FLOODPLAIN EVALUATION REPORT

Interstate 10 Corridor Project

San Bernardino and Los Angeles Counties

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Signature Page

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Chapter 1 Overview

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This Floodplain Evaluation Report was prepared in support of the Interstate 10 (I-10) Corridor Project as described below. There are several locations along the project with potential floodplain impacts from longitudinal or transverse encroachments by the project. The purpose of this report is to evaluate locations where the project may impact a floodplain and make preliminary recommendations for mitigation and further study.

This report provides data and analysis in support of the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the proposed project prepared pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). It has been prepared in accordance with the California Department of Transportation (Caltrans) Standard Environmental Reference (SER) for Floodplain Evaluation Reports. The SER applies to all transportation projects developed under the auspices of Caltrans and to all local agency highway or local streets and roads projects with funding or approvals by the Federal Highway Administration (FHWA). Caltrans is the CEQA and NEPA lead agency for the project.

In accordance with the guidance for compliance for floodplain studies as established in the Caltrans SER, this report addresses the following:

- Risk Assessment: Includes an overview of the regulatory floodplain within the project area.
- Impacts of the Project: Includes an assessment of direct impacts, impacts to natural floodplain values, support of incompatible floodplain development, and the potential for interruption or termination of the transportation facility in the event of flooding.
- Measures to Minimize Impacts: Recommends minimization measures to decrease potential impacts on the regulatory floodplain.

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Chapter 2 Project Description

Caltrans, in cooperation with the San Bernardino Associated Governments (SANBAG), proposes to add freeway lanes through all or a portion of the 33-mile stretch of I-10 from the Los Angeles/San Bernardino (LA/SB) county line to Ford Street in San Bernardino County. The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in Pomona at Post Mile (PM) 44.9 to Live Oak Canyon Road in Yucaipa at PM 37.0. Figure 1 shows the project limits.



Figure 1 Project Location Map

2.1 Alternatives

2.1.1 Alternative 1: No Build

Alternative 1 (No Build) would maintain the existing lane configuration of I-10 within the project limits with no additional mainline lanes or associated improvements to be provided.

2.1.2 Alternative 2: One High-Occupancy Vehicle Lane in Each Direction

Alternative 2 (One High-Occupancy Vehicle Lane in Each Direction) would extend the existing high-occupancy vehicle (HOV) lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles.

2.1.3 Alternative 3: Two Express Lanes in Each Direction

Alternative 3 (Two Express Lanes in Each Direction) would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street (near State Route [SR] 210) in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. The Express Lanes would be priced-managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project.

2.2 Purpose of Project

The purpose of the project is to improve traffic operations on I-10 in San Bernardino Counties to reduce congestion, increase throughput and enhance trip reliability for the planning design year of 2045.

The objectives of the project are to:

- Reduce volume-to-capacity (v/c) ratios along the corridor;
- Improve travel times within the corridor;
- Provide a facility that is compatible with transit and other modal options;
- Provide consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP);
- Provide a cost-effective project solution; and
- Minimize environmental impacts and right-of-way acquisition.

2.3 Need of Project

Deficiencies of I-10 within the project limits are summarized below:

- Substantial portions of the I-10 mainline general purpose (GP) lanes peakperiod traffic demand currently exceeds capacity;
- Nearly all of the I-10 mainline GP lanes are projected to exceed capacity in future years; and
- The I-10 existing mainline HOV lanes operation is degraded during peak periods.

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Chapter 3 Floodplain Determination

Flood hazard areas were determined based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM). Field visits in February 2009 were conducted to evaluate the potential cause of flooding, flood zone properties, and accuracy of the FEMA maps. Other sources, such as topographic mapping and aerial photos, were utilized to determine drainage tributary areas and potential flooding risk.

There are 14 floodplain locations that have been identified and studied along the 33mile-long project. The FIRM maps and photos are located in Appendices A and B, respectively.

3.1 Floodplain and Floodway Description

Floodplains are areas of land inundated by the river during the 100-year flood. Floodplains are a natural feature of rivers that may also occur in portions of a watershed on land depressions or wetlands. They are the mostly flat land adjacent to the river and are formed due to the actions of a river. Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required to provide for the passage of a design flood. Developments are prohibited in the floodway. Figure 2 depicts both floodplain and floodway areas.



Figure 2 Typical Floodplain and Floodway Location with Respect to the Main Stream

Rivers erode their own banks and redeposit the eroded material downstream. Material is added to the floodplain during floods, a process called overbank deposition. Rivers are constantly trying to reach an equilibrium state where there is a balance of water and soil material. The material that underlies floodplains is a mixture of thick layers of sand and thin layers of mud. Undisturbed floodplains provide a natural buffer by: (a) reducing the number and severity of floods, (b) minimizing non-point source water pollution, (c) filtering stormwater, (d) providing habitat for plants and animals, and (e) creating aesthetic beauty and outdoor recreation benefits.

When the flow in the river overtops its banks, the overflow spreads over the floodplain, which slows the flow of the water. Reduced water velocity can help prevent severe erosion and flooding downstream. In addition, during high water events, some of the water is absorbed by the floodplain, reducing the extent of the flooding. The absorbed water can then be returned to the stream during times of low water.

Floodplains support plants and animals and may have forests and wetlands on or adjacent to them. These river edges provide habitat for insects, birds, reptiles, amphibians, and mammals. The vegetation filters contaminants in water that flow into the river. In addition, vegetated floodplains provide shade for the adjacent rivers and streams, increasing dissolved oxygen levels, and consequently improving habitat for aquatic plants and animals.

In general, a floodplain cannot be altered in any way until it has been shown that alteration will pass the base flood without significant damage to either the floodplain or surrounding areas. No bridge abutment or embankment shall encroach on a regulatory floodway.

It is anticipated that there would be some floodplain encroachment throughout the project corridor. Encroachment would vary at each location depending on the proposed improvement. This report discusses proposed improvements and floodplain mitigation, if any.

The proposed project will have to adhere to all federal, state, and local regulatory policies for floodplain management. Some of the basic guidelines are:

• To minimize impacts of highway agency actions that adversely affect base floodplains;

- To restore and preserve the natural and beneficial floodplain values that are adversely impacted by highway agency actions;
- To avoid support of incompatible floodplain development; and
- To be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program.

3.2 **FEMA** Designations

FEMA designates Special Flood Hazard Areas according to zones. The base flood elevation (BFE) is the water surface elevation of the 1 percent annual chance of flood. The zones are described as:

Zone A – Corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. No BFEs or depths have been determined.

Zone AE – Corresponds to the areas of 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs have been derived from detailed hydraulic analyses and are shown within this zone.

Zone AH – Corresponds to the areas of 100-year shallow flooding with a constant water surface elevation. Flood depths are 1 to 3 feet (usually areas of ponding); BFEs are derived from detailed hydraulic analyses and are shown at selected intervals within this zone.

Zone AO – Corresponds to the areas of 100-year shallow flooding. Flood depths are 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AR – Depicts areas protected from flood hazards by flood control structures such as levees that are being restored.

Zone X (dotted) – Other flood areas. Areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

Zone X – Areas determined to be outside the 0.2 percent annual chance floodplain.

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Chapter 4 Federal and State Regulations

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4.1 FEMA

FEMA developed the National Flood Insurance Program (NFIP) to assist communities across the country with floodplain management. NFIP provides federally backed flood insurance to homeowners, renters, and business owners in participating communities. In addition to providing flood insurance and reducing flood damage through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates a broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

Executive Order (EO) 11988 directs all federal agencies to refrain, to the extent practicable and feasible, all short-term and long-term adverse impacts associated with floodplain modification and to refrain from direct and indirect support of development within 100-year floodplains wherever a practicable alternative is available and to restore and preserve the natural and beneficial values served by floodplains. Projects that encroach upon 100-year floodplains must be supported with additional specific information. The U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests." The Order does not apply to areas with Zone C (areas of minimal flooding as shown on FEMA FIRMs).

A Floodplain Evaluation is required as described under the NFIP (23 *Code of Federal Regulations* [CFR] 650, Subpart A Section 650). Section 650.111 of the regulations calls for location hydraulic studies to be performed which includes detailed engineering design drawings. Hydraulic modeling would be required, along with a hydraulic report summarizing the results (to be submitted for review by the local agencies listed in the FIRMs). A Conditional Letter of Map Revision (CLOMR) and a Letter of Map Revision (LOMR) may be required by FEMA for work within a floodway or for work resulting in significant impacts to the 100-year floodplain.

4.2 U.S. Environmental Protection Agency

Under the Clean Water Act (CWA), the United States Environmental Protection Agency (EPA) was granted authority to implement pollution control programs, such as setting wastewater standards for industry and establishing a permit system for the discharge of any pollutant into the waters of the United States. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

4.3 Clean Water Act (33 U.S.C. § 1251 *et seq.)*

The purpose of the CWA is restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. California's State Water Resources Control Board (SWRCB) is the State agency with primary responsibility for implementation of State and federally established regulations relating to hydrology and water quality issues. Typically, all regulatory requirements are implemented by the SWRCB through the nine different Regional Water Quality Control Boards (RWQCBs) established throughout the state. The CWA operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

Chapter 5 Permits and Approvals

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The following permits may be required for water bodies impacted by the project.

5.1 Section 404 Permit

CWA Section 404 establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. The responsibility for administering and enforcing a Section 404 Permit is shared by the U.S. Army Corps of Engineers (USACE) and EPA. USACE administers the day-to-day program, including individual permit decisions and jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions.

5.2 Section 408 Permit

This permit is required if there are proposed modification to an existing USACE flood control project. The applicant must obtain permission from the Secretary of the Army by demonstrating that such proposed alteration or permanent use and occupation of the Federal flood control project is "not injurious to the public interest and will not impair the usefulness of such work."

Modification of a federal flood control project requires permission by USACE through a Title 33 U.S.C. Section 408 permit. Section 408 specifies the technical and risk analyses that must be submitted to USACE by any non-federal sponsor of a project that may adversely affect the capacity or structural integrity of a federal flood control facility. The types of information required include detailed structural information, hydraulic data (e.g., water surface profiles), and geotechnical evaluations (e.g., levee seepage and stability). A memorandum, Clarification Guidance on the Policy and Procedural Guidance for the Approval of Modifications and Alterations of Corps of Engineers Projects (USACE 2008), provides detailed information.

5.3 Section 401 Certification

A 401 Certification certifies that the Section 404 mitigation plan conforms to State water quality standards. The 401 Certification for this project would be administered by the Santa Ana River RWQCB.

5.4 National Pollutant Discharge Elimination System Permit

The CWA created the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of any pollutant from a point source into

navigable waters by requiring those point sources to obtain a permit if their discharges go directly to surface waters. The NPDES permit documents that completed projects meet applicable water quality standards for drainage and runoff. An NPDES permit and Storm Water Pollution Prevention Plan (SWPPP) are required from SWRCB under the Federal CWA (Section 402). The project area is within the jurisdiction of the Los Angeles RWQCB and Santa Ana RWQCB.

By following the guidelines and regulations established by the NPDES permits, which include the Caltrans Statewide Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the Construction General Permit (CGP) (Order No. 2009-0009-DWQ, NPDES No. CAS000002), and compliance with waste discharge requirements (WDRs) for municipal separate storm sewer system (MS4) discharges (Order No. R4-2012-0175, NPDES No. CAS004001 for Los Angeles County and Order No. R8-2010-0036, NPDES No. CAS618036 for San Bernardino County) administered by the Los Angeles and Santa Ana RWQCBs, respectively.

5.5 NPDES Permit Requirements for Dewatering Discharges

Care is required for the removal of nuisance water from a construction site (known as dewatering) because of the high turbidity and other pollutants associated with this activity. The Los Angeles RWQCB's permit for discharges of groundwater from construction and project dewatering to surface waters is identified as No. R4-2013-0095 (NPDES No.CAG994004). The Santa Ana RWQCB's Dewatering Permit Order is identified as R8-2005-0041 (NPDES NO. CAG998001). These permits cover the General WDRs for Discharges to Surface Water which Pose an Insignificant (*De Minimis*) Threat to Water Quality from dewatering activities.

