



HYDROLOGY AND HYDRAULICS REPORT

for

Eddy Jones Way

City of Oceanside, California

Prepared for:

RPG

315 S. Coast Highway, Suit U-12

Encinitas, CA 92024

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ATTACHMENTS

- ATTACHMENT 1 - Effective FIRMS
- ATTACHMENT 2 - HEC-RAS Results



1. INTRODUCTION

This study includes an assessment of the potential impacts of the proposed project on the effective floodplain. The subject property for this study is located at 250 Eddy Jones Way in Oceanside, CA. It lies immediately south of the San Luis Rey River. [The property is currently developed with industrial buildings and is surrounded by an approximately 5-foot-tall earthen berm. The project proposes to increase the building footprint and replace the earthen berm with an approximately 8-foot-tall floodwall \(See Figure 1\).](#) The project lies within a FEMA Special Flood Hazard Area (SFHA) Zone A99 with no base flood elevations (BFEs). Zone A99 designates areas within the 100-year floodplain that will be protected by a federal flood protection system under construction. In this case, levees exist on both sides of the San Luis Rey River, but the federal project has not yet been certified by FEMA. [Therefore, the hydraulic models in this study assume the levees do not contain flows from the river.](#)

[The primary FEMA Flood Insurance Rate Maps \(FIRM\) related to this area are panels 06073C0751H, 06073C0734J, and 06073C0753J \(See Figure 2\).](#) The FEMA FIRM panels are dated May 16, 2012 and December 20, 2019 and are in vertical datum NAVD 88.

[An effective FEMA HEC-RAS model was obtained through a FEMA data request \(no. B2409027\). This effective model was part of the approved LOMR application for a project upstream of Douglas Drive.](#)

The purpose of this study is to analyze potential impacts of the proposed project on the effective floodplain.

