INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

GREEN RIVER ROAD WIDENING

CITY OF CORONA

RIVERSIDE COUNTY, CALIFORNIA

LSA

January 18, 2010

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RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

City of Corona
Public Works Capital Improvements Division
400 South Vicentia Avenue, Suite 210
Corona, California 92882-2187

Prepared by:

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LSA Project No. ABE0701

LSA

January 18, 2010

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CITY OF CORONA
MITIGATED NEGATIVE DECLARATION

NAME, DESCRIPTION AND LOCATION OF PROJECT:

Name: Green River Road Widening

Description: The proposed project is the widening of Green River Road between State Route 91 (SR-91) and Palisades Drive from 4 lanes to 6 lanes including installation of curb and gutter, sidewalk, utility relocation, installation of storm drain laterals and culverts, the installation of a new traffic signal at Green River Road/Palisades Drive, the modification of the existing traffic signal at Green River Road/Dominguez Ranch Road, and the modification to the existing intersections of Green River Road/Fresno Road and Green River Road/Nicholas Place.

Location: Green River Road between SR-91 and Palisades Drive in the City of Corona.

ENTITY OR PERSON UNDERTAKING PROJECT:

City of Corona - Public Works Capital Improvements Division
400 South Vicentia Avenue, Suite 210
Corona, California 92882-2187

The City Council, having reviewed the Initial Study of this proposed project and the written comments received prior to the public meeting of the City Council, and having heard, at a public meeting of the Council, the comments of any and all concerned persons or entities, including the recommendation of the City's staff, does hereby find that the proposed project may have potentially significant effects on the environment, but mitigation measures or revisions in the project plans or proposals made by or agreed to by the applicant would avoid or mitigate the effects to a point where clearly no significant effects will occur. **Therefore, the City Council hereby finds that the Mitigated Negative Declaration reflects its independent judgment and shall be adopted.**

The Initial Study and other materials which constitute the records of proceedings, are available at the office of the City Clerk, City of Corona City Hall, 400 South Vicentia Avenue, Corona, California 92882.

Date: _____ _____

Mayor
City of Corona

Date filed with County Clerk: _____

CITY OF CORONA
INITIAL STUDY / ENVIRONMENTAL CHECKLIST

PROJECT TITLE: Green River Road Widening Project

PROJECT LOCATION:

As identified in Figures 1 and 2, the proposed project is located in the City of Corona, California. The project is the widening of Green River Road for approximately 5,625 feet from State Route 91 (SR-91) to Palisades Drive. The project is located on a portion of Sections 29 and 30, Township 3 South, Range 7 West, as shown on the U.S. Geological Survey (USGS) *Prado Dam, California* 7.5-minute quadrangle.

PROJECT PROPONENT:

City of Corona
Public Works Capital Improvements Division
400 South Vicentia Avenue, Suite 210
Corona, California 92882-2187

PROJECT DESCRIPTION:

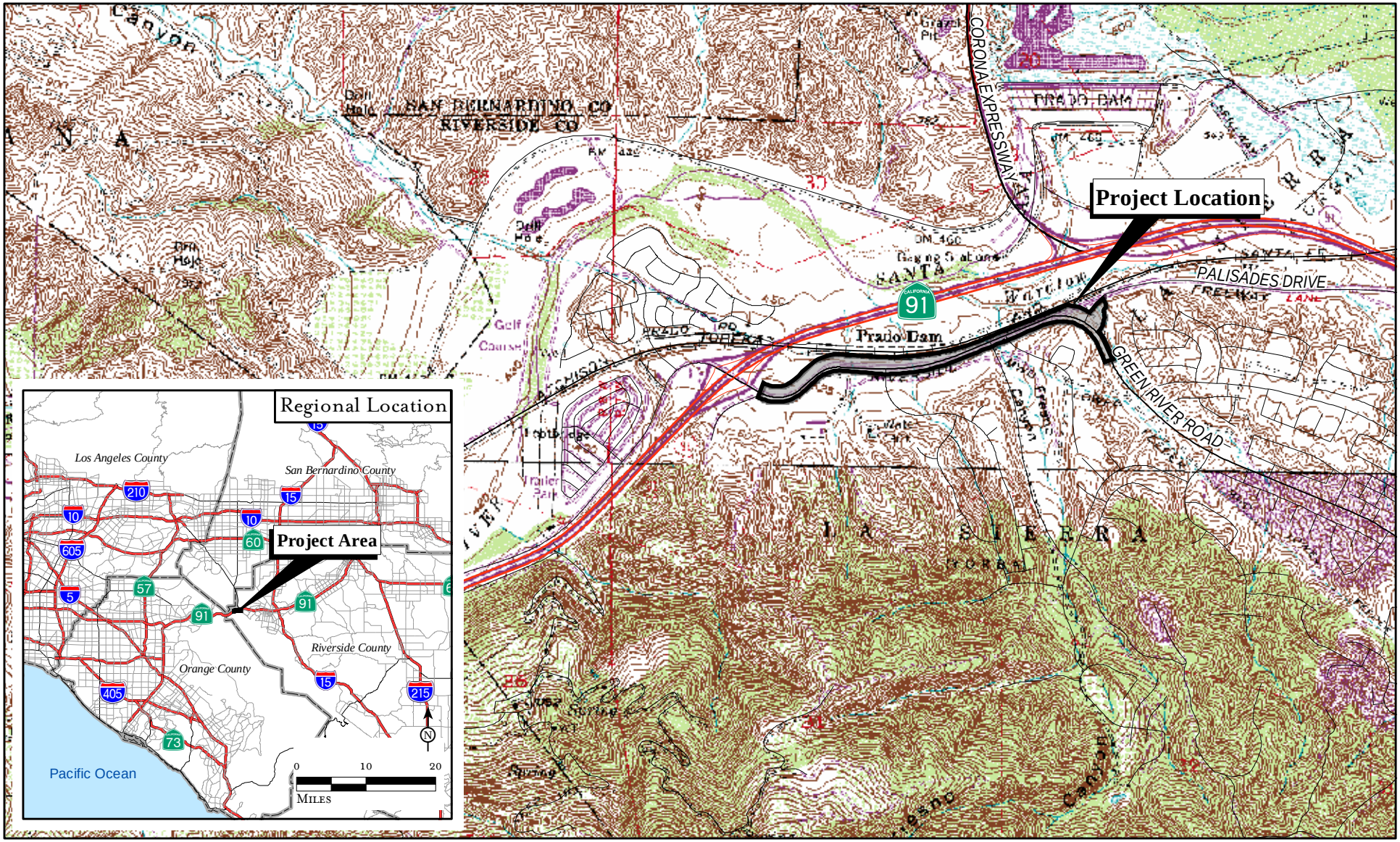
Within the project limits, existing Green River Road is approximately 79 feet across curb-to-curb and includes four lanes. Within the project limits, Green River Road currently has two eastbound and two westbound travel lanes. The two eastbound travel lanes start at the Green River Road/SR-91 ramps and continue to Palisades Drive. The two westbound lanes start at Palisades Drive and continue to the SR-91 ramps.

The typical cross-section proposed for widening Green River Road between SR-91 and Dominguez Ranch Road (approximately 1,985 feet) includes a curb-to-curb distance of 100 feet and a right-of-way of 130 feet. The proposed cross-section between Dominguez Ranch Road and the east project limits (approximately 3,640 feet) will be widened 7 feet to the south side of Green River Road and will allow for two additional 11-foot travel lanes for a total of 86 feet curb-to-curb and a right-of-way of 108 feet.

Implementation of the proposed project would result in Green River Road having two lanes in the eastbound direction from the Green River Road/SR-91 Interchange eastbound off-ramp to Fresno Canyon Road. After Fresno Canyon Road, a third travel lane will be added to Green River Road and will continue to Palisades Drive. Implementation of the proposed project would also result in Green River Road having three lanes in the westbound direction from Palisades Drive to Dominguez Ranch Road. After Dominguez Ranch Road, the inside lane would be a “freeway only” lane that will merge onto the westbound SR-91 on-ramp. The two outside lanes will remain through lanes across the existing bridge.

Implementation of the proposed project would include the following:

- Widening of Green River Road from varying roadway widths to an arterial street with a cross-section of six (6) lanes;
- Curb and gutter;
- Sidewalks;
- Utility relocation;
- Storm drain laterals;



LSA

FIGURE 1

N

0 1,000 2,000

Feet

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

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Green River Road Widening
Initial Study / Mitigated Negative Declaration

Regional and Project Location

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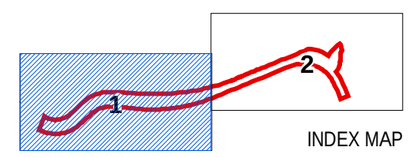
FIGURE 2
Sheet 1 of 2

STUDY AREA

N

0 100 200
FEET



INDEX MAP

Green River Road Widening
Initial Study / Mitigated Negative Declaration

SOURCE: Air Photo USA (2007)

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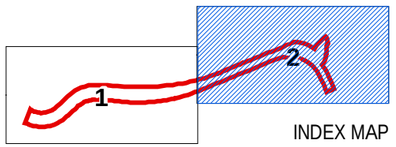
LSA

FIGURE 2
Sheet 2 of 2

STUDY AREA

N

0 100 200
FEET



Green River Road Widening
Initial Study / Mitigated Negative Declaration

SOURCE: Air Photo USA (2007)
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- Culverts;
- Installation of new traffic signal system at the intersection of Green River Road and Palisades Drive; and
- Traffic signal modification at the intersection of Green River Road and Dominquez Ranch Road.

ENVIRONMENTAL SETTING:

Green River Road is generally an east-west, four-lane, divided roadway west of Palisades Drive in the City of Corona. The speed limit on Green River Road is 45 mph and parking is not permitted on either side of the roadway. Green River Road is designated as a six-lane Major Arterial west of Palisades Drive and a four-lane Major Arterial east of Palisades Drive in the City's General Plan Circulation Element. The ramp intersections at Green River Road and SR-91 are signalized intersections. The recently completed Green River Road/SR-91 interchange improvement project (Corona, RCTC, Caltrans project) has replaced and reconstructed the interchange bridge, including widening of the bridge from three to six lanes. The interchange improvement project also made modifications to the Green River Road/SR91 eastbound and westbound ramps and was completed in December 2008.

For purposes of analysis, the project study area is the broader area of the project's indirect impacts while the project footprint is the area defined by the direct impacts of the project. For this document, the project footprint is considered to be the area needed to widen Green River Road. This area includes the land associated with the construction/required to widen Green River to its ultimate build out width as well as other roadway facilities (e.g., curb and gutter) associated with the widening of Green River Road.

GENERAL PLAN / ZONING:

As stated previously, the City's General Plan Circulation Element identifies Green River Road as a six-lane major arterial with an ultimate right-of-way width of 130 feet within the project limits. Land uses surrounding Green River Road as identified in the City's Land Use Map consist of light industrial, open space, general commercial, and mixed-use industrial/commercial.

STAFF RECOMMENDATION:

The City's Staff, having undertaken and completed an initial study of this project in accordance with the City's "Local Guidelines for Implementing the California Environmental Quality Act (CEQA)", has concluded and recommends the following:

__ The proposed project could not have a significant effect on the environment. **Therefore, a NEGATIVE DECLARATION will be prepared.**

__ The proposed project could have a significant effect on the environment, however, the potentially significant effects have been analyzed and mitigated to below a level of significance pursuant to a previous EIR as identified in the Environmental Checklist attached. **Therefore, a NEGATIVE DECLARATION WILL BE PREPARED.**

X The Initial Study identified potentially significant effects on the environment but revisions in the project plans or proposals made by or agreed to by the applicant would avoid or mitigate the effects to below a level of significance. **Therefore, a MITIGATED NEGATIVE DECLARATION will be prepared.**

__ The proposed project may have a significant effect on the environment. **Therefore, an ENVIRONMENTAL IMPACT REPORT is required.**

__ The proposed project may have a significant effect on the environment; however, a previous EIR has addressed only a portion of the effects identified as described in the Environmental Checklist discussion. As there are potentially significant effects that have not been mitigated to below significant levels, a **FOCUSED EIR will be prepared to evaluate only these effects.**

__ There is no evidence that the proposed project will have the potential for adverse effect on wildlife resources and the impacts are found to be de minimis pursuant to Section 711.4 of the Fish and Game Code.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following indicates the areas of concern that have been identified as "Potentially Significant Impact" or for which mitigation measures are proposed to reduce the impact to less than significant.

- ☐ Land Use Planning
- ☐ Population and Housing
- ☐ Geologic Problems
- ☒ Hydrology and Water Quality
- ☒ Air Quality
- ☐ Transportation / Traffic
- ☒ Biological Resources
- ☐ Mineral Resources
- ☒ Hazards / Hazardous Materials
- ☐ Noise
- ☐ Public Services
- ☐ Utilities
- ☐ Aesthetics
- ☒ Cultural Resources
- ☐ Agricultural Resources
- ☒ Mandatory Findings of Significance

Date Prepared: January 18, 2010 Prepared By: LSA Associates, Inc. (consultant)

Contact Person: Clint Herrera Phone: (951) 739-4888

Note: This form represents an abbreviation of the complete Environmental Checklist found in the City of Corona CEQA Guidelines. Sources of reference information used to produce this checklist may be found in the City of Corona Planning Department. 400 S. Vicentia Avenue, Corona, California.

1. LAND USE AND PLANNING:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with any land use plan/policy or agency regulation (general plan, specific plan, zoning)	☐	☐	☐	☒
b. Conflict with surrounding land uses	☐	☐	☐	☒
c. Physically divide established community	☐	☐	☐	☒

Discussion:

a) Conflict with an Applicable Land Use Plan?

No Impact. The proposed project is the widening of Green River Road for approximately 5,625 feet from approximately SR-91 to Palisades Drive. The proposed project does not require a General Plan Amendment or a Zone Change. Within the project limits, the City's General Plan identifies Green River Road as a six-lane major arterial roadway[1] with an ultimate right-of-way width of 130 feet. The proposed project consists of the widening of Green River Road with varying roadway widths with a cross-section of six (6) lanes and associated storm drains, sewer, and traffic signals. The proposed improvements would increase capacity, improve level of service, and alleviate traffic congestion, which would comply with Goal 10.23 of the City of Corona General Plan, by maintaining, establishing, developing, and protecting the City's highways and corridors for scenic purposes. Additionally, the proposed project is consistent with the goals and policies identified in the City's General Plan Circulation Element. The achievement of Goal 6.1 would result in the provision of a system of streets that meets the needs of current and future residents and businesses, and that facilitates the safe and efficient movement of people and goods throughout the City. This would be reached through the attainment of General Plan Policies 6.1.1 through Policy 6.1.19. General Plan Policy 6.1.1 through Policy 6.1.19 accommodate traffic flow through the provision of sufficient capacity on existing and planned roadways, coordination with street system improvements, and coordination with regional transportation efforts to design and employ traffic control measures to ensure City streets and roads function safely and efficiently. Since the proposed project would provide additional capacity to a roadway currently experiencing congestion, install traffic control measures such as stoplights at existing intersections on Green River Road promoting circulation coordination, and is included in the Regional Transportation Plan, implementation of the proposed project would be consistent with the City's General Plan. Because the proposed project does not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project, no impact would occur. No mitigation is required.

b) Conflict with surrounding land uses?

No Impact. The General Plan Land Use for the area is light industrial, open space, general commercial, and mixed-use industrial/commercial.[2] Similarly, existing land uses within the project's vicinity primarily consist of industrial operations, commercial operations, and vacant land. The proposed project consists of roadway improvements that would increase capacity, improve levels of service, and reduce traffic congestion along this portion of Green River Road. Therefore, the proposed project would not conflict with any surrounding land uses within the area but will actually improve the circulation pattern. The project would not conflict with any land use plan/policy or agency regulation, resulting in no impact and no mitigation is required.

c) Physically divide an established community?

No Impact. The proposed project is the widening of Green River Road for approximately 5,625 feet from approximately SR-91 to Palisades Drive. Areas adjacent to the proposed project consist of light industrial, open space, general commercial, and mixed-use industrial/commercial uses. There are no existing residences

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1 *Table 3.1-1 Roadway Characteristics, Chapter 3 Infrastructure and Public Services, City of Corona General Plan Technical Background Report,* City of Corona, March 2004.

2 *Figure 3 City of Corona Land Use Plan*, *City of Corona General Plan Update*, City of Corona, adopted April 4, 2004.

along the roadway and surrounding development does not constitute an established community. Because the proposed project is the widening of an existing roadway, implementation of the proposed project would not result in a new physical division of an established community nor would it introduce a new barrier between existing land uses. No impact related to this issue would occur and no mitigation is required.

2. POPULATION AND HOUSING:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Induce substantial growth	☐	☐	☒	☐
b. Displace substantial numbers of existing housing or people	☐	☐	☐	☒

Discussion:

a) Induce substantial growth?

Less than Significant Impact. The proposed project is located in an urbanized area to which roadways have already been extended. The proposed project would facilitate the continued growth and development of light industrial and mixed use industrial/commercial uses in the immediate area. Although the project will increase the capacity of Green River Road between SR-91 and Palisades Drive, traffic volumes on this section of roadway are already at congested levels during peak commute periods due to cut-through traffic diverting away from the congested SR-91 freeway. As indicated in Figure 13 of the City's General Plan,[3] the portion of Green River Road within the project footprint is classified as a "Major Arterial 6-Lane" roadway and is part of the long-term circulation plan for the City; therefore, the widening of Green River Road would accommodate population growth already anticipated in the City's General Plan. Although the proposed project would create short-term construction jobs, these short-term positions are anticipated to be filled by workers who, for the most part, reside in the surrounding communities. Therefore, construction of the proposed project would not generate a permanent increase in population within the project study area. The proposed project would remediate existing deficiencies in current roadway capacity and would not induce substantial indirect growth. Therefore, a less than significant growth-inducing impact would occur and no mitigation is required.

b) Displace substantial numbers of existing housing or people?

No Impact. The proposed project is located in an area that does not contain any existing housing constituting a community or neighborhood, nor is it adjacent to any residential land uses. Furthermore, the City's General Plan does not include a land use plan that would allow the future development of residential land uses within the project study area and immediate vicinity. Therefore, there would be no impacts related to the displacement of existing housing or people. No mitigation is required.

3. GEOLOGIC PROBLEMS:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Fault /seismic failures (Alquist-Priolo zone) /Landslide/Liquefaction	☐	☐	☒	☐
b. Grading of more than 100 cubic yards	☐	☐	☒	☐
c. Grading in areas over 10% slope	☐	☐	☐	☒
d. Substantial erosion or loss of topsoil	☐	☐	☒	☐
e. Unstable soil conditions from grading	☐	☒	☐	☐
f. Expansive soils	☐	☒	☐	☐

[3] *City of Corona General Plan*, City of Corona, prepared by EIP Associates, adopted March 17, 2004.

Discussion:

a) Fault / Seismic Failures (Alquist-Priolo zone) / Landslide / Liquefaction?

Less than Significant Impact. *Faults.* Fault rupture is the most easily avoided seismic hazard. The Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) mitigates fault rupture hazards by prohibiting the location of structures for human occupancy across the trace of an active fault. The A-P Act requires the State Geologist to delineate "Earthquake Fault Zones" along faults that are "sufficiently active" and "well defined." The boundary of an "Earthquake Fault Zone" is generally 500 feet from major active faults, and from 200 to 300 feet from well defined minor faults. The mapping of active faults has been completed by the State Geologist. These maps are distributed to all affected cities, counties, and State agencies for their use in developing planning policies and controlling renovation or new construction.

The proposed project footprint is not located within the boundaries of an earthquake fault zone for fault-rupture hazard as defined by the Alquist-Priolo Earthquake Fault Zoning Act.[4] Furthermore, the proposed project is the widening of an existing roadway and no habitable structures are proposed by the project. At the closest point, the proposed project is located approximately 1,850 feet northeast of the delineated fault zone of the Chino Fault. Other faults in the area include the Elsinore Fault Zone, which is located approximately 2,060 feet northeast of the project footprint. As such, the potential for fault ground rupture within the project study area is considered low; therefore, a less than significant impact related to this issue would occur. No mitigation is required.

Seismic Failures. The City of Corona, and therefore the proposed project, is situated in a seismically active area. Ground shaking is expected to be the seismic hazard most likely to affect the project. No habitable structures or bridges are proposed as part of the proposed project. The design of the proposed project would include seismic design parameters that would reduce the potential for seismic shaking-related impacts to a less than significant level. No mitigation is required.

Landslide. Landslides are rock, earth, or debris flows on slopes as a result of gravity. They occur on any terrain given the right conditions of soil, moisture, and the angle of slope and are triggered by rains, floods, earthquakes, and other natural causes as well as human causes such as grading, terrain cutting and filling, and excessive development. The City's General Plan identifies that portions of land within the City are located near the steep slopes of the Santa Ana Mountains and the steep slopes within the Elsinore Fault Zone and Chino Fault and may be subject to potential earthquake-induced landsliding.[5] However, the project study area is not identified as being susceptible to landslides.[6] In addition, the proposed project area is generally flat and does not present any significant topographical features that would result in landslide occurrences. Therefore, no landslide impact would result from the development of the proposed roadway and no mitigation is required.

Liquefaction. Liquefaction is a phenomenon that occurs when strong earthquake shaking causes soils to collapse from a sudden loss of cohesion and undergo a transformation from a solid to a liquefied state. Factors influencing a site's potential for liquefaction include area seismicity, the type and characteristics of on-site soils, and the level of groundwater. Liquefaction typically occurs in areas where groundwater is shallower than approximately 30 feet, and where there is the presence of loose, sandy soils. According to the Riverside County Land Information System, low liquefaction potential is present within the project study area. In addition, implementation of the proposed project would not result in the construction of any structures that may be affected by earthquake-induced liquefaction as the proposed project is a roadway improvement project. Because the potential for liquefaction at the project footprint is considered to be low, a less than significant impact related to liquefaction would occur. No mitigation is required.

b) Grading of more than 100 cubic yards?

Less than Significant Impact. According to the *Conceptual Grading Plan*,[7] grading within the proposed project footprint will be limited in scope because the widened roadway will match existing grades throughout

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4 California Geologic Survey, 2005.

5 *Chapter 4.12 Geology and Soils, City of Corona General Plan Final Environmental Impact Report,* City of Corona, March 2004.

6 *Figure 5.1-1 Geology,* City of Corona General Plan Technical Background Report, City of Corona, March 2004.

7 *Conceptual Grading Plan*, Armstrong and Brooks Consulting Engineers, March 2008.

the project. The roadway widening will be constructed with minimal grading and associated earthwork, resulting in balanced cut and fills. Based on calculations conducted for the proposed project, approximately 78 cubic yards would be graded, cut, or filled.[8] The project will result in grading of less than 100 cubic yards of soil, resulting in a less than significant impact. No mitigation is required.

c) Grading in areas over 10% slope?

No Impact. The proposed project is located within the existing Green River Road right-of-way. Because the right-of-way for Green River Road is relatively flat,[9] there would be no grading in areas which have a slope greater than 10 percent. Therefore, no impacts associated with this issue would occur and no mitigation measures are required.

d) Substantial erosion or loss of topsoil?

Less than Significant Impact. Soils within the project study area include Altamont Clay (AaF), Arbuckle Loam (A_KD), Cortina Cobbly Loamy Sand (C_MC), Garretson Very Fine Sandy Loam (G_AC and GaD2), Garretson Gravely Very Fine Sandy Loam (GdD2), Perkins Gravelly Loam (PGC and PGD2), and Terrace Escarpments (TEG).[10] Soils vary and intermix throughout the project study area with small areas of GaD2, AkD, CmC, PgD2, and AaF occurring from the middle portion throughout the northernmost portion of the project. Larger areas of GaD2 and G_AC occur at the southern portion of the project study area, while a small area of GdD2 occurs at the northernmost end of the project study area. The erosion hazards for G_AC soil is slight to moderate, while AkD, GdD2, and PgC soils have a moderate erosion hazard. CmC soil has a moderate to high eroded hazard potential, and PgD2 soil has a high erosion potential.[11] Prior to the issuance of grading permits, the project proponent would be required to submit detailed grading plans for the project, and would be required to comply with applicable City Grading Ordinance regulations established in Chapter 15.36.[12]

Development of the project would involve more than one acre of land disturbance; therefore, the proposed project is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit program was established under Section 402 of the Clean Water Act, which prohibits the unauthorized discharge of pollutants, including municipal, commercial, and industrial wastewater discharges. An NPDES permit would generally specify an acceptable level of a pollutant or pollutant parameter in a discharge (for example, a certain level of bacteria). The permittee may choose which technologies to use to achieve that level. Some permits, however, do contain certain generic Best Management Practices (BMPs). Table A lists BMPs for erosion control, runoff control, sediment control, and housekeeping that may be used during the construction and operations phases of the proposed project.

Table A: General Best Management Practices

Erosion Control	Runoff Control	Sediment Control	Good Housekeeping
Chemical Stabilization, Compost Blankets, Dust Control, Gradient Terraces, Mulching, Riprap, Seeding, Sodding, Soil Retention, Soil Roughening, Temporary Slope Drain, Wind Fences and Sand Fences	Check Dams, Grass-lined Channels, Permanent Slope Diversions, Temporary Diversion Dikes	Brush Barrier, Compost Filter Berms, Fiber Rolls, Filter Berms, Sediment Basins, Sediment Traps, Silt Fences, Straw/Hay Bales, Vegetated Buffers	Create waste collection area, Concrete Washout Areas, Spill Prevention and Control Plan.

Source: National Pollutant Discharge Elimination System, *Construction Site Storm Water Runoff Control*, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=4 ,website accessed March 24, 2009. More detailed Best Management Practices are available at this web site.

8 *Fill Calculations,* Armstrong & Brooks Consulting Engineers, April 7, 2009.
9 *Figure 4.5-1 Slope Analysis, City of Corona General Plan Background Technical Report,* City of Corona, March 2004.
10 Soil Data Mart (1999).
11 *Soil Survey Western Riverside County Area*, United States Department of Agriculture, Soil Conservation Service, November 1971.
12 City of Corona Municipal Code Chapter 15.36.

A draft Storm Water Pollution Prevention Plan (SWPPP) has been prepared to address erosion and discharge impacts associated with the proposed on-site grading. In addition to preparation of an SWPPP, new development projects submitted to the City would be required to submit a project-specific Water Quality Management Plan (WQMP). A draft WQMP has been prepared for the proposed project and identifies measures to treat and/or limit the entry of contaminants into the storm drain system. The WQMP is required to be incorporated by reference or attached to the project's SWPPP as the Post-Construction Management Plan. As soils covering the majority of the project site only have a slight to moderate erosion hazard potential and the project is required to adhere to the City's Grading Ordinance, obtain an NPDES Permit, and prepare a final SWPPP and final WQMP, impacts associated with soil erosion hazards are less than significant and no mitigation is required.

e) Unstable soil conditions from grading?

Potentially Significant Unless Mitigation Incorporated. Subsidence is the sudden sinking or gradual downward settling of the earth's surface with little or no horizontal motion. Subsidence is caused by a variety of activities, which include (but are not limited to) withdrawal of groundwater, pumping of oil and gas from underground, the collapse of underground mines, liquefaction, and hydrocompaction. Although the project study area is susceptible to subsidence, the project does not include the removal of groundwater. Minor ground subsidence is expected to occur in the soils below the zone of removal while the roadbed is prepared due to settlement and machinery working. The actual amount of subsidence and settling is expected to be variable and would be dependent on the specific soils found in the area of roadway widening, the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely. Consequently, implementation of the following mitigation measure and adherence to City and engineering requirements and standards would reduce potential impacts associated with this issue to a less than significant level.

GEO-01 Prior to issuance grading permits, the construction contractor shall provide evidence that a qualified geotechnical engineer or geologist will be on site during project construction to verify the adequacy of the roadway subgrade compaction and structural soundness of the existing and new street sections. Any recommendations made by the geotechnical engineer shall be implemented by the construction contractor. The engineer or geologist need only be present during the grading and compaction phases associated with the preparation of the entire roadway's subgrade.

f) Expansive soils?

Potentially Significant Unless Mitigation Incorporated. Expansive soils generally have a significant amount of clay particles, which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings, structures, roads, and other loads placed on these soils. The extent of shrink/swell is influenced by the amount and kind of clay in the soil. The occurrence of these soils is often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed and they can occur in hillside areas as well as low-lying alluvial basins. As discussed in response 3d above, soils on site consist of Altamont Clay (AaF), Arbuckle Loam (A_KD), Cortina Cobbly Loamy Sand (C_MC), Garretson Very Fine Sandy Loam (G_AC and GaD2), Garretson Gravely Very Fine Sandy Loam (GdD2), Perkins Gravelly Loam (PGC and PGD2), and Terrace Escarpments (TEG). CmC, GaC, and GdD2 soils have a low shrink-potential, while AkD, GaC, and GdD2 have a low shrink-swell potential, and AaF soil has a high shrink and swell potential. Consequently, implementation of previously referenced **Mitigation Measure GEO-01** and adherence to City and engineering requirements and standards would reduce potential impacts associated with this issue to a less than significant level.

4. HYDROLOGY AND WATER QUALITY:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than significant Impact	No Impact
a. Violate water quality standards/waste discharge requirements	☐	☒	☐	☐

4. HYDROLOGY AND WATER QUALITY:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than significant Impact	No Impact
b. Deplete groundwater supplies	☐	☐	☒	☐
c. Alter existing drainage pattern	☐	☒	☐	☐
d. Increase flooding hazard	☐	☐	☐	☒
e. Degrade surface or ground water quality	☐	☐	☒	☐
f. Within 100-year flood hazard area	☐	☐	☐	☒
g. Increase exposure to flooding	☐	☐	☐	☒
h. Exceed capacity of stormwater drainage system	☐	☐	☒	☐

Discussion:

a) Violate water quality standards/waste discharge requirements?

Potentially Significant Unless Mitigation Incorporated. Construction of the proposed project would require grading and excavation activities for paving, curbs, and gutters, which may allow eroded soils and other pollutant to enter existing drainage systems. In accordance with the National Pollutant Discharge Elimination System (NPDES) and as monitored by the City, the City's contractor is required to comply with NPDES and Storm Water Pollution Prevention Plan (SWPPP) requirements regarding Best Management Practices (BMPs) during construction. Based on the preliminary SWPPP prepared for the proposed project, the proposed project would implement an erosion prevention schedule, hydroseeding, and velocity dissipation devices to ensure that construction will be in conformance with NPDES requirements.[13]

As previously stated, in addition to preparation of an SWPPP, the City would be required to prepare a project-specific WQMP. Based on the preliminary WQMP prepared for the proposed project, the proposed project will implement site design concepts that minimize urban runoff, minimize impervious surfaces, conserve natural areas, and minimize directly connected impervious areas.[14] As identified in the preliminary WQMP, the proposed project would include the installation of drain inserts for catch basins in the project study area. These drain inserts will treat the stormwater runoff for trash/debris, oil/grease, and sediment prior to being released off-site. To ensure that an NPDES permit has been obtained prior to construction activities, **Mitigation Measure HYD-01** has been identified. Compliance with the project-specific SWPPP and WQMP, as ensured through **Mitigation Measure HYD-02** through **HYD-04** would reduce impacts related to this issue to a less than significant level.

HYD-01 Prior to issuance of the grading permit by the City, the construction contractor shall file a Notice of Intent (NOI) with the Santa Ana Regional Water Quality Control Board for the project to be covered under the State National Pollutant Discharge Elimination System (NPDES) General Construction Permit for discharge of stormwater associated with construction activities.

HYD-02 Prior to the first issuance of a grading permit, the City shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize best management practices (BMPs) to control sediment and non-visible discharges from the site. Some of the BMPs to be implemented may include (but shall not be limited to) the following:

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[13] *Storm Water Pollution Prevention Plan for Green River Road Widening and Traffic Signal Design Modification,* Armstrong & Brooks Consulting Engineers, May 6, 2009.

[14] *Project Specific Water Quality Management Plan for Green River Road – Widening & Traffic Signal Design Modification, Project No. 48-1106,* Armstrong & Brooks Consulting Engineers, February 5, 2009.

- Sediment discharges from the site may be controlled by sandbags, silt fences, straw wattles and temporary debris basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs would be periodically inspected during construction, and repairs would be made when necessary as required by the SWPPP.
- All materials that have the potential to contribute non-visible pollutants to stormwater must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas.
- All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate any discharge from the site. Stockpiles would be surrounded by silt fences and covered with plastic tarps.
- The SWPPP shall include inspection forms for routine monitoring of the site during the construction phase to ensure NPDES compliance.
- Additional BMPs and erosion control measures shall be documented in the SWPPP and utilized if necessary.
- The SWPPP shall be kept on site for the entire duration of project construction and will also be available to the local RWQCB for inspection at any time.

In the event that it is not feasible to implement the above BMPs, the City of Corona can make a determination that other BMPs would provide equivalent or superior treatment either on site or off site.

HYD-03 The Construction Contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sediment control measures called for in the SWPPP. Monthly reports shall be maintained by the Contractor and available for City inspection. In addition, the Contractor would also be required to maintain an inspection log and have the log on site available for review by the City of Corona and the representatives of the Regional Water Quality Control Board.

HYD-04 Prior to the issuance of a grading permit, the City shall be required to finalize the preliminary WQMP prepared for the project and approve the project-specific Final Water Quality Management Plan (WQMP).

b) Deplete groundwater supplies?

Less than Significant Impact. The proposed project would not require any withdrawal of groundwater in the project footprint. Construction of the roadway would require the grading of soil and the project would result in a minimal increase in the quantity of impervious surfaces. The excavation of soils during project construction will not affect the groundwater basin. Therefore, implementation of the proposed project would not result in changes in the quantity of groundwater through direct withdrawals or indirectly through reductions in groundwater recharge area. A less than significant impact associated with this issue would occur and no mitigation is required.

c) Alter existing drainage pattern?

Potentially Significant Unless Mitigation Incorporated. Implementation of the proposed project would require the installation of impermeable surfaces, which would result in the alteration of existing on-site absorption rates, drainage patterns, and surface runoff. As identified in the preliminary WQMP for the proposed project, runoff currently generated on site is discharged directly to a publicly-owned, operated, and maintained Municipal Separate Strom Sewer System (MS4) system. The stormwater runoff currently generated on site is in full compliance with the City's requirements for connections and discharges to its MS4 system. Since the proposed project is the widening of an existing roadway, it is anticipated that runoff would be conveyed to existing storm drain facilities. The additional stormwater runoff generated by the proposed

project would still be discharged directly to the City's drainage system and would still be in compliance with the City's requirements for connections and discharges to the drainage system.[15]

Compliance with City drainage requirements includes adherence to the City's Drainage Area Master Plan (DAMP) and the MS4 permit. The DAMP identifies major drainage system deficiencies and proposes corrective improvements to those system deficiencies within the City. The MS4 permit, which is a component of the NPDES permit, governs connections and discharges to stormwater facilities within the City and is regulated by the City of Corona Public Works Department. To ensure that drainage is sized correctly to City of Corona Public Works Department standards, **Mitigation Measure HYD-05** has been identified. Adherence to DAMP and MS4 NPDES permit requirements as well as drainage standards from the City of Corona Public Works Department (which requires specific drainage sizing and placement) would reduce potential impacts associated with drainage to a less than significant level.

HYD-05 Prior to the issuance of a grading permit, the City shall prepare a sizing study for all proposed on-site drainage features such as on-site basins, piping, or storm drains.

d) Increase flooding hazard?

No Impact. The proposed roadway improvement project does not include any structures that would impede or redirect stormwater flows. In addition, the proposed roadway improvement project is not within a 100-year flood zone.[16] Implementation of the proposed project would alter the drainage pattern within the project site through the introduction of additional impervious surfaces. However, any runoff that would be generated on site would be required by the City to drain into a storm drain facility. As previously identified, proposed stormwater drainage improvements would be designed to accommodate existing and anticipated future runoff volumes and flow rates. Therefore, the proposed project would not increase flooding hazards or would be located in an area that would be susceptible to flooding. No impact associated with this issue would occur. No mitigation is required.

e) Degrade surface or ground water quality?

Less than Significant Impact. The project would result in an increase in the amount of impervious surfaces in the form of a wider Green River Road street section. Post-construction stormwater conditions could degrade existing water quality due to increased runoff volumes and velocity; reduced infiltration; increased flow frequency, duration, and peak; and faster time to reach peak flow. However, implementation of the proposed project would include the installation of BMPs required as part of the project's SWPP and WQMP designed to remove pollutants from runoff coming from the project site. No substantial hydraulic changes or erosion would occur that would impact existing or planned stormwater drainage facilities. Therefore, with implementation of treatment BMPs, a less than significant impact would occur and no mitigation is required.

f–g? Within 100-year flood hazard area? / Increase exposure to flooding?

No Impact. The project is located within City identified Flood Zone X, which is area that lies outside the 1.0 percent and 0.2 percent annual chance floodplains.[17] Since the proposed site is not within a 100- year flood hazard area, the widening of Green River Road would not result in a potential flooding hazard area. Since the proposed project is a roadway improvement project which would occur within an existing roadway, and would not result in any habitable structures, no impacts associated with this issue would occur. No mitigation is required.

h) Exceed capacity of stormwater drainage system?

Less than Significant Impact. The project would result in a minimal increase in the amount of impervious surfaces in the form of roadways and associated infrastructure such as curbs, sidewalks, and road shoulders. Post-construction stormwater conditions could exceed the capacity of the stormwater drainage system due to

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15 *Project Specific Water Quality Management Plan for Green River Road – Widening & Traffic Signal Design Modification, Project No. 48-1106,* Armstrong & Brooks Consulting Engineers, February 5, 2009.

16 Federal Emergency Management Agency (FEMA) Q3 Flood Data, 1996.

17 *Figure 5.2-1 Creeks, Washes, Channels, and Flood Zones,* City of Corona General Plan Technical Background Report, March 2004.

increased runoff volumes and velocity; reduced infiltration; increased flow frequency, duration, and peak; and faster time to reach peak flow. However, implementation of the proposed project would include the installation of BMPs designed to remove pollutants from runoff coming from the project site. As identified in the preliminary WQMP prepared for the proposed project, the proposed project meets Hydrologic Condition of Concern A. Hydrologic Condition of Concern A indicates four things: 1) that the runoff from the proposed project is discharged directly to an existing storm drain system that is owned, operated, and maintained by the City; 2) that the discharge associated with the proposed project is in full compliance with the City's requirements for connections and discharges to the City storm drain system; 3) the project discharge does not significantly impact stream habitat in proximate receiving waters; and 4) the project discharge is authorized by the City of Corona. Therefore, no substantial hydraulic changes or erosion would occur that would affect existing or planned stormwater drainage facilities. A less than significant impact would occur and no mitigation is required.