5.6 California Department of Fish and Wildlife Section 1602 Streambed Alteration Agreement

Section 1602 of the California Department of Fish and Wildlife (CDFW) Code requires a Streambed Alteration Agreement for any alteration to the bank or bed of a stream or lake or for any activity that substantially diverts or obstructs the natural flow of any river, stream, or lake. Further coordination with CDFW regarding potential project impacts is required, and a Section 1602 Streambed Alteration Agreement may be necessary for this project. As applicable, a Section 1602 Streambed Alteration Agreement would be obtained for the project prior to construction.

Chapter 6 Floodplain Locations

In accordance with FEMA FIRMs, the following water bodies have been designated as flood hazard areas of varying degrees with San Sevaine Channel and Santa Ana River mapped as a floodway and the others mapped as floodplains. FEMA maps, located in Appendix A, display areas within the project that may have impact to some of the higher flood hazard zones such as A and AE. The exhibits in Appendix C show the proposed improvements overlaid on the FIRM maps. As a requirement of the SER, Location Hydraulic Study and Summary Floodplain Encroachment forms can be found in Appendices D and E.

6.1 West Cucamonga Creek – FIRM No. 06071C8609H

The existing West Cucamonga Creek carries flows from the City of Ontario. The upstream end of the channel is located north of Church Street, from where it continues in a southerly direction to the infiltration basins north of SR 60. The basins outfall is Cucamonga Creek.

The proposed improvements include roadway widening, grading and retaining walls. The two existing culvert crossings under the I-10 would be protected in place.

A Zone AO flood hazard designation is shown adjacent to the westbound roadbed. The floodplain spreads to the N. Grove Avenue underpass where it joins the Zone A designation south of the freeway. It is determined that the proposed improvement would not significantly alter the floodplain.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.2 Cucamonga Creek – FIRM No. 06071C8628H

The Cucamonga Creek watershed is located in San Bernardino County and Riverside County and includes portions of the cities of Chino, Ontario, Rancho Cucamonga, and Upland. The upstream reach of the Cucamonga Creek Channel originates at the Cucamonga Debris Basin, from where it continues in a southeasterly direction having a confluence with a channel that brings flows from Thorpe Canyon Dam. From this confluence, the channel crosses SR 210, continuing for approximately 5 miles to the project area. The Deer Creek Channel is the largest tributary of Cucamonga Creek, where the confluence is located just south of the eastbound (right) I-10 bridge. From the confluence with the Deer Creek Channel, the Cucamonga Creek Channel continues to the south under Ontario International Airport to the confluence with Lower Deer Creek, approximately 3.4 miles downstream. Downstream of this confluence, the channel continues south for approximately 3.8 miles where it discharges into Prado Basin.

The project proposes to widen the existing bridges over Cucamonga Creek/Deer Creek. The existing pier wall in the channel would be removed and replaced to support the proposed superstructure. According to the Preliminary Hydraulics Report for Cucamonga Creek Bridges, the proposed improvements have no hydraulic impact to the channel. It is determined that the proposed improvement would not alter the floodplain.

Adjacent to the I-10 crossing, the channel is designated as Zone A with the 100-year discharge contained in the channel.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.3 Lower Deer Creek – FIRM No. 06071C8629H

Lower Deer Creek is located mainly in the City of Ontario. The upstream reach begins at Turner Basins at the historical Deer Creek alignment. South of SR 60, the channel travels in a southwesterly direction. The open channel transitions to an underground system and back to an open channel several times before finally discharging to Cucamonga Creek near Schaefer Avenue.

The project proposes to widen the roadway to the north and south which would require extension of the existing 14' x 5' RCB within the designated floodplain.

FEMA designates the channel and culvert as a Zone A flood hazard, and it appears the flows are contained in the channel. It is determined that the proposed improvement would not significantly alter the floodplain.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.4 Cal Commerce Center Storm Drain – FIRM No. 06071C8629H

There is a strip of Zone AH floodplain just east of the Haven Avenue interchange along the westbound roadway. The flooding is primarily due to the inadequate carrying capacity of the ditch that parallels I-10 and backwater effects by the culvert that conveys flows across the freeway.

The proposed improvement is to widen the roadway which would require some grading within the floodplain. The ditch would not be impacted but should be evaluated during the plans, specification, and estimate (PS&E) phase to accommodate the 100-year discharge.

There are no natural and beneficial uses for this floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

6.5 East Etiwanda Creek – FIRM No. 06071C8634H

The channel north and south of the freeway is designated as flood hazard Zone A. Much of the historical flow has now been diverted to San Sevaine Channel north of Foothill Boulevard. The remaining East Etiwanda Creek flow comes from a smaller tributary from Foothill Boulevard to the I-10 crossing. A LOMR was issued effective September 20, 2013, to reflect the above improvements. The western culvert under I-10 appears to be nonfunctional, which would need to be confirmed by Caltrans or the San Bernardino County Flood Control District (SBCFCD).

Project improvements along the floodplain include roadway widening and grading of the embankments. Structural improvements include closure of the median gap between the eastbound and westbound bridges and widening the Etiwanda Avenue eastbound off-ramp bridge to the south. The bridge widening would require extension of the rectangular reinforced concrete channel cross section into the natural channel, along with possible modifications to the upstream transition structure.

The I-10 HOV Alternative and Express Lanes Alternative improvements would have some impact on the floodplain. Mitigation shall be assessed during the design phase and should include a new hydrology study for East Etiwanda Creek to determine the new 100-year peak flows and floodplain limits.

Beneficial uses for East Etiwanda Creek include groundwater recharge, industrial process supply, water contact recreation, non-contact water recreation, municipal and domestic water supply, wildlife habitat, and rare, threatened, or endangered species (Santa Ana RWQCB 2008).

It is determined that the proposed improvement would not significantly alter the floodplain.

6.6 San Sevaine Channel – FIRM No. 06071C8634J

San Sevaine Channel conveys storm runoff from the cities of Rancho Cucamonga and Fontana and unincorporated area of San Bernardino County. The channel discharges to the Santa Ana River in the city of Corona. The channels under I-10 consist of the San Sevaine Channel and I-10 Channel with the confluence occurring just downstream of the Etiwanda Avenue eastbound on-ramp. The proposed improvement would widen the mainline and Etiwanda Avenue eastbound on-ramp bridges over the channel. The bridge widening would not impact the two rectangular reinforced concrete channel cross sections, except for removal and replacement of the existing walls that separate them. The effective flow area and conveyance of the channel under the bridges will not change and therefore will not alter the floodplain.

The FIRM map indicates the channel is a designated floodway and flood hazard Zone AE, with the 100-year storm event contained in the channel. A preliminary revised FIRM map was issued February 1, 2014, to reflect current changes.

Intermittent beneficial uses for San Sevaine Channel include municipal and domestic water supply, groundwater recharge, non-contact water recreation, cold freshwater habitat, and wildlife habitat (Santa Ana RWQCB 2008).

6.7 I-10 Channel – FIRM No. 06071C8653H, 06071C8654H, and 06071C8658H

The I-10 Channel parallels I-10 on the north side. The high point of the channel is located approximately 300 feet east of Sierra Avenue and flows westerly, discharging into San Sevaine Channel. The channel conveys storm runoff from the cities of Rialto, Bloomington and Fontana and unincorporated areas of San Bernardino county. The concrete trapezoidal channel varies in width from 12 to 50 feet and in depth from 3 to 9 feet.

The City of Fontana's I-10 Channel Capacity Study Report (Boyle Engineering, 2003) determined the channel to be deficient to convey the 100-year peak discharges and recommends widening the channel. A portion of the channel has been improved recently as part of the Cherry Avenue interchange improvement project.

There are two Zone A flood hazard designations for the I-10 Channel. The first area is located at the Caltrans maintenance property (old rest area) between Beech Avenue

and Poplar Avenue. A field visit and topographic mapping indicate a sump area between the elevated section of I-10 and the I-10 Channel. Flows that overtop the channel would pond in the sump area.

The second floodplain area is located between Sierra Avenue and the upstream end of the channel. The source of flooding appears to be runoff from an area north of I-10 and the backwater effect of the I-10 Channel. The proposed improvement would encroach on the channel and floodplain. A portion of the existing channel would be replaced with a box or pipe system to accommodate realignment of the Sierra Avenue westbound on-ramp.

There are no natural and/or beneficial uses for the I-10 Channel and floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

6.8 Colton Southwest Storm Drain– FIRM No. 06071C8679H

The area northwest of I-10 and the Burlington Northern Santa Fe (BNSF) Railroad is designated as Zone AH. The existing storm drain system under 5th Street (Pennsylvania Avenue) does not have the capacity to convey the 100-year storm event causing shallow flooding induced by backwater effect and concentrated street flow.

The FEMA floodplain delineation shows several single-family residences and businesses impacted by the floodplain.

The proposed I-10 improvements at the floodplain include roadway widening, retaining wall construction, and bridge widening.

There are no natural and/or beneficial uses for this floodplain. It is determined that the proposed improvement would not significantly alter the floodplain.

6.9 11th Street Storm Drain – FIRM No. 06071C8679H

The floodplain is located along the 11th Street alignment south of I-10. There is a double pipe culvert crossing I-10 that outlets into an open channel. The open channel is designated as a floodway and Zone AE floodplain.

The project's proposed improvement, which includes widening of the existing eastbound roadway and realignment of the 9th Street eastbound on-ramp, would encroach on the designated floodway and floodplain. However, it is expected that encroachment would be minimal and would not significantly alter the floodplain.

There are no natural and/or beneficial uses for this floodplain except for drainage conveyance.

6.10 Warm (Lytle) Creek – FIRM No. 06071C8683H (LOMR Effective November 15, 2010)

Warm Creek crosses I-10 just west of the Interstate 215 (I-215) interchange. Major tributaries, such as Lytle Creek and Cajon Creek, discharge to Warm Creek upstream of the project. Warm Creek confluences with the Santa Ana River approximately 0.25 mile downstream of I-10.

Warm Creek is designated as Zone AE flood hazard with BFE determination. A LOMR was published in November 2010 that revises the floodplain for Warm Creek and Lytle Creek. It also decreased the BFE from the previously published FIRM Map (August 28, 2008). Note that the FEMA map refers to Warm Creek as Lytle Creek at the I-10 crossing. The revised FIRM map shows some channel overflow upstream and downstream of the I-10 crossing; however, the 100-year event appears to be contained in the channel several miles upstream of I-10.

The project proposes to widen the existing bridge over Warm Creek to accommodate additional lanes. For the Express Lanes Alternative, pierwalls inside the channel would be extended by approximately 22 feet upstream and 20 feet downstream of I-10. Seismic retrofit would also require thickening of the pier walls. The Preliminary Hydraulic Report for Warm Creek Bridge indicates a slight increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014).

This major river provides many beneficial uses for the area such as water suppliers that draw from Lytle Creek and hydroelectric generation (Santa Ana RWQCB 2008).

6.11 Santa Ana River – FIRM No. 06071C8683H

The Santa Ana River bridge crossing is located west of the I-10/I-215 interchange. The Santa Ana River headwater originates at the base of the San Bernardino Mountains east of Highland, and the 96–mile-long journey ends in the Pacific Ocean at Huntington Beach. The river accepts flows from other large tributaries, including runoff from several cities before crossing the project site. The Santa Ana River is a critical water resource for southern California, with many beneficial uses such as water consumption, natural habitat for many species, and a major flood control conveyance. The project proposes to widen the I-10 bridges over the Santa Ana River to accommodate the additional lanes. For the Express Lanes Alternative, pier walls would have to be extended approximately 26 feet upstream of the westbound bridge and the eastbound bridge would be widened 15 feet upstream and 7 feet downstream. The "Preliminary Hydraulic Report for Santa Ana River Bridge" indicates a negligible increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014). The proposed improvement will not significantly alter the floodplain and BFE.