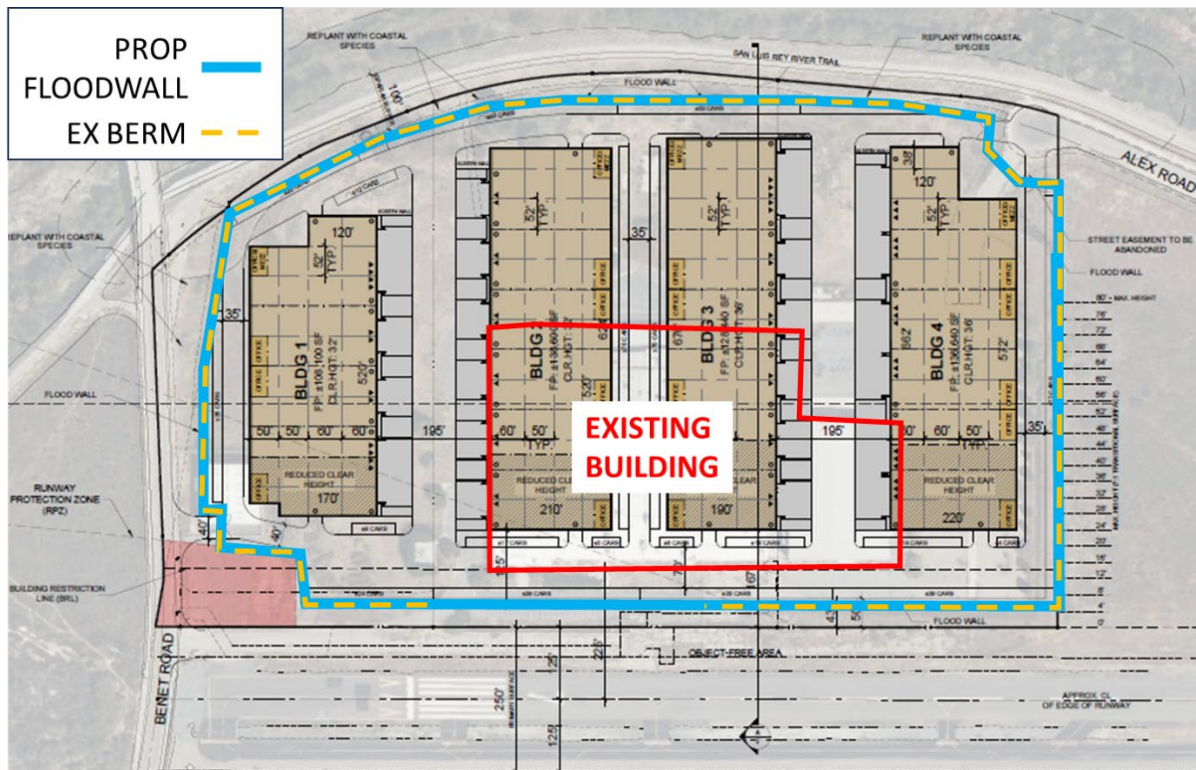


Figure 1 | Site Plan Showing Existing and Proposed Structures

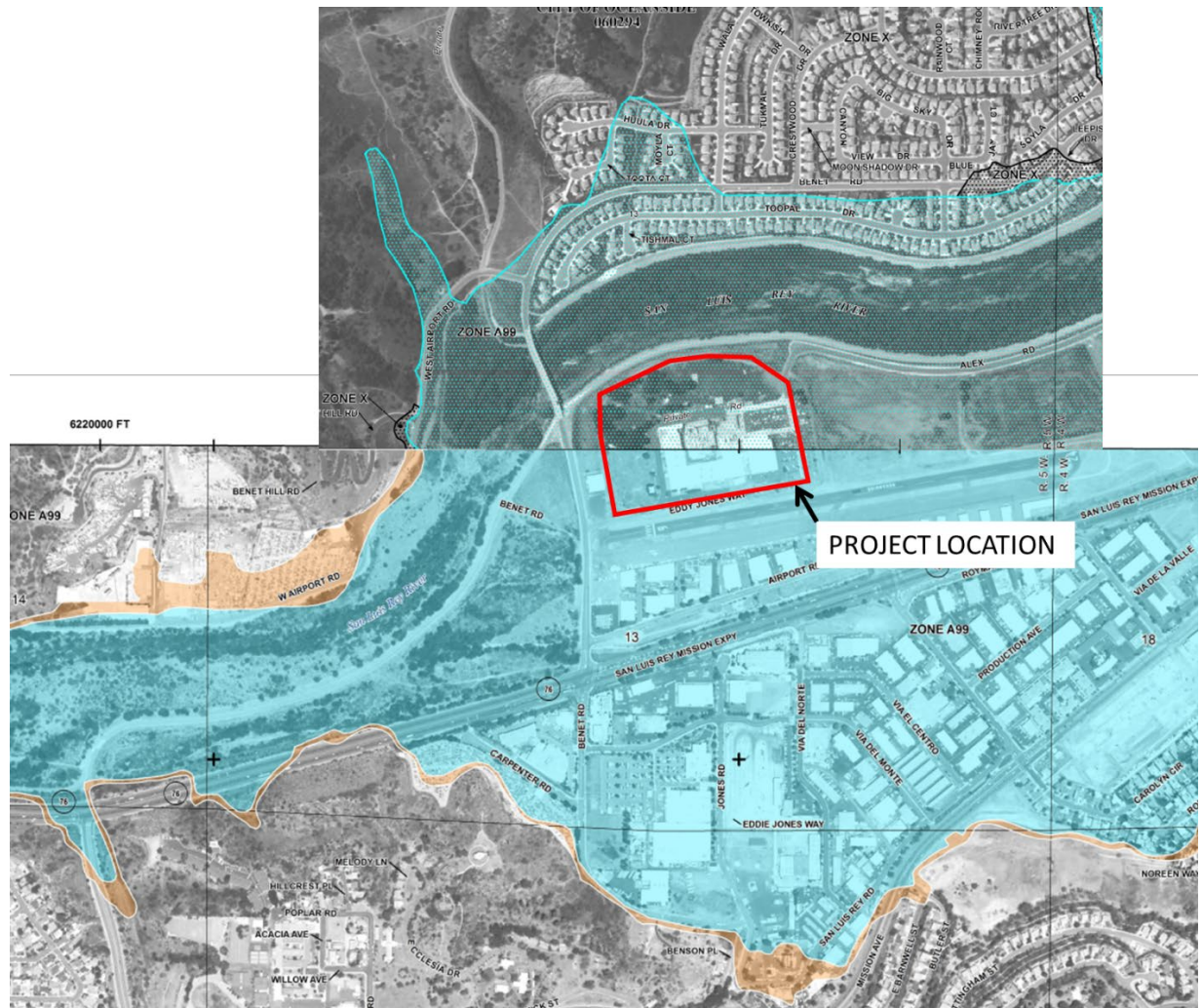
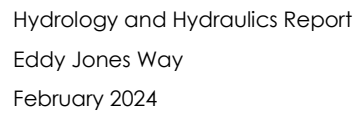