5. AIR QUALITY:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with air quality plan	☐	☐	☐	☒
b. Violate air quality standard	☐	☐	☒	☐
c. Net increase of any criteria pollutant	☐	☐	☒	☐
d. Expose sensitive receptors to pollutants	☐	☐	☒	☐
e. Create objectionable odors	☐	☐	☒	☐

The analysis contained in this section is based on the following technical study prepared for the proposed project:

- Air Quality Analysis, LSA Associates, Inc., May 21, 2009 (Appendix A of the Initial Study).

Discussion:

a) Conflict with the applicable air quality plan?

No Impact. The proposed project is located within the South Coast Air Basin (Basin) and is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. Basin-wide air pollution levels are administered by the SCAQMD through the Air Quality Management Plan (AQMP). The Final 2007 AQMP proposes policies and measures currently contemplated by responsible agencies to achieve Federal standards for healthful air quality in the Basin and those portions of the Salton Sea Air Basin that are under SCAQMD jurisdiction. This Final Plan also addresses several Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

The SCAQMD Handbook states that the purpose of assessing the project's consistency with the latest AQMP is to determine its consistency with the assumptions and objectives of the regional air quality plans, the most recent being the 2007 AQMP. If a project is found to interfere with the region's ability to comply with Federal and State air quality standards, local governments then need to consider project modifications or provide mitigation measures to eliminate the inconsistency of the project plans. In order for a project to be considered "consistent" with the latest AQMP, the project must be consistent with the goals, objectives, and assumptions in the respective plan to achieve the Federal and State air quality standards. Per the Handbook, there are two main indicators of a project's consistency with the AQMP:

- Whether the project would increase the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of the air quality standards or the interim emission reductions specified in the AQMP; and
- Whether the project would exceed the AQMP's assumptions for 2020 or yearly increments, based on the year of project build-out and phase.

As outlined in SCAQMD methodology, the first consistency criterion applies to long-term operational emissions. Short-term construction-related emissions are not reflected in the AQMP consistency analysis as these emissions are transitory in nature, and thus do not have the inherent ability to cause a severe air quality violation. On an operational basis, the project is a roadway extension and, as it is an "infrastructure project," is classified as an indirect source by the SCAQMD.[18] As such, direct emissions from the project are not quantified as it is not a trip-generating project (i.e., vehicle trips are redistributed; new trips are not created).

To assess the environmental impacts as a result of development accurately, environmental pollution and population growth are projected by the SCAQMD in the AQMP for future scenarios. The AQMP projections are based, in part, on the growth forecasts and General Plans from cities and counties located in the Basin. The widening of Green River Road from four to six lanes between Dominguez Ranch Road and Palisades Drive has been accounted for by the City in the Circulation Element of the 2004 General Plan. The 2007 AQMP takes into account development and associated emissions identified in the City's 2004 General Plan. Therefore, the proposed project would not exceed the AQMP's assumptions for 2020.

Because the proposed project is a transportation project, consistency of the project with the AQMP is also determined by the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program's (RTIP) consistency with the AQMP. This is determined by comparing the emissions from the transportation projects with the emissions budget in the AQMP. If the AQMP growth assumptions are likely to be exceeded as a result of the RTIP improvements, then the RTIP cannot be found consistent with the AQMP. The California Clean Air Act (CAA) requires that transportation plans and programs do not cause or contribute to any new violation of a standard, increase the frequency or severity of any existing violation, or delay the timely attainment of the air quality standards.

The project is included in the adopted 2008 RTP and is included in the adopted 2008 RTP Project List [RTP Project ID# 3A07130, page 127]. The description contained in the RTP indicates that the proposed roadway improvements would result in the widening of Green River Road from 4 to 6 lanes between Dominguez Ranch Road and Palisades Drive. Because the proposed project is anticipated in the RTP, AQMP growth assumptions would have been taken into account. Therefore, the proposed project is consistent with the description contained in the adopted 2008 RTP and is therefore consistent with the AQMP. Thus, the proposed roadway widening would be consistent with the AQMP and no impact is anticipated.

b) Violate air quality standards?

Less Than Significant Impact. As identified in the Air Quality Analysis[19] conducted for the proposed project, the Basin is designated as a non-attainment area for Federal and State ozone, PM_{10}, and $PM_{2.5}$. Implementation of the proposed project would contribute to air pollutant emissions on a short-term basis during project construction. An estimate of the construction emissions was conducted using the Road Construction Emissions Model that was developed by the Sacramento Metropolitan Air Quality Management District. Table B summarizes the results of the emission calculations.

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[18] Chapter 9, Emission Calculation Procedures, CEQA Air Quality Handbook, South Coast Air Quality Management District, November 1993.

[19] *Air Quality Analysis Green River Road Widening,* LSA Associates, Inc., October 2008 (Appendix A of the Initial Study).

Table B: Peak Day Construction Emissions (lbs/day) by Phase[1]

Construction Phase	CO	ROG	NO_X	PM_{10}[2]	$PM_{2.5}$[2]
Grubbing/Land Clearing	19.1	4.5	35.7	21.6	5.6
Grading/Excavation	35.4	6.4	48.7	22.4	6.3
Drainage/Utilities/Sub-Grade	17.5	4.6	32.8	21.8	5.8
Paving	9.8	3.1	15.3	1.4	1.3
SCAQMD Emissions Threshold	**550**	**75**	**100**	**150**	**55**
Exceed Significance?	**No**	**No**	**No**	**No**	**No**

[1] It is assumed that there is no overlap of these construction phases.
[2] Total PM_{10} and $PM_{2.5}$ daily emission rate with fugitive dust mitigation measures implemented.
Source: LSA Associates, Inc. May 2009.

Short-term emissions would result from construction activities, such as fugitive dust from grading/site preparation and equipment exhaust. However, as identified in Table B, emissions generated during the construction of the proposed project would not exceed the SCAQMD emissions threshold. In addition, the project would be required to comply with regional rules that assist in reducing short-term air pollutant emissions. The purpose of SDAQMD Rule 403 is to reduce the amount of particulate matter in the atmosphere resulting from man-made fugitive dust sources. Among the requirements under this rule, fugitive dust must be controlled so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. This is achieved by requiring actions to prevent, reduce, or mitigate dust emissions. Adherence to Rule 403 is a standard requirement for any development project occurring within the SCAQMD. Adherence to Rule 403 would reduce air quality emission impacts associated with construction to less than significant.

Long-term mobile emissions associated with the proposed project would be less than the no project scenario due to improved traffic flow in project area. Because existing traffic volumes on Green River Road are already at congested levels during the weekday peak commute periods, the increase in capacity will not induce or generate additional traffic over and above existing conditions. Consequently, the proposed project would improve traffic movement in the project vicinity, thereby lowering the total pollutants emitted by vehicles utilizing Green River Road. Because the proposed project would fulfill and be consistent with the goals and objectives of the existing City roadway improvements and adopted 2008 RTP, a less than significant impact associated with operational emissions would occur. No mitigation would be required.

c) Result in net increase of a criteria air pollutant?

Less than Significant Impact. Currently, the Basin is in non-attainment for Federal and State ozone, PM_{10}, and $PM_{2.5}$ standards. Air pollution levels of the criteria air pollutants are monitored, or measured, by the applicable air quality district at various locations throughout the Basin. Although the proposed project is within a non-attainment area for Federal and State ozone, $PM_{2.5}$ and PM_{10} standards, the Environmental Protection Agency (EPA) does not require qualitative or quantitative analysis for projects that are not listed as an air quality concern. The proposed project would improve roadway operations by reducing traffic congestion and improving traffic operations, and would reduce ozone, $PM_{2.5}$, or PM_{10} emissions by reducing congestion.

There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of greenhouse gases (GHGs)[20] that keep the Earth's surface warm by trapping heat in the Earth's atmosphere. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. While many studies show evidence of warming over the last century and predict future global warming, the causes of such warming and its potential effects are far less

[20] Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

certain. In its "natural" condition, the greenhouse effect[21] is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of greenhouse gases in the atmosphere, thereby contributing to an increase in global temperatures.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California's major initiatives for reducing GHG emissions are outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006, Executive Order S-3-05, and AB 1493, which requires the California Air Resources Board (CARB) to set GHG emission standards for passenger vehicles and light duty trucks. These efforts aim at reducing GHG emissions to 1990 levels by 2020, a reduction of approximately 25 percent, and then an 80 percent reduction below 1990 levels by 2050.

Some of the potential resulting effects in California of global climate change may include reduction of the Sierra snow pack, threats to water supplies, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. In addition to these effects, there are many secondary effects that are projected to result from global warming, including impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

Given the broad scope of global climate change, the challenge under CEQA is for a Lead Agency to scale the issue down to the level of a CEQA document for a specific project in a way that is meaningful to the decision-making process. Climate change is a global environmental problem in which: (a) any given development project contributes only a small portion of any net increase in GHGs and (b) global growth is continuing to contribute large amounts of GHGs across the world. No individual project would result in a measurable impact on global climate change, or an environmental impact resulting from global climate change. Although regulatory agencies at the State and regional levels are in the process of developing thresholds and methodologies to assess global climate change and greenhouse gas emissions, neither CEQA nor the *CEQA Guidelines* currently provides any methodology for analysis of greenhouse gases, nor do they provide any significance thresholds. In April 2009, proposed CEQA Guideline amendments released by OPR included the following direction regarding determination of significant impacts from GHG emissions (Section 15064.4):

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

    (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or

    (2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:

    (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

    (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

[21] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduce the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

To date, no quantitative GHG emission thresholds or similar criteria have been established to evaluate the cumulative impact of a single project on global climate change. In the absence of quantitative greenhouse gas emissions thresholds, consistency with adopted programs and policies is used by many jurisdictions to evaluate the significance of cumulative impacts. The California Air Pollution Control Officers Association (CAPCOA) published a White Paper in January 2008 that explored several options for setting numeric, non-zero thresholds. The White Paper acknowledges medium to high uncertainty as to each potential numeric threshold. Based on the above, none of the potential numeric thresholds would be appropriate for application to this project. Thus, for the purposes of analyzing this project, and consistent with OPR's recent CEQA guideline amendments, the potential climate change impacts will be analyzed qualitatively without setting a specific quantitative threshold.

GHG emissions estimates related to construction of the proposed project are discussed below and are provided for informational purposes only. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the City at the time this document was prepared. Just as construction activities would result in the emission of criteria pollutants, the combustion of fossil-based fuels from equipment exhaust, construction related vehicular activity and construction worker automobile trips creates GHG emissions such as CO_2, CH_4, and N_2O. GHG emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers.

Construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) *Road Construction Emissions Model, Version 6.3.1.*[22] SMAQMD states that manual calculation and URBEMIS approaches have shortcomings when used for roadway construction projects. Therefore, the Road Construction Emissions Model, developed by SMAQMD to provide a methodology for quantifying the emissions impacts of road construction projects, is recommended for estimating GHG emissions from these types of projects. It is estimated that the total project construction emissions would be approximately 224 metric tons of CO_2.

Operation of the proposed project would result in emissions of greenhouse gases, primarily CO_2, which would be formed as a primary product of combustion of gasoline and diesel fuel in vehicle trips. GHG emissions are currently emitted from vehicles utilizing the existing Green River Road, and as identified in the Air Quality Analysis conducted for the proposed project, the proposed roadway widening does not generate new regional vehicle trips. Therefore, no new regional vehicle emissions would occur.

As previously stated, there is no guidance from the State of California and the *CEQA Guidelines* on thresholds for assessing the impact of greenhouse gas emissions. The following considerations were developed for the proposed project from a review of recent publications and actions from CARB that address how the state plans to achieve the goals of reducing greenhouse gases. These considerations include:

[22] Sacramento Metropolitan Air Quality Management District. 2008. *Road Construction Emissions Model Version 6.3.1.* November. Available at www.airquality.org/ceqa/index.shtml.

(1) The potential conflicts with the 44 early action strategies identified by the CARB;

(2) Conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020 as set forth by the timetable established in AB 32, Global Warming Solutions Act of 2006.

These considerations will be used to evaluate whether the project emissions could conflict with the State goals for reducing greenhouse gas emissions. If a project implements or does not conflict with strategies identified in (1) and (2) above, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change.

(1) Potential conflicts with the 44 early action strategies identified by the CARB.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed the CARB to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. In June 2007 the CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture). Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The CARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures.

The CARB's focus in identifying the 44 early action items was to recommend measures that the CARB staff's evaluation concluded were "expected to yield significant GHG emission reductions, are likely to be cost-effective and technologically feasible."[23] The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT. Accordingly, the 44 early action items focus on industrial production processes, agriculture, and transportation sectors. Early action items associated with industrial production and agriculture do not apply to the proposed project. The proposed project does not conflict with early action items applicable to the transportation sector, including truck efficiency, low carbon fuel standard, proper tire inflation, truck stop electrification and strengthening light duty vehicle standards. Therefore, no significant impacts associated with this project would occur.

(2) Conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020 as set forth by the timetable established in AB 32, Global Warming Solutions Act of 2006.

On December 11, 2008, the CARB adopted the AB 32 Scoping Plan that contains the main strategies California will use to reduce the greenhouse gases that cause climate change. The adopted Scoping Plan includes proposed GHG reductions from direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.[24]

One of the main strategies to reduce GHG emissions is to make California's transportation system more efficient. SB 375, signed into law on October 1, 2008, enhances the State's ability to reach AB 32 goals by directing the CARB to develop regional greenhouse gas emission reduction targets to be achieved from vehicles by 2020 and 2035. SB 375 directs each of the State's 18 major Metropolitan Planning Organizations (MPOs) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plans.

Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions The highest levels of carbon dioxide from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour. To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, will be reduced. The purpose of the proposed project is to alleviate existing and future traffic congestion along Green River Road. Therefore, the proposed

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[23] *Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration,* California Environmental Protection Agency – Air Resources Board, October 2007.

[24] California Air Resources Board. *Climate Change Proposed Scoping Plan: a framework for change*. October 2008.

project would reduce the number of vehicle hours traveled within the project area and thereby reduce GHG emissions. Specific regional emission targets related to SB 375 will not be available until September 2010. However, this project would be consistent with the goals of AB 32 and SB 375, which requires planning agencies to develop strategies for meeting GHG emission targets as a part of regional transportation plans. Based on the project's consistency with these measures, the project would have a less than significant impact.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. Sensitive receptors are defined as populations that are more susceptible to the effects of pollution than the population at large. The SCAQMD identifies the following as sensitive receptors: long-term healthcare facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. Existing and planned land uses within the project's vicinity are predominantly light industrial, open space, general commercial and mixed use industrial commercial.

The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time and traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. Under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels. Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. Localized air quality impacts associated with CO concentrations in the project area would be reduced due to improved traffic flow from the project's roadway improvements. The Caltrans Transportation Project-Level Carbon Monoxide Protocol was utilized to assess the project's impact on the local CO concentrations in the area. Table C identifies the recorded CO levels in the project vicinity over the last 3 years.

Table C: CO Measurements at the Riverside-Rubidoux Air Quality Station (ppm)

Year	1-Hour		8-Hour			
	1st High	2nd High	1st High	2nd High	3rd High	4th High
2007	3.8	3.6	2.9	2.5	2.2	2.2
2006	2.7	2.7	2.3	2.1	2.1	2.0
2005	3.4	3.3	2.5	2.3	2.3	2.3
Federal Standards	**35**	**35**	**9**	**9**	**9**	**9**

Source: Air Quality Analysis, LSA Associates, Inc. October 2008.

Per EPA guidelines, the highest of the second-highest CO concentrations measures within the past three years were used as the background level. As indicated in Table C, at the Riverside-Rubidoux monitoring station, the background CO concentrations are 3.6 parts per million (ppm) for the one-hour period and 2.5 ppm for the eight-hour period. Tables D, E, and F identify CO concentrations at three intersections along Green River Road for the existing, 2012, and 2030 conditions.

Table D: Existing Year (2008) Highest CO Concentrations (ppm)

Intersection	1-hour	8-hour
SR-91 Eastbound Ramps/Green River Road	6.1	4.3
Dominguez Ranch Road/Green River Road	5.2	3.6
Palisades Drive/Green River Road	5.1	3.6

Note: 1-hour CO concentration Federal standard is 35 ppm; 1-hour CO concentration State standard is 20 ppm.
8-hour CO concentration Federal and State standard is 9 ppm.
Source: Air Quality Analysis, LSA Associates, Inc. October 2008.

Table E: Interim Year (2012) Highest CO Concentrations (ppm)

Intersection	1-hour	8-hour
SR-91 Eastbound Ramps/Green River Road	5.7	4.0
Dominguez Ranch Road/Green River Road	5.0	3.5
Palisades Drive/Green River Road	4.9	3.4

Note: 1-hour CO concentration Federal standard is 35 ppm; 1-hour CO concentration State standard is 20 ppm.
8-hour CO concentration Federal and State standard is 9 ppm.
Source: Air Quality Analysis, LSA Associates, Inc., October 2008.

Table F: Future Year (2025) Highest CO Concentrations (ppm)

Intersection	1-hour	8-hour
SR-91 Eastbound Ramps/Green River Road	5.1	3.6
Dominguez Ranch Road/Green River Road	4.7	3.3
Palisades Drive/Green River Road	4.7	3.3

Note: 1-hour CO concentration Federal standard is 35 ppm; 1-hour CO concentration State standard is 20 ppm.
8-hour CO concentration Federal and State standard is 9 ppm.
Source: Air Quality Analysis, LSA Associates, Inc., October 2008.

As identified in Tables D, E, and F, the one-hour and eight-hour CO concentrations at these intersections would not exceed the one-hour and eight-hour Federal and State standards for CO concentrations. CO concentrations would decrease over time.

As previously identified, the proposed project is not a trip-generating project such as a residential, commercial, or industrial land development project. The SCAQMD currently provides rules and regulations and other policies for Mobile Source Air Toxics (MSATs); however, these policies are oriented toward analyzing land use projects. MSATs are a subset of the 188 air toxics defined by the Federal Clear Air Act (FCAA). The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. MSATs would be present along any roadway within the City, including along the existing Green River Road, and would continue to be present with the widening of Green River Road. However, the Federal Highway Administration states that roadways that have daily traffic volumes below 140,000 to 150,000 average daily trips do not contain enough traffic to generate particulate matter that would result in an adverse impact.[25] Green River Road from SR-91 to Palisades Drive currently experiences approximately 19,000 vehicles per day.[26] As previously identified, the proposed roadway widening does not generate new regional vehicular trips. Therefore, Green River Road in its proposed condition would not experience a daily volume of 140,000 daily trips that would generate significant diesel particulate matter.

A less than significant impact would occur with implementation of the proposed project since sensitive receptors would not be exposed to substantial pollutant concentrations. No mitigation measures would be required.

e) Create objectionable odors?

Less than Significant Impact. During construction, diesel-powered vehicle and equipment exhaust would create odors. Additionally, the installation of asphalt may generate odors. These odors are temporary and not likely to be noticeable beyond the project boundaries. Standard SCAQMD requirements regarding the installation of asphalt

[25] Federal Highways Administration technical staff determined that this range of average daily traffic would be roughly equivalent to the Clean Air Act definition of a major Hazardous Air Pollutant (HAP) source (i.e., 25 tons per year [tpy] for all HAPs or 10 tpy for any single HAP). Source: U.S. Department of Transportation Federal Highway Administration, *Interim Guidance on Air Toxic Analysis in NEPA Documents*, February 2006.

[26] *Figure 3-5 Existing Daily Traffic Volumes, Corona Palisades Business Park Traffic Impact Analysis Report,* Linscott Law and Greenspan Engineers, January 24, 2008.

surfaces are sufficient to reduce temporary odor impacts to a less than significant level. The proposed project would not generate long-term objectionable odors. In addition, the proposed project would not create objectionable odors for sensitive receptors as existing and planned land uses within the project area are predominantly light industrial, open space, general commercial, and mixed use industrial commercial. Therefore, a less than significant impact would occur with respect to the creation of objectionable odors. No mitigation measures would be required.

6. TRANSPORTATION/TRAFFIC:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Increased vehicle trips/congestion	☐	☐	☒	☐
b. Exceed level of service standard	☐	☐	☒	☐
c. Change in air traffic patterns	☐	☐	☐	☒
d. Traffic hazards from design features	☐	☐	☒	☐
e. Emergency access	☐	☒	☐	☐
f. Inadequate Parking	☐	☐	☐	☒
g. Conflict with alternative transportation policies	☐	☐	☐	☒

Discussion:

a) Increased vehicle trips/congestion?

Less than Significant Impact. The proposed project would widen Green River Road from a four-lane arterial to a six-lane arterial consistent with its General Plan classification. Green River Road from SR-91 to Palisades Drive currently experiences approximately 19,000 vehicles per day.[27] The widening of Green River Road is not anticipated to increase traffic on the roadway significantly, but would expand the roadway's capacity to accommodate traffic volumes that are already occurring and are projected to occur. General Plan build out daily volumes for Green River Road are projected to be approximately 51,000 vehicles between the SR-91 ramps and Palisades Drive. According to the City's General Plan EIR, the daily capacity values for a major arterial six-lane would be 53,900 vehicles per day. Other roadway improvements in the area would facilitate traffic flows within the City. However, these roadway improvements, including the widening of Green River Road, would accommodate the anticipated build out traffic volumes identified in the City's General Plan. Therefore, the proposed project would not constitute a significant increase in vehicle trips or worsen traffic conditions resulting in traffic congestion. Impacts associated with this issue would be less than significant and no mitigation is required.

b) Exceed level of service standard?

Less than Significant Impact. The proposed project would improve levels of service on Green River Road and at the intersections within the project limits. The project will not increase traffic volumes; however, it will relieve traffic congestion that otherwise would occur with build out in accordance with the General Plan. The City of Corona uses Level of Service (LOS) D as its minimum level of service standard for arterial roadways, reflecting the City's desire to maintain stable traffic flow throughout the City. Roadway and intersection operations of LOS E or F are required to be mitigated to LOS D or better. The City's General Plan defines LOS D as a signalized intersection delay (seconds per vehicle) of greater than 35 seconds but less than 55 seconds per vehicle and at a stop-controlled intersection, average stop delay greater than 25 seconds but less than 35 seconds per vehicle. Intersections within the project area would operate at or above LOS D with implementation of the proposed project. Impacts associated with exceeding the level of service standard would not occur because of the project's roadway improvements. Therefore, there would not be a reduction in the

[27] *Figure 3-5 Existing Daily Traffic Volumes, Corona Palisades Business Park Traffic Impact Analysis Report,* Linscott Law and Greenspan Engineers, January 24, 2008.

level of service currently experienced at intersections. A less than significant impact associated with this issue would occur. No mitigation is required.

c) Change in air traffic patterns?

No Impact. The Corona Municipal Airport is located approximately 2.5 miles northeast of the proposed project. The project is not within the designated safety zones or the flight paths established for the airport. In addition, the Corona Municipal Airport is non-towered and serves general aviation aircraft for recreational use and has no commercial flights. The proposed project would not cause changes to air traffic volumes or otherwise affect air traffic patterns as it is a roadway improvement. Because the proposed project would not include uses or components that would affect this issue, no impacts would occur and no mitigation is required.

d) Traffic hazards from design features?

Less than Significant Impact. The design of roadways must provide adequate sight distance and traffic control measures. This provision is normally realized through roadway design to facilitate roadway traffic flows. The proposed widening of Green River Road has been designed to satisfy all City requirements for street widths, corner radii, and intersection control. In addition, the roadway incorporates design features tailored specifically to accommodate adjacent site access requirements. Adherence to applicable City requirements would ensure that the widening of Green River Road would not include any sharp curves or dangerous intersections. Therefore, no substantial increase in hazards due to a design feature would occur, resulting in a less than significant impact. No mitigation would be required.

e) Emergency access?

Potentially Significant Unless Mitigation Incorporated. The Green River Road widening project will result in street cross-sections, new and upgraded traffic signals, and driveway accommodations complying with City standards and implementing basic civil engineering design principles that will provide for adequate emergency access and evacuation. Construction of the project may temporarily restrict vehicular traffic, requiring implementation of adequate and appropriate measures to facilitate the passage of persons and vehicles through/around any required road closures. The proposed project design would be submitted to and approved by the City's Fire, Police, and Traffic Departments prior the issuance of construction permits. In addition, the City currently utilizes an Advanced Traffic Management System to monitor traffic throughout the City and to make adjustments to the traffic signal system as necessary from the Traffic Management Center (TMC). The Advanced Traffic Management System and the TMC allows City staff to assist in relieving traffic congestion in the City by monitoring traffic conditions. However, to ensure emergency access and through traffic will be accommodated throughout the duration of the project's construction, a Traffic Management Plan (TMP) will be prepared for the project. The provision of a TMP in tandem with the TMC would provide law enforcement and fire personnel to plan their routes accordingly in an emergency situation. Implementation of **Mitigation Measure TRAF-01** requiring the preparation of a TMP will reduce impacts associated with this issue to a less than significant level.

TRAF-01 Prior to issuance grading permits, the City shall prepare and provide the construction contractor with a Traffic Management Plan (TMP). The TMP shall include but not be limited to discussion of arterial traffic flow routes, local traffic flow routes, emergency access routes, plans showing the location and number of all (1) temporary signs, (2) cones and barricades for lane guidance, and (3) location of and message sets (if any) for portable message signs. The TMP shall maintain adequate emergency access throughout the duration of construction and shall accommodate through traffic and access to adjacent developed properties.

f) Inadequate parking?

No Impact. During project construction, construction vehicles would be parked within the project's construction staging areas. It is anticipated that there would be adequate temporary parking for construction vehicles. Because the proposed project is a roadway improvement project, it does not require parking during its operational phases. Therefore, no impacts related to this issue would occur and no mitigation is required.

g) Conflict with alternative transportation policies?

No Impact. Implementation of the proposed project would result in roadway improvements that would decrease hazards to pedestrians and bicycle traffic through the provision of sidewalks and bicycle lanes on Green River Road. Because the proposed project would enhance existing infrastructure that supports alternative transportation options and because the proposed project would comply with adopted policies, plans, or programs supporting alternative transportation, no impacts associated with this issue are anticipated to occur and no mitigation is required.

7. BIOLOGICAL RESOURCES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Endangered or threatened species/habitat	☐	☐	☐	☒
b. Riparian habitat or sensitive natural community	☐	☒	☐	☐
c. Adversely affects federally protected wetlands	☐	☒	☐	☐
d. Interferes with wildlife movement, corridors, migratory species	☐	☐	☒	☐
e. Conflicts with local biological resource policies or ordinances	☐	☐	☐	☒
f. Conflicts with any habitat conservation plan or is located within a MSHCP criteria cell	☐	☐	☐	☒

The analysis contained in this section is based on the following technical studies prepared for the proposed project:

- *General Biological Resources Report for the Green River Widening Project, City of Corona, Riverside County, California (LSA Project No. ABE0701)*, LSA Associates, Inc. April 8, 2008 (Appendix B of the Initial Study).
- *Delineation of the U.S. Army Corps of Engineers and the California Department of Fish and Game Jurisdiction with Preliminary Jurisdictional Determination Green River Road Widening Project,* LSA Associates, Inc., April 23, 2009 (Appendix C of the Initial Study).
- *Final Results of Riparian Bird Surveys April 15 to July 15, 2008; for the State Route 91 Corridor Improvement Project (LSA Project No. PAZ0701), Eastbound State Route 91 Lane Addition (LSA Project No. CDT0805)*, *State Route 91 Widening (LSA Project No. CDT0801B), and Green River Road Widening Project (LSA Project No. ABE0701)*, LSA Associates, Inc., November 7, 2008 (Appendix D of the Initial Study).
- *MSHCP Consistency Assessment, (LSA Project No. ABE0701)*, LSA Associates, Inc., December 3, 2009 (Appendix E of the Initial Study).
- *Determination of Biologically Equivalent or Superior Preservation for the Green River Road Widening Project,* (LSA Project No. ABE0701), LSA Associates, Inc., December 3, 2009 (Appendix F of the Initial Study).

Discussion:

a) Endangered or threatened species and or habitat?

No Impact. The United States Fish and Wildlife Services (USFWS) and the California Department of Fish and Game (CDFG) list species as threatened or endangered under the Federal and State Endangered Species Acts (FESA and CESA, respectively). The USFWS may designate “critical habitat” that identifies specific areas, both occupied and unoccupied, that are essential to the conservation of a listed species. Based on the General Biological Resources Report conducted for the proposed project, approximately 0.2 acre of riparian

vegetation is present within the project impact site and would be affected by the proposed project. This riparian vegetation is marginally suitable for least Bell's vireo (*Vireo bellii pusillus*), an endangered species. Although the least Bell's vireo was not detected on the project site during the General Biological Assessment[28] or Jurisdictional Delineation[29] surveys, the project study area has marginally suitable habitat for the least Bell's vireo. Therefore, a focused protocol survey for the least Bell's vireo was conducted.[30] Based on the final results of a riparian bird survey conducted for the project site, no least Bell's vireos were observed or otherwise detected within the project limits.[31] No other threatened or endangered species are expected to be present since the project site is not within designated critical habitat of any threatened or endangered species.[32] Therefore, since the proposed project would not disturb designated critical habitat of any threatened or endangered species and would not disturb threatened or endangered species, no impacts associated with this issue would occur. No mitigation is required.

b) Riparian habitat or sensitive natural community?

Potentially Significant Unless Mitigation Incorporated. Riparian habitat refers to the trees, other vegetation, and physical features normally found on the banks and floodplains of rivers, streams, and other bodies of fresh water. Approximately 0.2 acre of riparian vegetation, consisting of three areas of riparian scrub and one area of riparian forest is present within the project impact sites.[33] The Riverside County Environmental Programs Department (EPD) requires a Determination of Biologically Equivalent or Superior Preservation (DBESP) Report consistent with the MSHCP for impacts to Riparian/Riverine Areas/Vernal Pools. The drainage features associated with the project meet the MSHCP definition of riparian/riverine because they contain a predominance of riparian vegetation and/or freshwater flow for a portion of the year; therefore, the project is required to prepare a DBESP report prior to any construction disturbance on site. Adherence to **Mitigation Measure BIO-01** would reduce impacts to riparian habitat to a less than significant level.

Other sensitive natural communities identified by the MSHCP survey requirements include fairy shrimp, vernal pools, narrow endemic and criteria area (NEPSSA) plant species, and burrowing owl (*Athene cunicularia hypugaea*).

As identified in the General Biological Resources Report, there are no vernal pools or similar habitat present on the project site. Therefore, no surveys for fairy shrimp would be required. Since no vernal pools or fairy shrimp would be present on site, no impacts to these biological resources would occur and no mitigation is required.

The proposed project is within the MSHCP survey area for three NEPSSA species: San Diego ambrosia (*Ambrosia pumila*), Brand's phaecelia (*Phacelia stellaris*), and San Miguel savory (*Satureja chandleri*). As identified in the General Biological Resources Report, suitable habitat does not exist for the San Diego ambrosia or San Miguel savory within the project study area. A plant survey was conducted for Brand's

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28 *General Biological Resources Report for the Green River Widening Project, City of Corona, Riverside County, California (LSA Project No. ABE0701)*, LSA Associates, Inc. April 8, 2008 (Appendix B of the Initial Study).

29 *Delineation of the U.S. Army Corps of Engineers and the California Department of Fish and Game Jurisdiction with Preliminary Jurisdictional Determination Green River Road Widening Project*, LSA Associates, Inc., April 23, 2009 (Appendix C of the Initial Study).

30 *Final Results of Riparian Bird Surveys April 15 to July 15, 2008; for the State Route 91 Corridor Improvement Project (LSA Project No. PAZ0701), Eastbound State Route 91 Lane Addition (LSA Project No. CDT0805), State Route 91 Widening (LSA Project No. CDT0801B), and Green River Road Widening Project (LSA Project No. ABE0701),* LSA Associates, Inc., November 7, 2008 (Appendix D of the Initial Study).

31 *Final Results of Riparian Bird Surveys April 15 to July 15, 2008; for the State Route 91 Corridor Improvement Project (LSA Project No. PAZ0701), Eastbound State Route 91 Lane Addition (LSA Project No. CDT0805), State Route 91 Widening (LSA Project No. CDT0801B), and Green River Road Widening Project (LSA Project No. ABE0701),* LSA Associates, Inc., November 7, 2008 (Appendix D of the Initial Study).

32 *General Biological Resources Report for the Green River Widening Project, City of Corona, Riverside County, California (LSA Project No. ABE0701)*, LSA Associates, Inc. April 8, 2008 (Appendix B of the Initial Study).

33 *Delineation of the U.S. Army Corps of Engineers and the California Department of Fish and Game Jurisdiction with Preliminary Jurisdictional Determination Green River Road Widening Project*, LSA Associates, Inc., April 23, 2009 (Appendix C of the Initial Study).

phaecelia within the project study area on March 26, 2008. The survey concluded Brand's phaecelia was absent from the project study area. Since no NEPSSA species were identified within the project site, no impacts to NEPSSA species would occur with implementation of the proposed project and no mitigation is required.

The proposed project is within the MSHCP survey area for the burrowing owl. A burrowing owl survey was conducted during the June 28, 2007, field visit. The entire site was walked with 10- to 50-foot transects to assess habitat suitability and to survey for burrowing owl burrows. The burrowing owl survey concluded that the species was absent from the project site based on the lack of suitable burrows at the time of the survey. Although no burrowing owls were found, a pre-construction survey is required within 30 days prior to the beginning of site grading to ensure that no burrowing owls have moved onto the site since the conclusion of the burrowing owl survey. This has been incorporated as **Mitigation Measures BIO-02** and **BIO-03**. Adherence to **Mitigation Measures BIO-02** and **BIO-03** would result in a less than significant impact to burrowing owls.

BIO-01 Prior to the commencement of ground disturbance activities, the City shall prepare a Determination of Biologically Equivalent or Superior Preservation (DBESP) for impacts to riparian habitat caused by the proposed project. The DBESP shall be submitted to the regulatory agencies as a part of the permit application package for review and approval. The DBESP shall specify that the approximately 0.2 acre riparian habitat area disturbed by the proposed project shall be replaced at a 2:1 ratio. Through the permitting process, the actual mitigation ratios may be increased; the mitigation ratios required by the permitting agencies shall be applied.

BIO-02 A pre-construction survey for the burrowing owl is required to confirm presence or absence of the species within the limits of the project's construction footprint. The pre-construction survey for the burrowing owl shall be conducted within 30 days prior to the commencement of grading activities. If it is determined that the project is occupied by this species, **Mitigation Measure BIO-03** shall apply. Conversely, if the project is not occupied by burrowing owls, **Mitigation Measure BIO-03** shall not be required.

BIO-03 Any western burrowing owls identified within the project limits shall be relocated prior to the commencement of grading activities. The relocation of any specimen shall be conducted per applicable CDFG and/or USFWS procedures. Relocation of on-site burrowing owls shall not be permitted during the nesting season (annually from February 1 through August 31) for this species.

c) Adversely affects federally protected wetlands?

Potentially Significant Unless Mitigation Incorporated. Based on the Jurisdictional Delineation Report prepared for the proposed project, seven potentially jurisdictional drainages within the project study area were delineated.[34] Of these seven drainages, three (Drainages 1, 6, and 7) are not within the project footprint. All drainages within the project study area have been historically altered to accommodate development including the Atchison, Topeka, and Santa Fe (ATSF) railroad tracks, SR-91, Green River Road, and surrounding light industrial and commercial uses. ACOE jurisdictional areas were delineated based on the presence of an ordinary high water mark (OHWM) (i.e., the limit of waters of the U.S.) and jurisdictional nexus. Jurisdictional nexus determination was made following the two analytic standards as decided by the Supreme Court in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (*Rapanos*). Table G provides descriptions of each of the drainages located within the study area.

[34] .Ibid.

Table G: Drainages Within Study Area

Drainage	Type of Drainage	Description
1	Ephemeral with an earthen bottom	Originates in the Santa Ana Mountains south of the project site and is diverted under the existing Green River Road through a concrete box culvert. Not within project footprint.
2	Ephemeral drainages with earthen bottoms	Originates in the Santa Ana Mountains south of the project site. Both are diverted under Green River Road through concrete box culverts. **Located within project footprint.**
3	Vegetated, earthen-bottomed roadside swale/constructed ditch with an undefined detention area	Collects flows from Green River Road and terminates between the road and ATSF railroad right-of-way. It has no outlet or connection to any TNW. **Located within the project footprint.**
4	Ephemeral drainages with earthen bottoms	Originates in the Santa Ana Mountains south of the project site. Both are diverted under Green River Road through concrete box culverts. **Located within project footprint.**
5	Perennial drainage with surface flows that occur as a result of urban runoff.	Originates in the Santa Ana Mountains south of the project site, is diverted underground south of Green River Road to accommodate a commercial development, and emerges at a corrugated metal pipe (CMP) and concrete box culvert north of the road. **Located within project footprint.**
6	Naturally occurring, modified, earthen bottom	Flows out of Fresno Canyon and eventually into the Santa Ana River. Not within project footprint.
7	Naturally occurring drainage that has been diverted into a concrete v-ditch.	Flows along Green River Road from south to north and eventually passes underneath the road via a storm drain. Not within project footprint.

Source: *Jurisdictional Delineation,* LSA Associates, Inc., September 2008.

Of the seven drainages located within the project study area, Drainage 5 is the only drainage in the project area that meets all three Federal wetland criteria. It has hydrophytic vegetation dominated by black willows and scale broom; hydrophytic soils with a high organic matter content as identified by the presence of the Sandy Mucky Mineral soil indicator; and exhibits wetland hydrology as evidenced by surface water, soil saturation, water-stained leaves, aquatic invertebrates, and a hydrogen sulfide odor.

As identified in Table H, Drainages 1, 6, and 7 are potentially jurisdictional and within the project study area. However, these drainages are not within the project footprint and are not anticipated to be directly affected by the proposed project. The remaining four drainages, Drainages 2, 3, 4, and 5, were identified as potentially jurisdictional and would be affected by the proposed project. Although Drainages 1, 6, and 7 are outside of the project footprint, the ACOE has potential jurisdiction over water bodies based on the presence of an OHWM. OHWMs were observed in all seven drainages. Table H identifies the potential jurisdictional areas within the project study area.

Table H: Potential Jurisdictional Areas within the Project Study Area

Drainage Area	Water Type	CDFG[1] (acres)	ACOE (acres)
1	Ephemeral	0.0238	0.0034
2	Ephemeral	0.1057	0.0115
3	Intermittent	0.2084	0.0093
4	Ephemeral	0.0323	0.0079
5	Perennial	0.0361	0.0181
6	Intermittent	0.041	0.0041
7	Concrete v-ditch	0.0013	0.0013
	Total	**0.448**	**0.0556**

Note: 1 – CDFG jurisdictional area includes combined totals of streambed and riparian areas.
Source: *Jurisdictional Delineation for Green River Road Widening Project,* LSA Associates Inc., April 2009.

