

**DRAFT LOCATION HYDRAULIC STUDY AND  
SUMMARY FLOODPLAIN ENCROACHMENT REPORT**

**FOR THE**

**AIRPORT BOULEVARD BRIDGE  
REPLACEMENT PROJECT**

**RIVERSIDE COUNTY, CALIFORNIA**

**Federal Project No.: BRLS-5956 (231)**

**State Bridge No.: 56C-0020**

***Prepared For:***

**RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT**

**3525 14<sup>th</sup> Street**

**Riverside, CA 92502**

***Prepared By:***

**DOKKEN ENGINEERING**

**110 Blue Ravine Road, Suite 200**

**Folsom, CA 95630**

January 2023

# 1.0 Introduction

## 1.1 Purpose of Report

This report complies with Executive Order 11988, Floodplain Management, (May 24, 1977) which requires an assessment of any project that may encroach upon the base (100-year) floodplain. The purpose of the report is to evaluate whether the proposed project is in accordance with Title 23, Code of Federal Regulations (CFR), Part 650.111, entitled Location Hydraulic Studies. The regulations identify key items to be discussed in this report which are as follows: the significance of the risk or environmental impact for all encroachments, the risks associated with implementation of the project, the impacts on natural and beneficial flood-plain values, and the discouragement of probable incompatible flood-plain development.

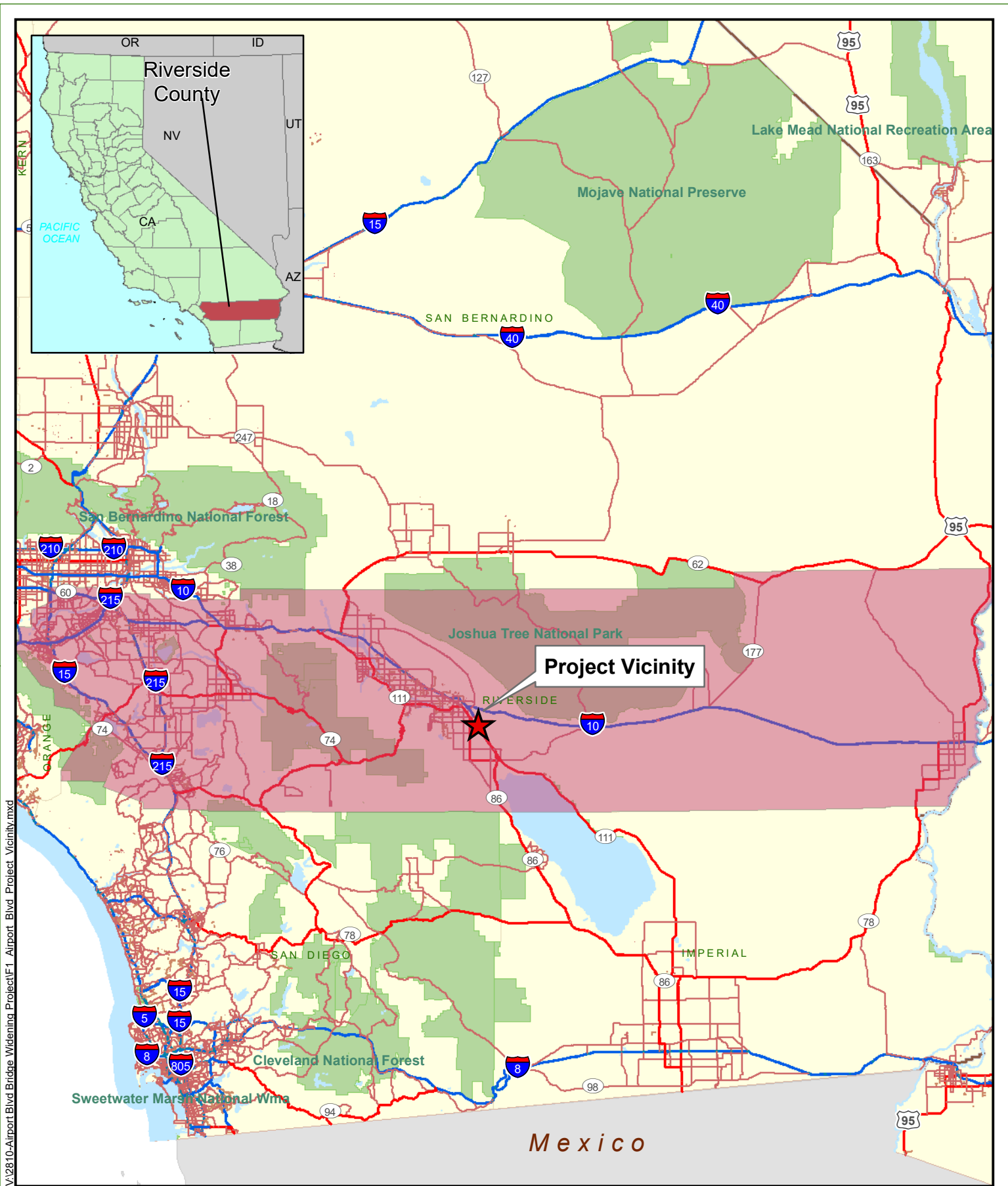
## 1.2 Project Description

The County of Riverside (County) in cooperation with the California Department of Transportation (Caltrans) and City of Coachella (City) proposes to replace the existing Airport Boulevard Bridge over the Whitewater River (State Br. No. 56C-0020). The Airport Boulevard Bridge Project (Project) is located in the community of Thermal, in the County of Riverside, California. The Project vicinity and Project location are shown in Figures 1 and 2, respectively.

The proposed bridge work is consistent with the 2012-2035 Regional Transportation Plan (RTP) as published by the Southern California Association of Governments (SCAG). The Project is anticipated to utilize federal funds through the federal Highway Bridge Project (HBP), as such it requires compliance with the National Environmental Policy Act (NEPA). Caltrans is the lead agency under NEPA and the County is the lead agency under the California Environmental Quality Act (CEQA). The City is a responsible agency under CEQA as the bridge is partially owned by the City as it is partially within City limits and City sphere of influence.