Figure 2 | Project Site Overlaid with FIRM Panels





2. BACKGROUND INFORMATION

Tory R. Walker Engineering (TRWE) prepared a FEMA data request in March 2022. [The data request \(B2409027\) response included an effective HEC-RAS model for an area upstream of the project, near Douglas Drive. TRWE gathered the remaining data that would be required to assess the floodplain mapping for the area, which included topography for the area from SanGIS.](#)

Flood protection levees have been built along the San Luis Rey River. However, certification of the levees is not yet complete. Therefore, the hydraulic models for this study [do not use the levee function and they assume the levees do not contain flow within the San Luis Rey River.](#) This was done to ensure that the proposed project will not affect base flood elevations (BFEs) regardless of the certification of the levees.

This project proposes to re-develop the site [to include four industrial buildings, parking, and a new floodwall that will replace the existing earthen berm. The design of the floodwall is currently undecided since this project is at the conceptual level. However, it will be built at an elevation above the 100-year water surface elevation, and according to FEMA standards.](#)

3. TOPOGRAPHIC INFORMATION

The topography used for this study consists of two-foot contours from SanGIS for the area labeled Carlsbad and Oceanside North. [The vertical datum is NAVD 88.](#)

4. HYDROLOGIC INFORMATION

According to the San Diego County Flood Insurance Study (FIS), the San Luis Rey River at the location of this study has a 100-year flow rate of 51,000 cfs.

5. HYDRAULIC ANALYSIS

The U.S. Army Corps of Engineers HEC-RAS version [6.4.1](#) was used for the HEC-RAS models. This study was performed using datum NAVD 88.

[The effective model ended upstream at Douglas Drive. We created a copy of this model and extended it down to the Pacific Ocean in order to tie into the Zone AE base flood elevation of 8-feet. The downstream tie in of 8-feet was taken from the effective FIRM 06073C0734J.](#)

[The existing condition model includes Cross Sections 250 and 251, which are located upstream and downstream of the existing project site \(See **Figure 4**\). These cross sections include the existing earthen berm. The Manning's coefficients for the extended portion of the HEC-RAS model were kept the same as those in the effective model, with some variance based on existing vegetation. As the cross sections draw near to](#)