As identified in Table H, 0.0556 acre is anticipated to be subject to ACOE jurisdiction. With the exception of Drainage 3, each of the drainages has a nexus to traditional navigable waters of the U.S. If the ACOE asserts jurisdiction over the potentially jurisdictional drainages within the project study area, then a pre-construction notice and permit application must be submitted according to Section 404 nationwide permit requirements for impacts to waters of the U.S. The project would be covered under Nationwide Permit (NWP) 14 for Linear Transportation Projects. Conditions of this Permit stipulate that stream channel modification, including bank stabilization, be limited to the minimum necessary to construct or protect the linear transportation project and such modifications must be in the immediate vicinity of the project footprint.

NWP 14 also authorizes temporary structures, fills, and work necessary to construct linear transportation projects. Appropriate measures would be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials and be placed in a manner that will not be eroded by expected high flows. The permittee must submit a pre-construction notification to the district engineer if: (1) the loss of waters of the United States exceeds 0.1 acre; or (2) there is any discharge in a special aquatic site, including wetlands. An individual permit is required when more than 0.5 acre of waters of the U.S. will be affected. A statement of proposed mitigation is required for discharges into more than 0.1 acre of a special aquatic site. Therefore, this project is required to submit a Pre-Construction Notification (PCN) and a wetland delineation report, but not a mitigation statement for the construction work in the perennial drainage because the impact to ACOE jurisdiction is less than significant. **Mitigation Measure BIO-04** will be implemented in order to comply with this regulatory requirement, reducing impacts associated with this issue to a less than significant level.

The CDFG jurisdictional areas were delineated by the presence of streambeds, banks, and riparian vegetation in each of the drainage basins. As identified in Table H, the total length of potential CDFG jurisdictional streambed within the project study area is 0.448 acre. The Regional Water Quality Control Board (RWQCB) would have jurisdiction through Clean Water Act (CWA) Section 401 and CWA Section 402 since the drainage are subject to ACOE jurisdiction. **Mitigation Measures BIO-05** and **BIO-06** have been identified to ensure the appropriate permits are secured. With implementation of this measure, the proposed project would adhere to Federal and State regulations regarding the filling of the on-site drainage, resulting in a less than significant impact to wetlands or riparian habitat.

BIO-04 Prior to the commencement of ground disturbance activities, the permittee shall submit to the district engineer a Pre-Construction Notification (PCN) and a wetland delineation report.

BIO-05 Prior to the commencement of project grading, the City shall apply for a Lake or Streambed Alteration Agreement with the CDFG for concurrence with the delineation report results. The agreements may include revegetation with native trees and shrubs within the project area or purchase of mitigation credits within an off-site mitigation bank at a replacement ratio of 2:1 (two acres replaced for every acre lost), or as specified in the regulatory permit.

BIO-06 Prior to the commencement of project grading, the City shall abide by all permit requirements mandated by the U.S. Army Corps of Engineers, the California Department of Fish and Game (e.g., Lake or Streambed Alteration Agreement), and/or the Regional Water Quality Control Board, Santa Ana Region, (e.g. Section 401 and Section 402 permits) have been satisfied.

d) Interferes with wildlife movement, corridors, or migratory species?

Less than Significant Impact. Wildlife movement includes seasonal migration along corridors, as well as daily movements for foraging. Migration corridors include areas of unobstructed movement for deer, riparian corridors providing cover for migrating birds, routes between breeding waters and upland habitat for amphibians, and between roosting and feeding areas for birds. The Green River Road project limits cross Proposed Constrained Linkages 1 and 2 in the Temescal Canyon Area Plan of the MSHCP. MSHCP Proposed Constrained Linkage 1 crosses Green River Road near its interchange with State Route-91 (SR-91). Linkage 1 connects Existing Core A (Prado Basin/Santa Ana River) to the north with Existing Core B (Cleveland National Forest) to the south. This Proposed Constrained Linkage includes potential wildlife

crossings in the form of three existing culverts that carry stormwater under Green River Road. One of these three culverts is located near the SR-91 eastbound on-ramp and is outside of the proposal project limits. Due to the ATSF railroad tracks, Prado Road, SR-91 freeway, and other urban development, these culverts and therefore this Proposed Constrained Linkage is constrained to the north. The linkage is unconstrained in the south. Based on a Wildlife Movement Study (Glenn Lukos Associates, 2007), no small to large mammals were observed using any of the north south culverts that cross Green River Road. This linkage also does not have perennial water or wetland habitat for aquatic species movement, such as coast range newt and western pond turtle. MSHCP Proposed Constrained Linkage 2 crosses Green River Road near Nicholas Place and is centered on the Fresno Canyon drainage. Similar to Proposed Constrained Linkage 1, this linkage connects the Prado Basin and Santa Ana River to the north with the Cleveland National Forest to the south. Proposed Constrained Linkage 2 includes potential wildlife crossings in the form of Fresno Canyon, which is a naturally occurring, modified, earthen bottom drainage that directs flows out of Fresno Canyon and eventually into the Santa Ana River. Based on the Wildlife Movement Study, coyotes and small mammals were observed on the north and south sides the Fresno Canyon crossing. In addition, Linkage 2 is likely to provide for movement of the coast range newt, western pond turtle, and mountain lions from the Santa Ana Mountains to the Chino Hills.

Green River Road at its current width physically limits wildlife movement between habitat north and south of the road. However, given the physical constraints in the immediate area as discussed above, medium to large wildlife movement (e.g., bobcat, coyote, and mountain lion) is more likely to occur further to the west using the existing concrete box culvert located underneath SR-91 northeast of the Coal Canyon Wildlife Corridor.

Volume I: Section 6.6.2 E(2) of the MSHCP indicates that MSHCP permittees proposing infrastructure projects that have the potential to affect connectivity of habitat within the Criteria Area shall consult with the Riverside County Regional Conservation Authority (RCA) at the pre-design stage regarding the size, location, and configuration of wildlife crossings pursuant to the Guidelines for Construction of Wildlife Crossings. Because the proposed project includes modifications to existing wildlife crossings in the form of culverts that cross under Green River Road, Section 6.6.2 of the MSHCP does not apply. A new wildlife crossing is not part of the proposed project. The proposed project involves improvements to an existing roadway and is confined to the existing right-of-way. Furthermore, existing pipe and box culverts will be extended north and south of widened Green River Road to accommodate the new travel lanes. The culvert diameters will remain the same as the existing culverts. There will not be any bends or angles in the new pipe and the inlets and outlets will be left open for wildlife access. Although the proposed project will modify existing culverts, they are not used by small to large mammals. Consequently, these modifications will not affect the movement of animals such as mountain lions, bobcats, and small mammals should they choose to use the culverts to move between the Santa Ana Mountains and Chino Hills.

Because the project is not constructing a new road through a corridor and the existing culverts will not be modified to restrict wildlife movement, a less than significant impact would occur in relation to this issue and no mitigation is required.

e–f) Conflicts with local biological resource policies or ordinances?/Conflicts with any habitat conservation plan or is located within a MSHCP criteria cell?

No Impact. The proposed project is the widening of an existing section of Green River Road in the City of Corona. The roadway is being widened in accordance with the City of Corona General Plan, which was adopted in 2004. The proposed project is within MSHCP Criteria Area Cells 1702, 1704, 1706, and 1616 and crosses Proposed MSHCP Constrained Linkages 1 and 2 of the Temescal Canyon Area Plan (Subunits 1 and 2). Therefore, the proposed project must be consistent with conservation objectives for MSHCP Reserve areas.

Conservation goals for Criteria Cell 1702 focus on assembly of acreage in relation to proposed Linkage 1 and maintaining 20 to 30 percent conservation of lands within the east portion of the cell. The proposed project will result in removal of habitat that exists on the edge of the roadway and within northern portion of Cell 1702. The proposed project will not negatively affect proposed Linkage 1 [see response to Checklist item 7d)] and the

quantity of habitat removed due to the widening is minimal and will not negatively affect the conservation goals established by the MSHCP for this cell.

Conservation goals for Criteria Cell 1704 also focus on assembly of acreage in relation to proposed Linkage 1, while maintaining 5 percent conservation of lands within the southwest portion of the cell. The proposed project will result in removal of habitat that exists on the edge of the roadway and within northern portion of Cell 1704. The proposed project will not negatively affect proposed Linkage 1 (see response to Checklist item 7d) and the quantity of habitat removed due to the widening is minimal and will not negatively affect the conservation goals established by the MSHCP for this cell.

Conservation goals for Criteria Cell 1706 focus on assembly of acreage in relation to proposed Linkage 2, while maintaining 15 to 25 percent conservation of lands within the west portion of the cell. The proposed project will result in removal of habitat that exists on the edge of the roadway and within northern portion of Cell 1706. The proposed project will not negatively affect proposed Linkage 2 (see response to Checklist item 7d) and the quantity of habitat removed due to the widening is minimal and will not negatively affect the conservation goals established by the MSHCP for this cell.

Conservation goals for Criteria Cell 1616 focus on assembly of acreage in relation to existing Core A (Prado Basin/Santa Ana River to the north), while maintaining 25 to 35 percent conservation of lands within the central and west portions of the cell. The proposed project will result in removal of habitat that exists on the edge of the roadway and within southeast portion of Cell 1616. The proposed project will not negatively affect existing Core A (see response to Checklist item 7d) and the quantity of habitat removed due to the widening is minimal and will not negatively affect the conservation goals established by the MSHCP for this cell.

Proposed Linkages 1 and 2 are intended to maintain connectivity between MSHCP Reserve areas to the north and south of the project site, particularly for the movement of small to large mammals such as bobcats and mountain lions. Proposed Constrained Linkage 2 is also intended to provide movement for the coast range newt and the western pond turtle through the Fresno Canyon drainage. However, the project area does not include core habitat for coast range newt or western pond turtle. Although there is a small amount of riparian habitat within the impact area, that habitat is also disturbed and unlikely to provide substantial habitat for any of the Planning Species identified in the two Subunits. Some Planning Species may occasionally move through the area or forage on site; however, such species are unlikely to nest within the project impact area. Therefore, the project would not substantially affect habitat of any Planning Species. In addition, the project area consists of disturbed and developed areas. Although there is a small amount of riparian habitat within the project area, it is also disturbed and unlikely to provide substantial habitat for MSHCP Planning Species.

In addition to being consistent with conservation objectives for MSHCP Reserve areas, the proposed project must also be consistent with MSHCP survey requirements. Table I provides a summary of the project's consistency with MSHCP survey requirements.

Table I: MSHCP Applicable Survey Requirements

MSHCP Survey Requirements	Project Consistency
Requires focused surveys for sensitive riparian bird species when suitable riparian habitat is present.	Riparian habitat is present within the project study. Focused survey for sensitive riparian bird species (southwestern willow flycatcher and least Bell's vireo) has been conducted for the proposed project. A single male least Bell's vireo was identified off site in the higher quality riparian habitat in Wardlow Wash and Santa Ana River but not in the project study area.
Requires surveys for fairy shrimp species when vernal pools or other suitable habitat is present.	There are no vernal pools or similar habitat present on the project site; therefore, no surveys for fairy shrimp would be required.
Requires narrow endemic and criteria area plant species (NEPSSA) surveys if within MSHCP survey area for NEPSSA.	Project is within MSHCP survey for three NEPSSA species: the San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Satureja chandleri*). Suitable habitat does not exist for the San Diego ambrosia or San Miguel savory within the project study area. A survey was conducted for Brand's phacelia within the project study area and concluded Brand's phacelia to be absent.

Table I: MSHCP Applicable Survey Requirements

MSHCP Survey Requirements	Project Consistency
Requires burrowing owl survey if within the MSHCP burrowing owl survey area.	Project is within MSHCP survey area for the burrowing owl. A burrowing owl survey was conducted and the species was determined to be absent from the site based on the absence of suitable burrows at the time of the survey. Although no burrowing owls were found, a pre-construction survey is required 30 days prior to the beginning of the site grading to ensure that no burrowing owls have moved onto the site since the conclusion of the burrowing owl survey.

Source: *General Biological Resources Report for the Green River Road Widening Project,* LSA Associates, Inc., April 2008

As identified in Table I, the proposed project is consistent with MSHCP survey requirements. The project site is not within a designated MSHCP survey area for any other species. Therefore, no surveys for other species are necessary for MSHCP consistency.[35] It should be noted that the City will submit an MSHCP Consistency Analysis to the Western Riverside County Regional Conservation Authority (RCA) as part of the Joint Project Review (JPR) process. As the proposed roadway improvements would not conflict with the provisions of the adopted MSHCP Temescal Canyon Area Plan or MSHCP survey requirements, no impacts would occur with implementation of the proposed roadway improvements and no mitigation would be required.

8. MINERAL RESOURCES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Loss of mineral resource or recovery site	☐	☐	☐	☒

Discussion:

a) Loss of mineral resource or recovery site?

No Impact. There are no identified Mineral Resource Zones (MRZ) located within vicinity of the proposed project, which would be situated in the City's Western Sphere of influence.[36] The project area does not have a history of containing valuable mineral resources. Implementation of the proposed project would not result in the loss of availability of a known mineral resource. No impact related to this issue would occur and no mitigation is required.

9. HAZARDS AND HAZARDOUS MATERIALS:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Transport, use or disposal of hazardous materials	☐	☐	☒	☐
b. Risk of accidental release of hazardous materials	☐	☐	☒	☐
c. Hazardous materials/emissions within ¼ mile of existing or proposed school	☐	☐	☐	☒
d. Located on hazardous materials site	☐	☒	☐	☐
e. Conflict with Airport land use plan	☐	☐	☐	☒
f. Impair emergency response plans	☐	☒	☐	☐
g. Increase risk of wildland fires	☐	☐	☐	☒

[35] *General Biological Resources Report for the Green River Widening Project, City of Corona, Riverside County, California (LSA Project No. ABE0701)*, LSA Associates, Inc. April 8, 2008.

[36] *Figure 4.5-7 City of Corona Sphere of Influence West Sphere Geology/Mineral Mineral Resources*, General Plan Technical Background Report, March 2005, pg. 4-91.

Discussion:

a) **Transport, use or disposal of hazardous materials?**

Less than Significant Impact. The proposed project would result in the widening of an existing roadway. Potentially hazardous materials such as fuels, lubricants, and solvents would be used during project construction. The transport, use, and storage of hazardous materials during the construction of the project would be conducted in accordance with all applicable State and Federal laws. Because the proposed project is a transportation improvement project, the range of activities that would occur during the post-construction or operational phase would not allow for the use, storage, or disposal of large volumes of toxic, flammable, explosive, or otherwise hazardous materials that could cause serious environmental damage in the event of an accident. The existing Green River Road currently has vehicles that could transport hazardous materials while traveling along the roadway. However, it is anticipated that the transport of such hazardous materials consist of relatively small quantities of consumer household cleaning supplies and materials. Therefore, small volumes of hazardous materials currently are transported along Green River Road. In addition, large volumes of hazardous materials are unlikely to be transported along the existing Green River Road as Green River Road is not identified as a truck route by the City.[37] The widening of Green River Road is not anticipated to change the frequency or quantity of hazardous materials being transported. Compliance with all applicable laws and regulations would reduce the potential impact associated with the routine transport, use, storage, or disposal of hazardous materials to a less than significant level. No mitigation is required.

b) ***Risk of accidental release of hazardous materials?***

Less than Significant Impact. As previously indicated, hazardous substances may be used during project construction. However, compliance with Federal, State, and local regulations concerning the storage and handling of hazardous materials or volatile fuels will reduce the potential for significant impacts related to the accidental release of hazardous materials to a less than significant level. No mitigation is required.

c) ***Hazardous materials/emissions within ¼ mile of existing or proposed school?***

No Impact. The nearest existing school to the proposed project is Prado View Elementary School located at 2800 Ridgeline Drive. The school is approximately 1.2 miles to the southeast. There are no proposed schools in the general area. As the proposed project is beyond ¼ mile from any existing or proposed school, there would be no impact related to hazardous materials/emissions. No mitigation is required.

d) ***Located on hazardous materials site?***

Potentially Significant Unless Mitigation Incorporated. Based on the Department of Toxic Substance Control's (DTSC) Hazardous Waste and Substance Site (Cortese) List, the project vicinity does not contain any underground storage tanks, hazardous waste generators, landfills, or other potentially hazardous materials sources.[38] Because of the project's condition and location, surface or subsurface hazardous materials are not known to exist. In the unlikely event potentially hazardous materials are encountered during project grading/construction, implementation of **Mitigation Measure HAZ-01** would reduce the potential exposure of people to health hazards to a less than significant level as any cleanup conducted would achieve recognized safety and/or action levels for the relevant contaminants.

HAZ-01 The City shall be immediately notified in the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during project grading/construction. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the City). The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and

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[37] *City of Corona Truck Routes 2004, City of Corona,* http://www.ci.corona.ca.us/documents/345.pdf, website accessed April 6, 2009.

[38] Department of Toxic Substance Control, *Hazardous Waste and Substance Site (Cortese) List*, http://www.envirostor.dtsc.ca.gov/public/, site accessed July 9, 2008.

Federal standards and shall be conducted by the Riverside County Department of Environmental Services, DTSC, or other appropriate governmental agency.

e) Conflict with Airport Land Use Plan?

No Impact. The proposed project is located approximately 2.5 miles southwest of Corona Municipal Airport. A review of the *Riverside County Airport Land Use Compatibility Plan* indicates that the proposed project is not within the Airport Influence Area Boundary for the Corona Municipal Airport.[39] As the project does not fall within the land use plan for the Corona Municipal Airport, the project is not subject to regulations within the various safety/compatibility zones surrounding the airport. Therefore, no impact would occur and no mitigation is required.

f) Impair emergency response plans?

Potentially Significant Unless Mitigation Incorporated. The proposed project includes design and construction features in accordance with applicable standards to accommodate vehicular access, resulting in the provision of adequate emergency access and evacuation. Construction activities that would temporarily restrict vehicular traffic would be required to implement adequate and appropriate measures to facilitate the passage of persons and vehicles through/around any required road closures through implementation of **Mitigation Measure TRAF-01**. Implementation of **Mitigation Measure TRAF-01** would reduce potential impacts related to this issue to a less than significant level.

g) Increase risk of wildland fires?

No Impact. Based on the California Department of Forestry and Fire Protection's (CDF) *Very High Fire Severity Zones* maps, the proposed project is not within an area identified as a Moderate, High, or Very High Fire Severity Zone.[40] The project is not located in an area susceptible to wildland fires and does not include any uses or activities that would yield a fire hazard. Implementation of the proposed project would not increase fire hazard in areas with flammable brush, grass, or trees; therefore, no impact related to fire hazard would occur and no mitigation is required.

10. NOISE:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Exceed noise level standards	☐	☐	☒	☐
b. Exposure to excessive noise levels/vibrations	☐	☐	☒	☐
c. Permanent increase in ambient noise levels	☐	☐	☒	☐
d. Temporary increase in ambient noise levels	☐	☐	☒	☐
e. Conflict with Airport Land Use Plan noise contours	☐	☐	☐	☒

Discussion:

a) Exceed noise level standards?

Less than Significant Impact. Noise increases from the proposed project would be generated on a short-term and long-term basis. Short-term noise levels are associated with project construction. Short-term noise levels would be higher than existing ambient noise levels in the project area, but would cease upon project completion. For a detailed analysis of short-term noise levels, please refer to Checklist Response 10d.

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39 *Map CO-1 Compatibility Map, Corona Municipal Airport Land Use Compatibility Plan,* Riverside County Airport Land Use Commission, June 28, 2005.

40 *Very High Fire Severity Zones,* California Department of Forestry and Fire Protection, http://frap.cdf.ca.gov/webdata/maps/riverside_west/fhsz_map.60.pdf, site accessed July 9, 2008.

Long-term noise levels would be associated with vehicles traveling on Green River Road. Based on a worst-case noise scenario (which is considered to be build out of the General Plan), the Green River Road segment between SR-91 and Palisades Drive would have a noise level ranging from 70 dBA CNEL at the median divider to 65 dBA CNEL outside the roadway right-of-way.[41] The City of Corona requires noise mitigation for sensitive uses where the exterior noise at a sensitive receptor exceed 65 dBA CNEL and where the interior noise in any habitable rooms is greater than 45 dBA CNEL.[42] Implementation of the proposed project would occur within an area that is primarily developed with light industrial, open space, general commercial, and mixed-used industrial commercial. In addition, the proposed project would not generate additional traffic as the main purpose of the proposed project is to accommodate existing traffic levels. Therefore, implementation of the proposed project would not result in the exposure of people to noise levels in excess of standards established by the City. Impacts associated with this issue would be less than significant and no mitigation would be required.

b) Exposure to excessive noise level/vibrations?

Less than Significant Impact. Vibration refers to groundborne noise and perceptible motion. Typical sources of groundborne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernable but without the accompanying effects (e.g., shaking of a building). Groundborne vibration is measured in terms of the velocity of the vibration oscillations. Groundborne vibration that exceeds 0.1 inch per second (in/sec), is generally perceived as annoying to building occupants. The degree of annoyance is dependent upon type of land use, individual sensitivity to vibration, and the frequency of the vibration events. Typically, vibration levels must exceed 0.2 in/sec before building damage occurs. Based on similar projects, groundborne vibration from construction equipment at 10 feet does not create vibration amplitudes that would cause structural damage to nearby structures. The widening of Green River Road to six lanes would not generate groundborne vibration that would affect the nearest existing structures (existing commercial uses approximately 30 feet south of Green River Road) as these buildings are more than 10 feet away from the outer boundary of the Green River Road right-of-way and would not create vibration amplitudes that would cause structural damage or substantial annoyance to existing development. Additionally, the proposed project would not utilize blasting or pile driving. Therefore, impacts from construction-related groundborne vibration would be less than significant and no mitigation would be required.

c) Permanent increase in ambient noise levels?

Less than Significant Impact. Noise impacts can be described in three categories: (1) audible impacts refer to a change in noise level of 3.0 dB or greater, since this level has been found to be barely perceptible in exterior environments; (2) potentially audible refers to a change in the noise level between 1.0 and 3.0 dB, a range of noise levels found to be noticeable only in laboratory environments; and (3) changes in noise level of less than 1.0 dB are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant. Therefore, a significant noise impact occurs when a project results in a 3 dBA CNEL increase over the existing noise levels. In order to result in a 3 dBA increase in traffic noise, a project must result in a doubling of the traffic volumes on a road. The proposed project would widen Green River Road from an existing four-lane arterial to a six-lane arterial; concurrently improving approximately 5,625 feet from approximately SR-91 to Palisades Drive. The proposed project would increase capacity, improve level of service, and alleviate traffic congestion. Although the proposed project would increase the capacity of Green River Road, the widening would correct existing deficiencies and accommodate existing traffic volumes. Although capacity is increased, it is not anticipated that traffic volumes would double as a result of project implementation. Therefore, impacts associated with this issue would be less than significant and no mitigation measure is required.

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41 *Figure 4.12.-1 (1) General Plan Buildout Noise Levels,* Corona General Plan Final Environmental Impact Report, March 2004.

42 The decrease from an exterior noise level of 65 dBA CNEL to an interior noise level of 45 dBA CNEL can be attributable to typical southern California home construction with achieves up to 12 dBA in exterior to interior noise reduction with windows open and up to 24 dBA when windows are closed.

d) Temporary increase in ambient noise levels?

Less than Significant. Temporary noise levels related to construction of the proposed project would temporarily increase noise levels in the vicinity of the project limits. However, as previously identified, implementation of the proposed project would occur within an area that is primarily developed with light industrial, open space, general commercial, and mixed-used industrial commercial. Therefore, there are no sensitive land uses within or adjacent to the project study area that would be affected by temporary increases in ambient noise levels. According to the City's Municipal Code, general construction noise is prohibited between the hours of 8:00 p.m. to 7:00 a.m., Monday through Saturday and 6:00 p.m. to 10:00 a.m. on Sundays and Federal holidays.[43] Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. Typical construction noise levels vary up to a maximum of 91 dBA at 50 feet from the construction site during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backhoes, bulldozers, draglines, and front loaders and earthmoving and compacting equipment, which includes compactors, scrapers, and graders. However, construction noise associated with the widening of Green River Road is temporary and short in duration. In addition, construction and associated noise generated from construction activities would occur during the City-identified construction hours. It should also be noted that the General Plan noise standards are based on the 24-hour CNEL methodology, which is not comparable to with decibel measurements for limited period noise sources, such as noise generation from construction equipment. Since construction noise is exempt during the construction time frames identified by the City, impacts associated with this issue are less than significant and no mitigation is required.

e) Conflict with Airport Land Use Plan noise contours?

No Impact. The nearest airport to the project site is the Corona Municipal Airport, located approximately 2.5 miles southeast of the proposed project. The proposed project is not identified as being within the noise or safety contours delineated for the Corona Municipal Airport.[44] Since the proposed project would not have the potential to expose people to excessive noise levels from airport operations, no impacts associated with this issue would occur with implementation of the proposed project. No mitigation is required. The nearest private airstrip or heliport to the proposed project site is the Corona Regional Medical Center heliport at the Corona Regional Medical Center, located approximately 4.3 miles east of the project site. Since the project site is not located within the vicinity of a private airstrip, no impact associated with this issue would occur and mitigation is not required.

11. PUBLIC SERVICES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Fire protection	☐	☐	☐	☒
b. Police protection	☐	☐	☐	☒
c. Schools	☐	☐	☐	☒
d. Parks & recreation facilities	☐	☐	☐	☒
e. Other public facilities or services	☐	☐	☐	☒

[43] City of Corona Municipal Code. Chapter 17.84.040 Noise D-2.

[44] *Map CO-3 Noise Compatibility Contours, Corona Municipal Airport Land Use Compatibility Plan,* Riverside County Airport Land Use Commission, June 28, 2005.

Discussion:

a) Fire protection?

No Impact. Other than during construction, the proposed project does not include structures or activities that would generate a response need from fire protection providers. The widening of Green River Road and associated roadway improvements would improve fire/emergency vehicle access and circulation in the project area. During the construction phase of the proposed project, the roadway would remain open and would not change the response time or impede the flow of fire protection emergency vehicles on Green River Road. Because the proposed project would not have an adverse physical impact on fire protection facilities, no impact associated with this issue would occur and no mitigation is required.

b) Police protection?

No Impact. The proposed project does not include structures or activities that would generate a response need from police protection providers. During the construction phase of the proposed project, the roadway would remain open and would not change the response time or impede the flow of police protection emergency vehicles on Green River Road. As discussed above for fire protection, the widening and completion of improvements to Green River Road would improve police vehicle access and circulation in the project area. No impact associated with the need for new or altered police protection facilities would occur and no mitigation is required.

c) Schools?

No Impact. The proposed project includes the widening of an existing roadway to accommodate existing and future traffic. The project does not include construction of new homes. Since the project does not include any residential or job-generating uses, it would not affect schools in the nearby area as there would be no increase in school-aged children associated with the proposed project. Therefore, no impact associated with schools would occur and no mitigation is required.

d) Parks and recreation facilities?

No Impact. The proposed project would result in the widening of Green River Road to six lanes and would not contribute to a direct increase in population which would use park facilities. In addition, the proposed project would not affect any parks or recreational facilities as no existing parkland would be taken as a result on project implementation. As there is no increase in population resulting from the proposed project, no new demand on existing park facilities would occur. Therefore, no impacts associated with this issue would occur and no mitigation is necessary.

e) Other public facilities or services?

No Impact. The proposed project is a roadway widening project, which would not cause an increase in population resulting in a significant impact on other public facilities such as libraries and hospital services. Construction of new facilities that would result in a significant environmental impact would not occur and no mitigation is required.

12. UTILITIES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Exceed wastewater treatment requirements	☐	☐	☐	☒
b. Involve construction/expansion of water or wastewater treatment facilities	☐	☐	☐	☒
c. Involve construction/expansion of storm drains	☐	☐	☒	☐

12. UTILITIES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
d. Sufficient water supplies/compliance with Urban Water Management Plan.	☐	☐	☐	☒
e. Adequate wastewater treatment capacity	☐	☐	☐	☒
f. Adequate landfill capacity	☐	☐	☐	☒
g. Comply with solid waste regulations	☐	☐	☐	☒

Discussion:

a) Exceed wastewater treatment requirements?

No Impact. The proposed roadway improvement project would not generate wastewater. Wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board (RWQCB) would not be exceeded. Therefore, no impact would occur and no mitigation is required.

b) Involve construction/expansion of water or wastewater treatment facilities?

No Impact. Implementation of the proposed project would not require water services as the project is a roadway improvement project that does not require water for roadway operations and would not result in the construction of new regional water treatment or distribution facilities. Therefore, no impacts related to the provision of regional water treatment services would occur and no mitigation is required. Since the proposed project is a roadway improvement, it would not generate any wastewater. The proposed project would not require the construction of new water or wastewater treatment facilities. Therefore, no impacts associated with this issue would occur and no mitigation is required.

c) Involve construction/expansion of storm drains?

Less than Significant Impact. Storm drainage systems currently exist in the project vicinity and are channeled northerly under SR-91 through culverts into the Santa Ana River. The proposed roadway improvements include the addition of lanes to Green River Road, which would result in an increase in impervious surfaces. However, the project would convey on-site runoff during storms and from nuisance flows to the existing drainage systems. Improvements that would occur as part of the proposed project include new drainage inlets and pipes to provide for stormwater runoff. As required by Policy 7.6.1 of the City's General Plan, public storm drain facilities would be maintained and upgraded, and new or expanded storm drain and flood control facilities would be required, if necessary, to protect the community from risks to lives and property associated with flooding and stormwater runoff. The sufficiency of the proposed storm drainage system to handle flows associated with the widening of Green River Road have been previously discussed in Response 4h. As the proposed project includes the construction of new drainage inlets to provide for any increases in storm runoff and because these improvements would occur within the existing right-of-way for Green River Road, impacts associated with the construction/expansion of stormwater drainage are considered less than significant and no mitigation is required.

d) Sufficient water supplies/compliance with Urban Water Management Plan?

No Impact. Because the proposed project would not require water, there is no need for new water sources or water entitlements. Therefore, no impacts associated with sufficient water supply would occur with implementation of the proposed project and no mitigation is required.

e) Adequate wastewater treatment capacity?

No Impact. The proposed project would not require services provided by a wastewater treatment provider. Therefore, no impacts related to this issue would occur and no mitigation is required.

f) Adequate landfill capacity?

No Impact. Solid waste collection is a "demand-responsive" service and current service levels can be expanded and funded through user fees without difficulty. Because the proposed project consists of a roadway widening, the provision of new or increased solid waste disposal facilities or services would not be required. Therefore, no impacts related to issue would occur and no mitigation is required.

g) Comply with solid waste regulations?

No Impact. As noted previously, the proposed project would not result in the construction of any residential, commercial, or industrial structures. Solid waste would not be generated daily as a result of project implementation. Federal and State regulations regarding solid waste would not apply to the proposed project as solid waste will not be generated and transported to the local landfill. Therefore, no impacts associated with solid waste regulations would occur and no mitigation is required.

13. AESTHETICS:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Scenic vista or highway	☐	☐	☒	☐
b. Degrade visual character of site and surroundings	☐	☐	☒	☐
c. Light or glare	☐	☐	☒	☐

Discussion:

a) Scenic vistas or scenic highways?

Less than Significant Impact. The proposed project would not alter scenic vistas within the project vicinity. The City of Corona is situated on a river plain bounded by rolling hills and mountain ranges that create significant vistas in the form of hillsides, valley lands, and floodplains. Scenic vistas identified in the City's General Plan include the Santa Ana Mountains to the south, the San Gabriel and Bernardino Mountains to the north and east, and the Chino Hills to the northwest.[45] Visual characteristics of the project area include views of these mountain ranges and the Prado Flood Control Basin to the north. The proposed project would not introduce structures that would obstruct views. In addition, the proposed roadway improvements would occur at grade and within or adjacent to the existing right-of-way, and would not constitute a change in the overall visual character of the project area. The existing roadway would remain in-situ and would continue as a transportation route. Therefore, a less than significant impact related to this issue would occur and no mitigation would be required.

As identified in the City's General Plan, Green River Road south of the SR-91 interchange is considered a local scenic resource because the road passes through a canyon that provides visual relief to the surrounding urban development.[46] Implementation of the proposed project will result in adding capacity to the roadway and will not alter the adjacent landscape as all widening would occur within the existing right-of-way for Green River Road. Therefore, impacts to a State Scenic Highway or locally designated scenic highways are considered less than significant and no mitigation is required.

b) Degrade the visual character of the site and its surroundings?

Less than Significant Impact. See Response 13a. The visual quality of the project area is characterized by open space, infrastructure, and urban development including freeways, local streets, and commercial and light industrial development. The proposed roadway improvements would not degrade the visual character of the area as the proposed project consists of improvements such as sidewalks and bike lanes that would occur at grade and within or adjacent to the existing right-of-way. In addition, the adjacent open spaces display characteristics of a natural environment with rural elements. Implementation of the proposed project would not

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[45] *City Views, Environmental Resources, City of Corona General Plan,* City of Corona, adopted March 17, 2004.
[46] *Ibid*.

degrade the visual character of the project area. Therefore, a less than significant would occur associated with degradation of the quality and/or character of the project area. No mitigation is required.

c) Result in light and glare impacts?

Less than Significant Impact. Street lighting would be required to comply with applicable standards associated with all existing and proposed public improvements (which include street lights) related to the installation and operation of lighting features. The City of Corona has established standards for the design, placement, and operation of all existing and proposed public improvements such as streetlights in the City's Municipal Code. Compliance with lighting standards contained in the City's Municipal Code would reduce light impacts on adjacent properties to a less than significant level. Because all lighting installed for the proposed project would comply with these standards, impacts associated with light or glare would be less than significant and no mitigation would be required.

14. CULTURAL RESOURCES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Historical resource	☐	☐	☐	☒
b. Archaeological resource	☐	☒	☐	☐
c. Paleontological resource or unique geologic feature	☐	☒	☐	☐
d. Disturb human remains	☐	☐	☒	☐

Discussion:

a) Historical Resources?

No Impact. No structures or historic resources have been identified in the project area. The City's General Plan EIR indicates that no historic resources have been designated as landmarks or points of interest within the project area.[47] Therefore, no impacts to a historical resource would result from project implementation. No mitigation is required.

b) Archaeological resource?

Potentially Significant Unless Mitigation Incorporated. The City of Corona is known to have been home to Native American groups prior to the settlement by Euro-Americans (City of Corona General Plan EIR, Section 4.2). While the project is located in a developed area where significant ground disturbance occurred with construction of infrastructure, roadways, and nearby structures, the potential to uncover an archaeological resource is present. Hence, construction activity, particularly grading and soil excavation and compaction, could adversely affect or eliminate existing and potential archaeological resources. Implementation of **Mitigation Measure CUL-01** would ensure that impacts to archaeological resources from project implementation remain less than significant.

CUL-01 In the event a cultural resource is uncovered during the course of grading or construction of the project, ground-disturbing activities in the vicinity of the find shall be redirected until the nature and extent of the find can be evaluated by a qualified archaeologist that meets Secretary of Interior Standards for archaeologists. Any such resource uncovered during the course of project-related grading or construction shall be recorded and/or removed per applicable City and/or State regulations.

c) Paleontological resource or unique geologic feature?

Potentially Significant Unless Mitigation Incorporated. Riverside County has been inventoried for geologic formations known to potentially contain paleontological resources. The City's General Plan indicates that

[47] *Figure 2.3-3 and Figure 2.3-4 Initial Historic Landmarks and District, Chapter 2.3 Historic and Cultural Resources, City of Corona General Plan Technical Background Report,* City of Corona, March 2004.

prehistoric or paleontological resources, such as fossilized plants and animals, have been discovered in some of the deeper canyons and drainages in the South Corona area.[48] However, very few paleontological sites have been found or recorded in the City of Corona. While there have been few paleontological resources recorded within the City and the project area has previously been disturbed, the potential to uncover a paleontological resource is present. Construction may uncover previously undetected subsurface paleontological resources, resulting in a potentially significant impact. In the event that such a resource is uncovered, implementation of **Mitigation Measures CUL-02** and **CUL-03** would reduce impacts to a less than significant level through the recordation and curation of previously undiscovered paleontological resources.

CUL-02 In the event a paleontological resource is uncovered during the course of project construction, ground-disturbing activities in the vicinity of the find shall be redirected until the nature and extent of the find can be evaluated by a qualified paleontologist as determined by the City and **Mitigation Measure CUL-03** shall apply. If no paleontological resource is uncovered during the course of project construction, **Mitigation Measure CUL-03** will not be required.

CUL-03 If paleontological resources are unearthed or discovered during the course of project construction, the following recovery processes shall apply:

- Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques.
- All fossils collected during the project shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to a City identified museum repository along with the specimens.
- A report documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared and submitted to the City.
- All fossils collected during this work, along with the itemized inventory of these specimens, shall be deposited in a City identified museum repository for permanent curation and storage.

d) Disturb human remains?

Less than Significant Impact. No evidence is in place to suggest the project site has been used for human burials. The California Health and Safety Code states that if human remains are discovered on site, no further disturbance shall occur until the County Coroner has made a determination of origin and disposition.[49] Disposition of the human remains shall occur in the manner provided in § 5097.98 of the Public Resources Code. If the Coroner determines that the remains are not subject to its authority and if the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC). As adherence to State regulations is required for all development, impacts associated with the discovery of human remains would be less than significant with implementation of existing regulations and no mitigation is required.

15. AGRICULTURE RESOURCES:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Williamson Act contract	☐	☐	☐	☒
b. Conversion of farmland to nonagricultural use	☐	☐	☐	☒

[48] *Chapter 2.3 Historic and Cultural Resources, City of Corona General Plan Technical Background Report,* City of Corona, March 2004.

[49] Division 7, *Dead Bodies;* Chapter 2, *General Provisions*, § 7050.5, California Health and Safety Code.

Discussion:

a) Williamson Act contract?

No Impact. The project is not located within a Williamson Act contract area.[50] Therefore, no impacts to Williamson Act lands would occur with implementation of the proposed project. No Mitigation is required.

b. Conversion of farmland to nonagricultural use?

No Impact. The project area is identified as "Urban & Built-Up" and "Other Land" by the California Department of Conservation, Farmland Mapping and Monitoring Program.[51] Highways, railroads, and other transportation facilities are mapped as a part of Urban and Built-up Land if they are a part of the surrounding urban areas. Since the proposed project is identified as "Urban & Built-Up," no Prime Farmland or Farmland of Statewide Importance would be converted with implementation of the proposed project. Because the proposed project would consist of improvements along an existing arterial, no impacts associated with the conversion of farmland to urban uses would occur with project implementation. No mitigation is required.

16. MANDATORY FINDING OF SIGNIFICANCE:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a. Fish/ wildlife population or habitat or important historical sites	☐	☒	☐	☐
b. Cumulatively considerable impacts	☐	☒	☐	☐
c. Substantial adverse effects on humans	☐	☐	☒	☐
d. Short-term vs. long-term goals	☐	☒	☐	☐

Discussion:

a) Fish/ wildlife population or habitat or important historical sites?

