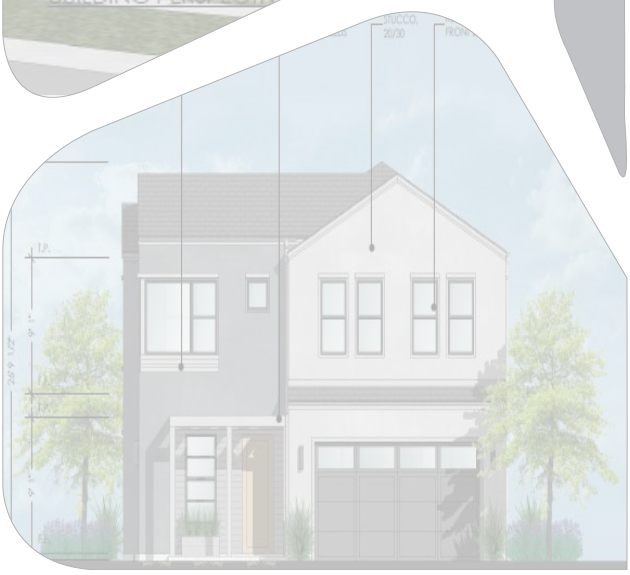
Appendix G

Drainage Report



PRELIMINARY DRAINAGE REPORT

For

The Pines at Sunrise Village
(APN: 287-241-01, 287-241-04, & 287-241-06)

PROJECT LOCATION
Southwest corner of Rosecrans Avenue and Euclid Street
Fullerton, CA

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Craig F. Johnson, P.E. Date

PREPARED: May 5, 2021 (Updated July 12, 2021 for CEQA)

Table of Contents

List of Technical Appendices

Introduction

This report has been prepared for APNs 287-241-01, 287-241-04, and 287-241-06, in the City of Fullerton, in the County of Orange, California (See Location Map below). The project proposes a new residential development consisting of 49 single-family units and 115 townhome units for a total of 164 dwelling units. The proposed Project would develop 12.52 acres of land into townhomes, single-family homes, private alleys, common area landscape, and common area amenities. Private alleys, common area landscape, and common area amenities are to be maintained by the homeowners association (HOA). See Appendix B for the Preliminary Site Plan, Grading, and Utility Plans.

The Project site is bordered by Rosecrans Avenue to the north, Euclid Street to the east, Paseo Dorado to the south, and by Fountain Glen senior apartment homes to the west. The existing properties comprising the project site are currently a commercial development shopping center (APN 287-241-01, 287-241-04, & 287-241-06). Per the City of Fullerton Zoning Map Atlas the Project Site is designated as General Commercial (APNs 287-241-01, 287-241-04, and 287-241-06); Surrounding properties are zoned as Office Professional, Restricted Multiple Residential, and One-Family Residential (See Appendix A for the Zoning Map).

Location Map

Per the Orange County Watershed Master Planning Susceptibility Analysis San Gabriel-Coyote Creek exhibit, dated Dec. 2012), the Project Site is within an area of "Potential Areas of Erosion, Habitat & Physical Structure Susceptibility". The exhibit shows that there are "Earth (Unstable)", "Earth (Stabilized)", and "Stabilized" portions of channel infrastructure downstream of the Project Site.

Purpose & Criteria

The purpose of this report is to determine the existing and proposed storm water runoff rates from the Project site and to provide analysis of the impacts to adjacent and downstream properties and facilities.

Existing Conditions

In existing condition, the Project Site consists of General Commercial parcels. The general commercial parcels (APNs 287-241-01, 287-241-04, & 287-241-06) are approximately 80% impervious, and is almost entirely covered by existing shopping center buildings and parking areas.

Drainage runoff from the existing site flows, via sheet flow, east toward Euclid Street where it is captured by inlets that outlet into the existing concrete channel that runs along the eastern edge of the project. There is minimal on-site underground drainage infrastructure, which has been identified from site walks and aerial topography. Any existing onsite drainage that does not drain to Euclid Street is captured and outlets into the exisiting trapezoidal concrete channel.