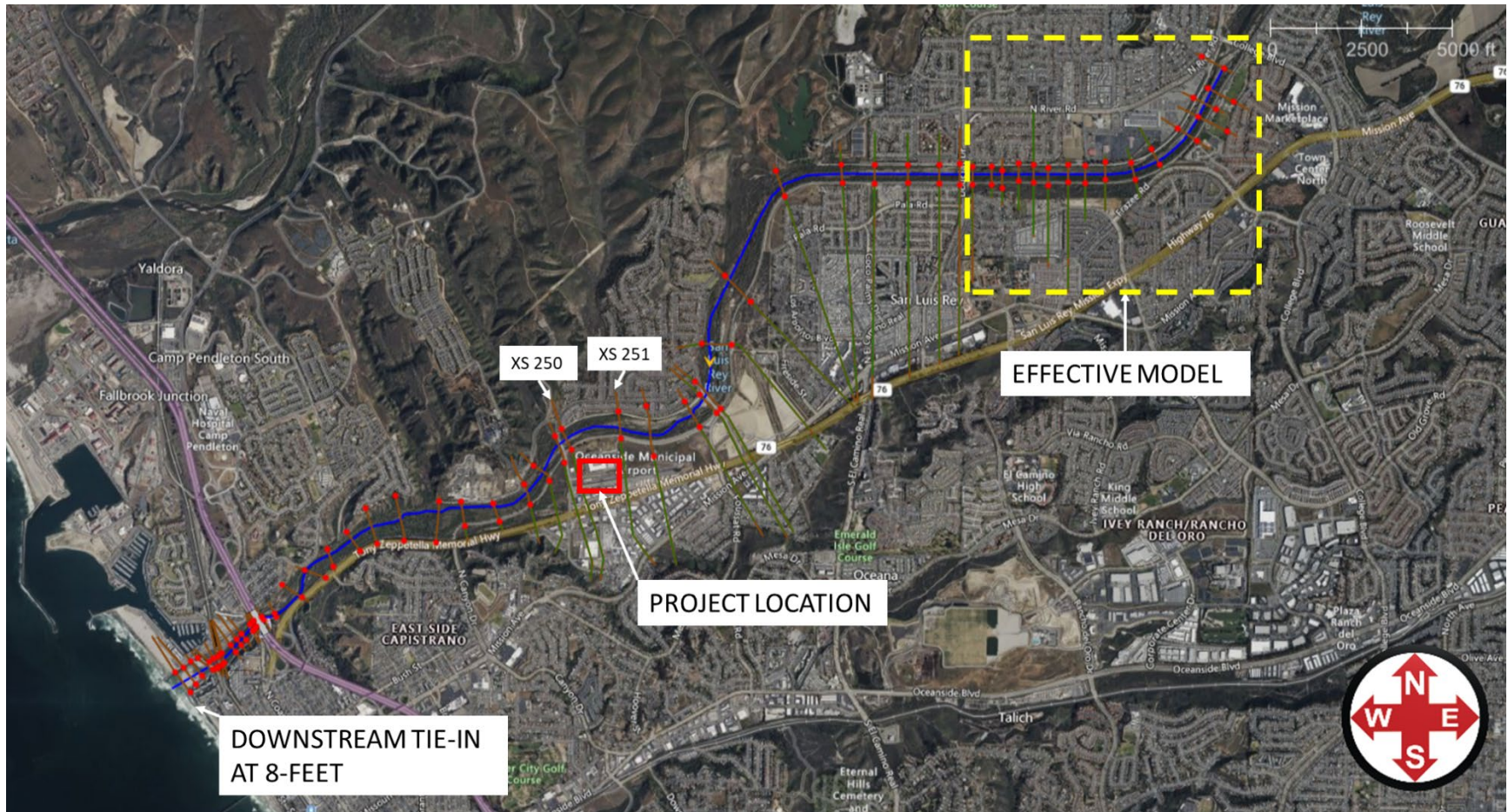
the Pacific Ocean, the channel bottom and banks become sandy; therefore, the Manning's coefficient for the channel bottom and banks were reduced to 0.025 and 0.03.

The proposed condition model is a copy of the existing condition model, except that the proposed flood wall at the project has been modeled as an obstruction at Cross Sections 250 and 251. The exact height and design of the floodwall is unknown at this conceptual phase of the project. Therefore, the top of the floodwall was assigned elevation 35-feet, which is greater than 1-foot above the 100-year water surface elevation.

The models were run using a subcritical flow regime. The HEC-RAS model file names are shown in **Table 1** below.

Table 1 | HEC-RAS Model File Names

<u>Project:</u>	<u>Eddy Jones Way</u>
<u>Plan:</u>	<u>EX - Extended</u> <u>PR = Extended</u>
<u>Geometry:</u>	<u>EX - Extended</u> <u>PR = Extended</u>
<u>Flow:</u>	<u>EX - Extended</u>



[Figure 4 | HEC-RAS Model Schematic](#)