Potentially Significant Impact Unless Mitigation Incorporated. Development of the proposed project would not cause a fish or wildlife population to drop below self-sustaining levels or restrict the movement/distribution of a rare or endangered species. The proposed project would not affect any threatened or endangered species or habitat as the project site and surrounding area are urbanized. Impacts to on-site biological resources are reduced to a less than significant level with implementation of the identified **Mitigation Measures BIO-01** through **BIO-06**.

In addition, the project area is also not identified as a sensitive archaeological or paleontological area. There are no known unique ethnic or cultural values associated with the site, nor are there any religious or sacred uses associated with the project site. However, the project has the potential to contain buried archaeological or paleontological resources. **Mitigation Measures CUL-01** through **CUL-03** have been identified to mitigate potential impacts associated with the discovery of undetected subsurface cultural and/or paleontological resources during excavation operations. Adherence to the measures identified would reduce impacts associated with cultural, historic, or paleontological resources to a less than significant level.

b) Cumulatively considerable impacts?

Potentially Significant Unless Mitigation Incorporated. The proposed project has been designated by the City for roadway uses. It is anticipated that no significant short-term construction-related air quality and noise impacts would result from construction of the proposed uses. Other impacts related to biological resources, geologic and soil conditions, hydrology and water quality, hazards and hazardous materials, and archaeological/paleontological resources are similarly reduced to a less than significant level through the

[50] Williamson Act GIS Coverage, Riverside County, 2006.
[51] Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program Metadata, 2004.

implementation of mitigation measures and the adherence to established City-mandated design and construction standards. The cumulative effects resulting from build out of the City's General Plan were previously identified in the General Plan EIR. The type, scale, and location of the proposed project is consistent with what is identified in the City's General Plan and is compatible with the pattern of development that has been approved for adjacent roadways. Because of this consistency, the potential cumulative environmental effects of the proposed project would fall within the impacts identified in the City's General Plan EIR. As no cumulative impact greater than that identified in the General Plan EIR would result from the proposed project, a less than significant impact would occur.

c) Substantial adverse effects on humans?

Less than Significant Impact. Development of the site under the proposed land use change would not cause substantial adverse effects on human beings, either directly or indirectly. No significant impacts are anticipated to occur with the implementation of the proposed project. The Initial Study does not identify any significant impact related to air quality.

d) Short-term vs. long-term goals?

Potentially Significant Unless Mitigation Incorporated. No short-term noise impacts would result from construction of the proposed project. Adherence to the standard City regulations and mitigation identified in this Initial Study would reduce these impacts to a less than significant level.

17. PREVIOUS ENVIRONMENTAL ANALYSIS:

Earlier analysis may be used when one or more of the environmental effects have been adequately analyzed in an earlier EIR or Negative Declaration (Section 15063).

DOCUMENTS INCORPORATED BY REFERENCE:

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APPENDIX A:

AIR QUALITY ANALYSIS

AIR QUALITY ANALYSIS

GREEN RIVER ROAD WIDENING

CITY OF CORONA, CALIFORNIA

May 2009

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A: SUPPORT DATA FOR CO HOT-SPOT ANALYSIS

1.0 EXECUTIVE SUMMARY

The City of Corona propose to widen Green River Road from an existing 4 lane arterial to a 6 lanes for approximately three miles between State Route 91 (SR-91) and Palisades Drive. This air quality analysis provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The analysis provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures.

The project will be funded with local funds only. No Federal funds will be used, and the project improvements will not modify the SR-91 mainline. Therefore, the project will be environmentally cleared under the California Environmental Quality Act (CEQA) only, and compliance with the National Environmental Policy Act (NEPA) is not required.

Historical air quality data show that existing carbon monoxide (CO) levels for the project area and the general vicinity do not exceed either the State or Federal ambient air quality standards. The proposed project will help to improve traffic flow and reduce congestion on roadway links in the project vicinity. Using the Department's Transportation Project-Level Carbon Monoxide Protocol, a CO hot-spot analysis was conducted to determine whether the proposed project would result in any CO hot spots. It was determined that the proposed project will not result in any exceedances of the one-hour or eight-hour CO standards.

Compliance with South Coast Air Quality Management District (SCAQMD) Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. Because the proposed roadway improvement project does not generate new regional vehicular trips, no new regional vehicular emissions would occur. The proposed project may have a beneficial effect in helping to reduce congestion on roadway links in the project vicinity.

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact from naturally occurring asbestos (NOA) during project construction would be minimal to none.

2.0 PROJECT DESCRIPTION

As identified in Figures 1 and 2, the proposed project is located in the City of Corona, California and would include the widening of Green River Road from an existing 4 lane arterial to a 6 lane arterial between State Route 91 (SR-91) and Palisades Drive. A total of 4,400 feet along Green River Road between SR-91 to Palisades Drive will undergo improvements. The project site is a portion of projected Sections 29 and 30, Township 3 South, Range 7 West, as shown on the U.S. Geological Survey (USGS) Prado Dam, California 7.5-minute quadrangle.

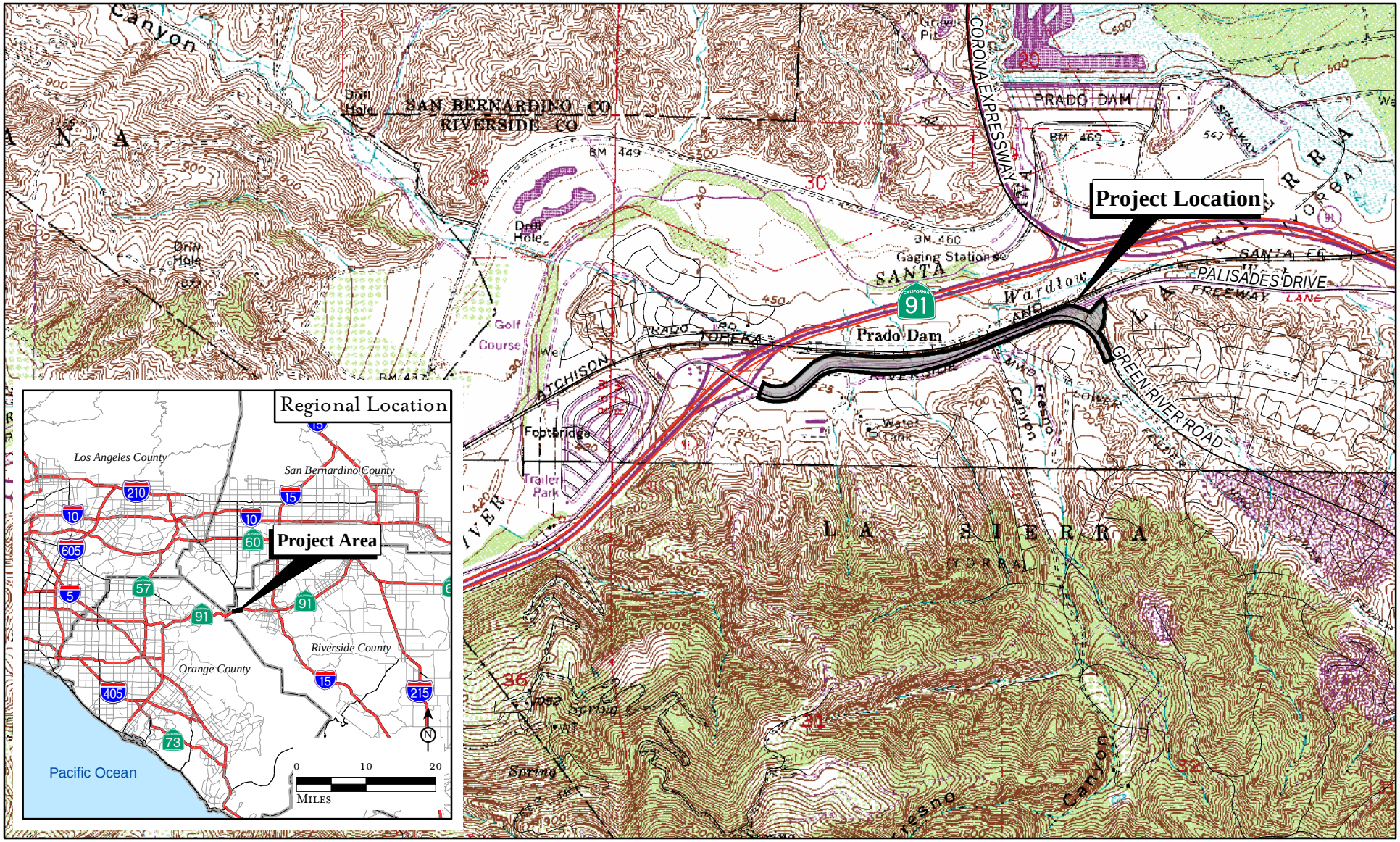
Within the project limits, existing Green River Road is approximately 79 feet across curb-to-curb and includes four lanes. The existing Green River Road has two eastbound and two westbound travel lanes. The two eastbound travel lanes start from the Green River Road/SR-91 Interchange eastbound off-ramp and continue to Palisades Drive. The two westbound lanes start from Palisades Drive and continue to Dominguez Ranch Road. After Dominguez Ranch Road, the inside westbound lane becomes a “freeway only” lane which merges onto the westbound SR-91 on-ramp. The outside westbound lane remains a through lane across the existing bridge.

The typical cross-section proposed for widening Green River Road between the SR-91 and Dominguez Ranch Road (approximately 1,600 feet) includes a curb-to-curb distance of 100 feet and a right-of-way of 130 feet. The proposed cross-section between Dominguez Ranch Road and Palisades Drive (2,800 feet) will be widened 7 feet to the south side of Green River Road and will allow for two additional 11-foot travel lanes for a total of 86 feet curb-to-curb and a right-of-way of 108 feet.

Implementation of the proposed project would result in Green River Road having two lanes in the eastbound direction from the Green River Road/SR-91 Interchange eastbound off-ramp to Fresno Canyon Road. After Fresno Canyon Road, a third travel lane will be added to Green River Road and will continue to Palisades Drive. Implementation of the proposed project would also result in Green River Road having three lanes in the westbound direction from Palisades Drive to Dominguez Ranch Road. After Dominguez Ranch Road, the inside lane would be a “freeway only” lane that will merge onto the westbound SR-91 on-ramp. The two outside lanes will remain through lanes across the existing bridge.

Implementation of the proposed project would include the following:

- Widening of Green River Road from varying roadway widths to an arterial street with a cross-section of six lanes;
- Curb and gutter;
- Sidewalks;
- Utility relocation;
- Storm drain laterals;
- Culverts;



LSA

FIGURE 1

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

Green River Road Widening
Air Quality Analysis

Regional and Project Location

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FIGURE 2
Sheet 1 of 2

STUDY AREA

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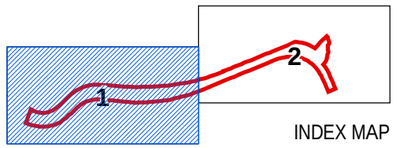

INDEX MAP

Green River Road Widening
Air Quality Analysis

SOURCE: Air Photo USA (2007)

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FIGURE 2
Sheet 2 of 2

STUDY AREA

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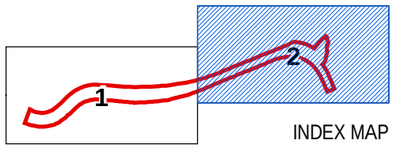

Green River Road Widening
Air Quality Analysis

SOURCE: Air Photo USA (2007)
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- Installation of a wildlife crossing feature;
- Installation of new traffic signal system at the intersection of Green River Road and Palisades Drive; and
- Traffic signal modification at the intersection of Green River Road and Dominquez Ranch Road.

Green River Road is generally an east-west, four-lane, divided roadway west of Palisades Drive with a two way left turn lane and is a southeast-northwest, four-lane, divided roadway east of Palisades Drive in the City of Corona. The speed limit on Green River Road is 45 mph and parking is not permitted on either side of the roadway. Green River Road is designated as a Major Arterial (6-lane) west of Palisades Drive and a Major Arterial (4-lane) east of Palisades Drive in the City's Circulation Element. The ramp intersections at Green River Road and SR-91 are all-way stop controlled intersections. The recently completed Green River Road/SR-91 Interchange project (Caltrans Project) has replaced and reconstructed the interchange bridge, which included the widening of the bridge from three to six lanes. The Caltrans project also made modifications to the Green River Road/SR-91 Interchange westbound ramps and was completed in December 2008.

For purposes of analysis, the project study area is the broader area of the project's indirect impacts while the project footprint is the area defined by the direct impacts of the project. For this document, the project footprint is considered to be the area needed to widen Green River Road. This area includes the land associated with the construction/required to widen Green River to its ultimate build out width as well as other roadway facilities (e.g., curb and gutter) associated with the widening of Green River Road.

The proposed project is a roadway improvement project. The City identifies Green River Road as a major arterial roadway with an ultimate right-of-way width of 130 feet. Land surrounding the existing Green River Road as identified in the City's Land Use Map consists of commercial, light industrial, and open space uses.

3.0 SETTING

3.1 REGIONAL CLIMATE AND AIR QUALITY

A region's topographic features have a direct correlation with air pollution flow; therefore, they are used by the California Air Resources Board (ARB) to determine the boundary of air basins. A local air district is then formed for each air basin; the district is responsible for providing air quality strategies to bring the air basin into compliance with the National Ambient Air Quality Standards (NAAQS).

The project site is located in the City of Corona within Riverside County, an area within the South Coast Air Basin (Basin) that includes Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties. Air quality regulation in the Basin is administered by SCAQMD, a regional agency created for the Basin.

The Basin climate is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the Basin. The region lies in the semipermanent high-pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site monitoring temperature is the Corona Station.[1] The annual average maximum temperature recorded at this station is 78.24°F, and the annual average minimum is 48.3°F. January is typically the coldest month in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin along the coastal side of the mountains. The climatological station closest to the site that monitors precipitation is the Corona Station. Average rainfall measured at this station varied from 2.62 inches (in) in February 0.55 in or less between May and October, with an average annual total of 12.71 in. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer.

[1] Western Regional Climatic Center. 2008. http://www. wrcc.dri.edu (accessed September 4, 2008).

This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Winds in the vicinity of the project area blow predominantly from the east southeast with relatively low velocities. Wind speeds in the project area average about 6.4 kilometers per hour (kph) (4 miles per hour [mph]). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds together with a persistent temperature inversion limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, northerly or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

Inversion layers are significant in determining smog or ozone (O_3) formation. O_3 and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as carbon monoxide. PM_{10} is both directly emitted and created indirectly in the atmosphere as a result of chemical reactions. Concentration levels are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The Earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the Earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide and oxides of nitrogen because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

Air Pollution Constituents

Pursuant to the Federal Clean Air Act (CAA) of 1970, the EPA established NAAQS. The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health. The NAAQS are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The six criteria pollutants are O_3, CO, particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). PM includes particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) and particulate matter smaller than 10 microns in diameter (PM_{10}).

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. ARB provided the EPA with California's recommendations for 8-hour O_3 area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. ARB responded to the EPA's proposal on February 4, 2004. On April 15, 2004, EPA announced the new nonattainment areas for the 8-hour O_3 standard. The designation and classification became effective on June 15, 2004. The Transportation Conformity requirement became effective on June 15, 2005.

The EPA proposed a $PM_{2.5}$ implementation rule in September 2003 and made final designations in December 2004. The $PM_{2.5}$ standard complements existing national and State ambient air quality standards that target the full range of inhalable PM_{10}.

These standards were addressed in the 2001 SIP. The primary standards for these pollutants are shown in Table A, and the health effects from exposure to the criteria pollutants are described later in this section.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the state on a pollutant by pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. The Basin's attainment status for each of the criteria pollutants is listed in Table B.

Ozone. O_3 (smog) is formed by photochemical reactions between nitrogen oxides (NO_X) and reactive organic gases (ROG) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. Effective June 15, 2005, the EPA revoked in full the Federal 1-hour O_3 ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compacts all outside California. The entire Basin is designated as a nonattainment area for the State 1-hour O_3 standard. The EPA has designated the status in the Basin for the 8-hour O_3 standard as "Severe 17," which means the Basin has until 2021 to attain the Federal 8-hour O_3 standard. The SCAQMD has requested that the Basin's Federal designation be changed from severe to extreme nonattainment. This change would extend the attainment deadline to 2023.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 μg/m^3)		0.075 ppm (147 μg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	15 μg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (56 μg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (338 μg/m^3)		—		
Lead	30-day average	1.5 μg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 μg/m^3	Same as Primary Standard	
	Rolling 3-month Average[9]	—		0.15 μg/m^3		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 μg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 μg/m^3)		0.14 ppm (365 μg/m^3)	—	
	3-Hour	—		—	0.5 ppm (1300 μg/m^3)	
	1-Hour	0.25 ppm (655 μg/m^3)		—	—	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 μg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24-Hour	0.01 ppm (26 μg/m^3)	Gas Chromatography			

Source: ARB, November 17, 2008.

See footnotes on next page.

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1- and 24-hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility-reducing particles are values not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 mg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current Federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

[8] The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[9] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Table B: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	Not Applicable
O_3 8-hour	Nonattainment	Severe 17 Nonattainment[1]
PM_{10}	Nonattainment	Serious Nonattainment[2]
$PM_{2.5}$	Nonattainment	Nonattainment[3]
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB 2008 (http://www.arb.ca.gov/desig/desig.htm).

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment/maintenance for the Federal standard and attainment for the State CO attainment standard.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin has not exceeded either Federal or State standards for NO_2 in the past 5 years with published monitoring data. It is designated as a maintenance area under the Federal standards and an attainment area under the State standards.

Sulfur Dioxide. SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment with both Federal and State SO_2 standards.

Reactive Organic Compounds. Reactive organic compounds (ROC) are formed from combustion of fuels and evaporation of organic solvents. ROC is a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere much quicker during the winter, when sunlight is limited and photochemical reactions are slower.

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1 The SCAQMD has requested that the Federal 8-hour O_3 attainment status be changed to extreme with an attainment date of 2023.

2 In October 2006, the EPA, in its final rule revision, eliminated the annual PM_{10} standard.

3 The $PM_{2.5}$ nonattainment designation is based on the 1997 standard. In 2006, the EPA revised the 24-hour standard. The 2006 $PM_{2.5}$ new standard of 35 micrograms per cubic meter ($\mu g/m^3$) applies 1 year after the effective date of the new designation (April 2010).

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 microns in diameter, or PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle (less than 2.5 microns in diameter, or $PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. Coarse particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that fine particles ($PM_{2.5}$), which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire Basin is a nonattainment area for the Federal and State PM_{10} standards. The attainment status of $PM_{2.5}$ in the Basin was officially established by the EPA and ARB as nonattainment in December 2004 and July 2005, respectively. The $PM_{2.5}$ nonattainment designation is effective from April 5, 2005, and the conformity determination requirements effective from April 5, 2006. In the 2007 Air Quality Management Plan (AQMP), the SCAQMD anticipated that the Basin will be in attainment for the $PM_{2.5}$ annual average Federal air quality standard by the April 5, 2015, deadline.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire Basin is in attainment for Federal and State lead standards.

Climate Change

There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of greenhouse gases (GHGs)[1] that keep the Earth's surface warm by trapping heat in the Earth's atmosphere. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. While many studies show evidence of warming over the last century and predict future global warming, the causes of such warming and its potential effects are far less certain. In its "natural" condition, the greenhouse effect[2] is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of greenhouse gases in the atmosphere, thereby contributing to an increase in global temperatures.

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1 Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

2 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduce the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California's major initiatives for reducing GHG emissions are outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006, Executive Order S-3-05, and AB 1493, which requires the ARB to set GHG emission standards for passenger vehicles and light duty trucks. These efforts aim at reducing GHG emissions to 1990 levels by 2020, a reduction of approximately 25 percent, and then an 80 percent reduction below 1990 levels by 2050.

Some of the potential resulting effects in California of global climate change may include reduction of the Sierra snow pack, threats to water supplies, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. In addition to these effects, there are many secondary effects that are projected to result from global warming, including impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

Given the broad scope of global climate change, the challenge under CEQA is for a Lead Agency to scale the issue down to the level of a CEQA document for a specific project in a way that is meaningful to the decision-making process. Climate change is a global environmental problem in which:

(a) Any given development project contributes only a small portion of any net increase in GHGs; and

(b) Global growth is continuing to contribute large amounts of GHGs across the world.

No individual project would result in a measurable impact on global climate change, or an environmental impact resulting from global climate change. Although regulatory agencies at the state and regional levels are in the process of developing thresholds and methodologies to assess global climate change and greenhouse gas emissions, neither CEQA nor the *CEQA Guidelines* currently mentions or provides any methodology for analysis of greenhouse gases, nor do they provide any significance thresholds. In April 2009, proposed CEQA Guideline amendments released by OPR included the following direction regarding determination of significant impacts from GHG emissions (Section 15064.4):

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

    (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or

    (2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

To date, no quantitative GHG emission thresholds or similar criteria have been established to evaluate the cumulative impact of a single project on global climate change. In the absence of quantitative greenhouse gas emissions thresholds, consistency with adopted programs and policies is used by many jurisdictions to evaluate the significance of cumulative impacts. The California Air Pollution Control Officers Association (CAPCOA) published a White Paper in January 2008 that explored several options for setting numeric, non-zero thresholds. The White Paper acknowledges medium to high uncertainty as to each potential numeric threshold. Based on the above, none of the potential numeric thresholds would be appropriate for application to this project. Thus, for the purposes of analyzing this project, and consistent with OPR's recent CEQA guideline amendments, the potential climate change impacts will be analyzed qualitatively without setting a specific quantitative threshold.

3.2 LOCAL AIR QUALITY

The site is located within SCAQMD jurisdiction. The SCAQMD maintains ambient air quality monitoring stations throughout the Basin. The Riverside – Rubidoux Air Quality Monitoring Station, located approximately 14 miles northeast of the project site at 5888 Mission Boulevard, monitors all five of the criteria pollutants: CO, O_3, NO_2, SO_2, and PM. Air quality trends identified from the data collected at this air quality monitoring station between 2005 and 2007 are listed in Table C and are discussed below. From the ambient air quality data listed, it can be seen that CO levels are below the relevant State and Federal standards. One-hour O_3 levels exceeded the State standard in each of the past 3 years. O_3 exceeded the State 1-hour standard from 31 to 46 times per year during the last 3 years. Eight-hour O_3 levels exceeded the Federal and State standards in each of the past 3 years. O_3 exceeded

the Federal 8-hour standard from 46 to 57 times per year and the State 8-hour standard from 69 to 83 times per year during the last 3 years. The PM_{10} level in the proposed project area exceeded the State standards from 65 to 69 days in the past 3 years and exceeded the Federal PM_{10} standard once in 2007. The $PM_{2.5}$ levels exceeded the Federal standard from 32 to 36 times per year in the past 3 years. The NO_2 level in the proposed project did not exceed the State or Federal PM_{10} standard in the past 3 years.

As previously mentioned, historical ambient air quality data are used to classify the attainment status for the Basin. As a result of the nonattainment status, the region is required to prepare an Air Quality Attainment Plan (AQAP) for O_3, which consists of emission reductions strategies and implementation of these strategies. The implementation of the AQAP for the region is the responsibility of many agencies, including all of the local air districts, the SCAG, and the ARB.

Table C: Ambient Air Quality Standards at the Riverside - Rubidoux Air Monitoring Station

Pollutant	Standard	2007	2006	2005
CO[1]				
Max 1-hr concentration (ppm)		3.8	2.7	3.4
No. days exceeded: State Federal	> 20 ppm/1-hr > 35 ppm/1-hr	0 0	0 0	0 0
Max 8-hr concentration (ppm)		2.9	2.3	2.1
No. days exceeded: State Federal	≥ 9.1 ppm/8-hr ≥ 9.5 ppm/8-hr	0 0	0 0	0 0
O_3				
Max 1-hr concentration (ppm)		0.131	0.151	0.144
No. days exceeded: State	> 0.09 ppm/1-hr	31	45	46
O_3				
Max 8-hr concentration (ppm)		0.111	0.117	0.129
No. days exceeded: Federal	> 0.075 ppm/8-hr	46	57	56
State	> 0.07 ppm/8-hr	69	75	83
PM_{10}				
Max 24-hr concentration (ppm)		559	109	123
No. days exceeded: State Federal	> 50 $\mu g/m^3$ > 150 $\mu g/m^3$	65 1	69 0	67 0
$PM_{2.5}$				
Max 24-hr concentration (ppm)		75.6	68.4	98.7
No. days exceeded: Federal	> 35 $\mu g/m^3$	33	32	36
NO_2				
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	0.072	0.076	0.077
No. days exceeded		0	0	0
Annual avg. concentration: Federal	0.053 ppm annual avg.	0.020	0.020	0.022
No. days exceeded		0	0	0

Source: EPA and ARB, 2005 to 2007.

3.3 REGIONAL AIR QUALITY PLANS

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The Federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the Federal standards in nonattainment areas of the state.

ARB coordinates and oversees both State and Federal air pollution control programs in California. ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a SIP for Federal EPA approval. ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by ARB to classify air basins as “attainment” or “nonattainment” with respect to each pollutant and to monitor progress in attaining air quality standards. ARB has divided the State into 15 air basins. Significant authority for air quality control within the air basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

The California Clean Air Act (CCAA) provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, at a mall, and on highways. As a State agency, ARB regulates motor vehicles and fuels for their emissions.

The CAA requires that transportation plans and programs do not cause or contribute to any new violation of a standard, increase the frequency or severity of any existing violation, or delay the timely attainment of the air quality standards. The AQMP has developed Transportation Conformity Budgets to demonstrate that the on-road mobile sources will conform to the attainment demonstration contained in the SIP.

Regional Air Quality Management Plan

The SCAQMD and the SCAG are responsible for formulating and implementing the AQMP for the Basin. Every 3 years the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to ARB for review and approval. The ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the Federal standards for O_3 and PM_{10}; replaces the 1997 attainment demonstration for the Federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the Federal NO_2 standard that the Basin has met since 1992.

The 2003 AQMP proposes policies and measures to achieve Federal and State standards for healthful air quality in the Basin.

This revision to the AQMP also addresses several State and Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories,

ambient measurements, new meteorological episodes, and new air quality modeling tools. This AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the O_3 SIP for the Basin for the attainment of the Federal O_3 air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/1999 Plan) to offset increased emission estimates from mobile sources and meet all Federal criteria pollutant standards within the time frames allowed under the Federal CAA.

The SCAQMD developed the 2007 AQMP, which it describes as a regional and multiagency effort (SCAQMD Governing Board, ARB, SCAG, and the EPA). State and Federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP includes a request to have the Basin's Federal 8-hour O_3 attainment status changed from severe to extreme. This change would extend the attainment deadline from 2021 to 2023. The ARB approved the 2007 AQMP on September 27, 2007, and adopted it as part of the 2007 SIP. The ARB has forwarded the 2007 AQMP to the EPA for its review and approval.

3.4 METHODOLOGY

This air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Long-term mobile emissions associated with the proposed project would be less than the no project scenario due to improved traffic flow in the project area, with the same projected future trips in the project vicinity. However, emissions reductions associated with such improvements are difficult to quantify. Therefore, no emissions calculations are provided in this analysis for regional vehicular emissions.

CO Hot Spots

Localized air quality impacts (i.e., CO concentrations [CO hot spots]) in the project area would be affected due to improved traffic flow from roadway improvements. The Department's Transportation Project-Level Carbon Monoxide Protocol (December 1997) was used to assess the project's impact on the local CO concentrations. Table D shows the recorded CO levels in the project vicinity over the last 3 years.

Table D: CO Measurements (ppm) at the Riverside – Rubidoux Air Quality Station

Year	1-Hr		8-Hr			
	1st High	2nd High	1st High	2nd High	3rd High	4th High
2007	3.8	3.6	2.9	2.5	2.2	2.2
2006	2.7	2.7	2.3	2.1	2.1	2.0
2005	3.4	3.3	2.5	2.3	2.3	2.3
Federal Standards	**35**	**35**	**9**	**9**	**9**	**9**

Sources: http://www.epa.gov/air/data/monvals.html and http://www.arb.ca.gov/adam/welcome.html, September 2008.
ppm = parts per million

4.0 IMPACTS

Air pollutant emissions associated with the proposed project would occur over the short term from construction such as fugitive dust from grading/site preparation and equipment exhaust. Long-term emissions would improve from the enhanced traffic flow due to the roadway improvements. The objective of the proposed project is to lessen traffic congestion and improve public safety. The proposed roadway improvement project is not expected to generate any additional traffic. Regional traffic trips would remain similar. Therefore, no new long-term regional emissions would result from implementation of the proposed project. The proposed project will improve traffic movement in the project vicinity, thereby lowering the total pollutants emitted by motor vehicles. The following section discusses the possible emissions-generating activities associated with the proposed project.

4.1 LONG-TERM MICROSCALE PROJECTIONS

CO Hot Spots

The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

The intersection vehicle turn volumes were used in the Caltrans CALINE4 model to evaluate local CO concentrations at intersections most affected by project traffic. Per EPA guidelines, the highest of the second-highest CO concentrations measured within the past three years were used as the background levels. At the Riverside – Rubidoux Station, the background concentrations are 3.6 parts per million (ppm) for the one-hour period and 2.5 ppm for the eight-hour period.

A traffic analysis prepared by Linscott Law & Greenspan for the Corona Palisades Business Park (January 2008) evaluated the existing (2008), 2012, and 2025 traffic conditions at intersections along Green River Road. Tables E, F, and G list the CO concentrations at three intersections along Green River Road for the Existing, 2010, and 2030 conditions, respectively. The CALINE4 model run printouts are provided in Appendix A.

As shown in Tables E, F, and G, the eight-hour CO concentrations at this intersection would not exceed the Federal and State standards of 9 ppm. The one-hour CO concentrations at this intersection would also be below the State standard of 20 ppm and below the Federal standard of 35 ppm. Therefore, the proposed project would not have a significant impact on local air quality for CO, and no mitigation measures would be required.

Table E: Existing (2008) CO Concentrations

Conditions	Receptor Distance to Roadway Centerline (feet)	One-Hour CO Concentration (ppm)[1]	Eight-Hour CO Concentration (ppm)[2]	Exceeds State Standards?	
				1-Hr	8-Hr
SR-91 EB Ramps and Green River Road	12	6.1	4.3	No	No
	12	6.1	4.3	No	No
	10	5.8	4.0	No	No
	10	5.8	4.0	No	No
Dominguez Ranch Road and Green River Road	12	5.2	3.6	No	No
	10	5.2	3.6	No	No
	10	5.1	3.6	No	No
	10	4.7	3.3	No	No
Palisades Drive and Green River Road	14	5.1	3.6	No	No
	14	5.0	3.5	No	No
	14	4.9	3.4	No	No
	10	4.8	3.3	No	No

Source: LSA Associates, Inc., 2008.
1 Includes background one-hour CO concentration of 3.8 ppm.
2 Includes background eight-hour CO concentration of 2.9 ppm.

Table F: 2012 CO Concentrations

Conditions	Receptor Distance to Roadway Centerline (feet)	One-Hour CO Concentration (ppm)[1]	Eight-Hour CO Concentration (ppm)[2]	Exceeds State Standards?	
				1-Hr	8-Hr
SR-91 EB Ramps and Green River Road	12	5.7	4.0	No	No
	12	5.7	4.0	No	No
	10	5.4	3.8	No	No
	10	5.4	3.8	No	No
Dominguez Ranch Road and Green River Road	12	5.0	3.5	No	No
	10	5.0	3.5	No	No
	10	5.0	3.5	No	No
	10	4.6	3.2	No	No
Palisades Drive and Green River Road	14	4.9	3.4	No	No
	14	4.8	3.3	No	No
	14	4.8	3.3	No	No
	10	4.6	3.2	No	No

Source: LSA Associates, Inc., 2008.
1 Includes background one-hour CO concentration of 3.8 ppm.
2 Includes background eight-hour CO concentration of 2.9 ppm.

Table G: 2025 CO Concentrations

Conditions	Receptor Distance to Roadway Centerline (feet)	One-Hour CO Concentration (ppm)[1]	Eight-Hour CO Concentration (ppm)[2]	Exceeds State Standards?	
				1-Hr	8-Hr
SR-91 EB Ramps and Green River Road	12	5.1	3.6	No	No
	12	5.0	3.5	No	No
	10	4.8	3.3	No	No
	10	4.8	3.3	No	No
Dominguez Ranch Road and Green River Road	12	4.7	3.3	No	No
	10	4.7	3.3	No	No
	10	4.7	3.3	No	No
	10	4.5	3.1	No	No
Palisades Drive and Green River Road	14	4.7	3.3	No	No
	14	4.6	3.2	No	No
	14	4.6	3.2	No	No
	10	4.4	3.1	No	No

Source: LSA Associates, Inc., 2008.
1 Includes background one-hour CO concentration of 3.8 ppm.
2 Includes background eight-hour CO concentration of 2.9 ppm.

4.2 SHORT-TERM CONSTRUCTION-RELATED IMPACTS

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions during the construction envisioned on site will vary daily as construction activity levels change. The use of construction equipment on site will result in localized exhaust emissions. An estimate of the construction emissions was conducted using the Road Construction Emissions Model that was developed by the Sacramento Metropolitan Air Quality Management District. The results of the emission calculations are summarized in Table H. As shown, the construction emissions would not exceed the SCAQMD's CEQA thresholds during any of the construction phases.

The SCAQMD has established Rule 403 for reducing fugitive dust emissions (PM_{10}). The best available control measures (BACM), as specified in SCAQMD Rule 403, shall be incorporated into the project commitments. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day), fugitive dust emissions from construction activities would not result in adverse air quality impacts.

Table H: Peak Day Construction Emissions (lbs/day) by Phase[1]

Construction Phase	CO	ROG	NO_X	PM_{10}[2]	$PM_{2.5}$[2]
Grubbing/Land Clearing	19.1	4.5	35.7	21.6	5.6
Grading/Excavation	35.4	6.4	48.7	22.4	6.3
Drainage/Utilities/Sub-Grade	17.5	4.6	32.8	21.8	5.8
Paving	9.8	3.1	15.3	1.4	1.3
SCAQMD Emissions Threshold	**550**	**75**	**100**	**150**	**55**
Exceed Significance?	**No**	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., May 2009.
[1] It is assumed that there is no overlap of these construction phases.
[2] Total PM_{10} and $PM_{2.5}$ daily emission rate with fugitive dust mitigation measures implemented.

Naturally Occurring Asbestos

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact from NOA during project construction would be minimal to none.

4.3 LONG-TERM AIR QUALITY EFFECTS

Greenhouse Gases

GHG emissions estimates related to construction of the proposed project are discussed below and are provided for informational purposes only. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the City at the time this document was prepared. Just as construction activities would result in the emission of criteria pollutants, the combustion of fossil-based fuels from equipment exhaust, construction related vehicular activity and construction worker automobile trips creates GHG emissions such as CO_2, CH_4, and N_2O. GHG emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers.

Construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) *Road Construction Emissions Model, Version 6.3.1*.[1] The SMAQMD states that manual calculation and URBEMIS approaches have shortcomings when used for roadway construction projects. Therefore, the Road Construction Emissions Model, developed by SMAQMD to provide a methodology for quantifying the emissions impacts of road construction projects, is recommended for estimating GHG emissions from these types of projects. It is estimated that the total project construction emissions would be approximately 2.5 tons of CO_2 per day. The project would be required to implement the construction exhaust control measures listed in Section 6.0. These measures would also be anticipated to reduce GHG emissions during the construction period.

[1] Sacramento Metropolitan Air Quality Management District. 2008. *Road Construction Emissions Model Version 6.3.1*. November. Available at www.airquality.org/ceqa/index.shtml.

In addition to construction, operation of the proposed project would result in emissions of greenhouse gases, primarily CO_2, which would be formed as a primary product of combustion of gasoline and diesel fuel in vehicle trips. Greenhouse gases are currently emitted from vehicles utilizing the existing Green River Road; however, the proposed roadway widening project does not generate new regional vehicle trips. Therefore, no new regional vehicle emissions would occur.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emissions reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and that 40 percent of all human-made GHG emissions are from transportation, the Department has created and is implementing the *Climate Action Program at Caltrans* (December 2006).

The Department recognizes the concern that CO emissions raise for climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels (including CO) at the project level is not currently possible. No Federal, State, or regional regulatory agency has provided methodology or criteria for GHG emissions and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory-based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and AB 32. As part of the *Climate Action Program at Caltrans* (December 2006), the Department is supporting efforts to reduce vehicle miles traveled (VMT) by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and in light and heavy-duty trucks. However, it is important to note that control of the fuel economy standards is held by the EPA and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California, Davis.

One of the main strategies to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources such as automobiles occur at stop-and-go speeds (0–25 mph) and speeds over 55 mph. Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions. The purpose of the proposed project is to alleviate existing and future traffic congestion along Green River Road. Therefore, the proposed project would reduce the number of vehicle hours traveled (VHT) within the project area. Although the proposed project may result in a net increase in VMT, the carbon dioxide emissions would be reduced due to the reduction in VHT and the improved traffic flow.

Air Quality Management Plan Consistency Analysis

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQMP's main purpose is to bring the area into compliance with the

requirements of Federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the AQMP. For a project in the SCAB to be consistent with the AQMP, the pollutants emitted from the project must not exceed the SCAQMD significance threshold or cause a significant impact on air quality. If feasible mitigation measures can be implemented to reduce the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the AQMP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways: (1) it fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed, and (2) it provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQMP (adopted in 2003 and updated in 2007). Because the AQMP is based on projections from local General Plans, projects consistent with the local General Plan are considered consistent with the AQMP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQMP. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project. The results for the No Project and the Proposed Project scenarios in the horizon year are compared to the AQMP's air quality projections.

As shown above, the proposed project will not significantly contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the City of Corona's General Plan and the SCAG forecast, and is therefore consistent with the AQMP.

4.4 CUMULATIVE IMPACTS

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time.

The project would contribute criteria pollutants to the area during temporary project construction. A number of individual projects in the area, such as the SR-91/Green River Road interchange project, may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction could result in substantial short-term increases in air pollutants. This would be a contribution to short-term cumulative air quality impacts.

The proposed project would not result in a long-term increase in air quality emissions. Therefore, the Green River Road widening project would not result in any long-term cumulative air quality impacts.

Greenhouse Gas Emissions

The project will generate emissions of GHGs, primarily in the form of vehicle exhaust. There are no Federal, State, or local emissions thresholds established for GHGs such as CO_2. The emissions from on-road vehicle exhaust are controlled by the State and Federal governments and are outside the control of this project. Emissions from construction equipment will be minimized by complying with the control measures listed in Section 6.3.