The Santa Ana River is designated as a floodway and Zone AE with BFE determination. The 100-year discharge is contained in the channel.

Beneficial floodplain values for Santa Ana River, Reach 4, include groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater and wildlife habitat (Santa Ana RWQCB 2008).

6.12 San Timoteo Creek – FIRM No. 06071C8684H

The existing channel carries flow from a tributary area within Riverside and San Bernardino counties southeast of the project. The total drainage area of San Timoteo Creek at the Santa Ana River outfall is approximately 126 square miles.

The creek begins at the confluence of Noble Creek and Little San Gorgonio Creek in the City of Beaumont. The channel meanders through San Timoteo Canyon and the cities of Redlands and Loma Linda. The creek outlets into the Santa Ana River approximately 10 miles northwest of the I-10 crossing.

Several streams discharge to San Timoteo Creek including Yucaipa Creek, the largest tributary.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing mainline and Carnegie Drive westbound on-ramp bridge. The center pier of the mainline bridge would be lengthened to accommodate the additional lanes. The pier nose would be removed and replaced on the south side (upstream). The westbound on-ramp bridge widening would not impact the existing channel. The Preliminary Hydraulic Report for San Timoteo Bridge indicates a slight increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014). The proposed improvement will not significantly alter the floodplain. FEMA designates San Timoteo Creek as Zone A with 100-year flows contained in concrete rectangular channel.

Intermittent beneficial uses for San Timoteo Creek include groundwater recharge and wildlife habitat (Santa Ana RWQCB 2008).

6.13 Mission Zanja Channel – FIRM No. 06071C8703H

FEMA designates the Mission Zanja Channel as Zone A downstream of I-10 and Zone AO adjacent to the channel and I-10 with the 100-year storm event flow overtopping the channel upstream of the freeway as shown in the FIRM Map. The flooding area extends upstream of the West Redlands Bridge (where the channel approaches the I-10, turns west in a wide curve and runs parallel to the Interstate for approximately 1500') beyond Redlands Boulevard. The floodplain does not appear to encroach on the mainline roadbed, but the eastbound off-ramp embankment at Mountain View Avenue may be affected.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing bridge by extending the abutments and adding pier walls at the top of channel. According to the Preliminary Hydraulics report for Mission Zanja Channel Bridge, hydraulic analysis indicate the bridge widening leads to a negligible change water surface elevation and would not alter the floodplain.

There are no natural and/or beneficial uses for this floodplain except for drainage conveyance.

6.14 The Zanja – FIRM No. 06071C8716H

The Zanja is a historical irrigation canal, which over several decades became a drainage conveyance. The Zanja's floodplain spreads throughout downtown Redlands and joins the Mission Zanja Channel east of California Street. The floodplain is bounded by the I-10 freeway embankments with a designation of Zone A along the main channel and Zone AO (depths of 1 to 2 feet) at the overbanks adjacent to I-10. The I-10 roadbed is elevated adjacent to the floodplain; therefore, flood inundation is concentrated along the toe of freeway embankment.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing roadway. Embankment slopes may encroach on the Zone AO floodplain but would not significantly alter the floodplain area. There are no natural and/or beneficial uses for this floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

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Chapter 7 Alternatives to Floodplain Encroachment

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Because the proposed work is located on an existing highway, a new highway location alternative could not be evaluated. The proposed work would widen the existing freeway to accommodate the HOV Alternative and Express Lanes Alternative. The only variable to the impacts is the degree of encroachment. Disturbance to the floodplains shall be minimized where possible.

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Chapter 8 Risk Assessment

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The I-10 Corridor Project would impact several water bodies and their floodplain at varying degrees, depending on the alternative. Table 1 summarizes the risks associated with encroaching and developing on a flood hazard area. The FEMA FIRM maps, photos, project improvements, Location Hydraulic Study Forms, and Summary Floodplain Encroachment Report found in the Appendix are supporting documents used to evaluate the risk.

Flooding	Q ₁₀₀ year (cfs) at I-10 Crossing	Type of Encroach- ment	Effects on Natural Beneficial Values	Effects on Incompatible Development	Risk		
Source					Alt. 1	Alt. 2	Alt. 3
West Cucamonga Creek	4,500 ¹ 3,134 ⁷	Transverse	None	None	None	Low	Low
Cucamonga Creek/Deer Creek	16,500 ¹ 23,500 ⁷	Transverse	None	None	None	Low	Low
Lower Deer Creek	Unknown	Transverse	None	None	None	Low	Low
Cal Commerce Center Storm Drain	1,284 ⁷	Transverse	None	None	None	Low	Low
East Etiwanda Creek	1,260 ²	Longitudinal and Transverse	Temporary	None	None	Low	Low
San Sevaine Channel	16,918 ⁵ Upstream 20,360 ⁵ Downstream	Transverse	Temporary	None	None	Low	Low
I-10 Channel	542 to 6,819⁴	Longitudinal	None	None	None	Low	Low
Colton Southwest Storm Drain	1,000 ¹	Longitudinal and Transverse	None	None	None	Low	Low
11 th Street Storm Drain	490 ¹	Transverse	None	None	None	Low	Low
Warm Creek	39,800 ⁶ 67,000 ⁷	Longitudinal and Transverse	None	None	None	Low	Low

Table 1 Summary of Floodplain Encroachments

Flooding	Q ₁₀₀ year (cfs)	Type of Encroach-	Effects on Natural	Effects on	Risk		
Source	at I-10 Crossing	ment	ment Beneficial Development Alt. 1 Alt. 2		Alt. 2	Alt. 3	
Santa Ana River	70,000 ³	Transverse	Temporary	None	None	Low	Low
San Timoteo Creek	17,200 ¹ 19,500 ⁷	Transverse	Temporary	None	None	Low	Low
Mission Zanja	5,100 ¹ 7,576 ⁷	Transverse	None	None	None	Low	Low
The Zanja	3,924 ⁷	Longitudinal and Transverse	None	None	None	Low	Low

Table 1 Summary of Floodplain Encroachments

¹ FIS

² LOMR September 20, 2013. Case No. 13-09-0673P

³ Seven Oaks Dam Study ⁴ I-10 Capacity Study, Boyle Engineering

⁵ San Sevaine Channel Study, SBCFCD

⁶ LOMR November 2010

⁷ Provided by the SBCFCD
Chapter 9 Beneficial Floodplain Values

As described earlier, beneficial uses have been identified for the receiving water bodies along the project corridor. Although there are no permanent impacts to the beneficial uses associated with the proposed improvements, downstream effects are temporary. Table 2 identifies the receiving water bodies for the project, along with the beneficial uses designated by the Santa Ana RWQCB and the Los Angeles RWQCB.

The beneficial uses identified for the receiving water bodies within the project corridor are as follows:

- Municipal and Domestic Supply Waters are used for community, military, municipal, or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Agricultural Supply Includes uses for farming, ranching, or horticulture including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Wildlife Habitat –Waters that support wildlife habitats including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife and prey species used by water fowl and other wildlife.
- Groundwater Recharge Used for natural or artificial recharge of groundwater including, but not limited to, future extraction and maintaining water quality.
- Rare, Threatened, or Endangered Species Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.
- Warm Freshwater Habitat Maintenance of warm water ecosystems.
- Water Contact Recreation Recreational activities involving body contact with water.
- Non-Contact Water Recreation Recreational activities involving proximity to water, but generally no body contact or ingestion of water.
- Industrial Industrial service supply.
- Process Water Industrial process supply.
- Cold Freshwater Habitat Waters that support cold water ecosystems.

RWQCB	Inland Surface Stream	MUN	AGR	GWR	IND	PROC	REC1	REC2	WARM	COLD	WILD	RARE
Los Angeles	San Jose Creek Reach 2 (Temple Avenue to Thompson Wash)	•		I					I		•	
Santa Ana	Etiwanda Wash (East Etiwanda Creek)	•		•		•	•	•		•	•	•
	Day Creek (Day Creek Channel)	•		•		•	•	•		•	•	
	Deer Creek Channel (Deer)	I		Ι			I	I		I	I	
	San Sevaine Channel (San Sevaine)	I		I			I	I		I	I	
	Santa Ana River, Reach 4	+		•			•*	•	•		•	
	San Timoteo Creek (Reach 1A – Santa Ana River Confluence to Barton Road)	+	 **				l*	I	I		Ι	
	San Timoteo Creek (Reach 1B – Barton Road to Gage at San Timoteo Canyon)	+	 **	I			I *	I	I		I	
	Cucamonga Creek Reach 1 (Confluence with Mill Creek to 23 rd Street in Upland)	+			•		•*	•	•		•	
	San Antonio Creek	•	•	•	•	•	•	•		•	•	

Table 2 Beneficial Uses for Receiving Water Bodies

Present or Potential Beneficial Use

I Intermittent Beneficial Use

+ Excepted from Municipal and Domestic Supply

* Access prohibited in some portions by San Bernardino County Flood Control District

** Intermittent Beneficial Use

Beneficial Use Definitions: MUN (Municipal and Domestic Supply); AGR (Agricultural Supply); IND (Industrial Service Supply); PROC (Industrial Process Supply); GWR (Groundwater Recharge); REC1 (Water Contact Recreation); REC2 (Non-Contact Water Recreation); WARM (Warm Freshwater Habitat); LWRM (Limited Warm Freshwater Habitat); COLD (Cold Freshwater Habitat); WILD (Wildlife Habitat); RARE (Rare, Threatened, or Endangered Species).

Chapter 10 Probable Incompatible Floodplain Development

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The proposed project improvements would not significantly alter any of the aforementioned regulatory floodplain and floodway areas. The proposed project is consistent with existing watershed and floodplain management programs set forth by Local, State and Federal agencies.

Every effort would be made such that the project remains compatible with the NFIP set forth by FEMA.

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Chapter 11 Potential for Interruption or Termination of a Transportation Facility in the Event of Flooding

The entire road surface would be above the 100-year floodplain. The project would not substantially alter water surface elevations of the 100-year flood; therefore, it would not affect the potential for interruption or termination of a transportation facility in the event of flooding.

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Chapter 12 Measures to Minimize Impacts

The proposed project would be designed to minimize impacts, where possible, by limiting the grading and structural encroachments at designated floodplain and floodways areas. The following measures would be incorporated into the design and construction phases to minimize potential floodplain impact:

- 1. Provide positive drainage during construction and refrain from filling designated floodplains.
- 2. Implement recommended BMPs as identified in the Storm Water Data Report (Parsons 2014).
- 3. Include erosion control and water quality protection during in-river construction and post-construction as identified in the Storm Water Data Report (Parsons 2014).
- 4. Contractor to develop a contingency plan for unforeseen discovery of underground contaminants in the Stormwater Pollution Prevention Plan (SWPPP).
- 5. Limit construction activities between October and May to those actions that can adequately withstand high flows and entrainment of construction materials. The Contractor to prepare a Rain Event Action Plan (REAP) and discuss high flows mitigation.
- 6. Provide adequate conveyance capacity at bridge crossings to ensure no net increase in velocity. A hydraulic analysis shall be completed to assess existing and post hydraulic conditions.

Chapter 13 Future Consideration

To comply with FHWA Sec 650.115 Design Standards Guidelines, design of highways must consider:

- 1. The design selected for an encroachment shall be supported by analyses of design alternatives with consideration given to capital cost and risk, risk analysis, or assessment.
- 2. The design flood for encroachments by through lanes of Interstate highways shall not be less than the flow with a 2 percent chance of being exceeded in any given year. No minimum design flood is specified for Interstate highway ramps and frontage roads or for other highways.
- 3. Freeboard shall be provided, where practicable, to protect bridge structures from debris- and scour-related failure.