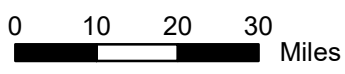
The existing Airport Boulevard Bridge is a two-lane road approximately 366 feet long and 34 feet wide with thirteen spans over the Whitewater River. This road along with the bridge is classified as a “collector street” by the County of Riverside. The bridge was originally built in 1951 and sustained damage in the 1969 flood. Partial reconstruction of the bridge occurred in 1970, when the bents were retrofitted by placing in-fill walls between the bent columns and pile cap with additional steel piles driven at the two ends of the in-filled wall bents. In 2017 the bridge was rehabilitated to include a 5-foot sidewalk on the south side. Furthermore, this bridge also has scour issues that have exposed a portion of the existing steel-encased piles and is now classified as a “Scour Critical Bridge” as of September 2019 based on Caltrans’ inspection in August 2019.

The bridge is listed in the Federal Eligible Bridge List (EBL) with a Sufficiency Rating (SR) of 60 according to the Bridge Inspection Report prepared by Caltrans Structure Maintenance and Investigations (SM&I). Since the bridge has a SR lower than 80, the bridge is eligible for major rehabilitation in accordance with the Highway Bridge Program (HBP) guidelines.



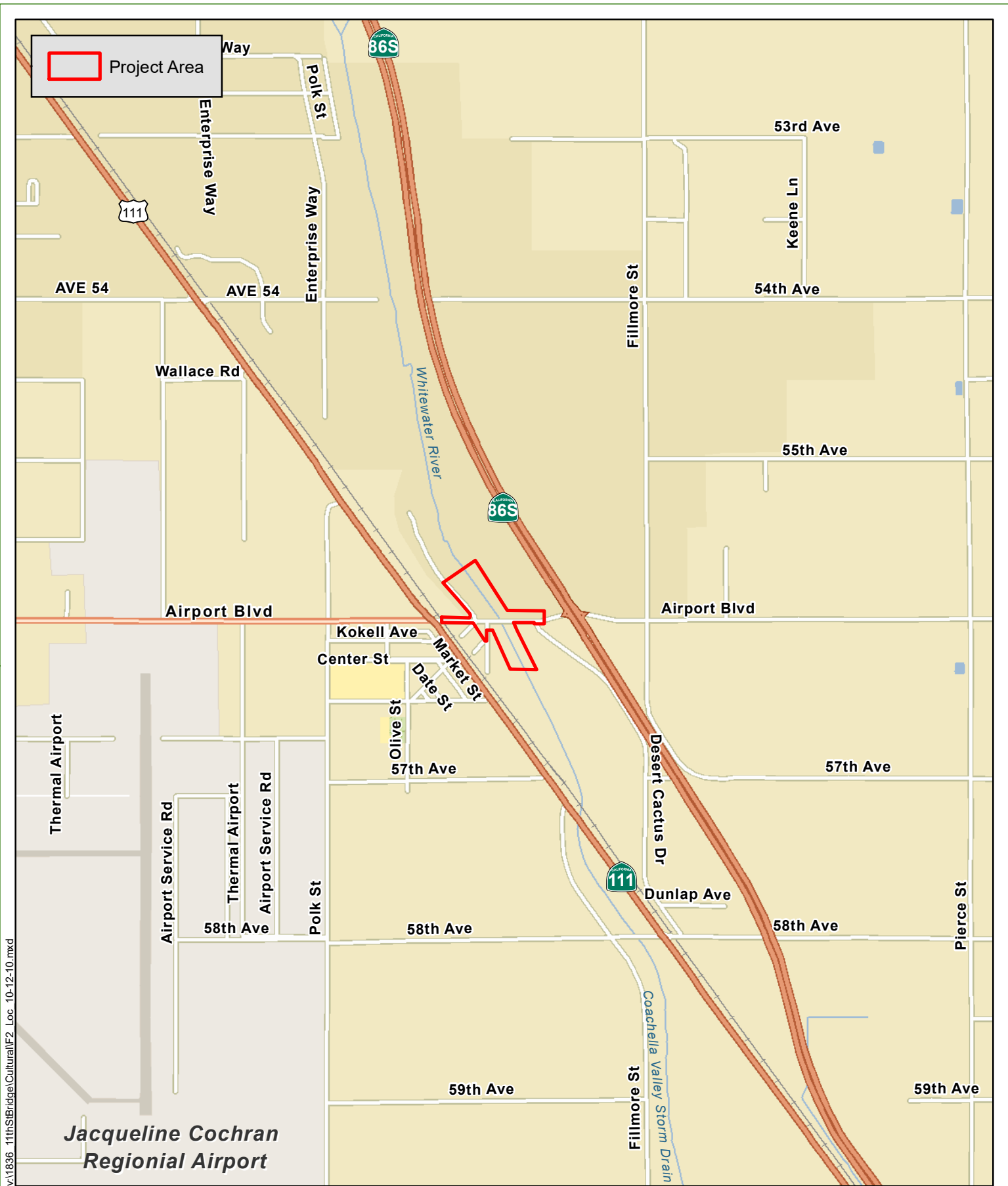
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Source: ESRI 2008; Dokken Engineering 5/18/2021; Created By: ahale



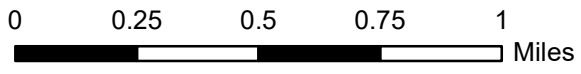
**FIGURE 1**  
**Project Vicinity**

BRLS-5956(231)  
Airport Boulevard Bridge Replacement Project  
Thermal, Riverside County, California



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Source: ESRI World Street Maps Online; Dokken Engineering 2/3/2022; Created By: ahale



**FIGURE 2**  
**Project Location**

BRLS-5956(231)  
 Airport Boulevard Bridge Replacement Project  
 Thermal, Riverside County, California



Additionally, the FEMA Flood Plain Report indicated significant inundation for the Airport Boulevard Bridge in a 100-year flood event. The Coachella Valley Water District (CVWD) has proposed improvements of the channel at the bridge location, including lowering of the riverbed by 5 feet and installing concreting lining from bank to bank underneath the existing bridge. The purpose of the CVWD Stormwater Channel Improvement Project is to restore channel flow conditions to convey the 100-year flood, provide requisite freeboard and to remove the existing threat of flooding during a 100-year storm event to the parcels within the area of benefit. CVWD's project is currently underway, to counter the impact of lowering the channel, four of the bents/support required temporary retrofit, strengthening of these bents/support is also a part of the CVWD Stormwater Channel Improvement Project.