5.0 STANDARD CONDITIONS

The following standard conditions would reduce or minimize air pollutant emissions associated with construction activities:

- The construction contractor shall adhere to the requirements of SCAQMD rules and regulations on cutback and emulsified asphalt paving materials.
- To reduce fugitive dust emissions the construction contractor shall adhere to the requirements of SCAQMD Rule 403. The BACMs specified in SCAQMD's Rule 403 shall be incorporated into the project construction. The BACMs are listed in Table I beginning on the following page.

Compliance with the above standard measures would lessen the fugitive dust (PM_{10}) impact during construction.

Table I: Best Available Control Measures

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	• Mix backfill soil with water prior to moving • Dedicate water truck or high capacity hose to backfilling equipment • Empty loader bucket slowly so that no dust plumes are generated • Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	• Maintain live perennial vegetation where possible • Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	• Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	• Follow permit conditions for crushing equipment • Pre-water material prior to loading into crusher • Monitor crusher emissions opacity • Apply water to crushed material to prevent dust plumes
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	• For large sites, pre-water with sprinklers or water trucks and allow time for penetration • Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition-mechanical/ manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	• Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	• Limit vehicular traffic and disturbances on soils where possible • If interior block walls are planned, install as early as possible • Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

Table I: Best Available Control Measures

Source Category	Control Measure	Guidance
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	• Grade each project phase separately, timed to coincide with construction phase • Upwind fencing can prevent material movement on site • Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Importing/ exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least 6 inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	• Use tarps or other suitable enclosures on haul trucks • Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage • Comply with track-out prevention/mitigation requirements • Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes.	• Apply water to materials to stabilize • Maintain materials in a crusted condition • Maintain effective cover over materials • Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes • Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	• Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs • Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	• Dedicate water truck or high capacity hose to screening operation • Drop material through the screen slowly and minimize drop height • Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point

Table I: Best Available Control Measures

Source Category	Control Measure	Guidance
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	• Limit size of staging area • Limit vehicle speeds to 15 miles per hour • Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than 8 feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	• Add or remove material from the downwind portion of the storage pile • Maintain storage piles to avoid steep sides or faces
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	• Apply gravel/paving to all haul routes as soon as possible to all future roadway areas • Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	• Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches, soak soils via the pre-trench, and resume trenching • Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six in (CVC 23114)	• Empty loader bucket such that no visible dust plumes are created • Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	• Haul waste material immediately off site
Unpaved roads/ parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	• Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements

Table I: Best Available Control Measures

Source Category	Control Measure	Guidance
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Source: SCAQMD, Rule 403, June 2005.
AQMD = Air Quality Management District

6.0 MITIGATION MEASURES

6.1 CONSTRUCTION IMPACTS

The following measures are recommended for implementation to reduce air pollutants generated by vehicle and equipment exhaust during the project construction phase:

- The construction contractor shall select the construction equipment used on site based on low emission factors and high energy efficiency. The construction contractor shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall utilize electric- or diesel-powered equipment in lieu of gasoline powered engines where feasible.
- The construction contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall time the construction activities so as not to interfere with peak hour traffic and to minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.
- The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.

6.2 OPERATIONAL IMPACTS

No mitigation is required.

6.3 GLOBAL WARMING/CLIMATE CHANGE

No significant construction impacts from GHG emissions have been identified; however, the following measures have been included to list measures that could be implemented to minimize the emissions of these gases:

Construction Measures

- The project plans and specifications shall include a statement that construction equipment shall be shut off when not in use and shall not idle for more than 15 minutes.
- The project plans and specifications shall include a statement that queuing of trucks on and off site shall be limited to periods when absolutely necessitated by grading or construction activities.

- The project plans and specifications shall include a statement that, to the extent feasible, all diesel- and gasoline-powered construction equipment shall be replaced with equivalent electric equipment.
- The project plans and specifications shall include policies and procedures for the reuse and recycling of construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- The project plans and specifications shall include education for construction workers about reducing waste and available recycling services.

7.0 REFERENCES

California Air Resources Board Web site: http://www.arb.ca.gov.

California Department of Transportation. 1988. Air Quality Technical Analysis Notes.

California Department of Transportation. 1997. Transportation Project-Level Carbon Monoxide Protocol.

Linscott Law & Greenspan, Corona Palisades Business Park Traffic Report, January 2008.

South Coast Air Quality Management District. 2003, 2007. Air Quality Management Plan.

South Coast Air Quality Management District. 1993. CEQA Air Quality Handbook.

Western Regional Climatic Center. 2008.

APPENDIX A

SUPPORT DATA FOR CO HOT-SPOT ANALYSIS

[illegible] MODEL
[illegible]
PA[illegible] 1

[illegible]: Green River Road [illegible]
R[illegible]: Existing-01 [illegible]
P[illegible]: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
[illegible]=	WORST CASE	VD=	.0 CM/S		
C[illegible]S=	7 (G)	VS=	.0 CM/S		
[illegible]=	1000. M	AMB=	.0 PPM		
SIG[illegible]=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. SR91 EB NBA	4	-150	4	0	AG	1714	8.4	.0	10.0
B. SR91 EB NBD	4	0	4	150	AG	187	4.2	.0	10.0
C. SR91 EB NBL	2	-150	0	0	AG	220	8.3	.0	10.0
D. SR91 EB SBA	0	150	0	0	AG	0	3.6	.0	10.0
E. SR91 EB SBD	0	0	0	-150	AG	0	3.6	.0	10.0
F. SR91 EB SBL	-2	150	0	0	AG	0	3.6	.0	10.0
G. Green Ri EBA	-150	-5	0	-5	AG	314	5.7	.0	10.0
H. [illegible]en Ri EBD	0	-5	150	-5	AG	2027	5.5	.0	10.0
I. [illegible]en Ri EBL	-150	-5	0	0	AG	146	7.7	.0	10.0
J. [illegible] Ri WBA	150	4	0	4	AG	403	5.8	.0	10.0
[illegible] Ri WBD	0	4	-150	4	AG	583	3.9	.0	10.0
[illegible] BL	150	2	0	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	.0	10.0
N. [illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	-750	[illegible]	-150	[illegible]	[illegible]	[illegible]	3.6	.0	10.0
P. [illegible]	150	[illegible]	750	-5	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	750	4	150	4	[illegible]	403	3.6	.0	10.0
T. [illegible]	-150	4	-750	4	AG	583	3.6	.0	10.0

JOB: Green River Road Widening
RUN: [illegible] (WORST CASE [illegible]
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	10	-12	1.8
2. NW	-7	10	1.8
3. SW	-7	-12	1.8
4. NE	10	10	1.8
5. ES mdblk	150	-12	1.8
6. WN mdblk	-150	10	1.8
7. WS mdblk	-150	-12	1.8
8. EN mdblk	150	10	1.8
9. SE mdblk	10	-150	1.8
10. NW mdblk	-7	150	1.8
11. SW mdblk	-7	-150	1.8
12. [illegible]	10	150	1.8
13. ES blk	600	-12	1.8
14. WN blk	-600	10	1.8
15. WS blk	-600	-12	1.8
16. EN blk	600	10	1.8
17. SE blk	10	-6[illegible]	1.8
18. [illegible] blk	-7	6[illegible]	1.8
[illegible]	-7	[illegible]	1.[illegible]
20. [illegible] blk	10	6[illegible]	1.8

CALINE4: CALIFORNIA [illegible] DISPERSION MODEL
JUNE 1989 [illegible]
PAGE 3

JOB: Gr[illegible] Road Widening
[illegible]N: Ex[illegible] (WORST CASE [illegible]
PO[illegible]: [illegible] xide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	189.	2.2	1.9	.0	.2	.0	.0	.0	.0	.0
2. NW	169.	1.9	1.2	.0	.3	.0	.0	.0	.0	.0
3. SW	82.	2.5	.7	.0	.1	.0	.0	.0	.0	1.3
4. NE	187.	2.5	1.6	.0	.2	.0	.0	.0	.0	.4
5. ES mdblk	278.	1.8	.0	.0	.0	.0	.0	.0	.0	1.4
6. WN mdblk	97.	1.0	.1	.0	.0	.0	.0	.0	.1	.2
7. WS mdblk	85.	1.0	.0	.0	.0	.0	.0	.0	.3	.2
8. EN mdblk	258.	1.2	.2	.0	.0	.0	.0	.0	.0	.6
9. SE mdblk	350.	2.2	1.9	.0	.2	.0	.0	.0	.0	.0
10. NW mdblk	177.	.6	.3	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	13.	1.6	1.2	.0	.2	.0	.0	.0	.0	.1
12. NE mdblk	182.	.7	.3	.0	.0	.0	.0	.0	.0	.0
13. ES blk	276.	1.2	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	96.	.7	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	[illegible]	.6	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	[illegible]	.9	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	[illegible]	1.1	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	7.	.3	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	7.	.8	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	2.	.3	.0	.0	.0	.0	.0	.0	.0	.0

JOB: Green River Road Widening
RUN: Existing-01 (WORST CA[illegible])
POLLUTANT: Carbon Monoxide

IV. MODE[illegible]S (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0
4. NE	.0	.2	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
11. SW [illegible]k	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. [illegible]k	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
13. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	.1	.0
14. WN blk	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.3
15. WS [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
16. EN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.3	.0
17. SE blk	.0	.0	.0	.0	1.0	.0	.0	.0	.0	.0	.0	.0
18. NW blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. SW blk	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0	.0
20. NE blk	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE[illegible] DISPERSION MODEL
JUNE 1989 [illegible]
PAGE 1

JOB: Green River Ro[illegible]ning
RUN: Existing-02 [illegible] ASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE [illegible]

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Domingue NBA	5	-150	5	0	AG	25	7.0	.0	10.0
B. Domingue NBD	5	0	5	150	AG	0	3.6	.0	10.0
C. Domingue NBL	5	-150	0	0	AG	40	7.7	.0	10.0
D. Domingue SBA	0	150	0	0	AG	0	3.6	.0	10.0
E. [illegible] SBD	0	0	0	-150	AG	102	4.2	.0	10.0
F. [illegible] SBL	-2	150	0	0	AG	0	3.6	.0	10.0
G. [illegible] NBA	-150	-4	0	-4	AG	1464	7.1	.0	10.0
H. [illegible]	0	-4	150	-4	AG	1427	4.2	.0	10.0
I. [illegible]	-150	-2	0	0	AG	0	3.6	.0	10.0
[illegible]	150	7	0	7	AG	226	5.4	.0	10.0
K. [illegible]	0	7	-150	7	AG	266	3.7	.0	10.0
[illegible]	150	5	0	[illegible]	AG	40	7.7	.0	0
[illegible]	5	[illegible]	5	[illegible]	AG	65	3.6	.0	[illegible]
[illegible]	5	[illegible]	[illegible]	[illegible]	AG	0	3.6		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	3.6	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	92	3.6	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	[illegible]	[illegible]
[illegible]	7	1	[illegible]	7	[illegible]	56	3.6	.0	0
[illegible]	-150	7	-750	7	AG	266	3.6	.0	10.0

JOB: Green [illegible] Road Widening
RUN: Exi[illegible] (WORST CASE ANGLE)
POLLUTANT: Ca[illegible] Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	12	-10	1.8
2. NW	-7	14	1.8
3. SW	-7	-10	1.8
4. NE	12	14	1.8
5. ES mdblk	150	-10	1.8
6. WN mdblk	-150	14	1.8
7. WS mdblk	-150	-10	1.8
8. EN mdblk	150	14	1.8
9. SE mdblk	12	-150	1.8
10. NW mdblk	-7	150	1.8
11. SW mdblk	-7	-150	1.8
12. NE mdblk	[illegible]	150	1.8
13. ES blk	[illegible]	-10	1.8
14. WN blk	[illegible]	14	1.8
15. WS blk	[illegible]	-10	1.8
16. EN blk	[illegible]	14	1.8
17. SE blk	12	-600	1.8
18. NW blk	-7	600	1.8
19. SW blk	-7	-600	1.8
20. NE blk	12	600	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Green River Road [illegible]
RUN: [illegible].2 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. A. PEAK RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	277.	1.5	.0	.0	.0	.0	.0	.0	1.2	.1
2. NW	259.	.8	.0	.0	.0	.0	.0	.0	.5	.0
3. SW	278.	1.6	.0	.0	.0	.0	.0	.0	1.4	.0
4. NE	260.	.8	.0	.0	.0	.0	.0	.0	.5	.0
5. ES mdblk	276.	1.1	.0	.0	.0	.0	.0	.0	.2	.7
6. WN mdblk	99.	.8	.0	.0	.0	.0	.0	.0	.5	.0
7. WS mdblk	82.	1.6	.0	.0	.0	.0	.0	.0	1.4	.0
8. EN mdblk	263.	.8	.0	.0	.0	.0	.0	.0	.2	.2
9. SE mdblk	349.	.3	.0	.0	.0	.0	.0	.0	.1	.0
10. NW mdblk	179.	.2	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	8.	.3	.0	.0	.0	.0	.0	.0	.0	.0
12. [illegible] mdblk	183.	.2	.0	.0	.0	.0	.0	.0	.0	.0
13. [illegible] blk	276.	.9	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	97.	.6	.0	.0	.0	.0	.0	.0	.0	.0
15. [illegible]	84.	1.0	.0	.0	.0	.0	.0	.0	.0	.0
16. [illegible]	263.	.6	.0	.0	.0	.0	.0	.0	.0	.0
17. [illegible]	354.	.2	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	182.	.1	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	4.	.2	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	184.	.1	.0	.0	.0	.0	.0	.0	.0	.0

[illegible] VERSION
[illegible]

[illegible] River Road Widening
[illegible]: Existing (WORST CASE [illegible]
[illegible]: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
2. NW	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
4. NE	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. [illegible] mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0	.0
14. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
15. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0
16. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.2	.0
17. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

[illegible]: CA[illegible] [illegible] E DISP[illegible]
[illegible]
PAG[illegible]

JOB: Gr[illegible] [illegible] ad Widening
RUN: Existi[illegible] (WORST CASE ANGLE)
POLLUTANT: Carb[illegible] [illegible]nox[illegible]ie

I. SITE VAR[illegible]

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. [illegible] VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Palisade NBA	0	-150	0	0	AG	0	3.6	.0	10.0
B. Palisade NBD	0	0	0	150	AG	415	6.3	.0	10.0
C. Palisade NBL	2	-150	0	0	AG	0	3.6	.0	10.0
D. Palisade SBA	-5	150	-5	0	AG	81	7.0	.0	10.0
E. [illegible] SBD	-5	0	-5	-150	AG	0	3.6	.0	10.0
F. [illegible] SBL	-5	150	0	0	AG	5	7.7	.0	10.0
G. Gr[illegible] [illegible]BA	-150	-7	0	-7	AG	1047	6.1	.0	10.0
H. [illegible]	0	-7	150	-7	AG	1052	3.9	.0	10.0
I. Gr[illegible]	-150	-5	0	0	AG	394	8.4	.0	10.0
J. [illegible]BA	150	4	0	4	AG	257	5.4	.0	10.0
K. [illegible]BD	0	4	-150	4	AG	317	3.7	.0	10.0
L. [illegible]BL	150	[illegible]	0	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	3.6	.0	10.0
[illegible]	-750	[illegible]	[illegible]	-7	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	150	[illegible]	[illegible]	-7	[illegible]	[illegible]	3.6	.0	10.0
[illegible]	750	4	1	4	[illegible]	[illegible]	3.6	.0	10.0
T. [illegible]	-150	4	-750	4	AG	[illegible]	3.6	.0	10.0

[illegible]: Green River Road W[illegible]ing
[illegible]: Existing-03 [illegible]
[illegible]: Carbon Monoxide

III. [illegible] R[illegible]CA[illegible]ONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. SE	*	7	-14	1.8
2. NW	*	-12	10	1.8
3. SW	*	-12	-14	1.8
4. NE	*	7	10	1.8
5. ES mdblk	*	150	-14	1.8
6. WN mdblk	*	-150	10	1.8
7. WS mdblk	*	-150	-14	1.8
8. EN mdblk	*	150	10	1.8
9. SE mdblk	*	7	-150	1.8
10. NW mdblk	*	-12	150	1.8
11. SW mdblk	*	-12	-150	1.8
12. NE mdblk	*	7	150	1.8
13. ES blk	*	600	-14	1.8
14. WN blk	*	-600	10	1.8
15. WS blk	*	-600	[illegible]	1.8
16. EN blk	*	600	[illegible]	1.8
17. SE blk	*	7	[illegible]	[illegible]
18. NW blk	*	-12	[illegible]	[illegible]
19. SW blk	*	-12	-6[illegible]	1.8
20. NE blk	*	7	600	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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[illegible] B: Green River Road W[illegible]ening
[illegible]: [illegible]xisting-03 [illegible] [illegible]ASE ANGLE)
[illegible] [illegible]: C[illegible]rbon Monoxide

IV. MODEL RESULTS (WORST CASE [illegible] [illegible]LE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	278.	1.3	.0	.0	.0	.0	.0	.0	.8	.0
2. NW	259.	.9	.0	.0	.0	.0	.0	.0	.3	.0
3. SW	278.	1.4	.0	.0	.0	.0	.0	.0	.9	.0
4. NE	260.	1.2	.0	.2	.0	.0	.0	.0	.3	.0
5. ES mdblk	276.	1.0	.0	.0	.0	.0	.0	.0	.1	.5
6. WN mdblk	99.	.9	.0	.0	.0	.0	.0	.0	.3	.0
7. WS mdblk	81.	1.5	.0	.0	.0	.0	.0	.0	.9	.0
8. EN mdblk	264.	.7	.0	.0	.0	.0	.0	.0	.1	.1
9. SE [illegible]blk	357.	.3	.0	.0	.0	.0	.0	.0	.0	.0
10. NW [illegible]k	170.	.4	.0	.2	.0	.1	.0	.0	.0	.0
11. [illegible]lk	1.	.3	.0	.0	.0	.0	.0	.0	.0	.0
12. NE [illegible]k	191.	.6	.0	.4	.0	.0	.0	.0	.0	.0
13. ES [illegible]k	276.	.8	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	96.	.6	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	84.	1.0	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	264.	.5	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	355.	.1	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	[illegible]	.3	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	[illegible]	.1	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	[illegible]	.4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CA[illegible] DISPERSION MODEL
[illegible]

JOB: [illegible] Road widening
RUN: [illegible] WORST CASE [illegible]
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.3	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.3	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
4. NE	.3	.0	.2	.0	.0	.0	.0	.0	.1	.0	.0	.0
5. ES mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.2	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0
14. WN blk	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
15. WS blk	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0
16. EN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.2	.0
17. SE blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible] blk	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0

CALINE4: [illegible] MODEL

[illegible]

PA[illegible] 1

[illegible]: Green River Ro[illegible]ning

[illegible]: [illegible].12-01 [illegible]

[illegible] : Carbon Monoxid[illegible]

I. SITE [illegible]ES

U= .5 M/S	Z0= 100. CM	ALT= 91. (M)	
BRG= WORST CASE	VD= .0 CM/S		
CLAS= 7 (G)	VS= .0 CM/S		
MIXH= 1000. M	AMB= .0 PPM		
SIGTH= 10. DEGREES	TEMP= 10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. SR91 EB NBA	4	-150	4	0	AG	2025	6.0	.0	10.0
B. SR91 EB NBD	4	0	4	150	AG	293	3.2	.0	10.0
C. SR91 EB NBL	2	-150	0	0	AG	248	5.9	.0	10.0
D. SR91 EB SBA	0	150	0	0	AG	0	2.7	.0	10.0
E. SR91 EB SBD	0	0	0	-150	AG	0	2.7	.0	10.0
F. SR9[illegible] EB SBL	-2	150	0	0	AG	0	2.7	.0	10.0
G. Gre[illegible]n Ri EBA	-150	-5	0	-5	AG	367	4.1	.0	10.0
H. G[illegible] Ri EBD	0	-5	150	-5	AG	2391	4.0	.0	10.0
I. [illegible] Ri EBL	-150	-5	0	0	AG	236	5.9	.0	10.0
J. [illegible] WBA	150	4	0	4	AG	561	4.4	.0	10.0
K. [illegible] WBD	0	4	-150	4	AG	753	3.1	.0	10.0
L. [illegible]	150		0			0	2.7	.0	10.0
[illegible]	[illegible]	[illegible]	4	[illegible]	[illegible]	[illegible]73	2.7	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]3	2.7	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0	2.7	.0	10.0
[illegible]	[illegible]			[illegible]		0	2.7	.0	10.0
[illegible]	[illegible]					[illegible]	2.7	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	2.7	.0	10.0
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]1	2.7	.0	10.0
[illegible]	[illegible]A	-150	4	[illegible]	AG	[illegible]53	2.7	.0	10.0

JOB: Green River Road Widening
RUN: 2012-01 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	10	-12	1.8
2. NW	-7	10	1.8
3. SW	-7	-12	1.8
4. NE	10	10	1.8
5. ES mdblk	150	-12	1.8
6. WN mdblk	-150	10	1.8
7. WS mdblk	-150	-12	1.8
8. EN mdblk	150	10	1.8
9. SE mdblk	10	-150	1.8
10. NW mdblk	-7	150	1.8
11. SW mdblk	-7	-150	1.8
12. NE mdblk	10	150	1.8
13. ES blk	[illegible]	-12	1.8
14. WN blk	[illegible]	10	1.8
15. WS blk	[illegible]	-12	1.8
16. EN blk	[illegible]	10	1.8
17. SE b[illegible]	[illegible]	-600	1.8
18. NW b[illegible]	[illegible]	600	1.8
19. [illegible]	-7	-600	1.8
20. NE [illegible]	10	600	1.8

[illegible]: [illegible] LINE [illegible] MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Green River Road Widening
[illegible]: [illegible]12-01 [illegible]
[illegible]: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	314.	1.8	.9	.0	.0	.0	.0	.0	.0	.6
2. NW	169.	1.6	1.0	.0	.2	.0	.0	.0	.0	.0
3. SW	82.	2.1	.6	.0	.0	.0	.0	.0	.0	1.1
4. NE	188.	2.1	1.3	.0	.2	.0	.0	.0	.0	.4
5. ES mdblk	278.	1.5	.0	.0	.0	.0	.0	.0	.0	1.2
6. WN mdblk	97.	.9	.1	.0	.0	.0	.0	.0	.0	.2
7. WS mdblk	85.	.9	.0	.0	.0	.0	.0	.0	.2	.1
8. EN mdblk	258.	1.1	.1	.0	.0	.0	.0	.0	.0	.5
9. SE mdblk	350.	1.8	1.5	.0	.2	.0	.0	.0	.0	.0
10. NW mdblk	177.	.5	.2	.0	.0	.0	.0	.0	.0	.0
11. [illegible]	13.	1.3	1.0	.0	.2	.0	.0	.0	.0	.1
12. NE [illegible]	182.	.6	.2	.1	.0	.0	.0	.0	.0	.0
13. [illegible]	277.	1.1	.0	.0	.0	.0	.0	.0	.0	.0
14. [illegible]	96.	.6	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	85.	.5	.0	.0	.0	.0	.0	.0	.0	.0
16. [illegible]	263.	.8	.0	.0	.0	.0	.0	.0	.0	.0
17. [illegible]	353.	.9	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	175.	.2	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	7.	.7	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	182.	.3	.0	.0	.0	.0	.0	.0	.0	.0

[illegible]: [illegible]LIFORNIA LINE SOURCE DISPERSION MODEL
[illegible] 1989 VERSION
[illegible] 4

[illegible]B: [illegible] [illegible]ver Road Widening
[illegible]: [illegible] (WORST CA[illegible]
[illegible]: [illegible]xi[illegible]e

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.1	.0
14. WN blk	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.3
15. WS blk	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
16. EN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.3	.0
17. SE blk	.0	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0
18. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0

CALI[illegible] MODEL

[illegible]

[illegible] 1

[illegible]: [illegible]een River Ro[illegible] Wi[illegible]ing

[illegible]: [illegible] 12-02 [illegible] [illegible]ASE ANGLE)

[illegible]: [illegible]rbon Monoxid[illegible]

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Domi[illegible]que NBA	5	-150	5	0	AG	30	5.1	.0	10.0
B. Domi[illegible]ue NBD	5	0	5	150	AG	0	2.7	.0	10.0
C. D[illegible]ue NBL	5	-150	0	0	AG	44	5.5	.0	10.0
D. Do[illegible]ngue SBA	0	150	0	0	AG	0	2.7	.0	10.0
E. D[illegible]que SBD	0	0	0	-150	AG	113	3.1	.0	10.0
F. D[illegible] SBL	-2	150	0	0	AG	0	2.7	.0	10.0
G. [illegible] BA	-150	-4	0	-4	AG	1719	5.6	.0	10.0
H. [illegible] Ri[illegible]3D	0	-4	150	-4	AG	1680	3.4	.0	10.0
I. Cre[illegible] BL	-150	-2	0	0	AG	0	2.7	.0	10.0
J. G[illegible]	150	7	0	7	AG	307	3.9	.0	10.0
K. [illegible]	0	7	-150	7	AG	351	2.8	.0	10.0
[illegible]	150	[illegible]	0	[illegible]	[illegible]	44	5.5	.0	10.0
[illegible]	[illegible]	[illegible]	5	[illegible]	[illegible]	74	2.7	.0	[illegible]
[illegible]	[illegible]	[illegible]	5	[illegible]	[illegible]	0	2.7	.0	.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	2.7	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	113	2.7	[illegible]	[illegible]
[illegible]	-750	[illegible]	-150	[illegible]	[illegible]	[illegible]9	2.7	.0	0
[illegible]	150	-4	750	[illegible]	[illegible]	[illegible]0	2.7	.0	[illegible].0
[illegible]	750	7	150	7	[illegible]	[illegible]1	2.7	.0	10.0
[illegible]	-150	7	-750	7	[illegible]	[illegible]51	2.7	.0	10.0

[illegible]: [illegible]een Rive[illegible] [illegible]ad Widening
R[illegible]: [illegible]2 (WORST CASE ANGLE)
P[illegible]L [illegible]: [illegible]bon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	12	-10	1.8
2. NW	-7	14	1.8
3. SW	-7	-10	1.8
4. NE	12	14	1.8
5. ES mdblk	150	-10	1.8
6. WN mdblk	-150	14	1.8
7. WS mdblk	-150	-10	1.8
8. EN mdblk	150	14	1.8
9. SE mdblk	12	-150	1.8
10. NW mdblk	-7	150	1.8
11. SW mdblk	-7	-150	1.8
12. NE mdblk	12	150	1.8
13. ES [illegible]	[illegible]	-10	1.8
14. [illegible]	[illegible]	14	1.8
15. [illegible]	[illegible]	-10	1.8
16. [illegible]	600	14	1.8
17. [illegible]	12	-600	1.8
18. [illegible]	-7	600	1.8
19. [illegible]	-7	-600	1.8
20. NE [illegible]	12	600	1.8

CALINE4: [illegible] E SOURCE DISPERSION MODEL
[illegible] VERSION
[illegible]

[illegible] B: [illegible]een River Road Widening
[illegible] (WORST CASE ANGLE)
P[illegible] [illegible]: C[illegible] [illegible] noxide

IV. MODEL RESULTS ([illegible]T CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	[illegible] CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	278.	1.4	.0	.0	.0	.0	.0	.0	1.0	.1
2. NW	258.	.7	.0	.0	.0	.0	.0	.0	.5	.0
3. SW	279.	1.4	.0	.0	.0	.0	.0	.0	1.2	.0
4. NE	259.	.7	.0	.0	.0	.0	.0	.0	.5	.0
5. ES mdblk	276.	1.0	.0	.0	.0	.0	.0	.0	.1	.7
6. WN mdblk	99.	.8	.0	.0	.0	.0	.0	.0	.4	.0
7. WS mdblk	82.	1.4	.0	.0	.0	.0	.0	.0	1.2	.0
8. EN mdblk	263.	.7	.0	.0	.0	.0	.0	.0	.2	.2
9. SE [illegible]lk	349.	.3	.0	.0	.0	.0	.0	.0	.1	.0
10. NW [illegible]lk	179.	.2	.0	.0	.0	.0	.0	.0	.0	.0
11. [illegible]	8.	.2	.0	.0	.0	.0	.0	.0	.0	.0
12. NE [illegible]lk	184.	.2	.0	.0	.0	.0	.0	.0	.0	.0
13. ES [illegible]	276.	.8	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	97.	.5	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	84.	.8	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	263.	.5	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	354.	.2	.0	.0	.0	.0	.0	.0	.0	.0
18. NW blk	182.	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. SW blk	4.	.2	.0	.0	.0	.0	.0	.0	.0	.0
20. NE blk	184.	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
[illegible] VERSION
PAGE 4

JOB: Green River Road Widening
RUN: 2012-02 [illegible]
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	*	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	*	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	*	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	*	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES blk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0
14. WN blk	*	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
15. WS blk	*	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0
16. EN blk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.2	.0
17. SE blk	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

[illegible] EL
[illegible]
PAGE 1

[illegible]: Green River Ro[illegible]ing
[illegible]: [illegible] 12-03 [illegible] ASE ANGLE)
P[illegible]: C[illegible]rbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BR[illegible]	[illegible] CLSE	[illegible]D=	.0 CM/S		
CLA[illegible]	[illegible]	VS=	.0 CM/S		
MIXH=	1000. M	[illegible]=	.0 PPM		
SIGTH=	10. DEGREES	[illegible]P=	0.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Palisade NBA	0	-150	0	0	AG	0	2.7	.0	10.0
B. Palisade NBD	0	0	0	150	AG	458	4.6	.0	10.0
C. Palisade NBL	2	-150	0	0	AG	0	2.7	.0	10.0
D. Palisade SB[illegible]	-5	150	-5	0	AG	90	5.1	.0	10.0
E. Palisade [illegible]D	-5	0	-5	-150	AG	0	2.7	.0	10.0
F. Palis[illegible]	-5	150	0	0	AG	6	5.5	.0	10.0
G. Gree[illegible]	[illegible]50	-7	0	-7	AG	1260	4.7	.0	10.0
H. Gre[illegible]	0	-7	150	-7	AG	1266	3.0	.0	10.0
I. Gre[illegible]	-150	-5	0	0	AG	435	6.0	.0	10.0
J. G[illegible]	150	4	0	4	AG	341	3.9	.0	10.0
K. [illegible]	0	4	-150	4	AG	408	2.8	.0	10.0
L. [illegible]	150	2	0	0	AG	0	2.7	.0	.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	2.7	.0	[illegible]
[illegible]					[illegible]	458	2.7		
[illegible]						[illegible]6	2.7		
[illegible]						0	2.7	.	
[illegible]						[illegible]	2.7	.	
[illegible]					[illegible]	[illegible]	2.7	..	
[illegible]	[illegible]	4	[illegible]	[illegible]	AG	11	2.7	.0	.0
[illegible]	[illegible]	4	[illegible]	4	AG	408	2.7	.0	10.0

[illegible] 3: [illegible]een River Road W[illegible]
[illegible]: [illegible]-C3 (WORS[illegible] C[illegible]E [illegible]
[illegible] M[illegible]: [illegible] Monoxide

II[illegible] [illegible] LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	7	-14	1.8
2. NW	-12	10	1.8
3. SW	-12	-14	1.8
4. NE	7	10	1.8
5. ES mdblk	150	-14	1.8
6. WN mdblk	-150	10	1.8
7. WS mdblk	-150	-14	1.8
8. EN mdblk	150	10	1.8
9. SE mdblk	7	-150	1.8
10. NW [illegible]k	-12	150	1.8
11. SW [illegible]k	[illegible]2	-150	1.8
12. [illegible]	[illegible]	150	1.8
[illegible]	60[illegible]	-14	1.8
[illegible]	[illegible]	10	1.8
15. [illegible]S blk	[illegible]	-14	1.8
16. [illegible] blk	[illegible]	10	1.8
17. SE blk	7	-600	1.8
18. NW blk	-12	600	1.8
19. SW blk	-12	-600	1.8
20. NE blk	7	600	1.8

CALINE4: CALIFORNIA LINE SOURCE [illegible]
[illegible] 1989 VERSION
DATE 3

[illegible] River Road Widening
[illegible]12-03 WORST CASE [illegible]
POLLUTANT: Carbon Monoxide

IV. MODEL PREDICTIONS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	COLUMN (PPM) A	B	C	D	E	F	G	H
1. SE	278.	1.2	.0	.0	.0	.0	.0	.0	.8	.0
2. NW	258.	.8	.0	.0	.0	.0	.0	.0	.3	.0
3. SW	278.	1.2	.0	.0	.0	.0	.0	.0	.8	.0
4. NE	259.	1.0	.0	.1	.0	.0	.0	.0	.3	.0
5. ES mdblk	276.	.8	.0	.0	.0	.0	.0	.0	.0	.5
6. WN mdblk	99.	.8	.0	.0	.0	.0	.0	.0	.3	.0
7. WS mdblk	81.	1.3	.0	.0	.0	.0	.0	.0	.8	.0
8. EN mdblk	264.	.7	.0	.0	.0	.0	.0	.0	.1	.1
9. SE mdblk	357.	.2	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	170.	.4	.0	.2	.0	.0	.0	.0	.0	.0
11. SW mdblk	1.	.2	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	191.	.5	.0	.3	.0	.0	.0	.0	.0	.0
13. ES [illegible]	276.	.7	.0	.0	.0	.0	.0	.0	.0	.0
14. [illegible]	97.	.6	.0	.0	.0	.0	.0	.0	.0	.0
15. [illegible]	83.	.8	.0	.0	.0	.0	.0	.0	.0	.0
16. [illegible]	264.	.5	.0	.0	.0	.0	.0	.0	.0	.0
17. [illegible]	355.	.1	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	1[illegible]4.	.3	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	[illegible]	.1	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	[illegible]	.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: [illegible] MODEL
[illegible] VERSION
[illegible]

[illegible]: Green River Road Widening
R[illegible]: [illegible]12-03 (WORST CASE [illegible]
POL[illegible]: Carbon Monoxide

IV. MODE[illegible] [illegible]S (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.3	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	.3	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.2	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. WS mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0
14. WN blk	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.2
15. WS blk	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0
16. EN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.2	.0
17. SE blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0

[illegible]: [illegible] EL
[illegible] 9 [illegible]
[illegible] 1

JOB: Green River Ro[illegible] ing
[illegible] 1 [illegible]
[illegible]: [illegible] Monoxid[illegible]

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 91. (M)	
BRG= WORST CASE	[illegible]= .0 CM/S		
CLAS= 7 (G)	[illegible]= .0 CM/S		
MIXH= 1000. M	[illegible]= .0 PPM		
SIGTH= 10. DEGREES	[illegible] 10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. SR91 EB NBA	4	-150	4	0	AG	3894	2.3	.0	10.0
B. SR91 EB NBD	4	0	4	150	AG	391	1.5	.0	10.0
C. SR91 EB NBL	2	-150	0	0	AG	255	2.2	.0	10.0
D. SR91 EB SBA	0	150	0	0	AG	0	1.2	.0	10.0
E. SR91 EB SBD	0	0	0	-150	AG	0	1.2	.0	10.0
F. SR91 EB SBL	-2	150	0	0	AG	0	1.2	.0	10.0
G. [illegible]een Ri EBA	-150	-5	0	-5	AG	471	1.7	.0	10.0
H. [illegible]en Ri EBD	0	-5	150	-5	AG	4363	1.6	.0	10.0
I. [illegible] Ri EBL	-150	-5	0	0	AG	236	2.2	.0	10.0
J. [illegible] BA	150	4	0	4	AG	809	2.2	.0	10.0
K. Gr[illegible] BD	0	4	-150	4	AG	911	1.6	.0	10.0
L. [illegible] WBL	150	[illegible]	0	[illegible]	AG	0	1.2	.0	10.0
[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
S. [illegible]	4	1	4	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
T. Gre[illegible] BA	-150	4	-750	4	AG	911	1.2	.0	10.0

JOB: Green River Road Widening
RUN: 2025-01 [illegible]
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. SE	*	10	-12	1.8
2. NW	*	-7	10	1.8
3. SW	*	-7	-12	1.8
4. NE	*	10	10	1.8
5. ES mdblk	*	150	-12	1.8
6. WN mdblk	*	-150	10	1.8
7. WS mdblk	*	-150	-12	1.8
8. EN mdblk	*	150	10	1.8
9. SE mdblk	*	10	-150	1.8
10. NW mdblk	*	-7	150	1.8
11. SW mdblk	*	-7	-150	1.8
12. NE mdblk	*	10	150	1.8
13. ES blk	*	600	-12	1.8
14. WN blk	*	-600	10	1.8
15. WS blk	*	-600	-12	1.8
16. EN blk	*	600	10	1.8
17. SE blk	*	10	-600	1.8
18. NW blk	*	-7	600	1.8
19. SW blk	*	-7	-600	1.8
20. NE blk	*	10	600	1.8

CALINE4: [illegible] LINE SOURCE [illegible] MODEL
JUN[illegible] 1989 VERSION
PA[illegible] 3

[illegible]: Green River Road W[illegible]ing
[illegible]: 2025-01 [illegible] CASE ANGLE)
PC[illegible]: C[illegible]rbon Monoxid[illegible]

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	315.	1.2	.6	.0	.0	.0	.0	.0	.0	.5
2. NW	169.	1.0	.7	.0	.0	.0	.0	.0	.0	.0
3. SW	82.	1.5	.4	.0	.0	.0	.0	.0	.0	.8
4. NE	187.	1.4	.9	.0	.0	.0	.0	.0	.0	.3
5. ES mdblk	279.	1.0	.0	.0	.0	.0	.0	.0	.0	.8
6. WN mdblk	96.	.6	.0	.0	.0	.0	.0	.0	.0	.1
7. WS mdblk	87.	.5	.0	.0	.0	.0	.0	.0	.0	.1
8. EN mdblk	257.	.7	.0	.0	.0	.0	.0	.0	.0	.4
9. SE mdblk	349.	1.2	1.1	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	177.	.3	.1	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	13.	.9	.7	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	182.	.4	.1	.0	.0	.0	.0	.0	.0	.0
13. ES blk	277.	.8	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	96.	.3	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	85.	.3	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	262.	.6	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	353.	.7	.0	.0	.0	.0	.0	.0	.0	.0
18. NW [illegible]	175.	.2	.0	.0	.0	.0	.0	.0	.0	.0
19. [illegible]	8.	.5	.0	.0	.0	.0	.0	.0	.0	.0
20. [illegible]	182.	.2	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CA[illegible] LINE SOURCE DIS[illegible] MODEL
[illegible]
[illegible]

[illegible]n Riv[illegible] : Road Widening
[illegible]: [illegible]25-01 (WORST CA[illegible]
P[illegible]T: Carbon Monoxide

[illegible] RESULTS (WORST CASE W[illegible]) (CONT.)