Chapter 14 References

1. FEMA, 2014. Flood Insurance Rate Maps (various), www.fema.org

- 2. FEMA, August 2008. Flood Insurance Study for San Bernardino County.
- 3. Stellar Blue Team, October 20, 2006. Lytle Creek Watershed Management Plan,
- 4. Boyle Engineering for City of Fontana, November 2003. I-10 Channel Capacity Report.
- 5. San Bernardino Flood Control Flood Control District, October 2011. Flood Control System Number Index and General File Codes
- 6. Parsons, Preliminary Hydraulics Report for:
 - West Cucamonga Creek, July 2014
 - Cucamonga Creek, July 2014
 - East Etiwanda Creek, July 2014
 - San Sevaine Channel, September 2014
 - Warm Creek, September 2014
 - Santa Ana River, November 2008
 - San Timoteo Creek, September 2014
 - Mission Zanja Channel, September 2014
 - The Zanja, August 2009
- 7. Santa Ana Regional Water Quality Control Board, February 2008. The Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. does not necessarily identify all areas subject to flooding, particularly from loc drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevation (BFE) and/or Derevings have been determined, users are acrospage to count tables contained within the Flood Insurance Study (FIS) report that accompanie that BFRM. Less should be avaited that BFEs shown on the FIRM reperson and an another that BFEs and the BFE shown on the FIRM reperson evaluation and the should be avaited that BFEs shown on the FIRM reperson report and the should be avaited by the shown report of the shown of the shown in the shown report should be utilized in conjunction with the FIRM for purposes construction and/or floodplain management.

0.0° North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood devations are also provided in the Summary of Siliwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Betwatons tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Soundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood** control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse dercator (UTM) zone 11 North. The horizontal datum was NAD 63, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the roduction of FIRMs for adjacent jurisdictions may result in sight positional ifferences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

load elevations on this map are referenced to the North American Vertical Datum 1988. These flood elevations may table compared to structure and ground provention between the National Geodetic Vertical Datum of 1929 and the north American Vertical Datum of 1998, visit the National Geodetic Survey ebsite at <u>http://www.mss.nata.org</u> or contact the National Geodetic Survey at elolowing addresses:

IGS Information Services IOAA, N/NGS12 Iational Geodetic Survey ISMC-3, #9202 315 East-West Highway ilver Spring, Marvland 20910

To obtain current elevation, description, and/or location information for benc marks shown on this map, please contact the Information Services Branc of the National Geodetic Survey at (301) 713-3242, or visit its website

Base map information shown on this FIRM was derived from digita orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

his map may reflect more detailed and up-to-date stream channel configurations and those shown on the previous FIRM for this jurisdicion. The floodplains and codways that were transferred from the previous FIRM may have been adjusted confirm to these new stream channel configurations. As a result, the Flood fordins authoritieve hydraulic data lables in the Flood insurance Study Report (which confirms the hydraulic data may make them channel distances that altachas authoritieve hydraulic data) may reflect stream channel distances that the stream of the stream of the stream channel distances that the stream of the stream of the stream channel distances that the stream of t

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Please refer to the separately printed Map Index for an overview map of t county showing the layout of map panels, community map repository address and a Listing of Communities table containing Nationia Flood Insurance Progra dates for each community as well as a listing of the panels on which ex community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information available products associated with this FIRM. Available products may inclu previously issued Letters of Map Change, a Flood Insurance Study report, and digital versions of this map. The FEMA Map Service Center may also be read by Fax dt 1-800-358-9620 and its website at thir/imsc fema acv/

If you have **questions about this map** or questions concerning the National Fi Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627 visit the FEMA website at <u>http://www.fema.gov.</u>

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NOTES TO USERS

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the following address: NGS Information Services NOAA, NINGS12 National Geodetic Survey SSMC-3, #9202 1315 East-West Highway Silver Spring, Maryland 20! (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov.

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f you have **questions about this map** or questions concerning the National Floo insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) o visit the FEMA website at <u>http://www.fema.gov.</u>

LOWER DEER **CREEK CHANNEL**



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in flood heights.								
ZONE X Area	of 0.2% annual chance flood; areas of 1% annual chance flood with							
aver 1 squ	ige depths of less than 1 foot or with drainage areas less than are mile; and areas protected by leves from 1% annual chance flood.							
OTHE	R AREAS							
ZONE X Area ZONE D Area	s determined to be outside the 0.2% annual chance floodplain. s in which flood hazards are undetermined, but possible.							
COAS	TAL BARRIER RESOURCES SYSTEM (CBRS) AREAS							
JUN OTHE	RWISE PROTECTED AREAS (OPAs)							
CBRS areas and OPAs are n	prmally located within or adjacent to Special Flood Hazard Areas. 1% annual chance floodplain boundary							
0 2	0.2% annual chance floodplain boundary							
	Floodway boundary Zone D boundary							
	CBRS and OPA boundary							
00000000000	Boundary dividing Special Flood Hazard Area Zones and —boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood dentits or flood velocities.							
513	Base Flood Elevation line and value; elevation in feet*							
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*							
* Referenced to the North	Imerican Vertical Datum of 1988 Cross section line							
<u></u>	Transect line							
87"07"45", 32"22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere							
³⁴ 76 ³⁰⁰⁴ N	1000-meter Universal Transverse Mercator grid values, zone 11N							
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic prolection							
DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)							
•M1.5	River Mile							
	tefer to listing of Map Repositories on Map Index							
	FLOOD INSURANCE RATE MAP March 18, 1996							
EFFI August 28, 2008 - to upda	CTIVE DATE(S) OF REVISION(S) TO THIS PANEL te corporate limits, to change Base Flood Elevations and Special Flood							
Hazard Areas, to update issued Letters of Map Re-	rap format, to add roads and road names, and to incorporate previously ision.							
For community map re Map History table locat	ision history prior to countywide mapping, refer to the Community at in the Flood Insurance Study report for this jurisdiction.							
To determine if flood agent or call the Nationa	Insurance is available in this community, contact your Insurance Flood Insurance Program at 1-800-638-6620.							
250	MAP SCALE 1" = 500' 0 500 1000							
	FEET METERS							
150	0 150 300							
	PANEL 8629H							
M								
IWi	FIRIVI							
0	FLOOD INSURANCE RATE MAP							
	SAN BERNARDINO							
	COUNTY,							
	AND INCORPORATED AREAS							
S.	PANEL 8629 OF 9400							
NHV	(SEE MAP INDEX FOR FIRM PANEL LAYOUT)							
10	COMMUNITY NUMBER PANEL SUFFIX							
	ONTARIO, CITY OF 060278 8629 H RANCHO CLICAMONGA, CITY OF 060671 8629 H							
Me								
Q	Notice to User. The Man Number shown below should be							
Q	used when placing map orders; the Community Number shown above should be used on insurance applications for the							
	MAP NUMBER							
AN AN								
	MAP REVISED							
N L	A00031 20, 2000							
	Federal Emergency Management Agency							

















-2757000 M

NOTES TO USERS This map is for use in administering the National Flood Insurance Program. Il does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information. obtain more detailed information in areas where Base Flood Elevatio ways have been determined, users are encouraged to at Floodway Data and/or Summary of Stillwater E in the Flood Insurance Study (FIS) report that acco sould be aware that BFEs are intended for flood it relevations. These BFEs are intended for flood it

astal Base Flood Elevations shown on this 0.0° North American Vertical Datum of 1988 (NA M should be aware that coastal flood elevations many of Stillwater Elevations table in the Flood

ifferences in map features across jurisdiction o not affect the accuracy of this FIRM.

This map reflects more detailed and up-to-date stream than those shown on the previous FIRM for this juried and floodways that were transferred from the previous extent to be boot to be the previous stream channe extent to be boot to be the previous the transferred and the stream of the stream of the previous Study report (which contents automative hydraulic - channel distances that differ from what is shown on this

have occurred after this map was published priate community officials to verify current corp

Corporate limits shown on this map are based on the best data at the lime of publication. Because changes due to annexation set data may have occurred after mis.

refer to the separately printed Map Index for an over showing the layout of map panels; community map rep

WARM CREEK

county showing the layout or huse permitting hallonal Flood Insu and a Listing of Community as well as a listing of the panels of community is located.

National Geodetic Survey SSMC- 3, #9202 1315 East- West Highway Silver Spring, MD 20910- 3282

ZONE AO ZONE AR ZONE AS9 ZONE X













West Cucamonga Creek

Direction: Facing north



Cucamonga Creek



Lower Deer Creek Channel

Direction: Facing north on East Airport Drive



Cal Commerce Center Storm Drain

Direction: Facing west on I-10 just east of Milliken Avenue offramp


East Etiwanda Creek

Direction: Looking south



San Sevaine Channel

Direction: Looking south



I-10 Channel

Direction: Looking west. I-10 Channel right side of freeway



Colton Southwest Storm Drain

Direction: At J Street Looking east towards Pennsylvania Ave. (5th St.)



11th Street Storm Drain

Direction: Eastbound I-10 looking south



Warm (Lytle) Creek

Direction: Looking north



Santa Ana River

Direction: Looking north



San Timoteo Creek

Direction: Looking upstream channel



Mission Zanja

Direction: Looking north



The Zanja

Direction: Looking south

Appendix C	Proposed Roadway
	Improvements Adjacent to
	Floodplains



c:\pw_working\p+gpwise\p001283a\dms56270\West Cucamonga Creek.dgn



c:\pw_working\p+gpwise\p001283a\dms56270\Cucamonga Creek.dgn



c:\pw_working\p+gpwise\p001283a\dms56270\Lower Deer Creek.dgn







c:\pw_working\p+gpwise\p001283a\dms56270\San Sevaine Channel.dgn 10/21/2014



_working\p+gpwise\p001283a\dms56270\I-10 Channel_653H.dgn



c:\pw_working\ptgpwise\p001283a\dms56270\I-10 Channel_654H.dgn



10/21/2014



c:\pw_working\ptgpwise\p001283a\dms56270\Colton SouthWest Storm Drain an@/1211/s2t019Horm Drain.dgm43:39 PM





c:\pw_working\ptgpwise\p001283a\dms56270\San Timoteo Creek.dgn

4:47:46 PM



c:\pw_working\p+gpwise\p001283a\dms56270\Mission Zanja Channel.dgn 10/21/2014



c:\pw_working\p+gpwise\p001283a\dms56270\The Zanja-1.dgn

10/21/2014

4:50:54 PM



Appendix D Location Hydraulic Study Forms

LOCATION HYDRAULIC STUDY FORM

Dist.	8	Co.	Sbd	Rte.	10	P.M.		
EA	0C2500)				Bridge No	. 54-1117	
Floodpl	ain Descr	iption:	West Cu	icamonga (Creek Ch	annel		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway widening and retaining wall

2. ADT:		Current		260,970)	Projected		378,900
					-	0		
3. Hydrau	ilic Data:		Base Floc	od Q100=		3,134	ft^3 / s	
WSE100=	unknown		The flood	of record	l, if greater	than Q100:	-	
Q=	unknown	ft^3 / s		WSE=	unknown	_		
Overtopp	ing flood (Q=	unknown	m^3 / s		WSE=	unknown	
Are NFIF	maps and	l studies a	available?	YES	Х	NO		
4. Is the h	nighway lo	cation al	ternative w	vithin a re	gulatory fl	oodway?		
	YES			NO	Х			

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

Potential Q100 backwater damages:

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. E	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. F	Practicable detour available?	NO		YES	Х
D. S	School bus or mail route?	NO	Х	YES	