It has been determined that a seismic structural retrofit would cost approximately \$1 million dollars more than replacement of the bridge, and with the significant hydraulic constraint cited above, the County proposes to replace Airport Boulevard Bridge with a new concrete structure. This Project proposes to replace the existing 2 lane Airport Boulevard Bridge over Whitewater River with a new, wider, 2 lane bridge and reconstruct the connecting approach roadways to meet current Caltrans seismic design codes. The new bridge would be widened to approximately 71 feet and include 6-foot wide sidewalks on both sides of the bridge, 8 foot wide shoulders, a 14 foot wide eastbound and westbound lane, and a 12 foot wide striped median/turn lane. The new bridge would have foundations placed below the potential scour plane. The Project would raise the bridge profile by approximately 2-3 feet in order to maintain a minimum freeboard from the flood water. The reprofiling would extend into approximately 850 feet of approach roadway to the west that will also be reconstructed. See Figure 3 for Project features.

The Project may also include minor retaining walls and offsite improvements in order to maintain access to the existing mobile home community on the south side of Airport Boulevard. Roadway improvements also include transition pavement to the existing grade separation structure to the west and improvement of the intersection at Orange Street and Airport Boulevard. The Project will also provide sidewalk improvements on the south side of the new bridge as well as accommodate future connectivity to the Coachella Valley Link Trail, which is anticipated to connect to Airport Boulevard along the unnamed local road in the northwestern quadrant of the Project.

Depending on the Project design, utility relocation may be required. Coordination with the following utilities to determine actions that may need to be taken once Project design is established include: Coachella Valley Water District, Imperial Irrigation, Kinder Morgan Energy Partners, Level 3 Communications/CenturyLink, MCI (Verizon Business), So Cal Gas (Distribution - Palm Desert division), and Utiliquest for Frontier.

The new bridge will be constructed in two stages. Stage 1 is to construct the north half of the bridge along the north edge of the existing structure, while the traffic on Airport Boulevard would remain on the existing bridge in each direction, unless necessary to reduce traffic control to one-way traffic to temporarily accommodate construction vehicles. Once Stage 1 is constructed, two lanes of traffic will be shifted to the newly constructed bridge while the existing bridge is demolished in Stage 2. Upon completion of demolition, the remaining south half of the proposed bridge will be constructed and completed once joined to the north half of the bridge with a closure pour.

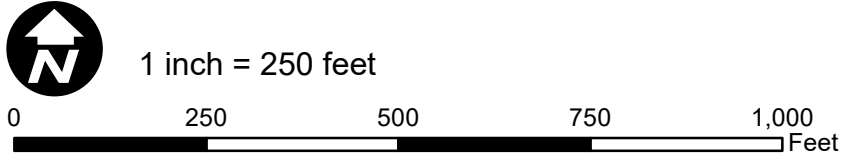


-  Project Area
-  Existing CVWD Concrete Channel Lining
-  Pavement Edges
-  Metal Beam Guardrail
-  Median Striping
-  Lane Striping
-  Retaining Wall
-  Proposed Bridge Piers (0.003 acres)
-  Access Roads
-  Parcels



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Source: ESRI Maps Online; Dokken Engineering 10/3/2022; Created By: zachl



**FIGURE 3**  
**Project Features**

BRLS-5956(231)  
Airport Boulevard Bridge Replacement Project  
Thermal, Riverside County, California



## 1.3 Purpose and Need

### Purpose

The purpose of the proposed Project is to update the existing facility to meet seismic, scour, flood, and design standards.

### Need

The need for the Project is outlined below:

- The existing Airport Boulevard Bridge over Whitewater River has reached its useful design life. The bridge has inadequate shoulder width, lane width and is found to be structurally inadequate to meet the basic required strength and resistance.
- The existing Airport Boulevard Bridge over Whitewater River needs to be replaced with a new bridge that will meet the current seismic, service load design standards, and provide an adequate facility for emergency response and general access across the Whitewater River.

## 2.0 Existing Conditions

### 2.1 Setting

The Airport Blvd Bridge crosses the Whitewater River just west of the Interstate 86 interchange in the community of Thermal, CA. The general land use consists of open space with relatively flat terrain. The land consists primarily of desert land with some small shrubs, but generally very little vegetative cover. There are a few single-family homes and a mobile home community in the Project area as well. The John Kelley Elementary School and the Coachella Valley Unified School District are located southwest of the Project site.

The proposed Project discharges to the Whitewater River, also referred to as the Coachella Valley Stormwater Channel. At the Project site the surrounding undeveloped areas slope toward the Whitewater River. The channel is approximately 20.3 miles in length, flows north to south, and outfalls into the Salton Sea. The Whitewater River has a total drainage area of approximately 1,600 square miles.

### 2.2 Traffic

Airport Blvd is classified as an Urban Arterial in the Eastern Coachella Valley Area Plan. Based on the Caltrans California Road System (CFS) maps, the federal classification of Airport Blvd varies along its length, but within the Project site it is classified as a Minor Arterial.

Airport Blvd follows a tangent east-west alignment throughout the Project area. The speed limit through the Project site is 30 mph. Airport Blvd serves as an emergency supply and evacuation route as well as a school bus/mail route. It also provides emergency vehicle access to the adjacent residential areas. Airport Blvd has an existing and proposed average daily traffic (ADT) of 6,280 (2017) and 10,400 (2045), respectively.