RECEPTOR	I	J	K	L	M	N	O	P	Q	R	S	T
	CONC/LINK (PPM)											
1. SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0
14. WN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
15. WS blk	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
16. EN blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.2	.0
17. SE blk	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0	.0
18. NW blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. [illegible]	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0
20. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: [illegible]
[illegible]
PAGE [illegible]

[illegible]: [illegible] Road Widening
[illegible]: [illegible] (WORST CASE AN[illegible]
[illegible] [illegible]: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BR[illegible]=	WORST CASE	VD=	.0 CM/S		
[illegible]	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. [illegible] EBA	5	-150	5	0	AG	25	2.0	.0	10.0
B. Dom[illegible] EBD	5	0	5	150	AG	0	1.2	.0	10.0
C. D[illegible] NBL	5	-150	0	0	AG	41	2.1	.0	10.0
D. [illegible] SBA	0	150	0	0	AG	0	1.2	.0	10.0
E. [illegible] SBD	0	0	0	-150	AG	103	1.3	.0	10.0
F. [illegible] SBL	-2	150	0	0	AG	0	1.2	.0	10.0
[illegible] EBA	-150	-4	0	-4	AG	3801	2.2	.0	10.0
H. [illegible] EBD	0	-4	150	-4	AG	3763	1.6	.0	10.0
I. G[illegible] [illegible]BL	-150	-2	0	0	AG	0	1.2	.0	10.0
J. [illegible] WBA	150	7	0	7	AG	637	1.7	.0	10.0
K. [illegible] WBD	0	7	-150	7	AG	678	1.2	.0	10.0
[illegible]	150	5	0	[illegible]	[illegible]	40	2.1	.0	10.0
[illegible]	[illegible]	[illegible]	5	[illegible]	[illegible]	66	1.2	.0	10.0
[illegible]	5	[illegible]	[illegible]	[illegible]	[illegible]	0	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	93	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	.0	10.0
S. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	77	1.2	.0	10.0
T. [illegible]	-150	7	[illegible]	[illegible]	AG	678	1.2	.0	10.0

JOB: [illegible] River Road Widening
RUN: [illegible] (WORST CASE [illegible]
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. SE	12	-10	1.8
2. NW	-7	14	1.8
3. SW	-7	-10	1.8
4. NE	12	14	1.8
5. ES mdblk	150	-10	1.8
6. WN mdblk	-150	14	1.8
7. WS mdblk	-150	-10	1.8
8. EN mdblk	150	14	1.8
9. SE mdblk	12	-150	1.8
10. NW mdblk	-7	150	1.8
11. SW mdblk	-7	-150	1.8
12. NE mdblk	12	150	1.8
13. ES blk	600	-10	1.8
14. WN blk	-600	14	1.8
15. WS blk	-600	-10	1.8
16. EN blk	600	14	1.8
17. SE [illegible]	12	-600	1.8
18. NW [illegible]	-7	600	1.8
19. [illegible]	-7	-600	1.8
20. NE [illegible]	12	600	1.8

CALINE4: CALIFORNIA LINE [illegible] DISPERSION MODEL
[illegible] 1989 VERSION
[illegible] 3

Job: [illegible] River Road Widening
[illegible] (WORST CASE [illegible])
Pollutant: [illegible] Monoxide

IV. MODEL RESULTS ([illegible] WORSE WIND ANGLE)

RECEPTOR	BRG (DEG)	PEAK CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SE	278.	1.1	.0	.0	.0	.0	.0	.0	.8	.1
2. NW	258.	.5	.0	.0	.0	.0	.0	.0	.4	.0
3. SW	279.	1.1	.0	.0	.0	.0	.0	.0	1.0	.0
4. NE	258.	.6	.0	.0	.0	.0	.0	.0	.4	.0
5. ES mdblk	278.	.9	.0	.0	.0	.0	.0	.0	.0	.7
6. WN mdblk	99.	.6	.0	.0	.0	.0	.0	.0	.3	.0
7. WS mdblk	82.	1.1	.0	.0	.0	.0	.0	.0	1.0	.0
8. EN mdblk	262.	.6	.0	.0	.0	.0	.0	.0	.1	.2
9. SE [illegible]k	348.	.1	.0	.0	.0	.0	.0	.0	.0	.0
10. NW [illegible]	180.	.1	.0	.0	.0	.0	.0	.0	.0	.0
11. [illegible]	8.	.1	.0	.0	.0	.0	.0	.0	.0	.0
12. NE [illegible]lk	217.	.1	.0	.0	.0	.0	.0	.0	.0	.0
13. ES [illegible]	277.	.7	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	[illegible]7.	.4	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	[illegible]3.	.7	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	[illegible]3.	.4	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	[illegible]4.	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible] blk	[illegible]2.	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	4.	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	184.	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: [illegible] LINE SOURCE DISPERSION MODEL
[illegible] VERSION
[illegible]

[illegible] Road Widening
[illegible] (WORST CASE [illegible])
POLLUTANT: [illegible] Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0
14. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.1
15. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0
16. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0
17. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible] blk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
[illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: [illegible]
[illegible] VERSION
PAGE 1

JOB: [illegible] r Road Widening
RUN: [illegible] (WORST CASE [illegible]
POLLUTANT: [illegible] M. oxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	91. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (D)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Palisade NBA	0	-150	0	0	AG	0	1.2	.0	10.0
B. Palisade NBD	0	0	0	150	AG	965	2.3	.0	10.0
C. Palisade NBL	2	-150	0	0	AG	0	1.2	.0	10.0
D. Palisade SBA	-5	150	-5	0	AG	148	2.0	.0	10.0
E. Palisade SBD	-5	0	-5	-150	AG	0	1.2	.0	10.0
F. Palisade SBL	-5	150	0	0	AG	7	2.1	.0	10.0
G. Green Ri EBA	-150	-7	0	-7	AG	2771	2.2	.0	10.0
H. Green Ri EBD	0	-7	150	-7	AG	2778	1.6	.0	10.0
I. Green Ri EBL	-150	-5	0	0	AG	923	2.3	.0	10.0
J. Green Ri WBA	150	4	0	4	AG	504	1.6	.0	10.0
K. Green Ri WBD	0	4	-150	4	AG	610	1.2	.0	10.0
L. [illegible]	150	2	0	[illegible]	AG	0	1.2	.0	10.0
[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0	1.2	.0	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	965	1.2	.0	.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	35	1.2	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	1.2	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.2	[illegible]	[illegible]
S. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	1.2	.0	0
T. Gre[illegible] WBDX	[illegible]	4	[illegible]	4	AG	610	1.2	.0	10.0

CALINE4: [illegible] DISPERSION MODEL
[illegible]
[illegible] 2

[illegible] 3: Green River Road Widening
[illegible]: [illegible]25-03 (WORST CASE ANGLE)
P[illegible]: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. SE	*	7	-14	1.8
2. NW	*	-12	10	1.8
3. SW	*	-12	-14	1.8
4. NE	*	7	10	1.8
5. ES mdblk	*	150	-14	1.8
6. WN mdblk	*	-150	10	1.8
7. WS mdblk	*	-150	-14	1.8
8. [illegible]	*	150	10	1.8
9. [illegible]	*	7	-150	1.8
10. NW mdblk	*	-12	150	1.8
11. SW mdblk	*	-12	-150	1.8
12. NE mdblk	*	7	150	1.8
13. ES blk	*	600	-14	1.8
14. WN [illegible]	*	-600	10	1.8
15. [illegible]	*	-600	-14	1.8
16. [illegible]	*	600	10	1.8
17. [illegible]	*	7	-600	1.8
18. [illegible]	*	-12	600	1.8
19. [illegible]	*	-12	-600	1.8
20. NE [illegible]	*	7	600	1.8

CALINE4: [illegible] IF [illegible] SOURCE DISPERS[illegible]
[illegible]

J[illegible] Road Widening
[illegible] - 3 (WORST CASE ANGLE)
POL[illegible]: Carbon [illegible]oxide

IV. MODEL RESULTS (W[illegible]ST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F	G	H
			CONC [illegible] (PPM)							
1. SE	278.	1.0	.0	.0	.0	.0	.0	.0	.7	.0
2. NW	258.	.6	.0	.0	.0	.0	.0	.0	.3	.0
3. SW	279.	1.0	.0	.0	.0	.0	.0	.0	.7	.0
4. NE	258.	.8	.0	.1	.0	.0	.0	.0	.3	.0
5. ES mdblk	277.	.7	.0	.0	.0	.0	.0	.0	.0	.5
6. WN mdblk	100.	.6	.0	.0	.0	.0	.0	.0	.2	.0
7. WS mdblk	80.	1.1	.0	.0	.0	.0	.0	.0	.7	.0
8. EN mdblk	263.	.5	.0	.0	.0	.0	.0	.0	.0	.1
9. SE mdblk	357.	.2	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	168.	.3	.0	.2	.0	.0	.0	.0	.0	.0
11. SW mdblk	2.	.2	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	191.	.4	.0	.3	.0	.0	.0	.0	.0	.0
13. ES blk	277.	.5	.0	.0	.0	.0	.0	.0	.0	.0
14. WN blk	97.	.4	.0	.0	.0	.0	.0	.0	.0	.0
15. WS blk	83.	.7	.0	.0	.0	.0	.0	.0	.0	.0
16. EN blk	263.	.3	.0	.0	.0	.0	.0	.0	.0	.0
17. SE blk	357.	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. NW blk	174.	.2	.0	.0	.0	.0	.0	.0	.0	.0
19. SW blk	358.	.0	.0	.0	.0	.0	.0	.0	.0	.0
20. NE blk	186.	.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: [illegible] LINE SOURCE DISPERSION MODEL
[illegible] VERSION
[illegible]

JOB: Green River Road Widening
JOB: [illegible]025-03 (WORST CASE [illegible]
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE [illegible]) (CONT.)

RECEPTOR	I	J	K	L	M	N	O	P	Q	R	S	T
	CONC/LINK (PPM)											
1. SE	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NW	.2	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NE	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. ES mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. WN mdblk	.1	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. WS mdblk	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. EN mdblk	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. SE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. NW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. SW mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. NE mdblk	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. ES [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.0	.0
14. W[illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.1
15. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0
16. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0
17. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. [illegible]	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
19. [illegible]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20. [illegible]	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0

APPENDIX B:

GENERAL BIOLOGICAL RESOURCES REPORT

April 8, 2008

Mr. Dennis Armstrong
Armstrong & Brooks Consulting Engineers, Inc.
1530 Consumer Circle, Unit "B"
Corona, California 92881

Subject: General Biological Resources Report for the Green River Road Widening Project, City of Corona, Riverside County, California (LSA Project No. ABE0701)

Dear Mr. Armstrong:

LSA Associates, Inc. (LSA) was retained by Armstrong & Brooks Consulting Engineers, Inc. to conduct a general biological resources assessment of the approximately 3-mile long project site, located along Green River Road east of the Green River Road/State Route 91 (SR-91) interchange, in the City of Corona, Riverside County. The project site is a portion of projected Sections 29 and 30, Township 3 South, Range 7 West, as shown on the U.S. Geological Survey (USGS) *Prado Dam, California* 7.5-minute quadrangle (Figure 1; all figures attached).

The biological resources assessment was conducted for the identification of potential jurisdictional waters and to address compliance with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and the California Environmental Quality Act (CEQA). The results of the assessment are summarized below.

- Proposed impacts to drainages and riparian areas on the site may be subject to regulation by the California Department of Fish and Game (CDFG), the U.S. Army Corps of Engineers (ACOE), and the Regional Water Quality Control Board (RWQCB). A formal jurisdictional delineation is needed to determine the extent of jurisdictional areas.
- The project site is within the MSHCP Criteria Area and crosses Proposed Constrained Linkages 1 and 2 in the Temescal Canyon Area Plan (Subunits 1 and 2). Therefore, the project must be consistent with conservation objectives for MSHCP Reserve assembly in this area and will be subject to MSHCP requirements for planned roads within the Criteria Area.
- Approximately 0.1 acre of riparian vegetation is present within the study area. Some of this would be impacted by the proposed project. Therefore, a survey for least Bell's vireo (*Vireo bellii pusillus*) is required. A Determination of Biologically Equivalent or Superior Preservation (DBESP) is required for impacts to riparian habitat and to least Bell's vireo, if it is determined to be present on the site. Precise impacts to riparian areas will be determined following the jurisdictional delineation. No vernal pools or similar habitats are present on the site. Therefore, fairy shrimp surveys will not be required.
- The project site is located within a Narrow Endemic Plant Species Survey Area (NEPSSA) for three plant species. All three species are determined to be absent from the site.

- The project site is within the MSHCP survey area for burrowing owl (*Athene cunicularia hypugaea*). A burrow survey was conducted throughout the site and this species was determined to be absent. However, a pre-construction survey for this species is required within 30 days prior to the beginning of construction.
- The project site is not located within any other designated MSHCP species survey area. Therefore, no additional focused species surveys are required for MSHCP consistency.
- The project is subject to MSHCP Urban/Wildlands Interface guidelines.
- A focused survey will be required to determine if least Bell's vireo occurs on site. The survey *must begin in mid-April* and extend though July. The site does not provide suitable habitat for any other threatened or endangered species. No substantial project impacts to other special interest species are anticipated.

ENVIRONMENTAL SETTING

Existing and Adjacent Land Use

The study area is centered on an approximately 3-mile long segment of Green River Road. It includes the road segment itself, as well as adjacent commercial development, residential and commercial landscaping, and disturbed open space.

Elevation, Topography, and Soils

The site elevation ranges from approximately 500 to 530 feet above mean sea level. The site is generally flat and level. It is traversed by a drainage out of Fresno Canyon and other smaller drainages. Mapped soils on the site (Figure 2) are Altamont clay, Arbuckle loam, Cortina cobbly loamy sand, Garretson very fine sandy loam, Garretson gravelly very fine sandy loam, Perkins gravelly loam, and Terrace escarpments (*Soil Survey for Western Riverside Area, California*, A.A. Knecht 1971). With the exception of some areas mapped as Garretson very fine sandy loam and a small area mapped as Cortina cobbly loamy sand within the Fresno Canyon drainage, all areas of the site have been developed, graded, or otherwise altered and may not currently have the surface soils indicated in the mapping.

Vegetation

Figure 3 shows vegetation, land use, and photograph locations. Site photographs are shown in Figure 4. A complete list of plant species observed on the site is included in attached Table A.

Most of the study area is developed or with only ruderal or ornamental vegetation. Dominant plant species in these areas include tocalote (*Centaurea melitensis*), shortpod mustard (*Hirschfeldia incana*), non-native annual grasses, and various ornamental landscaping species.

Dominant species in non-native grassland include shortpod mustard, tocalote, blue elderberry (*Sambucus mexicana*), and red brome (*Bromus madritensis* ssp. *rubens*).

The small area mapped as riparian forest consists of three or four Goodding's willow (*Salix gooddingii*) trees shaded by taller eucalyptus (*Eucalyptus* sp.) and without a substantial herbaceous vegetation layer.

The three areas mapped as riparian scrub consist primarily of a few large individuals of mule fat (*Baccharis salicifolia*) with a non-native herbaceous layer.

Wildlife

The wildlife observed in the study area is common to urban and disturbed areas. A list of species observed is provided in Table A.

METHODS

A literature review was conducted to determine the existence or potential occurrence of sensitive plant and animal species on or in the vicinity of the project site. Database records for the *Corona North, California; Corona South, California, Prado Dam, California;* and *Black Star Canyon, California* USGS 7.5-minute quadrangles were searched on July 10, 2007, using the CDFG's Natural Diversity Database application *Rarefind 3* (version 3.1.0, California Department of Fish and Game, Natural Diversity Data Base, dated February 3, 2007) and the California Native Plant Society's *Electronic Inventory of Rare and Endangered Vascular Plants of California* (online edition, v7-07d, California Native Plant Society, 2007, http://www.cnps.org/inventory).

Aerial photographs (2006, 2007) were reviewed, and maps of U.S. Fish and Wildlife Service (USFWS) designated critical habitats were used to determine the locations of critical habitats relative to the project site. Volume 1 of the *Western Riverside County Multiple Species Habitat Conservation Plan* was also used to prepare the report. Soil information was taken from *Soil Survey of Western Riverside Area, California* (A.A. Knecht 1971).

General field surveys were conducted on June 28, 2007, by LSA biologist Stanley Spencer and on July 26, 2007, by LSA biologists Stanley Spencer and Paul Kielhold. Follow-up visits were made by Stanley Spencer on August 7, 2007, and February 13, 2008, to evaluate additional areas added to the study area due to project refinements. These surveys constituted 100 percent survey coverage of the project site. Notes were made on general site conditions, vegetation, potential jurisdictional waters of the U.S. (if any), and suitability of habitat for various sensitive elements. All plant and animal species observed during field surveys were noted.

A habitat assessment for least Bell's vireo and southwestern southwestern willow flycatcher (*Empidonax traillii extimus*) was conducted on March 19, 2008, by LSA biologists Richard Erickson and Stanley Spencer. All areas mapped as riparian forest and riparian scrub were evaluated for habitat suitability.

A focused survey for Brand's phacelia (*Phacelia stellaris*) was conducted on March 26, 2008, by LSA biologist Stanley Spencer. This survey was limited to potentially suitable habitat within the Fresno Canyon drainage, consisting of approximately 0.01 acre of riparian scrub.

A focused burrowing owl burrow survey was conducted at the time of the June 28, 2007, field visit. The entire site was walked with 10- to 50-foot transects to assess habitat suitability and to survey for burrowing owl burrows. Transects were meandering because of obstacles on the property but provided for 100 percent coverage of the site. It had not rained on the site within the five previous days.

Total season-to-date Riverside area precipitation for the 2007–2008 precipitation season (starting July 1) was taken from the WeatherCurrents.Com web site (http://weathercurrents.com/riverside/). Average season-to-date values were taken from National Weather Service climate web site (http://www.weather.gov/climate/). Total season-to-date precipitation in the Riverside area as of March 25, 2008, was 6.8 inches, compared to an average season-to-date value of about 9 inches.

POTENTIAL JURISDICTIONAL WATERS AND STREAMBEDS

The ACOE, under Section 404 of the Federal Clean Water Act, regulates discharges of dredged or fill material into "waters of the United States." These waters include wetlands and non-wetland bodies of water that meet specific criteria, including a connection to interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or it may be indirect, through a connection identified in ACOE regulations. The ACOE typically regulates as non-wetland waters of the U.S. any body of water displaying an "ordinary high water mark." In order to be considered a "jurisdictional wetland" under Section 404, an area must possess hydrophytic vegetation, hydric soils, and wetland hydrology. The CDFG, under Sections 1600 et seq. of the California Fish and Game Code, regulates alterations to lakes, rivers, and streams. A stream is defined by the presence of a channel bed and banks and at least an occasional flow of water. The RWQCB is responsible for the administration of Section 401 of the Clean Water Act, through water quality certification of any activity that may result in a discharge to jurisdictional waters of the U.S. The RWQCB may also regulate discharges to "waters of the State," including wetlands, under the California Porter-Cologne Water Quality Control Act.

Several small drainages and areas of riparian vegetation occur in the western half of the study area (Sheet 1 of Figure 3). Most of these will be impacted by the proposed project (Sheet 1 of Figure 5). A larger drainage out of Fresno Canyon (Sheet 2 of Figure 3, Sheet 2 of Figure 5) will not be impacted. A formal jurisdictional delineation will be required to determine which of these features are subject to ACOE, RWQCB, and/or CDFG regulatory authority, and concurrence from the regulatory agencies on the results of the jurisdictional delineation report will be required.

MSHCP COMPLIANCE

Project Relationship to Reserve Assembly

The MSHCP provides for the assembly of a Conservation Area consisting of Core Areas and Linkages for the conservation of covered species. The Conservation Area is to be assembled from portions of the MSHCP Criteria Area.

The project site is within the MSHCP Criteria Area and crosses Proposed Constrained Linkages 1 and 2 of the Temescal Canyon Area Plan (Subunits 1 and 2). Therefore, the project must be consistent with conservation objectives for MSHCP Reserve assembly in this area and will be subject to MSHCP requirements for planned roads within the Criteria Area.

Relationship to Cores and Linkages. MSHCP Proposed Constrained Linkage 1 crosses Green River Road near its interchange with SR-91. The following paragraphs were taken from the MSHCP (Volume I: Section 3.0) and describe the purpose and conservation objectives of Proposed Constrained Linkage 1:

> Proposed Constrained Linkage 1 is located in the northwest portion of the Plan Area. The Linkage connects Existing Core A (Prado Basin/Santa Ana River) with Existing Core B (Cleveland National Forest) to the south. Existing urban Development constrains the Linkage at its northern terminus; the Linkage is unconstrained in the south. In addition, SR91 intersects this Linkage at its northern border. Despite this, Proposed Constrained Linkage 1 likely provides for movement of mountain lion and bobcat from the Santa Ana Mountains to the Chino Hills area beyond the Plan Area. Maintenance of contiguous habitat blocks with appropriate refugia for resting, such as rockpiles, brushpiles, windfalls, hollow snags and hollow trees, is important for dispersal of juveniles in this proposed Linkage.
>
> In addition, the Linkage has a relatively low P/A ratio (79 feet per acre) compared to other MSHCP Constrained Linkages, and the Linkage is surrounded by a Rural Mountainous planned land use designation. Thus Edge Effects will be somewhat mitigated by these factors. Guidelines Pertaining to Urban/Wildlands Interface for the management of edge factors such as lighting, urban runoff, toxics, and domestic predators are presented in Section 6.1 of this document. In addition, as SR-91 intersects the Linkage at its northern terminus, an adequate wildlife underpass or overpass may need to be implemented to insure movement of species in this area and to reduce the chance of mortality from vehicle collision.

The application of Urban/Wildlands Interface Guidelines, discussed later in this report, would help to mitigate the impact of the road widening on Proposed Constrained Linkage 1. Consultation with the RCA and concerned wildlife agencies may also be required to implement MSHCP Guidelines for Construction of Wildlife Crossings (also discussed later in this report).

MSHCP Proposed Constrained Linkage 2 crosses Green River Road near Nicholas Place and is centered on the Fresno Canyon drainage. The following paragraphs were taken from the MSHCP (Volume I: Section 3.0) and describe the purpose and conservation objectives of Proposed Constrained Linkage 2:

> Proposed Constrained Linkage 2 consists of Fresno Canyon, located along the eastern border of the Plan Area. Like Proposed Constrained Linkage 1, this Linkage connects Existing Core A (Prado Basin and Santa Ana River) with Existing Core B (Cleveland National Forest) to the south. Unlike Constrained Linkage 1, however, the Fresno Canyon Constrained Linkage provides a riparian connection from the Prado Basin and Santa Ana River to the Cleveland National Forest, thus allowing for movement of species such as coast range newt and western pond turtle. This Linkage is also likely to be important for mountain lion movement from the Santa Ana Mountains to the Chino Hills beyond the Plan Area. Maintenance of contiguous habitat blocks with appropriate refugia for resting, such as rockpiles, brushpiles, windfalls, hollow snags and hollow trees, is important for dispersal of juveniles in this proposed Linkage.
>
> Existing agricultural use and a small amount of urban Development constrain the Linkage along much of its length, and the vast majority of the Linkage is surrounded by a city (Corona) planned land use designation; thus treatment and management of edge conditions along this Linkage will be necessary to ensure that it provides Habitat and movement functions for species using the Linkage. Guidelines Pertaining to Urban/Wildlands Interface for the management of edge factors such as lighting, urban runoff, toxics, and domestic predators are presented in Section 6.1 of this document. In addition, as SR-91 intersects the Linkage at its northern terminus, an adequate wildlife underpass or overpass may need to be implemented to insure movement of species in this area and to reduce the chance of mortality from vehicle collision.

Proposed Constrained Linkage 2 in the project vicinity is centered on the Fresno Canyon drainage, which provides a riparian connection between MSHCP Core Areas. The drainage is not within the project impact area, and adjacent areas to be impacted are all mapped as developed/ruderal (Figure 5); however, MSHCP Urban/Wildlands Interface Guidelines must be implemented to minimize edge effects on the Linkage.

Objectives for Area Plan and Subunit. All but the extreme eastern end of the study area is located within the MSHCP Temescal Canyon Area Plan, Subunit 1: Santa Ana River to Santa Ana Mountains (Figure 3). The MSHCP (Volume I: Section 3.3.16) identifies the following Planning Species for Subunit 1:

- Coast range newt (*Taricha torosa torosa*);
- Coastal California gnatcatcher (*Polioptila californica californica*);
- Cooper's hawk (*Accipiter cooperii*);
- Bobcat (*Lynx rufus*);
- Mountain lion (*Felis concolor*); and
- Western pond turtle (*Clemmys marmorata pallida*).

The MSHCP also identifies the following Biological Issues and Considerations for Subunit 1:

- Provide for and maintain connection(s) from Prado Basin and the Santa Ana River to Chino Hills State Park outside the Plan Area;
- Maintain linkage area for bobcat;
- Maintain linkage area for mountain lion;
- Maintain Core and Linkage Habitat for coast range newt; and
- Maintain Core and Linkage Habitat for western pond turtle.

The extreme eastern end of the study area is located within the MSHCP Temescal Canyon Area Plan, Subunit 2: Prado Basin (Figure 3). This portion of the study area is mapped solely as developed/ruderal. The MSHCP (Volume I: Section 3.3.16) identifies the following Planning Species for Subunit 2:

- Coast range newt;
- Cactus wren (*Campylorhynchus brunneicapillus*);
- California horned lark (*Eremophila alpestris actia*);
- Northern harrier (*Circus cyaneus*);
- White-tailed kite (*Elanus leucurus*);
- Bobcat;
- Mountain lion; and

- Western pond turtle.

The MSHCP Biological Issues and Considerations for Subunit 2 are the same as those given for Subunit 1 above.

The MSHCP Biological Issues and Considerations for these two Subunits, as they relate to the proposed project, are all concerned with the two Proposed Constrained Linkages discussed previously. Specifically, both linkages are intended to maintain connectivity between MSHCP Reserve areas to the north and south of the project site, particularly for movement of bobcat and mountain lion. Proposed Constrained Linkage 2 is also intended to provide movement for coast range newt and western pond turtle through the Fresno Canyon drainage. The project area does not include core habitat for coast range newt or western pond turtle. The project must integrate MSHCP guidelines regarding Wildlife Crossings and Urban/Wildlands Interface as appropriate in order to minimize effects on the linkages.

The project impact area consists of disturbed and developed areas. Although there is a small amount of riparian habitat within the impact area (as discussed later in this report), it is also disturbed and unlikely to provide substantial habitat for any of the Planning Species listed above. None of the Planning Species for these two Subunits was observed on the project site. Cooper's hawk may occasionally forage on the site but is unlikely to nest within the area to be impacted. California horned lark, northern harrier, and white-tailed kite are planning species only for Subunit 2. The portion of the project site in Subunit 2 is all mapped as developed/ruderal (Figure 3) and does not provide habitat for these species. Bobcat and mountain lion may occasionally move through the site. The project site impact area does not provide habitat for coastal California gnatcatcher, cactus wren, coast range newt, or western pond turtle, although the latter two species may move through the vicinity along the Fresno Canyon drainage.

Overall Consistency with Reserve Assembly Criteria. The project area crosses two MSHCP Proposed Constrained Linkages. In order to minimize impacts to these linkages, the project must integrate MSHCP Urban/Wildlands Interface and Wildlife Crossing Guidelines, as appropriate. Some Planning Species may occasionally move through the area or forage on site but are unlikely to nest within the project impact area. Provided that the previously mentioned guidelines are followed, the project will not substantially impact habitat of any Planning Species.

Riparian/Riverine and Vernal Pool Requirements

The MSHCP requires focused surveys for sensitive riparian bird species when suitable riparian habitat is present and surveys for sensitive fairy shrimp species when vernal pools or other suitable habitat is present.

Approximately 0.1 acre of riparian vegetation, consisting of three areas of riparian scrub and one area of riparian forest, is present within the study area (Figure 3). One area of riparian scrub is within the Fresno Canyon drainage. The sparse mule fat in this area does not provide suitable habitat for sensitive riparian birds and would not be impacted. The other two areas of riparian scrub and the area of riparian forest would be impacted by the proposed project. These areas are marginally suitable for least Bell's vireo but not for any other sensitive riparian bird species due to the limited extent of the riparian vegetation and its relative isolation from larger riparian areas. A focused survey for least Bell's vireo will be required to determine if that species is present. The survey must begin in mid-April and continue through July.

The riparian areas on the site meet the MSHCP definition of riverine/riparian habitat. Other drainages on the site (Figure 3) may also meet the MSHCP definition. A Determination of Biological Superior or Equivalent Preservation (DBESP), including an assessment of functions and values, is required for impacts to riverine/riparian areas and for any impacts to least Bell's vireo (if it is determined to be present). Precise impacts to riparian areas will be determined following the jurisdictional delineation.

There are no vernal pools or similar habitats present on the project site; therefore, no surveys for sensitive fairy shrimp species will be required.

Additional Species Survey Requirements

The MSHCP requires focused surveys for certain plant, bird, amphibian, mammal, and insect species for project sites located within designated survey areas when suitable habitat is present.

Narrow Endemic and Criteria Area Plant Species. The project site is within MSHCP survey areas for three NEPSSA species (Table B). A survey was conducted for Brand's phacelia within the riparian scrub area of the Fresno Canyon drainage (Figure 3), and the species was determined to be absent. Suitable habitat does not exist on the site for the other two species, as described in Table B.

Burrowing Owl. The project site is within the MSHCP burrowing owl survey area. Burrowing owls are found in open, dry grasslands, agricultural and range lands, and desert habitats. They can also inhabit grass, forb, and shrub stages of pinyon and ponderosa pine habitats. They nest in abandoned burrows of ground squirrels or other animals, in pipes, under piles of rock or debris, and in other similar features.

A burrowing owl burrow survey was conducted as described in the Methods section, and the species was determined to be absent from the site based on the absence of suitable burrows at the time of the survey. However, a preconstruction survey is required within 30 days prior to beginning of site grading in order to determine whether any owls may have subsequently moved onto the site.

Other Survey Species. The project site is not within a designated MSHCP survey area for any other species. Therefore, no surveys for other species are necessary for MSHCP consistency.

Guidelines for Construction of Wildlife Crossings

The MSHCP [Volume I: Section 6.6.2 E(2)] indicates that MSHCP permittees proposing infrastructure projects that have the potential to affect connectivity of habitat within the Criteria Area shall consult with the Riverside County Regional Conservation Authority (RCA) at the predesign stage regarding the size, location, and configuration of wildlife crossings pursuant to the Guidelines for Construction of Wildlife Crossings (MSHCP (Volume I: Section 7.5.2). The proposed project is entirely within the Criteria Area and crosses Proposed Constrained Linkages 1 and 2, which are intended to provide habitat connectivity.

Construction Guidelines and Best Management Practices

The MSHCP (Volume I: Section 7.5.3) provides construction guidelines and best management practices (MSHCP Appendix C) applicable to planned roads, including the proposed project, within the Criteria Area.

Guidelines Pertaining to Urban/Wildlands Interface

Projects located in proximity to the MSHCP Conservation Area may result in edge effects that could adversely affect biological resources within the MSHCP Conservation area. MSHCP Guidelines Pertaining to Urban/Wildlands Interface (MSHCP Section 6.1.4) are intended to reduce such indirect effects.

This project is located within the MSHCP Criteria Area and crosses two Proposed Constrained Linkages. The MSHCP Conservation Area, including the two Proposed Constrained Linkages, is to be assembled from portions of the Criteria Area.

The project design features discussed below in relation to Urban/Wildlands Interface guidelines will serve to reduce edge effects.

Drainage. The Guidelines indicate that proposed developments in proximity to the MSHCP Conservation Area are to incorporate measures, including measures required through the National Pollutant Discharge Elimination System (NPDES) requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Conservation Area is not altered in an adverse way when compared with existing conditions. In particular, measures are to be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area. Stormwater systems are to be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials, or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area. This can be accomplished using a variety of methods including natural detention basins, grass swales, or mechanical trapping devices.

All runoff from the new paved areas will be directed into storm drains. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared to satisfy NPDES requirements.

Toxics. Land uses proposed in proximity to the MSHCP Conservation Area that use chemicals or generate bioproducts that may adversely affect wildlife species or water quality are to incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Conservation Area. Measures such as those employed to address drainage issues shall be implemented.

All runoff from the new paved areas will be directed into storm drains. An SWPPP will be prepared to satisfy NPDES requirements.

Lighting. Night lighting is to be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in the MSHCP Conservation Area is not increased.

The project may involve increased street lighting. This lighting will be directed onto the roadway.

Noise. Proposed noise-generating land uses affecting the MSHCP Conservation Area are to incorporate setbacks, berms, or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations, and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.

The project will not involve a change in land use and does not involve noise beyond that generated by street traffic.

Invasives. Table 6-2 of the MSHCP contains a list of plants that should be avoided adjacent to the MSHCP Conservation Area. For portions of the project that are adjacent to the MSHCP Conservation Area, avoidance of these species is to be incorporated into the project design or landscape plans. Considerations in reviewing the applicability of this list shall include proximity of planting areas to the MSHCP Conservation Areas, species considered in the planting plans, resources being protected within the MSHCP Conservation Area and their relative sensitivity to invasion and barriers to plant and seed dispersal, such as walls, topography and other features.

The landscaping plans and revegetation specifications for temporary soil stabilization and permanent slope stabilization shall consider MSHCP Table 6-2, "Plants that should be Avoided Adjacent to the MSHCP Conservation Area."

Barriers. Proposed land uses adjacent to the MSHCP Conservation Area are to incorporate barriers where appropriate in individual project designs to minimize unauthorized public access, domestic animal predation, illegal trespass, or dumping in the MSHCP Conservation Area. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.

The proposed project would not create new means of accessing adjacent natural areas and would reduce vehicular access to such areas by eastward extension of curb and gutter and an asphalt concrete berm, as indicated on the attached Street Improvement Plans.

Grading/Land Development. Manufactured slopes associated with proposed site development are not to extend into the MSHCP Conservation Area.

All grading will be limited to the impact area depicted in Figure 5.

Guidelines for the Siting and Design of Planned Roads Within the Criteria Area

The MSHCP (Volume I: Section 7.5.1) identifies the following guidelines for planned roadways within the Criteria Area in order to avoid and minimize impacts to sensitive species and habitats:

- Planned roads will be located in the least environmentally sensitive location feasible, including disturbed and developed areas or areas that have been previously altered. Alignments will follow existing roads, easements, rights-of-way, and disturbed areas, as appropriate to minimize habitat fragmentation.
- Planned roads will avoid, to the greatest extent feasible, impacts to Covered Species and wetlands. If wetlands avoidance is not possible, then any impacts to wetlands will require issuance of and mitigation in accordance with a Federal Section 404 and /or State Section 1600 permit.
- Design of planned roads will consider wildlife movement requirements, as further outlined below under Guidelines for Construction of Wildlife Corridors.
- Narrow Endemic Plant Species will be avoided; if avoidance is not feasible, then mitigation as described in the Narrow Endemics Plant Policy will be implemented.
- Any construction, maintenance, and operation activities that involves clearing of natural vegetation will be conducted outside the active breeding season (March 1 through June 30).
- Prior to design and construction of transportation facilities, biological surveys will be conducted within the study area for the facility including vegetation mapping and species surveys and/or wetland delineations. The appropriate biological surveys to be conducted will be based on field conditions and recommendations of the project manager in consultation with a qualified biologist. The results of the biological resources investigations will be mapped and documented. The documentation will include preliminary conclusions and recommendations regarding potential effects of facility construction on MSHCP Conservation Area resources and methods to avoid and minimize impacts to MSHCP Conservation Area resources in conjunction with project siting, design, construction and operation. The project biologist will work with facility designers during the design and construction phase to ensure implementation of feasible recommendations.

If there is a dispute over a project's consistency with these guidelines, the dispute resolution process described in MSHCP Volume I: Section 6.2.2 is to be employed.

The project follows the existing Green River Road in compliance with the first guideline. A delineation of wetlands and other jurisdictional areas will be required, and any impacts to wetlands must be mitigated. The project must integrate MSHCP Guidelines for Construction of Wildlife Crossings as discussed previously. Narrow Endemic Plant Species were determined to be absent from the project site and will not be impacted. Natural vegetation within the project impact area consists of non-native grassland, riparian scrub, and riparian forest. Clearing in these areas is to be conducted outside of the breeding season. Biological surveys remaining for this project include a least Bell's vireo survey and a delineation of wetlands and other jurisdictional waters.

CEQA COMPLIANCE

Adopted Habitat Conservation Plans

Section 10(a)(2)(A) of the 1973 Federal Endangered Species Act requires the preparation of a habitat conservation plan (HCP) for incidental take of threatened or endangered species when there is no federal agency involvement in a project. Continuing land development may cause incidental take of listed species and, therefore, HCPs have been prepared for areas within western Riverside County. The MSHCP and the Stephens' Kangaroo Rat Habitat Conservation Plan are the principal habitat

conservation plans in western Riverside County. The USFWS regional office maintains a current list of habitat conservation plans for the southern California region.

The project site is within the MSHCP area, but it not within the Stephens' Kangaroo Rat Habitat Conservation Plan area or subject to any other adopted habitat conservation plan.

Threatened and Endangered Species

The USFWS and CDFG may list species as threatened or endangered under the Federal and State Endangered Species Acts. The USFWS can designate critical habitat that identifies specific areas, either occupied or unoccupied, that are essential to the conservation of a listed species. Critical habitat areas may require special management considerations or protections.

The USFWS and CDFG have issued permits for the take of most threatened and endangered species within the MSHCP Plan Area. The MSHCP covers impact to these species. However, if a project has the involvement of a federal agency, that agency is required to address impacts to listed species and critical habitat by consulting with the USFWS. The USFWS has indicated in the permit issued for the MSHCP that, in such cases, the consultation will be expedited and that no restrictions will be imposed on the project beyond those specified in the MSHCP.

A survey is required to determine if least Bell's vireo occurs on the site. No other threatened or endangered species are expected to be present. The site is not within designated critical habitat of any species.

Other Special Interest Species

The CDFG, USFWS, local agencies, and special interest groups, such as the California Native Plant Society (CNPS), maintain lists of species that they consider to be in need of monitoring. Legal protection for these special interest species varies widely.

The special interest species listed in Table C (attached) may be expected to occur in the general project vicinity but are not covered under the MSHCP or are not adequately conserved by the MSHCP at this time. One or more of these species may occur on the project site. However, none of these species is listed as threatened or endangered under state or federal law, and the site does not contain high quality habitat for any of these species. Therefore, any impacts to these species by the project would not be substantial. Neither additional surveys nor additional conservation measures for these species will be required for the proposed project.