7. Esti	mated duration of the	raffic interruption	for 10)-year event	hours:	unknown
8. Esti	mated value of Q100	flood damages (ii	f any) -	– moderate r	isk level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9.	Assessment of	Level of Risk		Low Moderate High	Х	
For Hi May b	gh Risk projects, du e necessary to deter	uring design phase mine design altern	e, addit native.	ional Desigr	n Study Ri	sk Analysis
Signat (Item r	ure – Dist. Hydraul numbers 3,4,5,7,9)	ic Engineer				_ Date
Is there incomp	e any longitudinal e patible Floodplain c	encroachment, sign levelopment?	nifican	t encroachm	ent, or any	y support of
				NO	Х	YES
If yes, 23 CFI	provide evaluation R 650.113	and discussion of	practio	cability of al	ternatives	in accordance with
Inform Study	ation developed to shall be retained in	comply with the F the project files.	Federal	requiremen	t for the L	ocation Hydraulic
Signat	ure – Dist. Project I	Engineer				Date

(Item numbers 1,2,6,8)

LOCATION HYDRAULIC STUDY FORM

Dist.	8	Co.	Sbd	Rte.	10	P.M.	
				-		Bridge	54-438L & 54-
EA	0C2500					No.	438R
Floodplai	n Descriptio	n:	Cucamonga	ı Creek			

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway inside widening

2. ADT:	Current		262,080		Projected		384,850
					U		
			1.0			23 (
3. Hydraulic Data:		Base Floc	od $Q_{100=}$		23,500	ft ³ /s	
WSE100= unknown		The flood	of record	l, if greater	than Q100:		
Q= unknown	ft^3 / s		WSE=	unknown	_		
Overtopping flood Q	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and s	tudies ava	ilable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X___

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

Potential Q100 backwater damages:

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. E	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. P	racticable detour available?	NO		YES	Х

D. School	bus or mail route?		NO	Х	YES	
7. Estimat	ed duration of traffic	interruption for 100	-year event ho	ours:	0	
8. Estimat	ed value of Q100 flood	l damages (if any) –	moderate risk	level.		
A.	Roadway	\$ 0				
B.	Property	\$ 0				
	Total	\$ 0				
9.	Assessment of Level	l of Risk	Low	X		
			High			
For High I May be ne	Risk projects, during cessary to determine	design phase, additio design alternative.	onal Design St	tudy Risk .	Analysis	
Signature (Item num	– Dist. Hydraulic Eng bers 3,4,5,7,9)	gineer			Date	
Is there an Floodplair	y longitudinal encroa 1 development?	chment, significant	encroachment	, or any su	pport of incompatible	
			NO	Х	YES	
If yes, pro CFR 650.1	vide evaluation and d	liscussion of practica	ability of alter	natives in a	accordance with $2\overline{3}$	
Informatic shall be re	on developed to comp tained in the project f	ly with the Federal riles.	requirement fo	or the Loca	tion Hydraulic Study	

Signature – Dist. Project Engineer	Date
(Item numbers 1,2,6,8)	

LOCATION HYDRAULIC STUDY FORM

Dist. <u>8</u> EA <u>0C25</u> Floodplain Desc	Co. 00 ription:	Sbd Lower Dee	Rte.	10 Channel	P.M. Bridge No.	None
1. Description of design elements	Proposal (inc to minimize flo	lude any pl podplain im	nysical ba	arriers i.e. c	oncrete barri	ers, soundwalls, etc. and
Freeway widenin	ng and retainin	g wall	I ,			
2. ADT:	Current		257,580	_	Projected	408,460
3. Hydraulic Dat WSE100= <u>unkno</u>	a: wn wm ft ³ /s	Base Floo The flood	od Q100= of record	d, if greater	unknown than Q100:	ft^3 / s
Q- <u>ulkio</u> Overtopping floo	d Q =	unknown	m^3/s	unknown	WSE=	unknown
Are NFIP maps	and studies ava	ulable?	YES	X	NO	
4. Is the highway	V location alter	native with	in a regu NO	latory flood X	way ?	

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

Potential Q100 backwater damages:

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. E	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. P	Practicable detour available?	NO		YES	Х

D. School	bus or mail route?		NO	X	YES	
7. Estimat	ed duration of traffic	interruption for 100	-year event ho	ours:	0	
8. Estimat	ed value of Q100 flood	l damages (if any) –	moderate risk	level.		
A.	Roadway	\$ 0				
B.	Property	\$ 0				
	Total	\$ 0				
9.	Assessment of Level	l of Risk	Low	X		
			High			
For High I May be ne	Risk projects, during cessary to determine	design phase, additio design alternative.	onal Design St	tudy Risk .	Analysis	
Signature (Item num	– Dist. Hydraulic Eng bers 3,4,5,7,9)	gineer			Date	
Is there an Floodplair	y longitudinal encroa 1 development?	chment, significant	encroachment	, or any su	pport of incompatible	
			NO	Х	YES	
If yes, pro CFR 650.1	vide evaluation and d	liscussion of practica	ability of alter	natives in a	accordance with $2\overline{3}$	
Informatic shall be re	on developed to comp tained in the project f	ly with the Federal riles.	requirement fo	or the Loca	tion Hydraulic Study	

Signature – Dist. Project Engineer	Date						
(Item numbers 1,2,6,8)							
Dist.	8	Co.	Sbd	Rte.	10	P.M.	8.2
------------	--------------	-----	----------	------------	--------------	--------	------
-				-		Bridge	
EA	0C2500					No.	None
Floodplain	n Descriptio	n:	Cal Comm	erce Cente	er Storm Dra	in	

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway widening and embankment fill

2. ADT:	Current		263,160		Projected		419,760
3. Hydraulic Data:		Base Floo	od Q100=	unknown		ft^3 / s	
WSE100= unknown		The flood	l of recor	d, if greater	than Q100:	unknown	
Q= unknown	ft^3 / s		WSE=	unknown	_		
Overtopping flood Q	=	unknown	ft ³ / s		WSE=	unknown	
Are NFIP maps and s	tudies ava	ailable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. E	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. P	racticable detour available?	NO		YES	Х

D. Schoo	ol bus or mail rou	te?		NO	Х	YES
7. Estim	ated duration of tr	affic interruption	for 100-ye	ear event l	nours:	2
8. Estim	ated value of Q100	flood damages (if	any) – m	oderate ri	sk level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9.	Assessment of	Level of Risk	L N	ow Ioderate	X	
			Н	igh		
May be Signatur (Item nu	necessary to deter e – Dist. Hydrauli mbers 3,4,5,7,9)	mine design altern	ative.			Date
Is there a incompa	any longitudinal e tible Floodplain d	ncroachment, sign levelopment?	ificant en	croachme	nt, or any	v support of
			N	0	Х	YES
If yes, pr 23 CFR	rovide evaluation 650.113	and discussion of	practicabi	lity of alt	ernatives	in accordance with
Informat Study sh	tion developed to all be retained in	comply with the F the project files.	ederal rec	luirement	for the L	ocation Hydraulic

Signature – Dist. Project Engineer	 Date

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(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	10.99
-				-		Bridge	
EA	0C2500					No.	54 0378L R S
Floodplain	n Descriptio	on:	Etiwanda O	Creek Floo	odplain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Bridge widening and embankment fill

2. ADT:	Current		215,000		Projected		354,540
3. Hydraulic Data:		Base Floo	od Q100=		1,260	ft^3 / s	
WSE100= unknown		The flood	of record	d, if greater	than Q100:	unknown	
Q= unknown	ft^3 / s		WSE=	unknown	_		
Overtopping flood Q	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and s	tudies ava	uilable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X___

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. I	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. F	Practicable detour available?	NO		YES	Х

D. Scho	ol bus or mail rou	te?	NO	Х	YES	
7. Estin	nated duration of th	affic interruption	for 100-	year event h	ours:	0
8. Estin	nated value of Q100	flood damages (if	any) – 1	noderate ris	k level.	
A.	Roadway	\$	0			
B.	Property Total	\$ \$	0			
	Total	φ	0			
9.	Assessment of	Level of Risk		Low _ Moderate	Х	_
				High		_
May be Signatu (Item nu	necessary to deter re – Dist. Hydraul umbers 3,4,5,7,9)	mine design alterr	ative.			_ Date
Is there incompa	any longitudinal e atible Floodplain c	ncroachment, sign levelopment?	ificant e	encroachmei	nt, or any	support of
				NO	Х	YES
If yes, p 23 CFR	orovide evaluation 650.113	and discussion of	practical	bility of alte	rnatives i	n accordance with
Informa Study sl	tion developed to hall be retained in	comply with the F the project files.	ederal re	equirement :	for the Lc	cation Hydraulic

Signature – Dist. Project Engineer	Date

(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	11.64
		-				-	54 0454 L
EA	0C2500					Bridge No.	R S
Floodpla	in Descriptio	on:	<u>San Sevair</u> concrete li	ne Channe ned rectar	<u>l crossing un</u> Igular channe	der I-10. Q100) is contained within

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Bridge Widening				
2. ADT: Current	203,220		Projected _	337,290
3. Hydraulic Data:	Base Flood Q100=		20,360	ft^3/s
WSE100= unknown	The flood of record	rd, if greater	than Q100:	
	WSE			
Q= <u>unknown</u> ft ³ / s	=	unknown	-	
Overtopping flood Q=	<u>unknown</u> m^3 / s		WSE=	unknown
Are NFIP maps and studies a	vailable? YES	Х	NO	
4. Is the highway location alto	ernative within a regu	ulatory flood	way?	
YES X	NO		-	
5. Attach map with flood limit	ts outlined showing	all buildings	or other impr	covements within the
base moodplain.				
Potential O100 backwater dam	3065.			
Totennar Q100 backwater dann	ages.			
A. Residences?		NO	Х	YES
B. Other Bldgs?		NO	Х	YES
C. Crops?		NO	Х	YES
D. Natural and beneficial fl	oodplain values?	NO	X	YES
	1			
6. Type of Traffic:				
A. Emergency supply or evac	uation route?	NO	Х	YES
B. Emergency vehicle access	?	NO	Х	YES

C. Pra	cticable detour avai	lable?		NO		YES X
D. Sch	nool bus or mail rou	te?		NO _	Х	YES
7. Esti	mated duration of t	raffic interruption	for 100-	year event h	iours:	0
8. Esti	mated value of Q100	flood damages (i	f any) –	moderate ris	sk level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9	Assessment of	Level of Risk		Low	Х	
				Moderate		
				High _		
Signat (Item)	ure – Dist. Hydraul numbers 3,4,5,7,9)	ic Engineer				_ Date
Is ther Flood	e any longitudinal e plain development?	encroachment, sign	nificant	encroachme	nt, or any s	upport of incompatible
				NO	Х	YES
If yes, CFR 6	provide evaluation 50.113	and discussion of	practica	bility of alte	ernatives in	accordance with 23
Inform shall b	nation developed to be retained in the pro-	comply with the H oject files.	Federal r	equirement	for the Loc	eation Hydraulic Study
Signat	ure – Dist. Project l	Engineer				Date

Signature – Dist. Project Engineer (Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	14.5	
EA	0C2500			-		Bridge No.		
Floodplain Description:			I-10 Channel between Cherry and Citrus Avenues					
and Citrus	s and east of	f Sierra						

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway widening and embankment fill

2. ADT:	Current		195,360)	Projected		327,180
3. Hydraulic Data: WSE100= unknown		Base Floo The flood	d Q100=	~542	than O100.	ft^3 / s	
Q= unknown	ft^3 / s	1110 11000	WSE=	unknown			
Overtopping flood (Q=	unknown	ft^3 / s		WSE=	unknown	
Are NFIP maps and	studies a	vailable?	YES	Х	NO		
4. Is the highway loo YES	cation alt	ernative w	vithin a re NO	egulatory fl X	oodway?		