## 2.3 Base Flood and Floodplain

The Federal Emergency Management Agency (FEMA) prepared a Flood Insurance Study (FIS) in 2022 for Riverside County and Incorporated Areas. Where the existing Airport Blvd crosses the Whitewater River (also known as the Coachella Valley Stormwater Channel), the road is within the Zone AE floodplain, as indicated on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) No. 06065C2270H (Figure 4). Zone AE is defined as a special flood hazard area with a one percent chance of flooding in any given year. Zone AE regions have base flood elevations and an associated hydraulic analysis provided in FEMA's FIS. FEMA's 100-year water surface elevation at Airport Blvd is approximately -117 (NAVD 88). Based on this water surface, the existing roadway approaches, embankment, and bridge piers have an approximate 1.9 acres of encroachment on Zone AE.

The 2018 FEMA FIRM shown in Figure 4 is the latest that has been published. However, CVWD is constructing the Coachella Valley Stormwater Channel Improvement Project (CVSCIP). CVWD's project is a flood control project that will contain the 100-year flow in the channel and reduce the overall floodplain inundation limits. They are also preparing a Letter of Map Revision (LOMR) and provided the hydraulic modeling that supports the LOMR. This model shows the 100-year flow for the Whitewater River through the Project site is 39,000 cubic feet per second (cfs). This flow, in conjunction with the newly constructed channel geometry, yields an existing water surface elevation of -120.4 feet (NAVD 88) upstream of the Airport Blvd bridge. In this scenario, the existing bridge has a 1,746 square foot encroachment on the Zone AE floodplain. For the purposes of this document, and to follow a conservative approach, the improved channel will represent the existing condition.

As shown in Figure 4, there are various levees along the Whitewater River. These levees are not currently accredited by FEMA and therefore are not recognized as providing protection to the surrounding area for the 100-year flood event. Along with the LOMR, CVWD is in the process of gaining certification of the levees through the Project area.

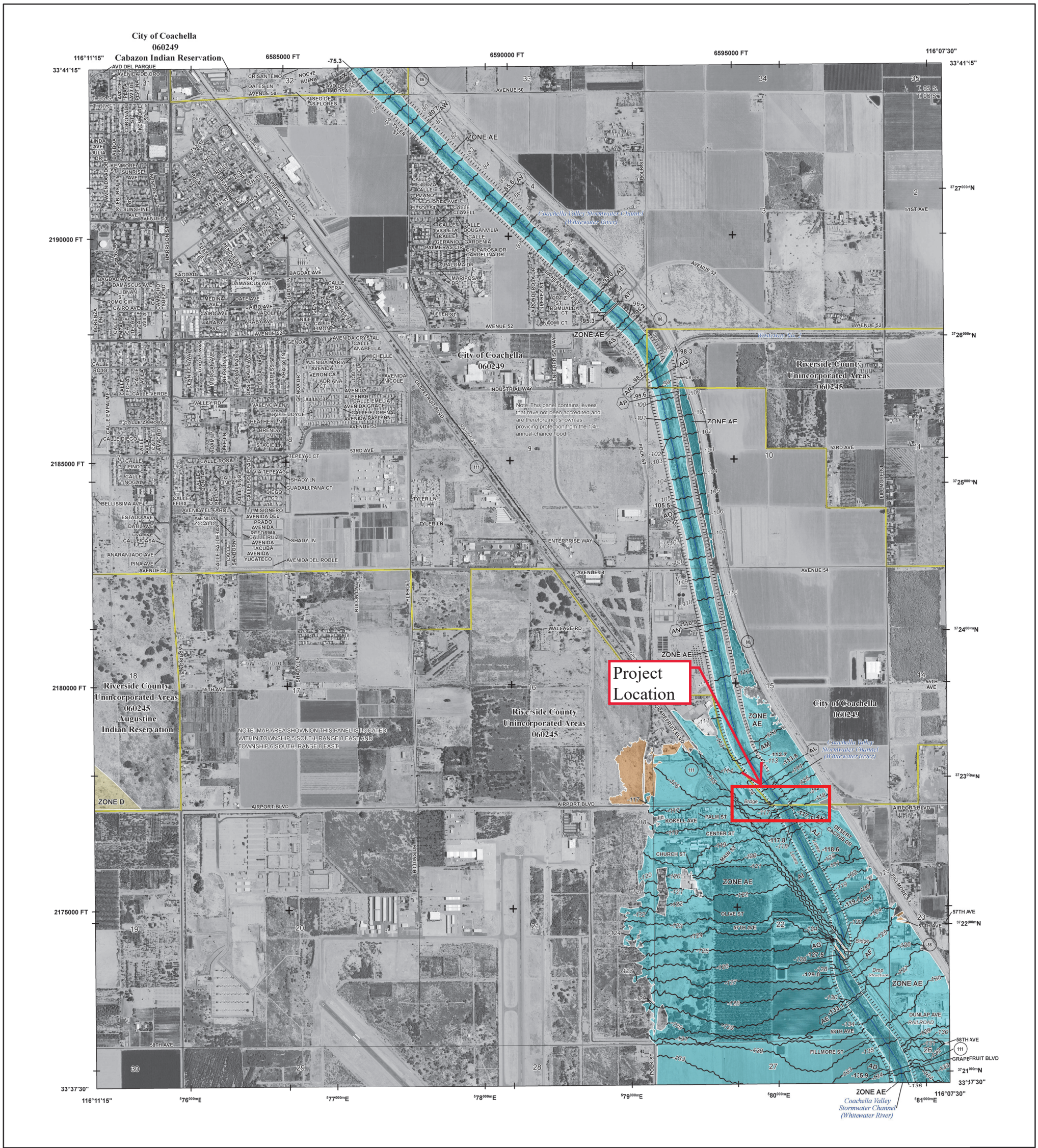
## 3.0 Risk Assessment

### 3.1 Risk Associated with Implementation

FHWA defines risk as being measured by the potential for property damage upstream and downstream of the facility caused by flooding, potential for damage or loss of the proposed facility due to flooding, potential for interruption of traffic due to flooding and potential for loss of life during the service life of the facility.