An isolated stand of Coulter's matilija poppy (*Romneya coulteri*) was found during the focused plant survey within an area of otherwise ruderal vegetation and almost entirely outside the project impact area. Although this species is monitored by the California Native Plant Society (as a CNPS List 4 species) because of its limited distribution, it is not generally considered sensitive, and impacts to this species by the project would not be substantial.

Wildlife Movement, Corridors, and Nursery Sites

Wildlife movement includes seasonal migration along corridors, as well as daily movements for foraging. Migrational corridors may include areas of unobstructed movement of deer, riparian corridors providing cover for migrating birds, routes between breeding waters and upland habitat for amphibians, and between roosting and feeding areas for birds.

Green River Road already limits wildlife movement between habitats north and south of the road. Widening of the road would further limit such movement. Such limitation is of particular concern given that the road crosses two MSHCP Proposed Constrained Linkages. Application of the MSHCP Guidelines for Construction of Wildlife Crossings, Guidelines Pertaining to Urban/Wildlands Interface, and Guidelines for Siting and Design of Planned Roads discussed above will serve to mitigate project impacts to wildlife movement.

Natural Communities of Interest

Riparian habitats, oak woodlands, and vernal pools are among the natural communities of interest to the CDFG. Coastal sage scrub is not considered a sensitive natural community unless it is occupied by California gnatcatcher.

Four small areas of riparian vegetation exist within the study area. Three of these will be impacted (Figure 5). A DBESP will be required to address the impacts these areas. No other plant communities that might be considered sensitive are present in the study area.

Wetlands

A formal wetland delineation is required to determine presence and extent and other types of wetlands on the project site.

Local Policies and Ordinances Protecting Biological Resources

City and County General Plans and development ordinances may include regulations or policies governing biological resources. For example, policies may include tree preservation, locally designated species survey areas, local species of interest, and significant ecological areas.

The project will not be in conflict with local policies or ordinances applicable to biological resources.

Indirect Effects

Development in proximity to the Conservation Area (i.e., within 1,000 feet of the MSHCP Criteria Area or other Public/Quasi-Public Lands) may result in edge effects that adversely affect biological resources within the Conservation Area. The Guidelines Pertaining to the Urban/Wildlands Interface (MSHCP Section 6.1.4) are intended to address indirect effects due to edge effects of development in proximity to the MSHCP Conservation Area. Compliance with the applicable guidelines will serve to reduce indirect impacts on biological resources in the MSHCP Conservation Area.

Indirect effects of the project on adjacent biological resources may include some increase in lighting, noise, and stormwater runoff. Application of standard mitigation measures and the MSHCP guidelines discussed above will serve to mitigate indirect impacts.

Cumulative Effects

Cumulative impacts refer to incremental effects of an individual project when viewed in connection with the effects of past projects, current projects, and probable future projects.

Project construction will contribute to the incremental loss of natural habitat in the region. Cumulative impacts potentially include limitations on wildlife movement, increased edge effects, reduced habitat quality, and increased wildlife mortality. The MSHCP provides a comprehensive approach to the regional conservation of natural habitats and, as a regional plan, serves to provide mitigation for cumulative impacts to covered species. Project compliance and consistency with the MSHCP ensures that any cumulative impacts to covered species are effectively mitigated. Special interest species that are not covered by the MSHCP also benefit from the surveys, conservation, and other measures of the MSHCP because they occupy many of the same habitats.

Sincerely,

LSA ASSOCIATES, INC.

Stanley C. Spencer, Ph.D.
Senior Biologist

Attachments:
- Figure 1 – Regional and Project Location
- Figure 2 – Soils
- Figure 3 – Land Cover and Photograph Locations
- Figure 4 – Site Photographs
- Figure 5 – Project Impact Area
- Table A – Plant and Animal Species Observed
- Table B – MSHCP Narrow Endemic and Criteria Area Plant Survey Species
- Table C – Special Interest Species Potentially Occurring in the Project Vicinity That Are Not Adequately Covered by the MSHCP
- Street Improvement Plans (November 2007, partial)

cc: Yvonne C. Moore, Southern California Coordinator, Resource Assessment Program, California Department of Fish and Game

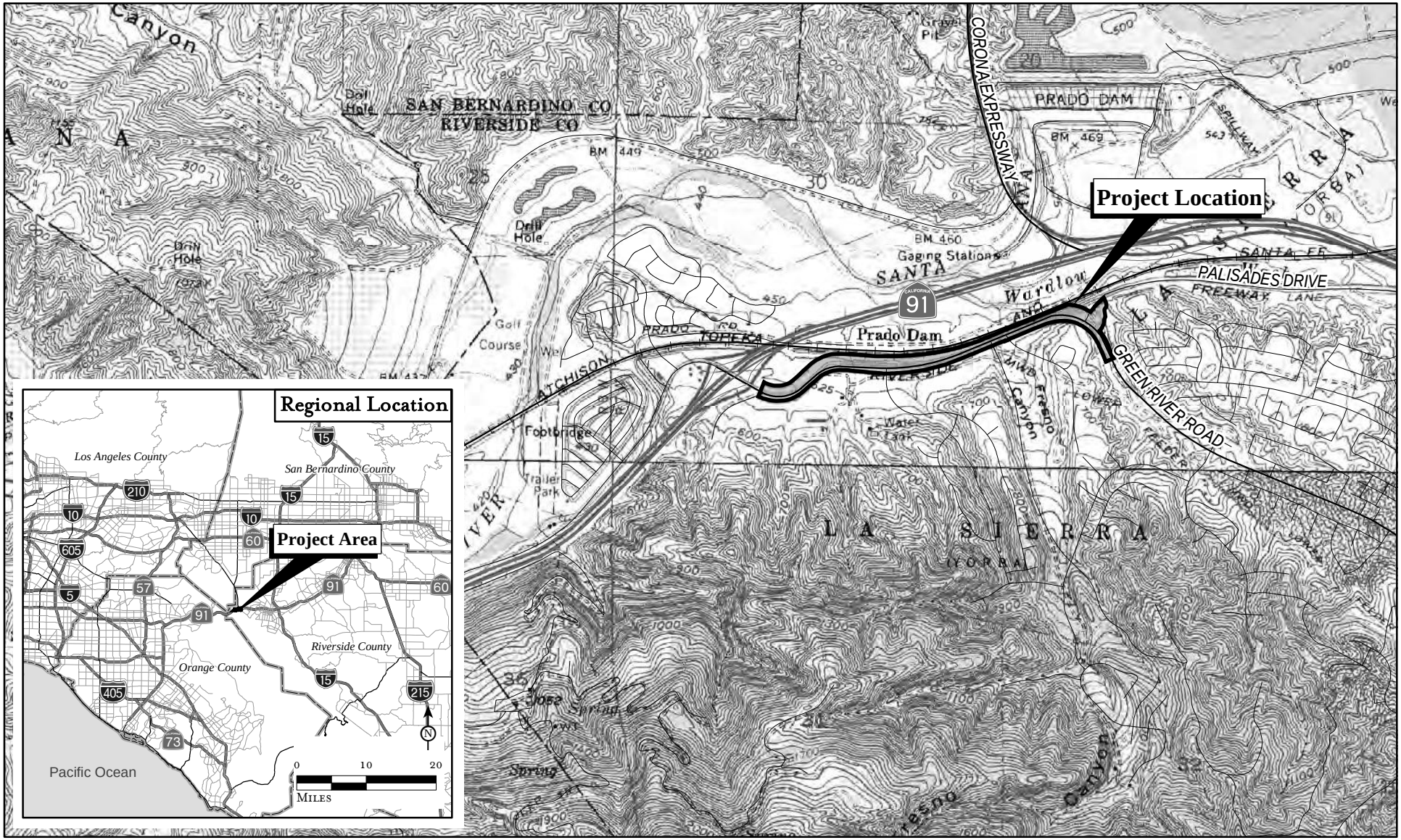

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FIGURE 1

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Feet

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

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Green River Road Widening
Biological Resources Assessment Report

Regional and Project Location

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STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments

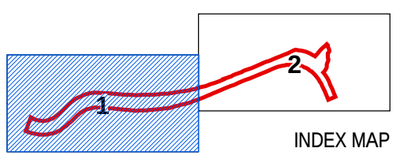

FIGURE 2
Sheet 1 of 2

Green River Road Widening
Biological Resources
Assessment Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)

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FEET

STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments

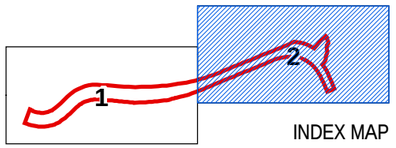

FIGURE 2
Sheet 2 of 2

Green River Road Widening
Biological Resources
Assessment Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)

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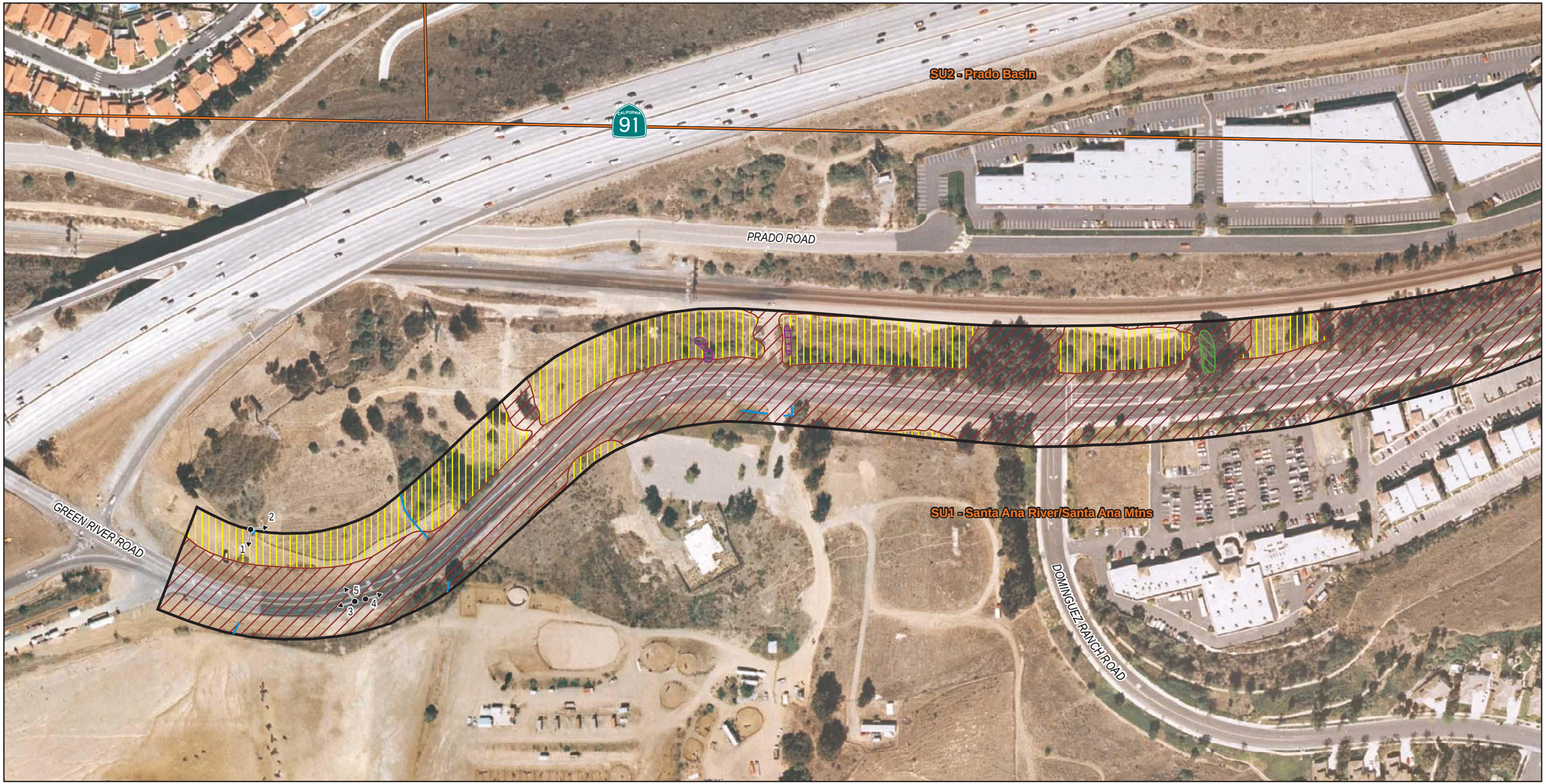

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FIGURE 3
Sheet 1 of 2

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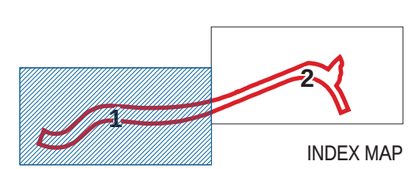
PHOTOGRAPH LOCATION
STUDY AREA
DRAINAGE WITH UPLAND VEGETATION
AREA PLAN SUBUNITS

LAND COVER
DEVELOPED/RUDERAL
NON-NATIVE GRASSLAND
RIPARIAN FOREST
RIPARIAN SCRUB



INDEX MAP

Green River Road Widening
Biological Resources
Assessment Report

Land Cover and
Photograph Location

SOURCE: Air Photo USA (2007)

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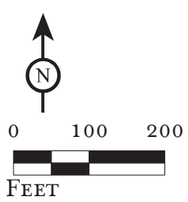
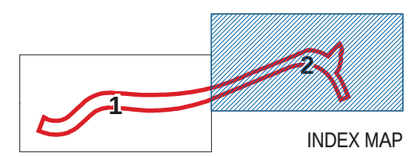
FIGURE 3
Sheet 2 of 2



PHOTOGRAPH LOCATION
STUDY AREA
DRAINAGE WITH UPLAND VEGETATION
AREA PLAN SUBUNITS

LAND COVER
DEVELOPED/RUDERAL
NON-NATIVE GRASSLAND
RIPARIAN FOREST
RIPARIAN SCRUB



Green River Road Widening
Biological Resources
Assessment Report

Land Cover and
Photograph Location

SOURCE: Air Photo USA (2007)

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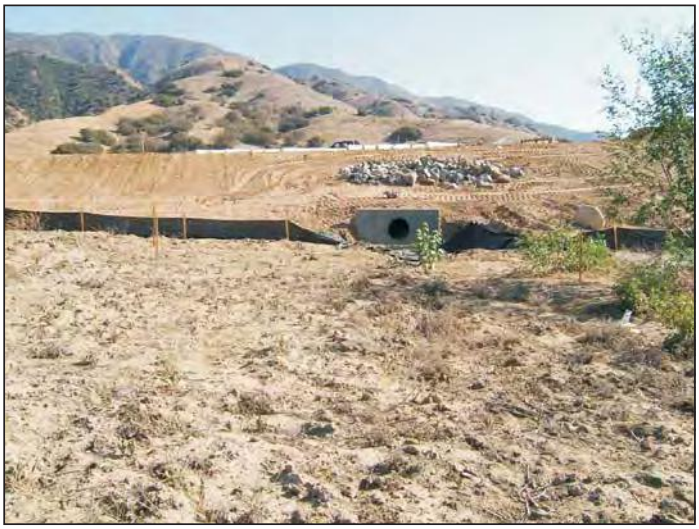

PHOTOGRAPH 1: *View of site looking south, showing north edge of Green River Road.*

PHOTOGRAPH 2: *View of site looking east, showing disked non-native grassland with a stand of blue elderberries and eucalyptus in the distance.*

PHOTOGRAPH 3: *View of site looking southwest, showing the western end of the project area.*

PHOTOGRAPH 4: *View of site looking northeast along Green River Road.*

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FIGURE 4A

Green River Road Widening
Biological Resources Assessment
Site Photographs

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PHOTOGRAPH 5: *View of site looking northwest across Green River Road.*

PHOTOGRAPH 6: *View of site looking southwest along Green River Road.*

PHOTOGRAPH 7: *View of site looking northeast along Green River Road.*

PHOTOGRAPH 8: *View of site looking southwest, showing an area of ruderal vegetation.*

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FIGURE 4B

Green River Road Widening
Biological Resources Assessment
Site Photographs

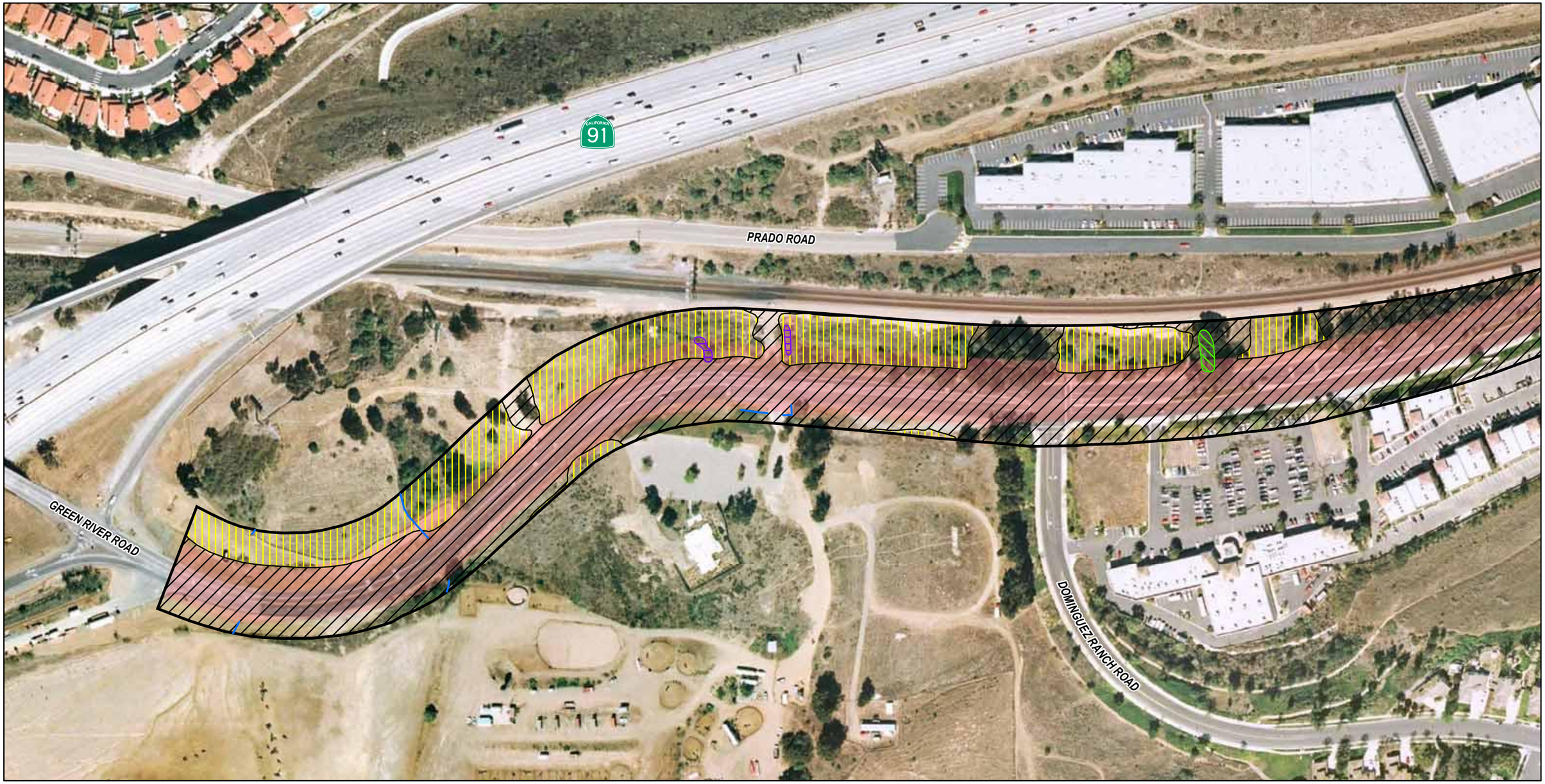

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FIGURE 5
Sheet 1 of 2

STUDY AREA
PROJECT IMPACT AREA
DRAINAGE WITH UPLAND VEGETATION

LAND COVER
DEVELOPED/RUDERAL
NON-NATIVE GRASSLAND
RIPARIAN FOREST
RIPARIAN SCRUB

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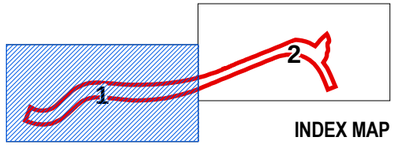

Green River Road Widening
Biological Resources
Assessment Report

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)
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STUDY AREA

PROJECT IMPACT AREA

LAND COVER

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN FOREST

RIPARIAN SCRUB

N

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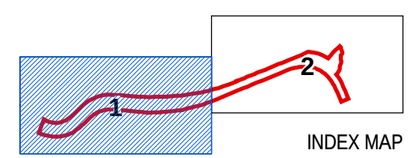
FEET



INDEX MAP

FIGURE 5
Sheet 1 of 2

Green River Road Widening
Biological Resources
Assessment Report

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)

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LSA

N

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FEET

STUDY AREA

PROJECT IMPACT AREA

LAND COVER

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN FOREST

RIPARIAN SCRUB

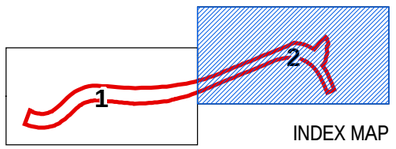

FIGURE 5
Sheet 2 of 2

Green River Road Widening
Biological Resources
Assessment Report

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)

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Table A: Plant and Animal Species Observed

Scientific Name	Common Name
DICOT PLANTS	
Aizoaceae	**Carpet weed family**
Carpobrotus edulis (Non-native species)	Hottentot-fig
Amaranthaceae	**Amaranth family**
Amaranthus albus (Non-native species)	Tumbling pigweed
Anacardiaceae	**Sumac family**
Malosma laurina	Laurel sumac
Apiaceae	**Carrot family**
Foeniculum vulgare (Non-native species)	Fennel
Asteraceae	**Sunflower family**
Ambrosia acanthicarpa	Annual bur-sage
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Baccharis pilularis	Coyote brush
Baccharis salicifolia	Mule fat
Baccharis sarothroides	Broom baccharis
Centaurea melitensis (Non-native species)	Tocalote
Cirsium vulgare (Non-native species)	Bull thistle
Conyza Canadensis	Canadian horseweed
Cotula australis (Non-native species)	Australian brass-buttons
Encelia californica	California encelia
Isocoma menziesii	Goldenbush
Lactuca serriola (Non-native species)	Prickly lettuce
Lepidospartum squamatum	Scalebroom
Picris echioides (Non-native species)	Bristly ox-tongue
Pseudognaphalium luteoalbum (Non-native species)	Jersey cudweed
Senecio vulgaris (Non-native species)	Common groundsel
Silybum marianum (Non-native species)	Milk thistle
Sonchus oleraceus (Non-native species)	Common sow thistle
Taraxacum officinale (Non-native species)	Common dandelion
Boraginaceae	**Borage family**
Amsinckia menziesii	Common fiddleneck
Brassicaceae	**Mustard family**
Hirschfeldia incana (Non-native species)	Shortpod mustard
Sisymbrium irio (Non-native species)	London rocket

Table A: Plant and Animal Species Observed

Scientific Name	Common Name
Caprifoliaceae	**Honeysuckle family**
Sambucus mexicana	Blue elderberry
Chenopodiaceae	**Saltbush family**
Chenopodium murale (Non-native species)	Nettleleaf goosefoot
Salsola tragus (Non-native species)	Russian thistle
Euphorbiaceae	**Spurge family**
Ricinus communis (Non-native species)	Castor bean
Fabaceae	**Pea family**
Lupinus truncates	Collar lupine
Medicago lupulina (Non-native species)	Black medick
Geraniaceae	**Geranium family**
Erodium cicutarium (Non-native species)	Redstem stork's bill
Lamiaceae	**Mint family**
Marrubium vulgare (Non-native species)	Horehound
Myrtaceae	**Myrtle family**
Eucalyptus sp. (Non-native species)	Eucalyptus
Papaveraceae	**Poppy family**
Romneya coulteri	Coulter's matilija poppy
Platanaceae	**Sycamore family**
Platanus racemosa	Western sycamore
Plumbaginaceae	**Leadwort family**
Limonium perezii (Non-native species)	Statice
Polygonaceae	**Buckwheat family**
Polygonum aviculare (Non-native species)	Common knotweed
Portulacaeae	**Purslane family**
Portulaca oleracea (Non-native species)	Common purslane
Primulaceace	**Primrose family**
Anagallis arvensis (Non-native species)	Scarlet pimpernel
Salicaceae	**Willow family**
Salix gooddingii	Goodding's willow
Solanaceae	**Nightshade family**
Datura wrightii	Sacred thorn-apple
Nicotiana glauca (Non-native species)	Tree tobacco
Tamaricaceae	**Tamarisk family**
Tamarix ramosissima (Non-native species)	Mediterranean tamarisk
Urticaceae	**Nettle Family**
Urtica urens (Non-native species)	Dwarf nettle

Table A: Plant and Animal Species Observed

Scientific Name	Common Name
MONOCOT PLANTS	
Poaceae	**Grass family**
Agrostis viridis (Non-native species)	Water bentgrass
Avena barbata (Non-native species)	Slender wild oat
Bromus diandrus (Non-native species)	Common ripgut grass
Bromus madritensis ssp. *rubens* (Non-native species)	Red brome
Cynodon dactylon (Non-native species)	Bermuda grass
Hordeum murinum (Non-native species)	Foxtail barley
Piptatherum miliaceum (Non-native species)	Smilo grass
Poa annua (Non-native species)	Annual bluegrass
REPTILES	
Phrynosomatidae	**Phrynosomatid Lizards**
Sceloporus occidentalis	Western fence lizard
BIRDS	
Cathartidae	**American Vultures**
Cathartes aura	Turkey vulture
Accipitridae	**Kites, Hawks, and Eagles**
Buteo jamaicensis	Red-tailed hawk
Corvidae	**Crows and Ravens**
Corvus brachyrhynchos	American crow
MAMMALS	
Leporidae	**Rabbits and Hares**
Sylvilagus audubonii	Desert cottontail
Sciuridae	**Squirrels**
Spermophilus beecheyi	California ground squirrel

Table B: MSHCP Narrow Endemic and Criteria Area Plant Survey Species

Species	MSHCP Habitat	Growth Form & Blooming Period	Habitat Suitability
San Diego ambrosia *Ambrosia pumila*	Open floodplain terraces on Garretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to Willow silty alkaline soils. Occurs in sparse annual vegetation.	Perennial Generally non-flowering	Absent. No Las Posas or Willows soils on site. Garretson gravelly sandy loam mapped within the study area is within the existing pavement of Green River Road and over 1,000 feet from any natural vegetation in the study area. This perennial species was not observed during full botanical inventory of the site.
Brand's Phacelia *Phacelia stellaris*	Sandy soils of washes or benches in alluvial flood plains. This species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside County, Brand's phacelia is restricted to sandy benches along the Santa Ana River."	Annual March–June	Absent. Potential habitat within the study area is of marginal suitability and is limited to a small area mapped as riparian scrub in the Fresno Canyon drainage. This area was surveyed and the species determined to be absent.
San Miguel savory *Satureja chandleri*	Rocky, gabbroic and metavolcanic substrates in chaparral or oak woodland. MSHCP Table 6-1 lists chaparral, coastal sage scrub, cismontane woodland, riparian woodland, and valley and foothill grasslands as potential habitat for this species. However, this species prefers moist rocky canyons with trees or large shrubs and would not be expected in coastal sage scrub or open grassland except at the margins of chaparral or oak woodland, nor would it be expected in woodlands outside of rocky canyons (Andrew C. Sanders, UC Riverside Herbarium, pers. comm. to Stan Spencer, December 8, 2004, and March 9, 2005). All occurrences of this species in the California Natural Diversity Database that include habitat information (16 occurrences in Riverside, Orange, and San Diego Counties) list coast live oak (*Quercus agrifolia*) or chaparral species as associates, or indicate that the habitat is chaparral, oak woodland, a chaparral-coastal sage scrub interface, or grassy openings in chaparral. In Riverside County, this species is known only from the Santa Ana Mountains and Santa Rosa Plateau, except for a dubious record of an occurrence near Sage Road south of Hemet (Andrew C. Sanders, UC Riverside Herbarium, pers. comm. to Stan Spencer, Mar. 10, 2005; MSHCP species account for San Miguel savory).	Perennial March–May	Absent. No chaparral or oak woodland or other suitable habitat on site.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Plants				
Abronia villosa var. *aurita* **Chaparral sand-verbena**	US: – CA: SP CNPS: 1B	Sandy areas in chaparral and coastal sage scrub 80 to 1,600 meters (300 to 5,300 feet) elevation. Known only from Riverside, Orange (believed extirpated), and San Diego Counties.	January through August (annual herb)	Absent. No chaparral or coastal sage scrub on site.
Astragalus brauntonii **Braunton's milk-vetch**	US: FE CA: SP CNPS: 1B	Considered a limestone endemic and dependent on fire. Typically associated with the fire-dependent chaparral habitat on limestone and on down-wash sites. Elevation is below 640 meters (3,000 feet). Los Angeles, Orange, and Ventura Counties.	Blooms March through July (perennial herb)	Absent. No chaparral or limestone on site.
Atriplex coulteri **Coulter's saltbush**	US: – CA: SP CNPS: 1B	Alkaline or clay soils in ocean bluffs and ridgetops and alkaline low places in coastal bluff scrub, coastal dunes, coastal sage scrub, and valley and foothill grasslands below 460 meters (1,500 feet) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Bernardino, and San Diego Counties. Reports of this species from Riverside County are based on misidentifaction of *Atriplex serenana* ssp. *davidsonii* (*The Vascular Plants of Western Riverside County, California.* F.M. Roberts et al. 2004).	March through October (perennial herb)	Absent. No alkaline areas or clay bluffs on site.
Baccharis malibuensis **Malibu baccharis**	US: – CA: SP CNPS: 1B	Deciduous shrub of conejo volcanic substrates (often on exposed roadcuts), in coastal scrub, chaparral, or cismontane (oak) woodland at 150 to 260 meters (490 to 850 feet) elevation. Known only from near Malibu Lake in the Santa Monica Mountains in Los Angeles County, and from Fremont Canyon of the Santa Ana Mountains in Orange County.	Blooms in August (deciduous shrub)	Absent. No chaparral, coastal scrub or oak woodland on site. Nearest location is about 6 miles southwest of site in Orange County.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Calochortus plummerae **Plummer's mariposa lily**	US: – CA: SP CNPS: 1B	Sandy or rocky sites of (usually) granitic or alluvial material in valley and foothill grassland, coastal scrub, chaparral, cismontane woodland, and lower montane coniferous forest at 100 to 1,700 meters (300 to 5,600 feet) elevation. Known from the Santa Monica Mountains to San Jacinto Mountains in Riverside, San Bernardino, Los Angeles and Ventura Counties. In the western Riverside County area, this species is known from the foothills of the San Bernardino Mountains, northeastern Santa Ana Mountains, Box Springs Mountains, and from the Lake Skinner area (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	Blooms May through July (perennial herb)	Absent. No sandy or rocky areas in natural upland plant communities on site. All grasslands on site are on loams, not sands.
Calochortus weedii var. *intermedius* **Intermediate mariposa lily**	US: – CA: SP CNPS: 1B	Rocky areas in hills with annual grassland and coastal sage scrub. 180 to 855 meters (600 to 2,800 feet) elevation. Los Angeles, Orange, and Riverside Counties. In the western Riverside County area, this species is known from the hills and valleys west of Lake Skinner and Vail Lake (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	June through July (perennial herb)	Absent. No natural communities in rocky, hilly areas on site.
Chorizanthe parryi var. *parryi* **Parry's spineflower**	US: – CA: SP CNPS: 3	Dry sandy soils in chaparral or coastal scrub at 40 to 1,750 meters (100 to 5,700 feet) elevation. Known only from Riverside and San Bernardino Counties and possibly extending into Los Angeles County.	April through June (annual herb)	Absent. No chaparral or coastal scrub on site.
Chorizanthe xanti var. *leucotheca* **White-bracketed spineflower**	US: – CA: SP CNPS: 1B	Mojave desert scrub and pinyon and juniper woodland 300 to 1,200 meters (900 to 4,000 feet) elevation. Reported from Los Angeles, Riverside and San Bernardino Counties. However, reports of this species from western Riverside County are doubtful (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	April through June (annual herb)	Absent. No desert scrub or pinyon and juniper woodland on site. Reports from general project vicinity are doubtful.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Cupressus forbesii **Tecate cypress**	US: – CA: SP CNPS: 1B	Evergreen tree found in closed-cone coniferous forest and chaparral at elevations from 255 to 1,500 meters (800 to 4,900 feet). Known from Orange and San Diego Counties; fewer than five occurrences. Trees known from Riverside County are planted.	Evergreen tree	Absent. No coniferous forest or chaparral on site.
Lepidium virginicum var. *robinsonii* **Robinson's pepper-grass**	US: – CA: SP CNPS: 1B	Dry soils in coastal sage scrub and chaparral, typically below 500 meters (1,600 feet) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and San Diego Counties.	January through July	Absent. No coastal sage scrub or chaparral on site.
Nolina cismontana **Chaparral nolina**	US: – CA: SP CNPS: 1B	Sandstone, shale, and occasionally gabbro substrates in chaparral and coastal scrub from 140 to 1,275 meters (500 to 4,200 feet) elevation. Known only from Orange, San Diego, and Ventura Counties, California.	May through July (evergreen shrub)	Absent. No coastal scrub or chaparral on site.
Phacelia suaveolens ssp. *keckii* **Santiago Peak phacelia**	US: – CA: SP CNPS: 1B	Closed-cone coniferous forest and chaparral in elevations from 545 to 1,600 meters (1,800 to 5,200 feet). Known from Orange and Riverside Counties. In the western Riverside County area, this species is scarce and known from higher elevations in the Santa Ana Mountains, Agua Tibia Mountains, and Arroyo Seco Creek (*The Vascular Plants of Western Riverside County, California*. F.M. Roberts et al. 2004).	Blooms May through June (annual herb)	Absent. No coniferous forest or chaparral on site.
Pseudognaphalium leucocephalum **White rabbit-tobacco**	US: – CA: SP CNPS: 2	Sand and gravel at the edges of washes or mouths of steep canyons at 0 to 2,100 meters (0 to 7,000 feet) elevation. In California, known from Los Angeles, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties. Also occurs in Arizona, New Mexico, Texas, and Mexico.	Usually August through November (perennial herb)	Absent. Potential habitat in the study area occurs only within the Fresno Canyon drainage. This area was fully surveyed and the species determined to be absent.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Senecio aphanactis **Rayless ragwort**	US: – CA: SP CNPS: 2	Drying alkaline flats in cismontane woodland, coastal sage scrub, and chaparral at 15 to 575 (800?) meters (50 to 1,900 [2,600] feet) elevation. Known in California from Alameda, Contra Costa, Fresno, Los Angeles, Merced, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura Counties.	Blooms January through April (annual herb)	Absent. No alkaline areas on site.
Sidalcea neomexicana **Salt spring checkerbloom**	US: – CA: SP CNPS: 2	Alkaline springs and marshes below 1,530 meters (5,000 feet) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and Ventura Counties.	Blooms March through June (perennial herb)	Absent. No alkaline springs or marshes on site.
Symphyotrichum defoliatum (Aster defoliatus) **San Bernardino aster**	US: – CA: SP CNPS: 1B	Vernally wet sites (such as ditches, streams, and springs) in many plant communities below 2,040 meters (6,700 feet) elevation. In California, known from Ventura, Kern, San Bernardino, Los Angeles, Orange, Riverside, and San Diego Counties. In the western Riverside County area, this species is scarce, and documented only from Temescal and San Timoteo Canyons (*The Vascular Plants of Western Riverside County, California*. F.M. Roberts et al. 2004).	Blooms July through November (perennial herb)	Absent. Ditches on site are extremely disturbed and devoid of natural vegetation. Potential habitat in the study area within the Fresno Canyon drainage was surveyed and the species determined to be absent.
Reptiles				
Lampropeltis zonata pulchra **San Diego mountain kingsnake**	US: – CA: CSC	In the interior mountain ranges, this subspecies occurs primarily in associations of ponderosa, Jeffrey, and Coulter pine, and black oak. At lower elevations and in the coastal ranges, it occurs in riparian woodlands, usually in canyon bottoms, that have western sycamore, Fremont's cottonwood, coast live oak, willows, wild rose, poison oak, and blackberries. Found most commonly in the vicinity of rocks or boulders near streams or lake shores. This species ranges from the Santa Monica Mountains (Los Angeles County), Santa Ana Mountains (Orange and Riverside Counties), Santa Rosa Mountains (Riverside County), to the mountain areas of	Active diurnally throughout most of the year. Nocturnal in warm weather.	Absent. The project site includes neither the low coastal nor the mountainous habitat of this species. Riparian woodland on site is an isolated stand of 3-4 willows with a sparse weedy understory. Inland populations are typically at much higher elevations.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
		San Diego County. Documented from sea level to about 1,800 meters (5,900 feet) elevation. The lower elevational ranges are for coastal situations with lower temperatures and fog or abundant cloud cover. The inland locations are more typical and primarily support the subspecies between 1,220 meters (4,000 feet) and 1,830 meters (6,000 feet).		
Salvadora hexalepis virgultea **Coast patch-nosed snake**	US: – CA: CSC	Coastal chaparral, washes, sandy flats and rocky areas. Widely distributed throughout lowlands, up to 2,130 meters (7,000 feet) elevation, of Southern California from coast to the eastern border.	Active diurnally throughout most of the year	Low. Marginally suitable habitat for this species occurs in Fresno Canyon, which is within the study area but not within the project impact area.
Thamnophis hammondii **Two-striped garter snake**	US: – CA: CSC	Highly aquatic. Only in or near permanent sources of water. Streams with rocky beds supporting willows or other riparian vegetation. From Monterey County to northwest Baja California.	Diurnal Year-round	Absent. No permanent water on site.
Birds				
Asio otus (nesting) **Long-eared owl**	US: – CA: CSC	Scarce and local in forests and woodlands throughout much of the Northern Hemisphere. Rare resident in coastal southern California. Nests and roosts in dense willow-riparian woodland and oak woodland, but forages over wider areas. Breeds from valley foothill hardwood up to ponderosa pine habitat.	Nocturnal Year-round	Low. No dense oak or riparian woodlands on site, but this species may occasionally forage on site.
Mammals				
Antrozous pallidus **Pallid bat**	US: – CA: CSC	Day roosts in caves, crevices, mines and occasionally hollow trees and buildings. Night roosts may be more open sites, such as porches and open buildings. Hibernation sites are probably rock crevices. Grasslands, shrublands, woodlands, and forest in western North America.	Year-round Nocturnal	Low. Unlikely to roost on buildings or in culvert at Fresno Canyon. No roosting habitat within project impact area. May occasionally forage over site.