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. 7	Type of Traffic:				
A. 1	Emergency supply or evacuation route?	NO	Х	YES	
B. I	Emergency vehicle access?	NO	Х	YES	
C. I	Practicable detour available?	NO		YES	X

D. Sch	ool bus or mail rou	te?		NO	Х	YES
7. Estir	nated duration of th	caffic interruption	for 100-y	ear event h	ours:	2
8. Estii	mated value of Q100	flood damages (if	any) – m	oderate ris	sk level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9	Assessment of	Level of Risk	Ι	.ow _	Х	_
			N	/loderate _		_
			1	<u></u>		_
For Hig	gh Risk projects, du	uring design phase	, addition	al Design	Study Ris	k Analysis
May be	e necessary to deter	mine design altern	native.	-	-	
Cianat	me Dist Uridmoul	. Engineer				Data
(Item n	umbers 3 4 5 7 9)					
(nem n						
Is there incomp	e any longitudinal e batible Floodplain d	ncroachment, sign levelopment?	ificant er	icroachmei	nt, or any	support of
-	-	-	Ν	10	Х	YES
If yes, 23 CFF	provide evaluation R 650.113	and discussion of	practicab	ility of alte	ernatives i	n accordance with
Inform Study s	ation developed to shall be retained in	comply with the F the project files.	ederal re	quirement	for the Lo	ocation Hydraulic

Signature – Dist. Project Engineer	 Date

(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	22.36			
EA	0C2500					Bridge No.	None			
Floodplain Description:			Colton S	Colton Southwest Storm Drain						

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway widening and retaining wall

2. ADT:	Current		167,160)	Projected		290,190
3. Hydraulic Data:		Base Floc	od Q100=		1,000	ft ³ /s	
WSE100= unknown		The flood	of record	l, if greater	than Q100:	-	
Q= unknown	ft^3 / s		WSE=	unknown			
Overtopping flood	 Q=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and	d studies	available?	YES	Х	NO		
					_		
4. Is the highway lo	ocation al	ternative w	vithin a re	gulatory fl	oodway?		
YES	3		NO	X			

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

Potential Q100 backwater damages:

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	_

6. Type of Traffic:

A. Eme	ergency supply or e	vacuation route?		NO	Х	YES	
B. Eme	ergency vehicle acc	ess?		NO	Х	YES	
C. Prac	ticable detour avail	able?		NO		YES	Х
D. Sch	ool bus or mail rout	te?		NO	Х	YES	
7. Estir	nated duration of tr	affic interruption f	for 100-yea	ar event h	ours:	0	
8. Estir	nated value of Q100	flood damages (if	any) – mo	derate ris	k level.		
A.	Roadway	\$	0				
B.	Property	\$	0				
	Total	\$	0				
9	Assessment of	Level of Risk	Lo	w	Х		
			Mo	oderate		-	
			Hi	gh		-	
For Hig May be	gh Risk projects, du e necessary to deter	ring design phase, mine design altern	, additional ative.	Design S	Study Risk	Analysis	
Signatu (Item n	ure – Dist. Hydrauli umbers 3,4,5,7,9)	c Engineer				Date	
Is there incomp	e any longitudinal e patible Floodplain d	ncroachment, sign evelopment?	ificant enc	roachmer	it, or any s	upport of	
			NC) _	Х	YES	
If yes, j 23 CFF	provide evaluation <i>c</i> 650.113	and discussion of j	practicabili	ity of alte	rnatives in	accordance	with
Inform Study s	ation developed to the shall be retained in the second sec	comply with the Forther the project files.	ederal requ	iirement f	or the Loc	ation Hydra	ulic
Signatu	ıre – Dist. Project E	Engineer				Date	

(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	22.9		
				-		Bridge			
EA	0C2500					No.			
Floodplain Description:		on:	11th Street Storm Drain adjacent to EB roadbed.						

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Freeway widening and retaining wall

2. ADT:	Current				Projected	
					- J	
3. Hydraulic Data:		Base Floc	od O100=		490	ft^3 / s
						<u>.</u>
WSE100= unknown		The flood	of record	d, if greater	than Q100:	
0	ft^3/c		WCE_			
Q– unknown	n / s		WSE-	unknown	-	
Overtopping flood O:	=	unknown	m^3/s		WSE=	unknown
		unknown	III , 5			unitiown
Are NFIP maps and s	tudies ava	ilable?	YES	Х	NO	
1					-	

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X___

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	ype of Traffic:				
A. F	Emergency supply or evacuation route?	NO	Х	YES	
B. E	Emergency vehicle access?	NO	Х	YES	
C. F	Practicable detour available?	NO		YES	Х

D. Sch	ool bus or mail rou	te?		NO	Х	YES
7. Estin	mated duration of t	raffic interruption	for 100-yea	r event h	ours:	0
8. Esti	mated value of Q100	flood damages (if	any) – mo	derate ris	k level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9	Assessment of	Level of Risk	Lo	W	Х	
			Mo	oderate –		
			Hig	gh –		
Signati (Item r	ure – Dist. Hydraul numbers 3,4,5,7,9)	ic Engineer				Date
Is there incomp	e any longitudinal e patible Floodplain o	encroachment, sign levelopment?	ificant enc	roachmei	nt, or any X	support of YES
If yes, 23 CFI	provide evaluation R 650.113	and discussion of	practicabili	ty of alte	ernatives	in accordance with
Inform Study s	ation developed to shall be retained in	comply with the F the project files.	ederal requ	irement	for the Lo	ocation Hydraulic

Signature – Dist. Project Engineer	Date	

(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	23.6
				-		Bridge	54 0830 L
EA	0C2500					No.	R
Floodplain	n Descriptio	on:	Warm (Lyt	tle) Creek	Floodplain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Bridge Widening

2 4 DT.	Cumment		101.000		Duciente d		200 140
2. AD1:	Current		181,000		Projected		290,140
3. Hydraulic Data:		Base Floo	od Q100=		67,000	ft^3 / s	
WSE100=	952	The flood	of recor	d, if greater	than Q100:	-	
Q= unknown	ft^3 / s		WSE=	unknown	-		
Overtopping flood Q	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and s	studies ava	ilable?	YES	Х	NO		_
4. Is the highway loca	ation altern	native with	in a regu	latory flood	way?		
YES			NO	Х	_		

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

A.	Residences?	NO X	YES
B.	Other Bldgs?	NO X	YES
C.	Crops?	NO X	YES
D.	Natural and beneficial floodplain values?	NO X	YES
6. T	ype of Traffic:		
A. E	Emergency supply or evacuation route?	NO X	YES
B. E	Emergency vehicle access?	NO X	YES
C. P	Practicable detour available?	NO	YES X

D. School bus or mail route?				NO	Х	YES
7. Estim	ated duration of traff	ic interruption for	r 100	-year event h	ours:	0
8. Estim	ated value of Q100 flo	od damages (if a	ny) –	moderate ris	sk level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9	Assessment of Lev	vel of Risk		Low Moderate High	Х	-
For High May be Signatur (Item nu	n Risk projects, durin necessary to determin e – Dist. Hydraulic E mbers 3,4,5,7,9)	g design phase, a ne design alternat Engineer	dditi ive.	onal Design	Study Ris	k Analysis _ Date
Is there a incompa	any longitudinal encr tible Floodplain deve	oachment, signifi elopment?	icant	encroachme NO	nt, or any X	support of YES
If yes, pr CFR 650	rovide evaluation and).113	l discussion of pr	actic	ability of alte	ernatives i	n accordance with 23
Informat Study sh	tion developed to cor all be retained in the	nply with the Fed project files.	leral	requirement	for the Lo	cation Hydraulic

Signature – Dist. Project Engineer	I	Date
(Item numbers 1,2,6,8)		

_

Dist.	8	Co.	Sbd	Rte.	10	P.M.	23.82
		-		-		Bridge	54 092 G R
EA	0C2500					No.	L
Floodplain	n Descriptio	n:	Santa Ana	River Flo	odplain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Bridge Widening, Substructure Work in the Channel, Seismic Retrofit

2. ADT:	Current	181,000	_	Projected		290,140
3. Hydraulic Data:		Base Flood Q100=		70,000	ft^3 / s	
WSE100= 966		The flood of reco	rd, if greater	than Q100:		
Q= unknown	ft^3 / s	WSE=	unknown			
Overtopping flood Q=	=	unknown m ³ /s		WSE=	unknown	
Are NFIP maps and s	tudies ava	ilable? YES	Х	NO		

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

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

A.	Residences?	NO X	YES	
B.	Other Bldgs?	NO X	YES	
C.	Crops?	NO X	YES	
D.	Natural and beneficial floodplain values?	NO X	YES	
6. T	Type of Traffic:			
A. I	Emergency supply or evacuation route?	NO X	YES	
B. I	Emergency vehicle access?	NO X	YES	
C. I	Practicable detour available?	NO	YES	Х

D. School bus or mail route?				NO	Х	YES
7. Estim	ated duration of traffi	c interruption for	100-yea	r event ho	ours:	0
8. Estim	ated value of Q100 flow	od damages (if an	y) – moo	lerate risk	level.	
A. B.	Roadway Property Total	\$ \$ \$	0			
9	Assessment of Lev	ه el of Risk	U Lov Mo Hig	w derate th	X	- -
For High May be	n Risk projects, during necessary to determin	g design phase, ac e design alternati	lditional ve.	Design S	tudy Risk	c Analysis
Signatur (Item nu	e – Dist. Hydraulic E mbers 3,4,5,7,9)	ngineer				Date
Is there a incompa	any longitudinal encre tible Floodplain deve	oachment, signifi lopment?	cant encr	oachment	t, or any s	support of
If yes, pr CFR 650	covide evaluation and).113	discussion of pra	NC acticabili	ty of alter	X natives in	YES
Informat Study sh	ion developed to con all be retained in the	pply with the Fede project files.	eral requ	irement fo	or the Loc	cation Hydraulic

Signature – Dist. Project Engineer	 Date
(Item numbers 1,2,6,8)	

Dist.	8	Co.	Sbd	Rte.	10	P.M.	25.46	
-						Bridge		
EA	0C2500					No.	54 0599	
Floodplair	n Descriptio	n:	San Timot	eo Chann	el Floodp	lain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

Bridge Widening, Substructure Work in the Channel, Pier Extensions

2. ADT:	Current		387,950	-	Projected		639,160
						2	
3. Hydraulic Data:		Base Floo	od $Q_{100=}$		19,500	ft^3 / s	
$WSE_{100=}$ 1028 - 102	9	The flood	l of recor	d, if greater	than Q100:		
Q= unknown	ft ³ / s		WSE=	unknown	_		
Overtopping flood Q	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and s	studies ava	ilable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO ____

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T	Type of Traffic:				
A. I	Emergency supply or evacuation route?	NO	Х	YES	
B. F	Emergency vehicle access?	NO	Х	YES	
C. I	Practicable detour available?	NO		YES	Х

D. Sch	ool bus or mail rou	te?		NO	Х	YES
7. Estin	mated duration of t	raffic interruption	for 100-yea	r event h	ours:	0
8. Esti	mated value of Q100	flood damages (if	any) – mo	derate ris	k level.	
A.	Roadway	\$	0			
B.	Property	\$	0			
	Total	\$	0			
9	Assessment of	Level of Risk	Lo	W	Х	
			Mo	oderate –		
			Hig	gh –		
Signati (Item r	ure – Dist. Hydraul numbers 3,4,5,7,9)	ic Engineer				Date
Is there incomp	e any longitudinal e patible Floodplain o	encroachment, sign levelopment?	ificant enc	roachmei	nt, or any X	support of YES
If yes, 23 CFI	provide evaluation R 650.113	and discussion of	practicabili	ty of alte	ernatives	in accordance with
Inform Study s	ation developed to shall be retained in	comply with the F the project files.	ederal requ	irement	for the Lo	ocation Hydraulic

Signature – Dist. Project Engineer	Date	

(Item numbers 1,2,6,8)

Dist.	8	Co.	Sbd	Rte.	10	P.M.	27.64
		_				Bridge	
EA	0C2500	_				No.	54 0570
Floodpla	in Descripti	on:	Mission	Channel Fl	oodplain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