The Project will replace the existing bridge, which has 12 piers, with a new bridge that has 4 piers. Subsequently, the results of the existing and proposed condition hydraulic analysis show that the water surface elevation will be lowered from -120.4 feet to -120.6 feet at the upstream face of the bridge (see Appendix A). This reduction tapers to zero over a distance of several thousand feet upstream of the bridge. The hydraulic analysis also shows that the velocity in the channel at the bridge site increases by 0.1 ft/s in the proposed condition. The channel is concrete lined from a distance 450 feet upstream of the bridge to 180 feet downstream of the bridge so this minor increase in velocity will not result in additional





**FLOOD HAZARD INFORMATION**

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT  
**THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://msc.fema.gov)**

	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AD, AH, VE, AR Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes Zone X
	NO SCREEN Areas of Minimal Flood Hazard Zone X
	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike or Floodwall
	Non-accredited Levee, Dike or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

**NOTES TO USERS**

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

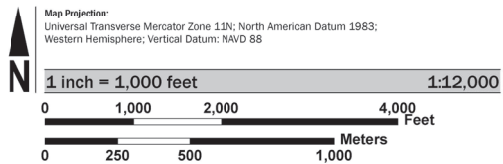
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

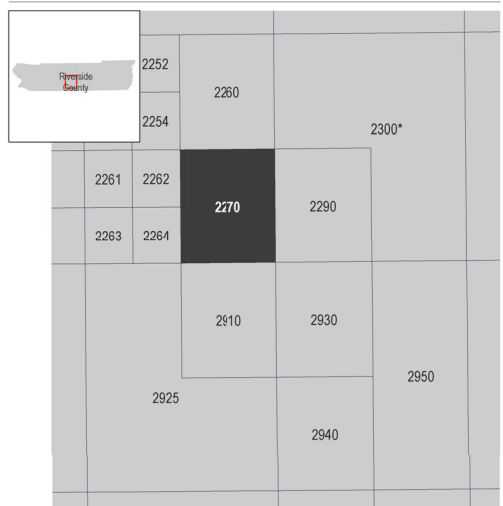
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the Riverside County GIS Department and United States Geological Survey National Hydrography Dataset (NHD). The imagery was flown by U.S. Department of Agriculture Farm Service Agency's National Aerial Imagery Program (NAIP) in 2014 and was produced with a 1-meter ground sampling distance.

**SCALE**



**PANEL LOCATOR**



**FEMA**  
 National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM  
 FLOOD INSURANCE RATE MAP**

**RIVERSIDE COUNTY,  
 CALIFORNIA**  
 and Incorporated Areas  
 PANEL 2270 OF 3805

Panel Contains:  
 COMMUNITY: COACHELLA, CITY OF RIVERSIDE COUNTY  
 NUMBER: 060249  
 PANEL: 2270  
 SUFFIX: H

**Figure 3  
 FEMA FIRM Panel**



erosion or scour along the channel. With a minimal impact to water surface elevations and a minimal change in channel velocity, the proposed Project will have no potential to cause property damage upstream or downstream reaches of the Airport Blvd bridge.

The hydraulic analysis also shows that the bridge and adjacent roadway are not overtopped during a 100-year design storm event. Therefore, there is no potential for damage to the bridge due to flooding, for interruption of traffic due to flooding, or for loss of life during the service life of the bridge.

In summary, the Project is not anticipated to create an increased risk of potential damage to the surrounding areas or create flooding that would result in loss of life or property, or interruption to traffic. As a result, there is no significant risk associated with implementation of this Project.

### 3.2 Impacts on Floodplain Values

Natural and beneficial floodplain values are defined by the Federal Highway Administration (FHWA) to include, but are not limited to: fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.

The Project will construct six 2.5-foot diameter columns at each of the four piers in the floodplain. Abutments will be constructed on pile foundations at the top of the bridge approach embankments. The finished Project will have no effect on any natural and beneficial floodplain values. Construction activities could result in temporary impacts to the following natural and beneficial floodplain values: water quality maintenance.

**Water Quality Maintenance:** The CVSCIP has fully lined the Whitewater River in the vicinity of the Airport Blvd Bridge. Therefore, the risk of erosion is minimal in the channel except where construction activities will remove the lining to construct pier and abutment foundations. These activities have the potential to increase erosion and degrade water quality in the short term. During construction, standard practices for erosion and water quality control, as dictated in the Project specific Storm Water Pollution Prevention Plan (SWPPP), will provide adequate protection against short term water quality degradation. Long term impacts associated with the replacement of the bridge include the increased amount of roadway surface that will generate additional pollutants. The Whitewater River Watershed is regulated under the NPDES Permit No. CAS617002, Order No, R7-2013-0011. Permanent BMPs are not required for transportation projects, and as such post construction BMPs will not be incorporated. With the incorporation of temporary construction BMPs, significant impacts to water quality are considered minimal and are not expected to adversely affect floodplain values associated with water quality.

### 3.3 Support of Incompatible Development

Incompatible floodplain development is defined as development that is not consistent with a community floodplain development plan (FHWA Technical Advisory T 6640.8A, 1987). Riverside County has a General Plan that details overall policies and management guidance for development in Riverside County.

The Riverside County General Plan specifies the following rules for development located at a greater risk of flood impacts (policies S 4.1-4.11):

- Minimize fill, floodproof building and structures in accordance with the Building Code.
- Maintain existing drainage patterns, watercourses, and channels.
- Address negative impacts to floodplains created by a development.

The City of Coachella also has a general plan that discusses goals for floodplain development. The City of Coachella General Plan has determined a goal to promote minimal flooding disturbance per Section 08-6, Goal 3. Policy 3.4 specifically states that the City will enforce floodplain development management. This includes “keeping surface waters within the Project area, grading of the sites so that runoff does not affect adjacent properties, and building structures so they are elevated above the anticipated flood levels.”