See Appendix C for the Existing Hydrology Map and Appendix D for the Existing Hydrology calculations.

Proposed Conditions

Proposed site improvements include townhomes, single-family homes, private alleys, common area landscape, and common area amenities, which will result in an impervious percentage of approximately 66%, resulting in a significant reduction in imperious area. Drainage in the proposed condition is to maintain the same ultimate direction of flow (east to the concrete channel along Euclid Street). Proposed site improvements include the construction of drain inlets and multiple Bioclean proprietary Modular Wetland System (MWS) units to capture and convey runoff to the existing concrete channel along Euclid Street. The street slopes onsite will convey the flows to 5 major drainage management areas. These drainage areas have been delineated based on the proposed site grading patterns, drainage patterns, storm drain and catch basin locations. Surface flows will be directed into an area drain piping system or into onsite curb and gutters which will convey the flow to one of the Bioclean MWS units. From each MWS unit, the flows are conveyed into a storm drain pipe that discharges into the existing trapezoidal concrete channel along the eastern edge of the site.
Existing inlets and storm drain within Euclid Street and Rosecrans Avenue R/W will remain in place. These facilities are not being used to drain the proposed development.

Flows from the existing hillside adjacent to Euclid Street will remain in the existing condition of draining to the existing concrete channel.

Hydrologic Analysis

Onsite hydrologic analyses have been prepared using the rational method in accordance with the Orange County Hydrology Manual and the Advanced Engineering Software (AES) computer program.

The 1-hour precipitation rate for the 2-, 10-, 25-, and 100-year frequency events and slope of intensity duration curves were taken from the County's Hydrology Manual. Rainfall intensities were derived by AES based on the rainfall intensity curve and the expected time of concentration. Calculations and tabulations can be found in Appendix D.

The existing hydrology was performed based on the existing condition of the site which is a retail center. The City General Plan currently designates the site as Commercial. The proposed hydrology is based upon the proposed development which will be residential. Appendix C contains hydrology exhibits for both the existing and proposed hydrology.

Conclusion

Based on the hydrologic runs, the proposed project will slightly increase discharge from the site. At the point of confluence, Node 108 on the exhibits, all peak discharges, including the 2-year event (HCOC), are mitigated to slightly above existing levels from onsite and do not increase more than 5%. Table 1 below summarizes the difference in the runoff from the existing condition to the proposed development for all storm intervals studied.

Table 1 ***Summary of Mitigated Runoff***

At Node 108		**Condition**		
Frequency	Area (ac)	Existing	Proposed	Delta
100-year Q (cfs)	12.52	41.92	42.53	+1.46%
25-year Q (cfs)	12.52	32.18	32.79	+1.90%
10-year Q (cfs)	12.52	26.43	27.11	+2.57%
2-year Q (cfs)	12.52	13.94	14.60	+4.73%

Modular Wetland Systems (MWS) will be used onsite to meet stormwater quality requirements. The MWS units are sized for the water quality flow rate. For details on the MWS units refer to the Preliminary WQMP (PWQMP) report, dated May 5, 2021, prepared for this project.
Analysis of the ultimate storm drain design, including final hydrology, pipe and inlet hydraulics, outflow structure and street flow calculations will be included in the Final Project Drainage Report.

Appendix A

OC Hydrology Manual 1986 Soils Map

Zoning Map

Master Plan of Drainage Exhibit

Soils Classification Map

Appendix B

Preliminary Site Plan

Preliminary Grading Plan

Preliminary Utility Plan

Appendix C

Existing Hydrology Map

Proposed Hydrology Map

Conceptual Cross Sections

Appendix D

Existing Hydrology Calculations

Proposed Hydrology Calculations

Appendix E

OC Hydrology Procedures

Existing Hydrograph Calculations

Proposed Hydrograph Calculations & Flood Routing Analysis