D 1 1	TT 7' 1	•
Bridge	Widei	nıng
Dilage	11100	

2. ADT:	Current		182,300		Projected		302,550
3. Hydraulic Data:		Base Floo	od Q100=		7,576	ft^3 / s	
WSE100= unknown		The flood	of recor	d, if greater	than Q100:		
Q= unknown	ft^3 / s		WSE=	unknown	_		
Overtopping flood Q=	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and st	tudies ava	ilable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X___

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

A.	Residences?	NO	Х	YES	
B.	Other Bldgs?	NO	Х	YES	
C.	Crops?	NO	Х	YES	
D.	Natural and beneficial floodplain values?	NO	Х	YES	
6. T A. I	Type of Traffic: Emergency supply or evacuation route?	NO	Х	YES	
B. F	Emergency vehicle access?	NO	Х	YES	
C. F	Practicable detour available?	NO		YES	Х
D. S	School bus or mail route?	NO	Х	YES	

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

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

А.	Roadway	\$ 0	_		
B.	Property	\$ 0	_		
	Total	\$ 0	- -		
9	Assessment of Level	l of Risk	Low Moderate High	X	
For High I May be ne	Risk projects, during ecessary to determine	design phase, additi design alternative.	onal Design	Study Risk	Analysis
Signature (Item num	– Dist. Hydraulic Eng ibers 3,4,5,7,9)	gineer			Date
Is there an incompati	y longitudinal encroa ble Floodplain develo	chment, significant	encroachme	nt, or any s	upport of
			NO	Х	YES
If yes, pro 23 CFR 6	vide evaluation and d 50.113	liscussion of practic	ability of alte	ernatives in	accordance with
Information Study sha	on developed to comp Il be retained in the pr	ly with the Federal roject files.	requirement	for the Loc	ation Hydraulic
Signature	– Dist. Project Engine	eer			Date

(Item numbers 1,2,6,8)

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Dist.	8	Co.	Sbd	Rte.	10	P.M.	31.52
		-		-		Bridge	54 0472 L
EA	0C2500	_				No.	R
Floodplai	n Descriptio	on:	Zania Cha	nnel Flood	lplain		

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts)

D 1	• • •	
Roadway	widen	ing
itouunuj		

2. ADT:	Current		163,270		Projected		274,570
				-	Ū.		
						2	
3. Hydraulic Data:		Base Floo	$d Q_{100=}$		3,924	ft^3 / s	
WSE100= unknown		The flood	of recor	d, if greater	than O100:		
	23 /			, 0			
Q= unknown	ft^3 / s		WSE=	unknown			
Overtopping flood Q=	=	unknown	m^3 / s		WSE=	unknown	
Are NFIP maps and s	tudies ava	ilable?	YES	Х	NO		

4. Is the highway location alternative within a regulatory floodway ? YES _____ NO __X

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

A.	Residences?	NO X	YES
B.	Other Bldgs?	NO X	YES
C.	Crops?	NO X	YES
D.	Natural and beneficial floodplain values?	NO X	YES
6. T	ype of Traffic:		
A. E	Emergency supply or evacuation route?	NO X	YES
B. E	Emergency vehicle access?	NO X	YES
C. P	Practicable detour available?	NO	YES X
D. S	School bus or mail route?	NO X	YES

7. Estimated	duration	of traffic	interruption	for 1	100-year	event hours:

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

A.	Roadway	\$	0				
B.	Property	\$	0				
	Total	\$	0				
9	Assessment of Le	vel of Risk		Low Moderate	Х		
				High			
For High May be n	Risk projects, durin ecessary to determi	ng design phase. ne design altern	, additio ative.	onal Design	Study Risk	Analysis	
Signature	e – Dist. Hydraulic I	Engineer				Date	
(Item nur	nbers 3,4,5,7,9)						
Is there a incompat	ny longitudinal enc ible Floodplain dev	roachment, sign elopment?	ificant	encroachme	ent, or any s	upport of	
				NO	Х	YES	
If yes, pro CFR 650	ovide evaluation and .113	d discussion of	practica	ability of alt	ernatives in	accordance wi	th 23
Informati Study sha	on developed to con all be retained in the	mply with the F e project files.	ederal 1	requirement	for the Loc	ation Hydraulic	2
Signature	e – Dist. Project Eng	gineer				Date	

Signature – Dist. Project Engineer	
(Item numbers 1,2,6,8)	

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Appendix E Summary Floodplain Encroachment Report

Floo	dplain Des	cription:	West C	lucamon	ga Creek				
one	A and AO								X 7
	To the sum	1	1 .		.1	1	fl	No	Yes
•	is the pro	posed act	lion a lo	ngituaina	al encroac	inment of the base		X	
	Are the ri	sks assoc	iated wi	th the in	nplementa	tion of the propos	sed action	<u></u>	
	significar	ıt?			I · · · ·	I I I		Х	
	Will the J	proposed	action s	upport p	robable in	compatible flood	plain development	t?	
								Х	
ŀ.	Are there	any sign	ificant in	npacts o	n natural	and beneficial flo	odplain values?		
t	Douting	onstructi	on proce	duras ar	o roquiro	l to minimizo imp	acts on the	<u> </u>	
	floodplai	n. Are the	ere any s	pecial m	itigation	measures necessar	ry to minimize		
	impacts c	r restore	and pres	serve nat	ural and t	eneficial floodpla	ain values? If yes,		
	explain.							Х	
5.	Does the	proposed	action of	constitut	e a signifi	cant floodplain er	croach-ment as		
,	Are Loca	1 23 CFR	, Section	1 030.10 udios the	5(q).	nt the above ones	vers on file? If not	<u> </u>	
· ·	explain.	uon nyu	laune St	uules ula					Х

Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Dist.	<u>8</u> Co. <u>Sbd</u> Rte. <u>10</u> P.M.		
Project No.:	0C2500 Bridge No.:		
Limits:	I-10 – LA County Line to Ford St. in Redlands	-	
Floodplain	Description: Cucamonga Creek/Deer Creek Floodplain		
		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base		
	floodplain?	Х	
2.	Are the risks associated with the implementation of the proposed	. <u> </u>	
	action significant?	Х	
3.	Will the proposed action support probable incompatible floodplain		
	development?	Х	
4.	Are there any significant impacts on natural and beneficial floodplain		
	values?	Х	
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.	v	
6	Does the proposed action constitute a significant floodplain	<u></u>	
	encroach-ment as defined in 23 CFR, Section 650.105(q).	v	
7	Are Location Hydraulic Studies that document the above answers on	<u></u>	
	file? If not explain.		v
		·	<u></u>
PREPARE	D BY:		
	·		

Signature - Dist. Hydraulic Engineer

Date

Date

Signature - Dist. Environmental Branch Chief

Signature - Dist. Project Engineer

Dist.	8	Co.	Sbd	Rte.	10	P.M.			
Proje	ct No.:	0C250	0	_		Bridge No.:	N/A		
Limit	ts:	I-10 L.	A. Count	y Line t	o Ford S	t. in Redlands			
Floo	dplain Des	cription	Lower	Door Cr	aalt				
	- T	I. I.	Lower	Deel Cl	eek				
								No	Yes
1.	Is the prop	posed ac	tion a lo	ngitudin	al encroa	achment of the base floo	odplain?		
								Х	
2.	Are the ri	sks asso	ciated wi	th the in	nplemen	tation of the proposed a	ction		
	significant?							Х	
3.	Will the p	roposed	action su	upport p	robable	incompatible floodplain	development?	,	
								Х	
4.	Are there	Are there any significant impacts on natural and beneficial floodplain values?							
								Х	
5.	Routine c	onstruct	ion proce	dures a	e require	ed to minimize impacts	on the		
	floodplair	n. Are th	ere any s	pecial n	itigatior	measures necessary to	minimize		
	impacts of	r restore	and pres	erve nat	ural and	beneficial floodplain v	alues? If yes,		
	explain.							Х	
6.	Does the j	proposed	d action c	onstitut	e a signi	ficant floodplain encroa	ch-ment as		
	defined in	23 CFF	R, Sectior	n 650.10	5(q).			Х	
7.	Are Locat	tion Hyd	lraulic St	udies the	at docum	nent the above answers	on file? If not		
	explain.								Х

PREPARED BY:

Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Dist.	8	Co.	Sbd	Rte.	10	P.M.		8.2			
Projec	ct No.:	0C2500)			Bridge I	No.:				
Limit	s:	I-10 - L	.A. Cou	nty Line	to Ford S	t. in Redland	S			_	
Flood	plain Desc	ription:	Cal Co	mmerce	Center St	orm Drain					
Zone	AH										
										No	Yes
1.	Is the prop	posed ac	tion a lo	ngitudin	al encroac	hment of the	base	floodplai	n?		
										Х	
2.	Are the ris	sks asso	ciated wi	th the in	nplementa	tion of the pi	opose	ed action			
	significan	t?								Х	
3.	Will the p	roposed	action su	upport p	robable in	compatible f	loodpl	lain devel	opment?		
										Х	
4.	Are there	any sign	ificant in	npacts o	n natural	and beneficia	ıl floo	dplain va	lues?		
										Х	
5.	Routine co	onstructi	ion proce	dures ar	e required	to minimize	e impa	cts on the	e		
	floodplain	h. Are the	ere any s	pecial m	itigation	measures nec	essary	to minin	nize		
	impacts or	r restore	and pres	erve nat	ural and t	eneficial floo	odplai	n values?	If yes,		
	explain.									Х	
6.	Does the 1	oroposed	l action c	onstitut	e a signifi	cant floodpla	in enc	roach-me	ent as		
	defined in	23 CFR	, Sectior	650.10	5(q).	I				Х	
7.	Are Locat	tion Hvd	raulic St	udies tha	at docume	ent the above	answe	ers on file	? If not		
	explain.	J									Х

PREPARED BY:

Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Dist.	8	Co.	Sbd	Rte.	10	P.M.	10.9	99		
Proje	ect No.:	0C250	00			Bridge No.	.:	54 0378L R S	5	
Limi	ts:	I-10 L	.A. Coun	ty Line t	o Ford St	t. in Redlands				
Floo	dplain Deso	cription:	Etiwan	da Creel	c Floodpl	ain				
Zone	<u>A</u>									
									No	Yes
1.	Is the pro	posed a	ction a lo	ngitudin	al encroa	chment of the ba	ase floo	odplain?		
									X	
2.	Are the ri	sks asso	ociated wi	ith the in	nplement	ation of the prop	bosed a	ction		
	significar	nt?							Х	
3.	Will the p	proposed	d action s	upport p	robable i	ncompatible floo	odplain	development?		
									Х	
4.	Are there	any sig	nificant i	mpacts c	on natural	and beneficial f	loodpl	ain values?		
									Х	
5.	Routine c	construct	tion proce	edures a	e require	d to minimize in	npacts	on the		
	floodplai	n. Are th	here any s	special m	itigation	measures necess	sary to	minimize		
	impacts o	or restore	e and pres	serve nat	ural and	beneficial flood	plain va	alues? If yes,		
	explain.								X	
6.	Does the	propose	d action of	constitut	e a signif	ïcant floodplain	encroa	ich-ment as		
	defined in	n 23 CF	R, Section	n 650.10	5(q).				X	
7.	Are Loca	tion Hy	draulic St	udies the	at docum	ent the above an	swers o	on file? If not		
	explain.									Х
PRE	PARED B	Y:								

Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Dist.	8	Co.	Sbd	Rte.	10	P.M.	11.6	4		
Proje Limit	ect No.: ts:	0C2500 I-10 - L) A. Cour	ty Line	to Ford	Bridge No. St. in Redlands	.:	54 0454 L R	S	
Floo	dplain Des	cription:	San Sev	vaine Ch	annel c	rossing under I-10). Q ₁₀₀	is contained wi	thin concre	ete lined
7one	ΔF		rectangu	<u>ılar cha</u>	nnel.					
20110									No	Yes
1.	Is the prop	posed ac	tion a lon	gitudina	al encro	achment of the ba	se floo	dplain?		
									X	
2.	Are the ris	sks assoc t?	ciated wit	h the in	plemen	tation of the prop	osed ac	ction	Х	
3.	Will the p	roposed	action su	pport p	obable	incompatible floc	odplain	development?		
						•	•	•	Х	
4.	Are there	any sign	ificant in	npacts o	n natura	al and beneficial f	loodpla	in values?		
									X	
5.	Routine confloodplain impacts of	onstructi n. Are the r restore	on proce ere any sp and prese	dures ar pecial m erve nat	e requir itigation ural and	red to minimize in n measures necess l beneficial floodg	npacts of sary to plain va	on the minimize lues? If yes,		
	explain.								Х	
6.	Does the p defined in	proposed 23 CFR	l action c	onstitute 650.10	e a signi 5(q).	ficant floodplain	encroad	ch-ment as	X	
7.	Are Locat explain.	tion Hyd	raulic Stu	idies tha	t docun	nent the above and	swers o	n file? If not		X
DDD		7								

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Date

Dist.	8	Co.	Sbd	Rte.	10	P.M.	14.5				
Proje	ct No.:	0C250	0	_		Bridge No	.:				
Limit	ts:	I-10 - I									
Flood	lplain Desc	ription:	Shallov	v Pondir	ng adjace	nt to WB I-10 H	Freeway between C	herry			
and C	Citrus										
								No	Yes		
1.	Is the prop	posed ac	tion a lo	ngitudin	al encroa	chment of the b	ase floodplain?				
								Х			
2.	Are the ri	sks asso	ciated wi	th the in	nplement	ation of the prop	oosed action				
	significan	t?						X			
3.	Will the p	Will the proposed action support probable incompatible floodplain development?									
								Х			
4.	Are there	any sigi	nificant in	npacts o	n natural	and beneficial	floodplain values?				
								Х			
5.	Routine c	onstruct	ion proce	dures a	e require	ed to minimize in	npacts on the				
	floodplair										
	impacts of	3,									
	explain.							Х			
6.	Does the	propose	d action o	onstitut	e a signif	ficant floodplain	encroach-ment as				
	defined in	23 CFF	R, Sectior	n 650.10	5(q).	I		Х			
7.	Are Locat	tion Hyd	Iraulic St	udies th	at docum	ent the above ar	swers on file? If no	ot			
	explain.	J *							Х		

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Dist.	8	Co.	Sbd	Rte.	10	P.M.	22	.36		
Proje	ect No.:	0C2500	0			Bridge N	No.:			
Limi	ts:	I-10 - L	.A. Cour	nty Line	to Ford S	St. in Redland	s.			
the C	City of Colto	on								
Floo	dplain Des	cription:	Colton	Southwe	est Storm	Drain				
Zone	A	I								
									No	Yes
1.	Is the prop	posed ac	tion a lor	ngitudina	al encroad	chment of the	base flo	odplain?		
									X	
2.	Are the ri	sks asso	ciated wi	th the in	plementa	ation of the pr	oposed a	action		_
	significan	t?							Х	
3.	Will the p	roposed	action su	ipport pi	robable ir	ncompatible f	loodplai	n developm	ent?	
									Х	
4.	Are there	any sign	ificant ir	npacts o	n natural	and beneficia	l floodp	lain values?	?	
									Х	
5.	Routine c	onstructi	ion proce	dures ar	e require	d to minimize	impacts	on the		
	floodplair	h. Are the	ere any s	pecial m	itigation	measures nec	essary to	o minimize		
	impacts of	r restore	and pres	erve nat	ural and t	peneficial floo	odplain v	alues? If ye	es,	
	explain.								Х	
6.	Does the j	proposed	l action c	onstitute	e a signifi	icant floodpla	in encro	ach-ment as	5	
	defined in	23 CFR	R, Section	650.10	5(q).				Х	
7.	Are Locat	tion Hyd	raulic St	udies tha	at docume	ent the above	answers	on file? If 1	not	
	explain.									Х
PRE	PARED B	Y:								

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Dist.	8	Co.	Sbd	Rte.	10	P.M.	22.9					
Proje	ect No.:	0C250	00			Bridge N	0.:					
Limi	ts:	I-10 -	I-10 - L.A. County Line to Ford St. in Redlands									
Floo	dplain Des	scription	1: 11th S	treet Sto	rm Drain	adjacent to FB	roadbed					
	•	•	11115				Toddoed.					
								No	Yes			
1.	Is the pro	posed a	ction a lo	ongitudin	al encroa	chment of the	base floodplain?					
								Х				
2.	Are the r	isks asso	ociated w	ith the ir	nplement	ation of the pro	posed action					
	significa	nt?						X				
3.	Will the	propose	d action s	support p	robable i	ncompatible flo	oodplain developn	nent?				
								X				
4.	Are there	e any sig	nificant i	mpacts of	on natural	and beneficial	floodplain values	?				
								X				
5.	Routine of floodplai impacts of	construc n. Are th or restor	tion proc here any e and pre	edures an special n serve nat	re require nitigation cural and	d to minimize measures nece beneficial floo	impacts on the ssary to minimize dplain values? If y	'es,				
	explain.							Х				
6.	Does the defined in	propose n 23 CF	ed action R, Sectio	constitut n 650.10	e a signif 5(q).	ïcant floodplai	n encroach-ment a	.s X				
7.	Are Loca explain.	tion Hy	draulic S	tudies th	at docum	ent the above a	nswers on file? If	not	X			

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Dist.	8	Co.	Sbd	Rte.	10	P.M.	23.6			
Proje	ct No.:	0C250	0			Bridge No.:	5	40830 L R		
Limi	ts:	I-10 - I	.A. Cou	nty Line	to Ford	St. in Redlands				
the C	City of Colt	on								
Floo	dplain Des	cription	Warm	(Lytle) C	Creek Fl	oodplain				
									No	Yes
1.	Is the pro	posed ac	tion a lo	ngitudina	al encro	achment of the base	floodpla	uin?		
									Х	
2.	Are the ri	sks asso	ciated wi	th the in	nplemen	ntation of the propos	sed action	1		
	significan	ıt?							Х	
3.	Will the p	proposed	action s	upport p	robable	incompatible flood	plain dev	elopment?		
									Х	
4.	Are there	any sigr	nificant in	npacts o	n natura	al and beneficial floo	odplain v	alues?		
									X	
5.	Routine c	onstruct	ion proce	edures ar	e requir	red to minimize imp	acts on th	ne		
	floodplai	n. Are th	ere any s	pecial m	itigatio	n measures necessar	ry to min	imize		
	impacts o	r restore	and pres	serve nat	ural and	beneficial floodpla	un values	s? If yes,		
	explain.								Х	
6.	Does the	proposed	d action c	constitute	e a signi	ificant floodplain en	croach-n	nent as		
	defined ir	a 23 CFF	R, Section	n 650.10	5(q).				Х	
7.	Are Loca	tion Hyd	lraulic St	udies tha	at docun	nent the above answ	vers on fi	le? If not		
	explain.									Х
PRE	PARED B	Y:								

Signature - Dist. Hydraulic Engineer

Date

Date

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Signature - Dist. Project Engineer

Dist.	8	Co.	Sbd	Rte.	10	P.M.	23.8	2			
Proje	ct No.:	0C2500)			Bridge No).:	54 0292 0	GRL		
Limit	ts:	I-10 - L.A County Line to Ford St. in Redlands									
Floo	dplain Des	cription:	Santa A	na Rive	r Floodpl	lain					
									No	Yes	
1.	Is the prop	posed ac	tion a lor	ngitudina	al encroa	chment of the b	ase floo	dplain?			
									Х		
2.	Are the ris	sks asso	ciated wi	th the in	plement	ation of the prop	posed ac	tion			
	significan	t?							Х		
3.	Will the p	roposed	action su	ipport p	robable ii	ncompatible flo	odplain	developmen	nt?		
									Х		
4.	Are there any significant impacts on natural and beneficial floodplain values?										
									Х		
5.	Routine c	onstructi	ion proce	dures ar	e require	d to minimize in	mpacts of	on the			
	floodplair	h. Are the	ere any sj	pecial m	itigation	measures neces	sary to 1	minimize			
	impacts of	r restore	and pres	erve nat	ural and l	beneficial flood	plain va	lues? If yes,	,		
	explain.								Х		
6.	Does the j	proposed	l action c	onstitute	e a signifi	icant floodplain	encroad	ch-ment as			
	defined in	23 CFR	, Section	650.10	5(q).				Х		
7.	Are Locat	tion Hyd	raulic Stu	udies tha	at docume	ent the above ar	nswers o	n file? If not	t		
	explain.									Х	
		. 7									

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Dist.	8	Co.	Sbd	Rte.	10	P.M.	25.	46			
Proje	ct No.:	0C250	0			Bridge N	0.:	54 0599			
Limi	ts:	I-10 - I									
Floo	dplain Des	cription:	San Ti	moteo C	hannel Fl	oodplain					
									No	Yes	
1.	Is the pro	posed ac	tion a lo	ngitudin	al encroad	chment of the b	base floo	odplain?			
									Х		
2.	Are the ri	sks asso	ciated wi	ith the in	nplementa	ation of the pro	posed a	ction			
	significar	nt?							Х		
3.	Will the p	proposed	action s	upport p	robable ir	ncompatible flo	oodplair	a development?			
									Х		
4.	Are there any significant impacts on natural and beneficial floodplain values?										
									Х		
5.	Routine c	onstruct	ion proce	edures a	e require	d to minimize	impacts	on the			
	floodplain										
	impacts o	r restore	and pres	serve nat	ural and b	peneficial floor	lplain v	alues? If yes,			
	explain.								Х		
6.	Does the	proposed	action of	constitut	e a signifi	cant floodplai	n encroa	ach-ment as			
	defined in	n 23 CFF	R, Section	n 650.10	5(q).				Х		
7.	Are Loca	tion Hyd	raulic St	udies the	at docume	ent the above a	nswers	on file? If not			
	explain.	·								Х	
	_										

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Date

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Signature - Dist. Project Engineer
SUMMARY FLOODPLAIN ENCROACHMENT REPORT

Dist.	8	Co.	Sbd	Rte.	10	P.M.	27.6	4		
Project No.:		0C2500 Bridge No.: 54 0570						54 0570		
Limits:		I-10 - L.A. County Line to Ford St. in Redlands								
Floo	dplain Des	cription:	Mission	n Channe	el Floodplain	n				
									No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?									
									Х	
2.	Are the risks associated with the implementation of the proposed action significant?									
									Х	
3.	Will the proposed action support probable incompatible floodplain development?									
									Х	
4.	Are there any significant impacts on natural and beneficial floodplain values?									
									Х	
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.								Х	
6.	Does the proposed action constitute a significant floodplain encroach-ment as									
	defined in 23 CFR, Section 650.105(q).								Х	
7.	Are Location Hydraulic Studies that document the above answers on file? If not									
	explain.	·								Х
	-									

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Date

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Date

Signature - Dist. Project Engineer

Date

SUMMARY FLOODPLAIN ENCROACHMENT REPORT

Dist.	8	Co.	Sbd	Rte.	10	P.M.	27.6	54		
Proje	ct No.:	0C250	0			Bridge No	o.:	54 0472 L R		
Limits:		I-10 - L.A. County Line to Ford St. in Redlands								
Floo	lplain Des	cription	Zanja	Channel	Floodplai	n				
									No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?									
									Х	
2.	Are the risks associated with the implementation of the proposed action significant?									
									Х	
3.	Will the proposed action support probable incompatible floodplain development?									
									Х	
4.	Are there any significant impacts on natural and beneficial floodplain values?									
									Χ	
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.								х	
6	Does the proposed action constitute a significant floodplain encroach-ment as									
5.	defined in	23 CFF	R. Section	n 650.10	5(a).	cuint moodphum	enerou		x	
7	Are Location Hydraulic Studies that document the above answers on file? If not									
<i>.</i>	explain	non nyc		lucies th		int the above a		in me. n not		x
	enpium.									

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Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Date