The proposed Project will replace the existing Airport Blvd Bridge and provide improvements to the bridge roadway approaches but will not alter the existing land use of the surrounding area. The proposed bridge will be designed per Caltrans and Riverside County standards. As such, the structure will be designed to sufficiently be protected from damage due to floodwaters. The existing drainage patterns will be maintained. The hydraulic discussion in Section 3.2 shows that the proposed Project will maintain the existing channel hydraulic conditions and as such the Project will not have a significant impact on the Whitewater River. The Project will not negatively impact floodplain values as discussed in Section 3.2. As a result, the proposed Replacement of Airport Boulevard Bridge over Whitewater River Project is determined to be consistent with the aforementioned development policies.

### 3.4 Minimization of Floodplain Impact

The proposed Project layout and design has minimized both short term and long-term impact to the floodplain. Temporary impacts due to construction activity will be minimized through the implementation of construction Best Management Practices as well as additional measures that may be specified in the regulatory permits obtained for this Project.

Permanent floodplain impacts have been minimized to the greatest extent possible by improving the overall bridge geometry. The existing bridge, which lies entirely in the Zone AE floodplain, is supported by twelve piers that have a total combined cross-sectional area of approximately 1,746 square feet. The Project proposes to remove the existing bridge, including the piers that support it, and replace it with a bridge that will be supported on six 2.5-foot diameter columns at each of the four pier bents. The proposed piers are located within the Zone AE floodplain and have a combined footprint area of 118 square feet. Within the hydraulic conveyance area of the bridge, the proposed Project produces a reduction in floodplain encroachment of 1,628 square feet.

### 3.5 Restoration and Preservation of Floodplain Values

The Project is not expected to impact floodplain values. See the discussion provided in Section 3.2.

### 3.6 Alternatives to Significant Encroachment

A significant encroachment is defined in the Federal-Aid Highway Program Manual (Volume 6, Chapter 7, Section 3, Subsection 2) as a highway encroachment that would involve one or more of the following during construction or flooding:

- Significant potential for interruption or termination of a vehicular emergency or evacuation route.
- Significant risk (i.e. loss of property or life).
- Significant adverse impact on natural or beneficial floodplain values.

Airport Blvd is a mail, bus, emergency supply, emergency vehicle access, and evacuation route. During stage 1 construction, Airport Blvd will remain open to traffic with one lane in each direction over the existing Airport Blvd Bridge while half of the proposed structure is constructed. During stage 2 of construction the one lane in each direction traffic will be shifted over to the newly constructed half of the bridge while the rest is constructed. During the 100-year flood event, the Whitewater River does not overtop the bridge or roadway. Therefore, there is not anticipated to be any travel interruptions due to construction or flooding.

Construction of the proposed Project will reduce water surface elevations and will therefore not increase flooding that results in loss of property or life. Therefore, the potential for loss of life or property is not significant.

The Project will not have a significant adverse impact on natural or beneficial floodplain values. Refer to Section 3.2 for further discussion.

The proposed Project does not represent a significant encroachment to the floodplain.

### 3.7 Alternatives to Longitudinal Encroachment

A longitudinal encroachment is defined by the FHWA to be an encroachment that is parallel to the direction of flow. The Project does not represent a longitudinal encroachment because the proposed bridge crosses the Whitewater River at a perpendicular angle.

## References

City of Coachella. 2015. General Plan Update City of Coachella, California. April 22.

County of Riverside. 2019. Riverside County General Plan Chapter 6 Safety Element. August 6.

Federal Emergency Management Agency (FEMA). 2018. Flood Insurance Rate Map #06065C2270H, Riverside County, California, and Incorporated Areas. March 6.



**Federal Emergency Management Agency (FEMA). 2022. Flood Insurance Study, Riverside County, California, and Incorporated Areas. March 22.**

**Federal Highway Administration (FHWA). 1979. Federal-Aid Highway Program Manual - Title 23, Code of Federal Regulations (CFR). November 15.**

**Federal Highway Administration (FHWA). 1987. Technical Advisory T 6640.8A. October 30.**

**Northwest Hydraulic Consultants. 2021. Coachella Valley Stormwater Channel Avenue 54 to Thermal Drop Structure Channel Improvement Project Hydraulic Basis of Design. March.**

# LOCATION HYDRAULIC STUDY FORM

Dist. 8 Co. RIV Rte. N/A Project ID BRLS-5956(231)  
Federal-Aid Project Number: N/A

## Floodplain Description:

The Whitewater River floodplain is located in Riverside County and encompasses the channel for its 20.3 mile length. The channel is concrete lined for a total of 630 feet through the bridge Project area. The Project is located in the Whitewater River floodplain Zone AE as shown on FEMA FIRM No. 06065C2270H, dated 3/6/2018.

1. Description of Proposal *(include any physical barriers i.e. concrete barriers, sound walls, etc. and design elements to minimize floodplain impacts)*  
Riverside County in conjunction with the California Department of Transportation (Caltrans), is proposing to replace the existing two-lane and thirteen span Airport Boulevard Bridge over the Whitewater River in the community of Thermal, CA. The proposed replacement bridge will be a wider two-lane and five span bridge.

2. ADT: Current 6,280 Projected 10,400

3. Hydraulic Data: Base Flood Q100= 39,000 CFS  
WSE100= -120.4 feet *The flood of record, if greater than Q100:*  
Q= N/A CFS WSE= N/A  
Overtopping flood Q= N/A CFS WSE= N/A

Are NFIP maps and studies available? NO \_\_\_\_\_ YES X

4. Is the highway location alternative within a regulatory floodway?  
NO X YES \_\_\_\_\_

5. Attach map with flood limits outlined showing all buildings or other improvements within the base floodplain.

### Potential Q100 backwater damages:

A. Residences?	NO <u>X</u>	YES _____
B. Other Bldgs?	NO <u>X</u>	YES _____
C. Crops?	NO <u>X</u>	YES _____
D. Natural and beneficial Floodplain values?	NO <u>X</u>	YES _____

*"Natural and beneficial flood-plain values" shall include but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.*

## 6. Type of Traffic:

A. Emergency supply or evacuation route?	NO _____	YES <u>X</u>
B. Emergency vehicle access?	NO _____	YES <u>X</u>
C. Practicable detour available?	NO _____	YES <u>X</u>
D. School bus or mail route?	NO _____	YES <u>X</u>

7. Estimated duration of traffic interruption for 100-year event hours: 0

8. Estimated value of Q100 flood damages (if any) – moderate risk level.

A. Roadway	\$ <u>0</u>
B. Property	\$ <u>0</u>
Total	\$ <u>0</u>

9. Assessment of Level of Risk Low X  
Moderate \_\_\_\_\_  
High \_\_\_\_\_

For High Risk projects, during design phase, additional Design Study Risk Analysis may be necessary to determine design alternative.