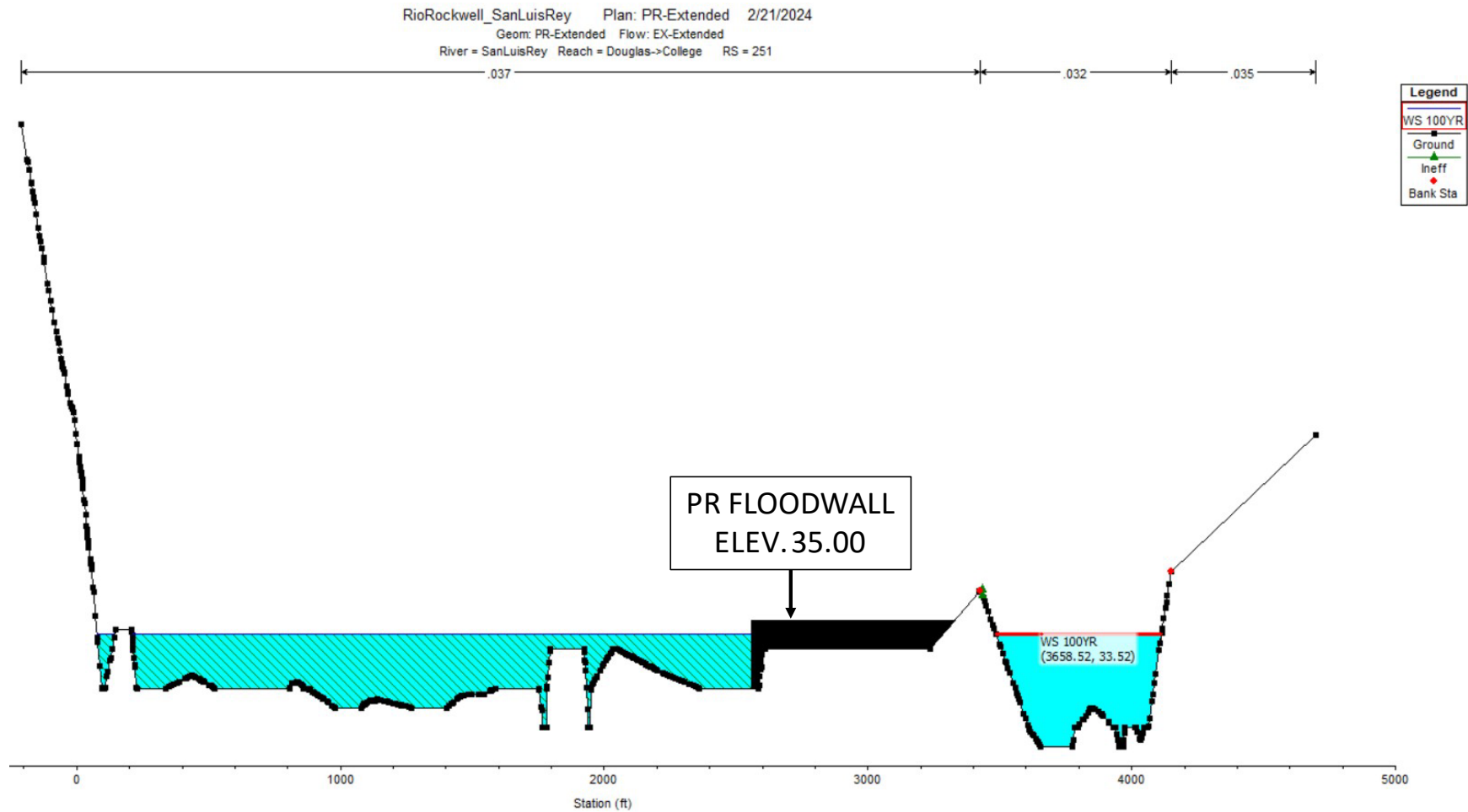


6. RESULTS AND CONCLUSIONS

[The HEC-RAS model results show that when the existing berm is converted to a taller floodwall, there is no change to the 100-year water surface elevation. This shows that the proposed floodwall has no impact on the floodplain and the proposed project will not create a significant impact on the 100-year water surface elevation. Refer to **Table 2** for water surface elevation results, and to **Figure 5** for floodplain cross section results at the project with the floodwall in place. HEC-RAS summary results are included in **Attachment 2**.](#)

Table 2 | Water Surface Elevations (ft, NAVD 88)

	Downstream (Cross Section 250)	Upstream (Cross Section 251)
Existing Condition	33.81	33.54
Proposed Condition	33.81	33.54



[Figure 5 | PR HEC-RAS Results with Floodwall at Cross Section 251](#)



Hydrology and Hydraulics Report

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ATTACHMENT 1

Effective FIRMS



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ATTACHMENT 2

HEC-RAS Results