**LOCATION HYDRAULIC STUDY FORM cont.**

Dist. 8 Co. RIV Rte. N/A K.P. N/A  
Federal-Aid Project Number: N/A  
Project ID BRLS-5956(231) Bridge No. 56C-0020

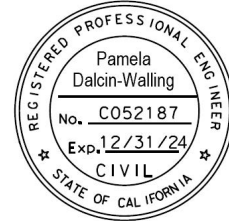
**PREPARED BY:**

Signature:

*I certify that I have conducted a Location Hydraulic Study consistent with 23 CFR 650 and that the information summarized in items numbers 3, 4, 5, 7, and 9 of this form is accurate.*

\_\_\_\_\_  
District Hydraulic Engineer (capital and 'on' system projects) Date \_\_\_\_\_

Pamela Dalcin-Walling Date 01-10-2023  
Local Agency/Consulting Hydraulic Engineer (local assistance projects)




Is there any longitudinal encroachment, significant encroachment, or any support of incompatible Floodplain development? NO X YES \_\_\_\_\_

If yes, provide evaluation and discussion of practicability of alternatives in accordance with 23 CFR 650.113

Information developed to comply with the Federal requirement for the Location Hydraulic Study shall be retained in the project files.

*I certify that item numbers 1, 2, 6 and 8 of this Location Hydraulic Study Form are accurate and will ensure that Final PS&E reflects the information and recommendations of said report:*

\_\_\_\_\_  
District Project Engineer (capital and 'on' system projects) Date \_\_\_\_\_

Juann Ramos, P.E.  Date 01-12-2023  
Local Agency Project Engineer (local assistance projects)

**CONCURRED BY:**

*I have reviewed the quality and adequacy of the floodplain submittal consistent with the attached checklist, and concur that the submittal is adequate to meet the mandates of 23 CFR 650.*

\_\_\_\_\_  
District Project Manager (capital and 'on' system projects) Date \_\_\_\_\_

\_\_\_\_\_  
Local Agency Project Manager (Local Assistance projects) Date \_\_\_\_\_

\_\_\_\_\_  
District Local Assistance Engineer (or District Hydraulic Branch for very complex projects or when required expertise is unavailable. Note: District Hydraulic Branch review of local assistance projects shall be based on reasonableness and concurrence with the information provided).

*I concur that the natural and beneficial floodplain values are consistent with the results of other studies prepared pursuant to 23 CFR 771, and that the NEPA document or determination includes environmental mitigation consistent with the Floodplain analysis.*

\_\_\_\_\_  
District Senior Environmental Planner (or Designee) Date \_\_\_\_\_

Note: If a significant floodplain encroachment is identified as a result of floodplains studies, FHWA will need to approve the encroachment and concur in the Only Practicable Alternative Finding.

## SUMMARY FLOODPLAIN ENCROACHMENT REPORT

Dist. 8 Co. RIV Rte. N/A K.P. N/A

Federal-Aid Project Number (*Local Assistance*) N/A

Project No.: BRLS-5956(231) Bridge No. 56C-0020


Limits: The floodplain is bound by the approximate limits of the Whitewater River. The Airport Blvd Bridge encroaches on the Zone AE Floodplain for a length of approximately 400 feet.

Floodplain Description: The Whitewater River floodplain is located in Riverside County and encompasses the channel for its 20.3 mile length. The channel is concrete lined for a total of 630 feet through the bridge Project area. The Project is located in the Whitewater River floodplain Zone AE as shown on FEMA FIRM No. 06065C2270H, dated 3/6/2018. The proposed Project produces a reduction in floodplain encroachment of 1,628 square feet.

- |   | No       | Yes      |
|---|----------|----------|
| 1. Is the proposed action a longitudinal encroachment of the base floodplain?   | <u>X</u> | ___      |
| 2. Are the risks associated with the implementation of the proposed action significant?   | <u>X</u> | ___      |
| 3. Will the proposed action support probable incompatible floodplain development?   | <u>X</u> | ___      |
| 4. Are there any significant impacts on natural and beneficial floodplain values?   | <u>X</u> | ___      |
| 5. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain. | <u>X</u> | ___      |
| 6. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q).  | <u>X</u> | ___      |
| 7. Are Location Hydraulic Studies that document the above answers on file? If not explain.  | ___      | <u>X</u> |

**PREPARED BY:**

\_\_\_\_\_ Date \_\_\_\_\_  
 District Project Engineer (*capital and 'on' system projects*)

**Juann Ramos, P.E.**  Date 01-12-2023  
 Local Agency Project Engineer (*local assistance projects*)

**CONCURRED BY:**

\_\_\_\_\_ Date \_\_\_\_\_  
 District Project Manager (*capital and 'on' system projects*)

\_\_\_\_\_ Date \_\_\_\_\_  
 District Local Assistance Engineer (*Local Assistance projects*)

*I concur that impacts to natural and beneficial floodplain values are consistent with the results of other studies prepared pursuant to 23 CFR 771, and that the NEPA document or determination includes environmental mitigation consistent with the Floodplain analysis.*

\_\_\_\_\_ Date \_\_\_\_\_  
 District Senior Environmental Planner (*or Designee*)

**Note: If a significant floodplain encroachment is identified as a result of floodplains studies, FHWA will need to approve the encroachment and concur in the Only Practicable Alternative Finding.**

**APPENDIX A:**

**EXISTING AND PROPOSED HEC-RAS SUMMARY  
TABLE AND FLOOD PROFILE**

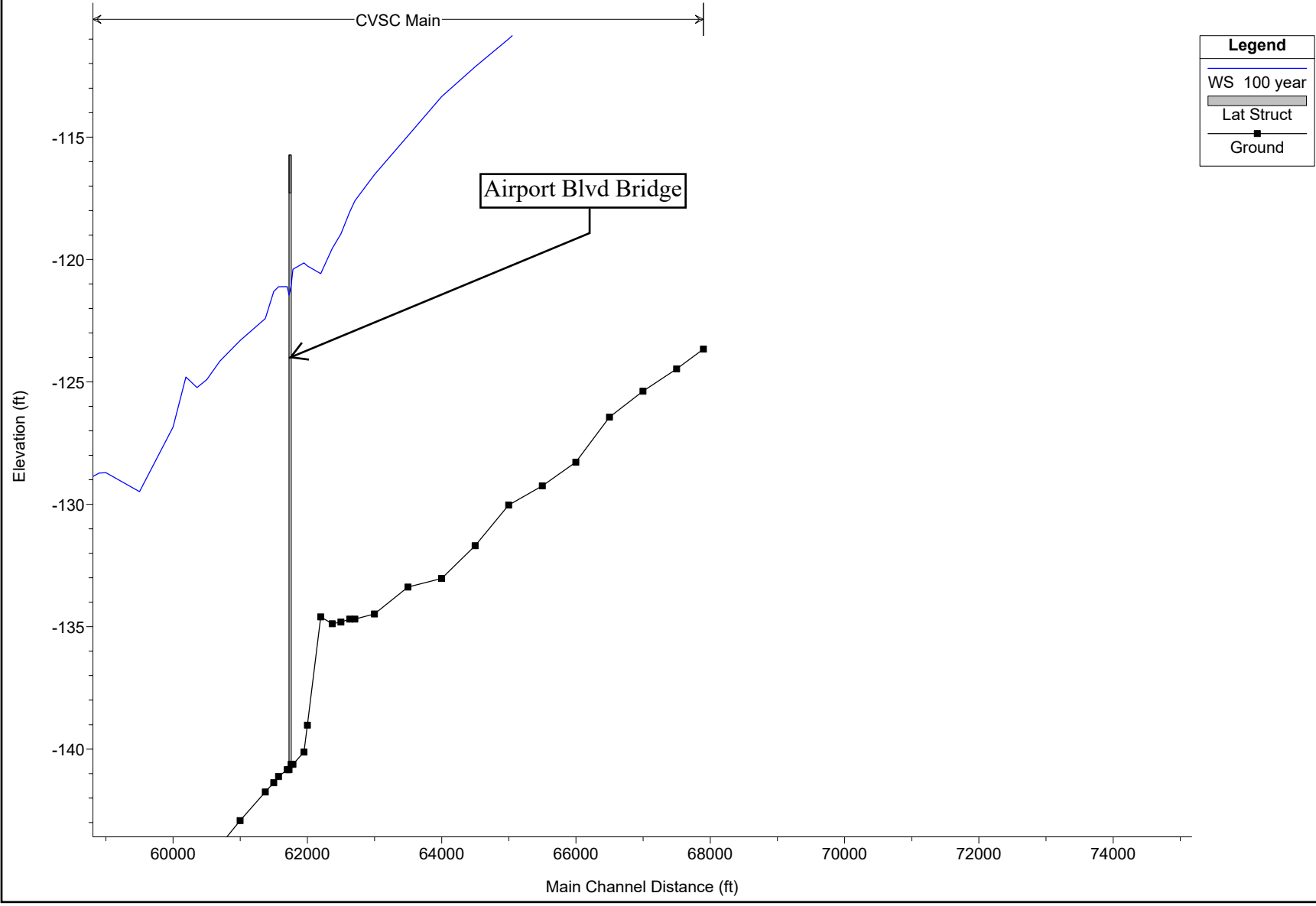
## **EXISTING CONDITION**

**Existing HEC-RAS Results**

River STA	Q Total	Min Ch El	W.S. Elev	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
	(cfs)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	Chl
61570	39000	-141.12	-121.11	-119.64	0.00045	9.74	4002.27	273.15	0.45
61700	39000	-140.84	-121.11	-119.55	0.00054	10.00	3899.16	297.75	0.49
61750	Airport Blvd Bridge								
61785	39000	-140.62	-120.40	-118.93	0.00049	9.71	4014.82	297.94	0.47
61950	39000	-140.12	-120.14	-118.84	0.00040	9.14	4267.90	294.60	0.42
62000	39000	-139.02	-120.26	-118.76	0.00053	9.85	3961.35	301.39	0.48
62200	39000	-134.60	-120.58	-118.32	0.00302	12.06	3234.62	315.33	0.66
62371	39000	-134.88	-119.55	-117.71	0.00379	10.90	3578.84	341.65	0.59

Airport Blvd Project Plan: Existing Updated Condition Run 4/4/2022

Geom: Airport Blvd Existing Condition Updated



Legend	
WS 100 year	
Lat Struct	
Ground	



## **PROPOSED CONDITION**

Proposed HEC-RAS Results

River STA	Q Total	Min Ch El	W.S. Elev	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
	(cfs)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	Chl
61570	39000	-141.12	-121.11	-119.64	0.00045	9.74	4002.27	273.15	0.45
61700	39000	-140.84	-121.11	-119.55	0.00054	10.00	3899.16	297.75	0.49
61750	Airport Blvd Bridge								
61785	39000	-140.62	-120.56	-119.06	0.00051	9.83	3965.70	297.64	0.47
61950	39000	-140.12	-120.29	-118.97	0.00041	9.24	4222.97	294.15	0.43
62000	39000	-139.02	-120.42	-118.88	0.00055	9.96	3913.72	300.91	0.49
62200	39000	-134.60	-120.76	-118.42	0.00319	12.27	3178.09	314.83	0.68
62371	39000	-134.88	-119.66	-117.77	0.00392	11.01	3543.13	341.33	0.60

Airport Blvd Project Plan: Proposed Condition Run 12/9/2022

Geom: Airport Blvd Proposed Condition Flow: 6 floods July2020 long