Table C: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Eumops perotis **Western mastiff bat**	US: – CA: CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc.; roosts in crevices in vertical cliff faces, high buildings, and tunnels, and travels widely when foraging.	Primarily the warmer months	Low. Unlikely to roost on buildings or in culvert at Fresno Canyon. No roosting habitat within project impact area. May occasionally forage over site.
Lasiurus xanthinus **Western yellow bat**	US: – CA: SA	Occurs in southern California in palm oases and in residential areas with untrimmed palm trees. Roosts primarily in trees, especially the dead fronds of palm trees. Forages over water and among trees.	Primarily the warmer months	Low. May occasionally forage over site.

LEGEND

US: Federal Classifications

FE Listed as Endangered.

CA: State Classifications

CSC California Species of Special Concern. Refers to animals with vulnerable or seriously declining populations.

SP Special Plant. Refers to any other plant monitored by the Natural Diversity Data Base, regardless of its legal or protection status.

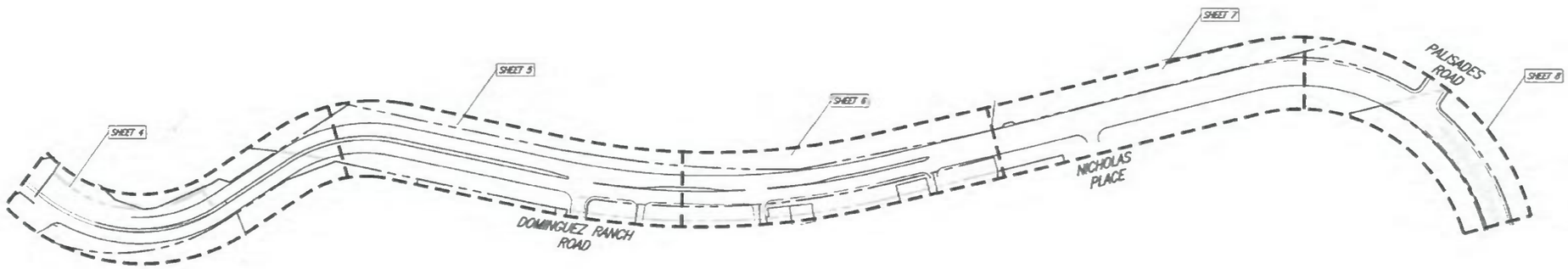
CNPS: California Native Plant Society Classifications

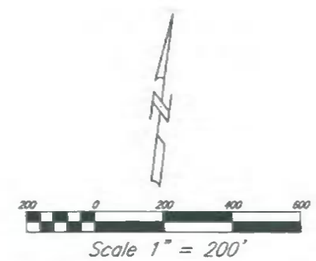
1B Plants considered by CNPS to be rare, threatened, or endangered in California and elsewhere.

2 Plants considered by CNPS to be rare, threatened, or endangered in California, but more common elsewhere.

3 Plants about which more information is needed – a CNPS review list.

STREET IMPROVEMENT PLANS
FOR GREEN RIVER ROAD





SHEET INDEX

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Designed by	Drawn by	Checked by
DGA	MDJ	DGA

PLANS PREPARED UNDER SUPERVISION OF

Date

Reference Plans for Street Improvements

Date	By	REVISIONS	App'd

BENCH MARK

Scale AS SHOWN

Engineering

Fire

Approved

By

Arnold A. Cotton R.C.E. 61930 Exp. 9-30-07
Director of Public Works

CITY OF CORONA

GREEN RIVER ROAD

INDEX SHEET

Drawing No. XX-XXXX

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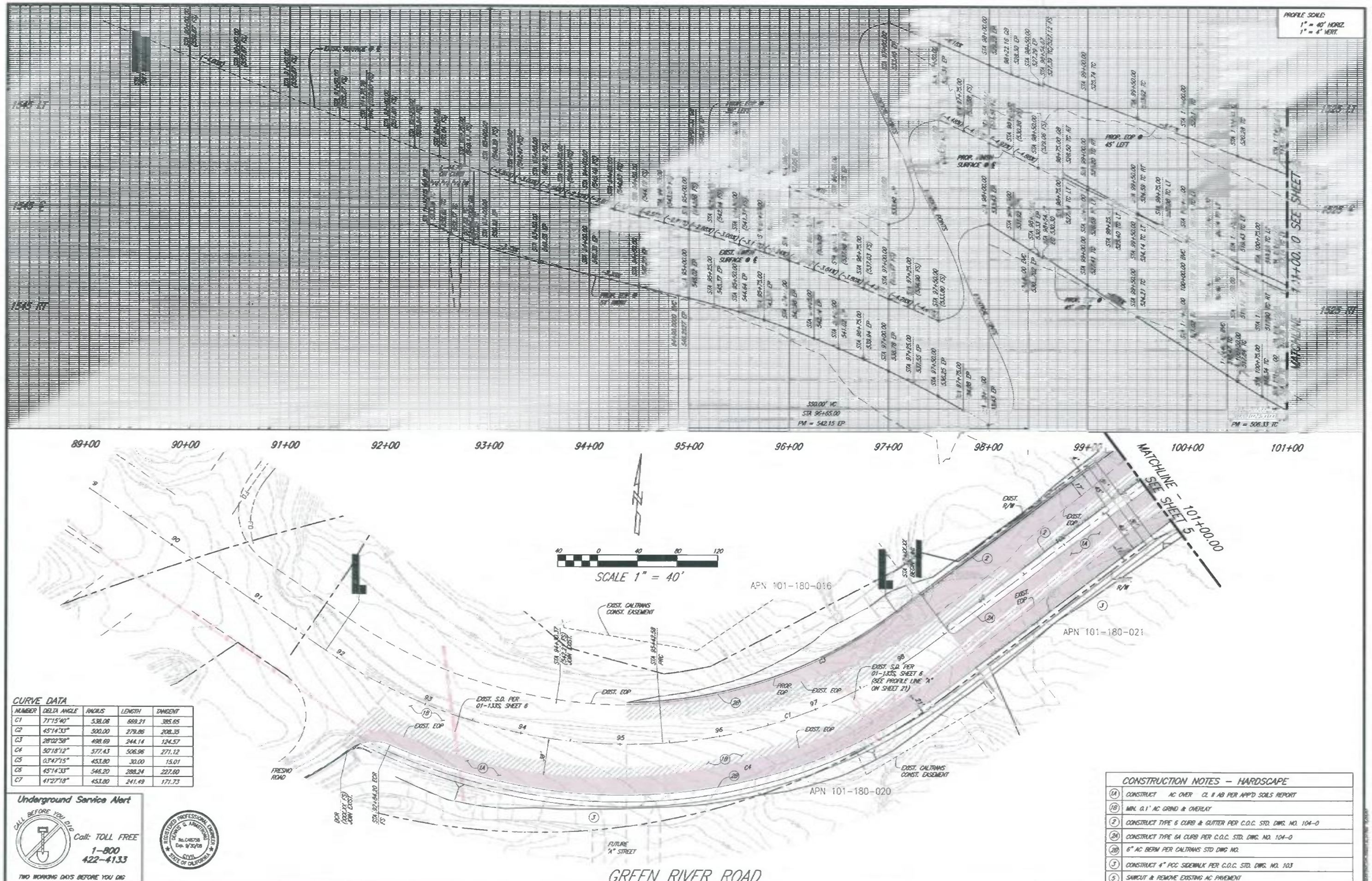

CURVE DATA

NUMBER	DELTA ANGLE	RADIUS	LENGTH	TANGENT
C1	71°15'40"	538.08	669.21	385.65
C2	45°14'33"	500.00	279.86	208.35
C3	28°22'58"	498.69	244.14	124.57
C4	50°18'12"	577.43	506.96	271.12
C5	0°47'15"	453.80	30.00	15.01
C6	45°14'33"	546.20	288.24	227.60
C7	41°27'18"	453.80	241.49	171.73

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Exp. 9/30/08
CIVIL
STATE OF CALIFORNIA

CONSTRUCTION NOTES – HARDSCAPE

1A	CONSTRUCT AC OVER CL II AB PER APP'D SOILS REPORT
1B	MIN. 0.1' AC GRIND & OVERLAY
2	CONSTRUCT TYPE 6 CURB & GUTTER PER C.O.C. STD. DWG. NO. 104-0
2A	CONSTRUCT TYPE 6A CURB PER C.O.C. STD. DWG. NO. 104-0
2B	6" AC BERM PER CALTRANS STD DWG NO.
3	CONSTRUCT 4" PCC SIDEWALK PER C.O.C. STD. DWG. NO. 103
5	SAWCUT & REMOVE EXISTING AC PAVEMENT

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Designed by DGA | Drawn by MDJ | Checked by DGA

PLANS PREPARED UNDER SUPERVISION OF
DENNIS G. ARMSTRONG No. C46758 Exp. 9/30/08
Date

Reference Plans for these Improvements

Date | By | REVISIONS

BENCH MARK

Scale AS SHOWN | Date

Engineering

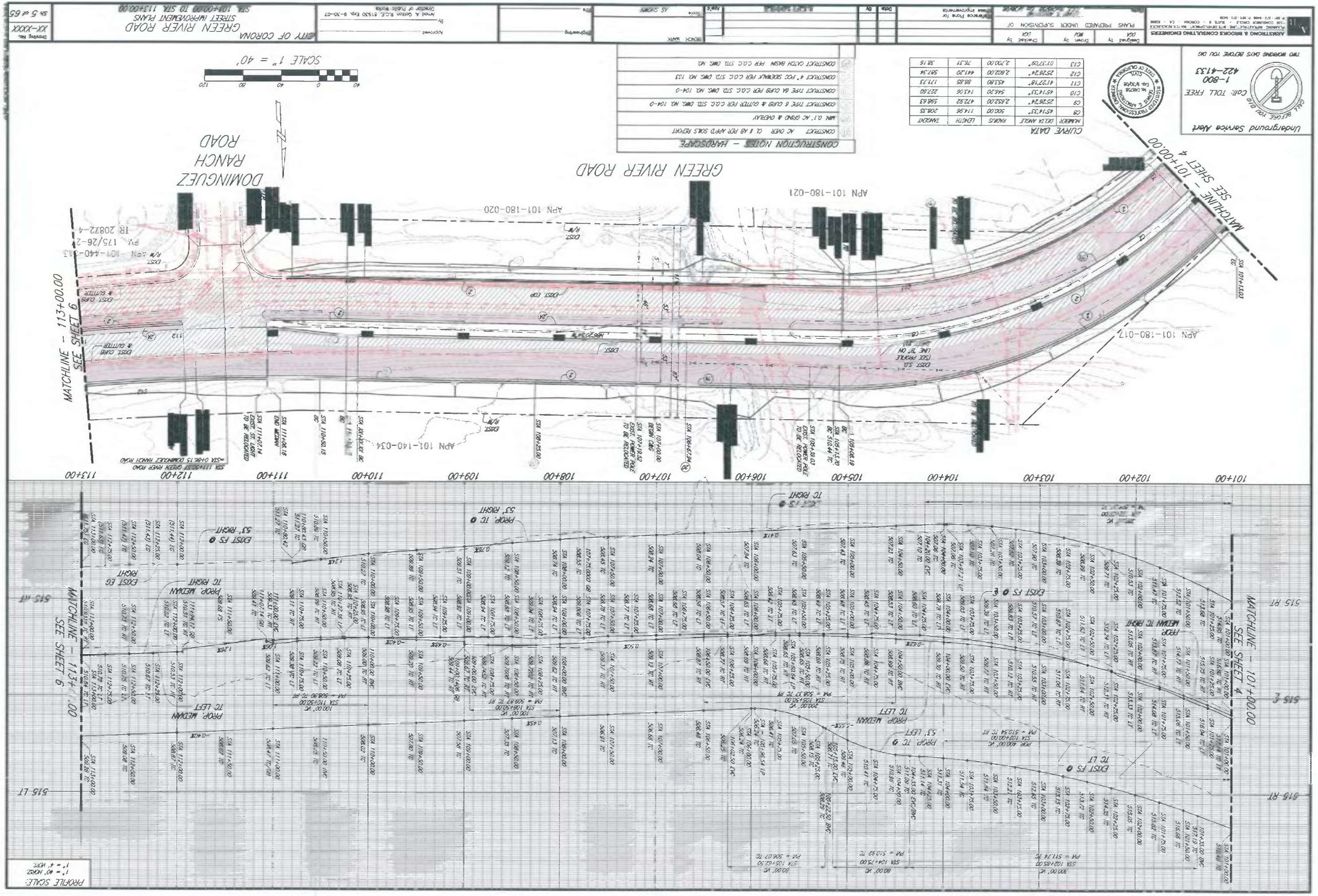
Approved

By Arnold A. Dotten R.C.E. 61930 Exp. 9-30-07
Director of Public Works

CITY OF CORONA

GREEN RIVER ROAD
STREET IMPROVEMENT PLAN
STA. 89+00.00 TO STA. 101+00.00

Drawing No. XX-XXXX
Sh 4 of 20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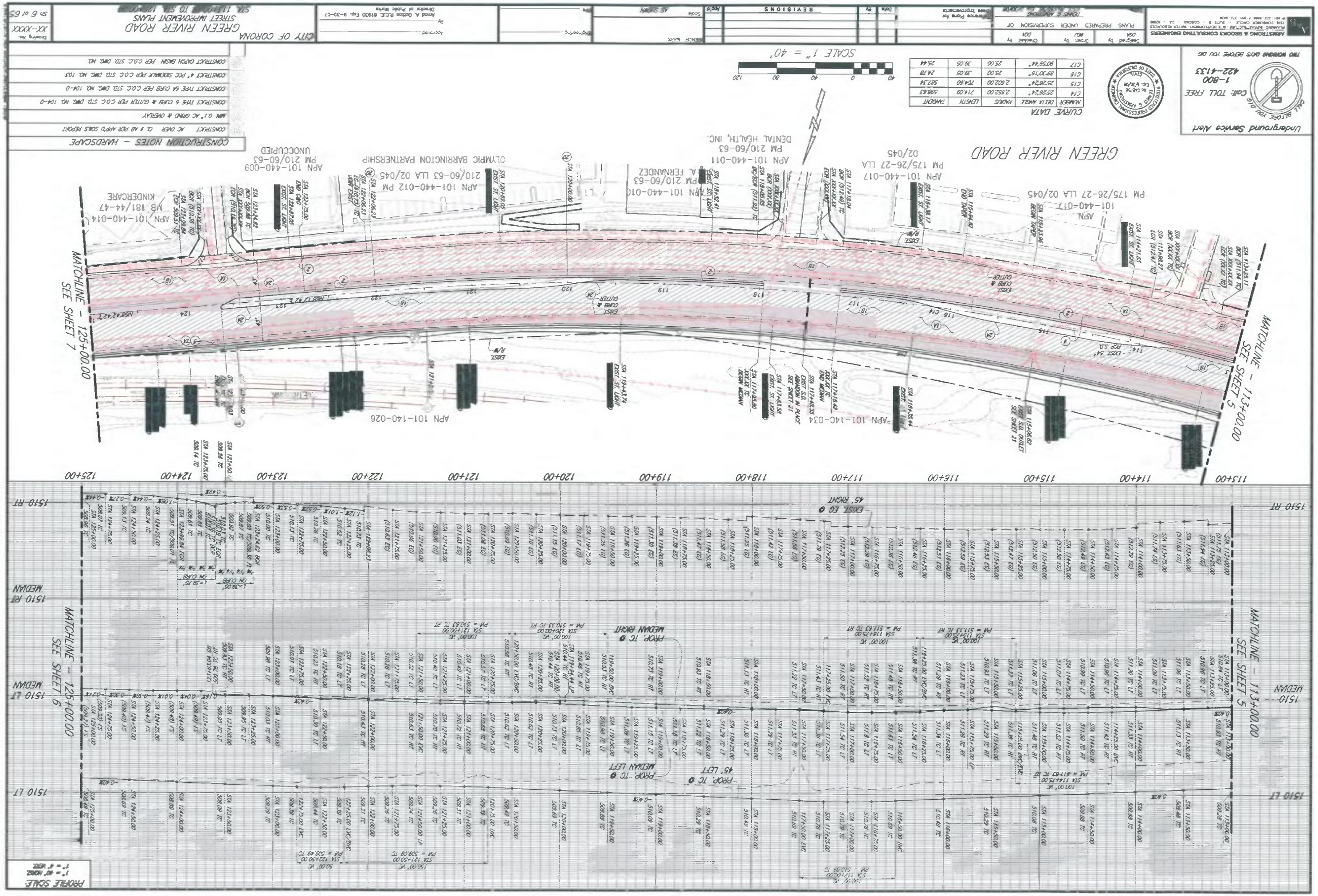
Drawing No. XX-XXXX
Sh 5 of 65
Approved
Engineering
Arnold A. Cotton R.C.E. 61930 Exp. 9-30-07
Director of Public Works
Scale AS SHOWN
BENCH MARK
REVISIONS
Date By
Revision Made for Grand Prix Commercial
CONSTRUCTION NOTES – HARDSCAPE
(1) CONSTRUCT AC OVER CL II AB PER APPD SOILS REPORT
(2) MIN. 0.1' MC OSND & OVERLAY
(3) CONSTRUCT TYPE 6 CURB & GUTTER PER C.O.C. STD. DWG. NO. 104-0
(4) CONSTRUCT TYPE 8A CURB PER C.O.C. STD. DWG. NO. 104-0
(5) CONSTRUCT 4" PCC SIDEWALK PER C.O.C. STD. DWG. NO. 103
(6) CONSTRUCT CATCH BASIN PER C.O.C. STD. DWG. NO.
SCALE 1" = 40'
CURVE DATA
MATCHLINE – 101+00.00 SEE SHEET 4
MATCHLINE – 113+00.00 SEE SHEET 6
GREEN RIVER ROAD
DOMINGUEZ RANCH ROAD
APN 101-180-020
APN 101-180-021
APN 101-180-012
APN 101-140-034
PROFILE SCALE: 1" = 40' HORZ. 1" = 4' VERT.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MATCHLINE - 125+00.00 SEE SHEET 7
MATCHLINE - 113+00.00 SEE SHEET 5
MATCHLINE - 125+00.00 SEE SHEET 6
MATCHLINE - 113+00.00 SEE SHEET 5
CONSTRUCTION NOTES - HARDSCAPE
CONSTRUCT AC OVER CL II AB PER APPD SOILS REPORT
MIN. 0.1' AC GRIND & OVERLAY
CONSTRUCT TYPE 6 CURB & GUTTER PER C.O.C. STD. DWG. NO. 104-0
CONSTRUCT TYPE 6A CURB PER C.O.C. STD. DWG. NO. 104-0
CONSTRUCT 4" PCC SIDEWALK PER C.O.C. STD. DWG. NO. 103
CONSTRUCT DITCH BASIN PER C.O.C. STD. DWG. NO.
CURVE DATA
SCALE 1" = 40'
Underground Service Alert
CALL BEFORE YOU DIG
Call: TOLL FREE
1-800
422-4133
TWO WORKING DAYS BEFORE YOU DIG
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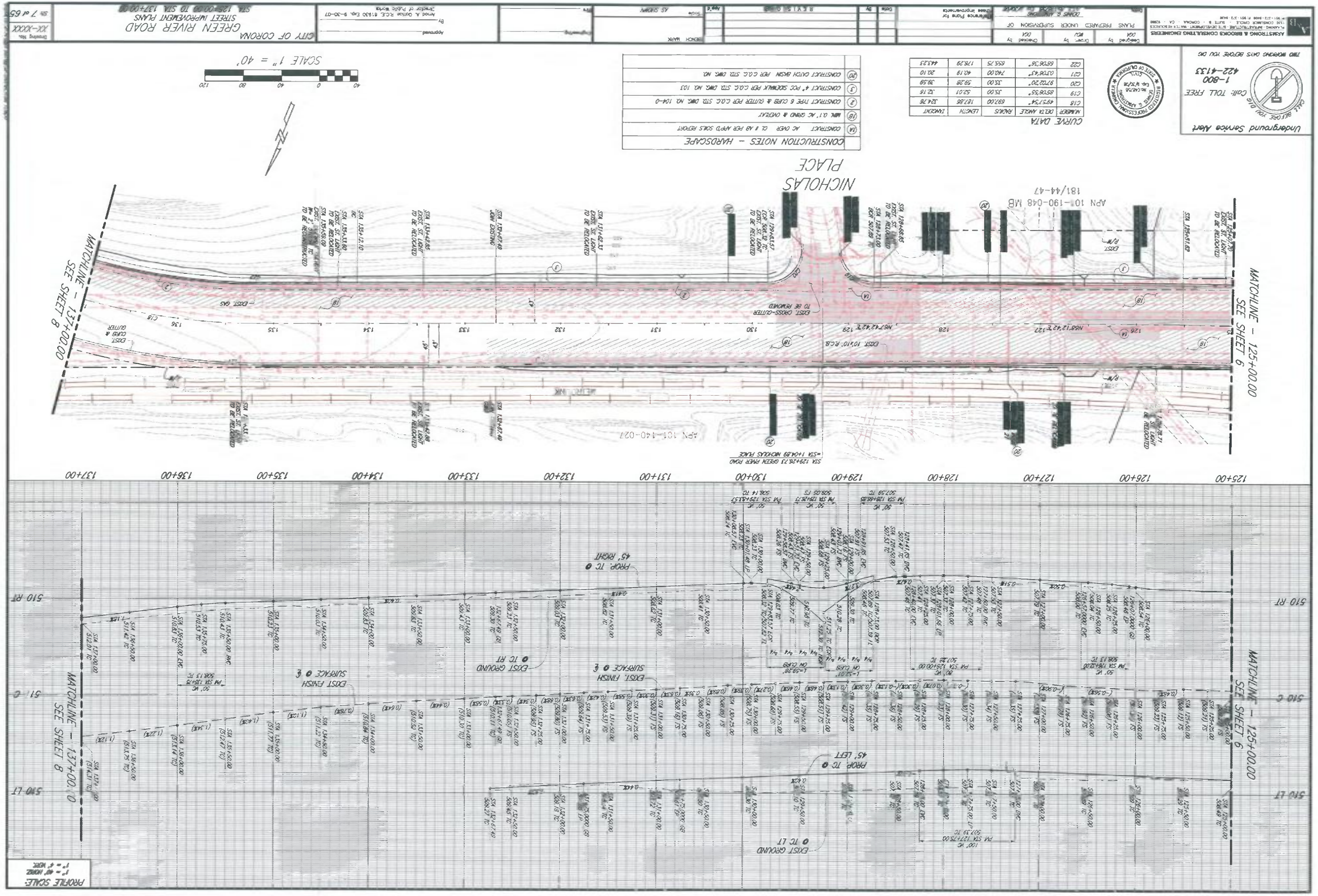
PLANS PREPARED UNDER SUPERVISION OF
REVISIONS
AS SHOWN
CITY OF CORONA
GREEN RIVER ROAD
STREET IMPROVEMENT PLANS
STA 113+00.00 TO STA 125+00.00
XX-XXXX
Sh. 6 of 65
PROFILE SCALE
1" = 40' HORZ.
1" = 4' VERT.



Designed by	Drawn by	Checked by
DSA	BCA	DSA

Reference Plans for Common Improvements

Date	By	REVISIONS

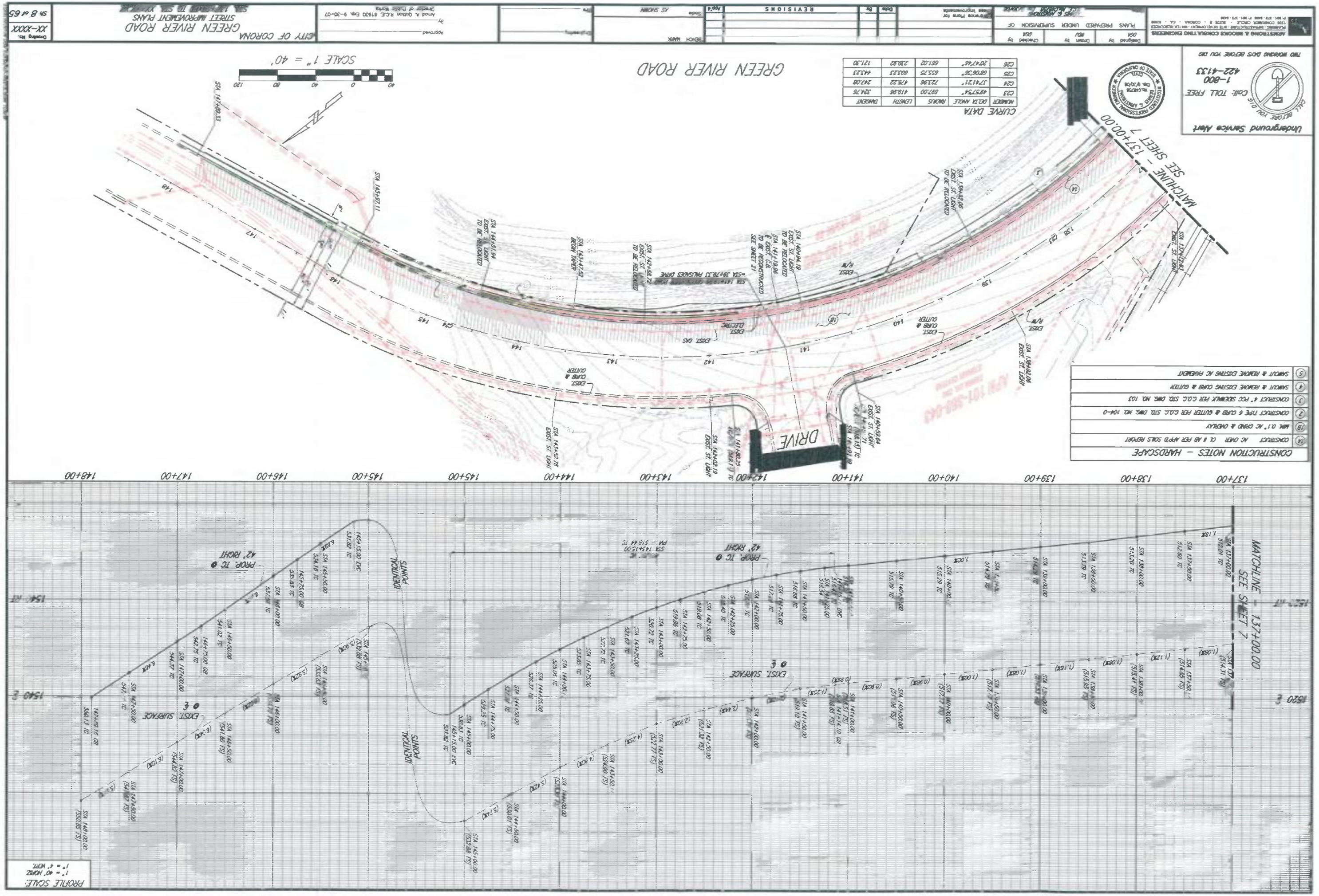
Approved	Engineering
By	
Title	Date

Scale: AS SHOWN

Arnold A. Ostrom R.C.E. 61830 Exp. 9-30-07
Director of Public Works

CITY OF CORONA
GREEN RIVER ROAD
STREET IMPROVEMENT PLANS
STA. 125+00.00 TO STA. 137+00.00

Drawing No. XX-XXXX
Sh. 7 of 65


ARMSTRONG & BROOKS CONSULTING ENGINEERS
PLANNING · SURVEYING/STUDIES · SITE DEVELOPMENT · MUNICIPAL SERVICES
1539 CHAMBERS CIRCLE · SUITE B · CORONA · CA · 92880
P 951 · 272 · 8488 F 951 · 273 · 8428
PLANS PREPARED UNDER SUPERVISION OF
Designed by DAA
Drawn by RGV
Checked by DAA
Construction Plans for Sewer Improvements
REVISIONS
Date
By
Sheet
SEWER MAPS
Scale AS SHOWN
Approved
Approved A. Dotson R.C.E. 61932 Exp. 9-30-07
Director of Public Works
CITY OF CORONA
GREEN RIVER ROAD
STREET IMPROVEMENT PLANS
SEWER IMPROVEMENTS TO SEWER
Drawing No. XX-XXXX
Sh. 8 of 65
Underground Service Alert
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Call: TOLL FREE
1-800
422-4133
TWO WORKING DAYS BEFORE YOU DIG
REGISTERED PROFESSIONAL ENGINEER
DAVID E. ARMSTRONG
No. 42078
Exp. 9/30/08
STATE OF CALIFORNIA
CIVIL
CURVE DATA
NUMBER | DELTA ANGLE | RADIUS | LENGTH | TANGENT
C23 | 49°57'54" | 697.00 | 419.96 | 224.75
C24 | 37°41'21" | 723.96 | 476.22 | 247.08
C25 | 68°06'36" | 655.75 | 803.23 | 443.23
C26 | 207°47'46" | 661.02 | 2392.92 | 121.30
GREEN RIVER ROAD
SCALE 1" = 40'
N
MATCHLINE - 137+00.00
SEE SHEET 7
DRIVE
CONSTRUCTION NOTES - HARDSCAPE
(14) CONSTRUCT AC OVER CL II AB PER APPD SOILS REPORT
(18) ADD 0.1' AC GRND & OVERLAY
(2) CONSTRUCT TYPE 6 CURB & GUTTER PER C.O.C. STD. DWG. NO. 104-0
(3) CONSTRUCT 4" PCC SIDEWALK PER C.O.C. STD. DWG. NO. 103
(4) SAWCUT & REMOVE EXISTING CURB & GUTTER
(5) SAWCUT & REMOVE EXISTING AC PAVEMENT
MATCHLINE - 137+00.00
SEE SHEET 7
IDENTICAL POINTS
SIAMPA
EXIST. SURFACE
PROP. TC @ 42' RIGHT
PROFILE SCALE:
1" = 40' HORZ
1" = 4' VERT.

APPENDIX C:

JURISDICTIONAL DELINEATION

DELINEATION OF THE U.S. ARMY CORPS OF ENGINEERS AND THE CALIFORNIA DEPARTMENT OF FISH AND GAME JURISDICTION WITH PRELIMINARY JURISDICTIONAL DETERMINATION

GREEN RIVER ROAD WIDENING PROJECT

CITY OF CORONA

RIVERSIDE COUNTY, CALIFORNIA

LSA

April 23, 2009

DELINEATION OF THE U.S. ARMY CORPS OF ENGINEERS AND THE CALIFORNIA DEPARTMENT OF FISH AND GAME JURISDICTION WITH PRELIMINARY JURISDICTIONAL DETERMINATION

GREEN RIVER ROAD WIDENING PROJECT

CITY OF CORONA

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

City of Corona
Department of Public Works
400 S. Vicentia Avenue,
Corona, California 92882
Attention: Mr. Clint Herrera
Phone: (951) 739-4888

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

LSA Project No. ABE0701

LSA

April 23, 2009

DELINEATION OF POTENTIAL JURISDICTIONAL WATERS

GREEN RIVER ROAD WIDENING PROJECT

Case Numbers: SPL-2009-00077-FBV
Related Environmental Documents: _____

Project Location: The project site is located in the City of Corona along Green River Road from Palisades Avenue on the eastern boundary to just east of State Route 91 on the western boundary. It is in the *Prado Dam, California* U.S. Geological Survey (USGS) 7.5-minute series topographic map in the western ½ of Section 4 of Township 3 South, Range 4 West.

Prepared for:
City of Corona
Department of Public Works
400 S. Vicentia Avenue
Corona, California 92882
Attention: Mr. Clint Herrera
Phone: (951) 739-4888

Prepared by:
LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
Phone (951) 781-9310; Fax (951) 781-4277

Principal Investigator: Maria Lum

Survey Conducted by: Maria Lum & Sarah Barrera

Survey Conducted on: June 23, 2008

Report Prepared by: Sarah Barrera

Report Date: April 23, 2009

Received by ACOE Date: _____

Summary: Refer to Executive Summary

Certification Statement: I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation and the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: April 23, 2009 Signed: Maria A. Lum

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EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained by Armstrong & Brooks Consulting Engineers, Inc. to delineate the potential wetlands and waters of the U.S. subject to the jurisdiction of the U.S. Army Corps of Engineers[1] (ACOE) and areas potentially subject to the jurisdiction of the California Department of Fish and Game[2] (CDFG) for the Green River Road Widening Project located along Green River Road between Palisades Avenue and State Route 91 (SR-91) in the City of Corona.

The project is located in the *Prado Dam, California* U.S. Geological Survey (USGS) 7.5-minute series topographic map in the western ½ of Section 4 of Township 3 South, Range 4 West. The study area is centered on an approximately 3-mile long segment of Green River Road. It includes the road segment to be widened and the surrounding right-of-way, as well as adjacent commercial development, residential and commercial landscaping, and disturbed vacant lands.

LSA Biologists Maria Lum and Sarah Barrera conducted a wetlands and jurisdictional waters delineation of the study area on June 23 and July 9, 2008, according to the ACOE 1987 Wetland Delineation Manual, Arid West Region Delineation Supplement, and CDFG Guidelines.

Seven potentially jurisdictional drainages within the study area were delineated. All drainages within the project area have been historically altered to accommodate development including railroad tracks, SR-91, Green River Road, and surrounding residential and commercial uses.

ACOE jurisdictional areas were delineated based on the presence of an ordinary high water mark (OHWM) (i.e., the limit of waters of the U.S.) and jurisdictional nexus. Jurisdictional nexus determination was made following the two analytic standards as decided by the Supreme Court in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (*Rapanos*) (126.CT.2208, 33 U.S.C. §1251 et seq.). The two analytical standards used for jurisdictional nexus determination are (1) Relatively Permanent Waters (RPW) Standard: if the water body is relatively permanent and if the water body is a wetland that abuts a RPW body, and (2) if the water body or wetland proposed to be impacted in combination with all wetlands adjacent to that water body has a significant nexus with a traditional navigable water (TNW). A "significant nexus" may be found where waters, including adjacent wetlands, have more than an insubstantial effect on the chemical, physical, or biological integrity of TNWs. Application of this standard will involve a comprehensive review of the tributary flow characteristics, functions of the tributary, and functions of adjacent wetlands. The flow characteristics and functions of the tributary itself in combination with the functions performed by any wetlands adjacent to the tributary determine if they significantly affect the chemical, physical, and biological integrity of TNWs.

Drainage 1 is an ephemeral drainage with an earthen bottom that originates in the Santa Ana Mountains south of the project site. It is diverted under Green River Road through a concrete box culvert and is lined with riprap near the culvert. Vegetation within Drainage 1 consists entirely of upland vegetation including shortpod mustard (*Hirschfeldia incana*) and tocalote (*Centaurea melitensis*). It is within the study area but not within the project site. Drainage 6 is a naturally occurring, modified, earthen bottom drainage that directs flows out of Fresno Canyon and eventually into the Santa Ana River. It is within the study area but the project site avoids any impact to or work within Drainage 6. Drainage 7 is a naturally occurring

[1] Pursuant to Section 404 of the Clean Water Act.
[2] Pursuant to Section 1600 et seq. of the California Fish and Game Code.

drainage that has been diverted into a concrete v-ditch. It flows along Green River Road from south to north and eventually passes underneath the road via a storm drain. This drainage is not within the project site.

Three of the seven drainages (Drainages 2, 4, and 5) are natural historic drainages that are located within the proposed project site. These three drainages are determined to be jurisdictional by LSA for purposes of obtaining ACOE approval of a "Preliminary Jurisdictional Determination" for the project. All three drainages flow to the Santa Ana River less than one mile north of the project site. Drainages 2 and 4 are ephemeral drainages with earthen bottoms that originate in the Santa Ana Mountains south of the project site. Both are diverted under Green River Road through concrete box culverts and are lined with riprap near the culverts. Vegetation within these drainages consists largely of upland or upland riparian transitional plants, likely growing as a result of runoff water from the residential areas. Dominant species include blue elderberry (*Sambucus mexicana*) and mule fat (*Baccharis salicifolia*) as well as several species common to disturbed areas including shortpod mustard, tocalote, and eucalyptus (*Eucalyptus* sp.).

Drainage 5 is a perennial drainage with surface flows that occur as a result of urban runoff. It originates in the Santa Ana Mountains south of the project site, is diverted underground south of Green River Road to accommodate a commercial development, and emerges at a corrugated metal pipe (CMP) and concrete box culvert north of the road. At this point, it has an earthen bottom, surface flows, and hydrophytic/riparian vegetation including mature Goodding's black willow (*Salix gooddingii*) trees. Drainage 5 has perennial surface flows, moss-covered rocks, saturated soils, and a prevalence of wetland indicator plants; therefore, based on these existing features, Drainage 5 is preliminarily determined to be under ACOE jurisdiction.

Drainage 3, the last of the seven drainages discussed, is a constructed ditch with an undefined detention area located within the project site and is preliminarily determined to be non-jurisdictional by LSA. Drainage 3 is nevertheless included in the jurisdictional area calculations so that the delineation report can be approved by the ACOE as a Preliminary Jurisdiction Determination document. Drainage 3 is a vegetated, earthen-bottomed roadside swale that collects flows from Green River Road and terminates in between the road and railroad right-of-way. It has no outlet or connection to any TNW. Dominant vegetation within Drainage 3 includes mule fat, blue elderberry, branching phacelia (*Phacelia ramosissima*) and mugwort (*Artemisia douglasiana*).

The average width between the OHWMs based on observations following recent typical storm runoff is 2.3 feet. Thus within the project study area, the non-wetland area potentially subject to ACOE jurisdiction in the project study area is rounded up to 0.04 acre. The wetland area potentially subject to ACOE jurisdiction is rounded up to 0.02 acre with moist soil zone of 7.5 feet wide. The total length of potential ACOE jurisdictional streambed within the project area is 785 linear feet.

The CDFG jurisdictional areas were delineated due to the presence of streambed and banks and riparian vegetation in each of the drainage basins. The average width of streambed potentially subject to CDFG jurisdiction is 8.8 feet and encompasses 0.45 acre, rounded up to the nearest one hundredth. The total length of potential CDFG jurisdictional streambed within the project area is 785 linear feet.

The findings and conclusions presented in this report, including the location and extent of wetlands and other waters subject to regulatory jurisdiction, represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the ACOE and the CDFG.

INTRODUCTION

LSA conducted a jurisdictional delineation for the Green River Road Widening Project located along Green River Road between State Route (SR-91) and Palisades Drive. The proposed project includes the widening of Green River Road from an existing 4-lane arterial to 6 lanes and associated street improvements including new storm drains, sewer, water, wildlife crossing, a traffic signal at the intersection of Green River Road and Palisades Drive, and a traffic signal upgrade at the intersection of Green River Road and Dominquez Ranch Road. A total of 4,400 feet along Green River Road between SR-91 and Palisades Drive will be improved. Land uses adjacent to Green River Road in the project area include office buildings, a storage center, a shopping center, and several undeveloped parcels. The BNSF Railway lies just north of the project boundary (Figure 1).

Four jurisdictional drainages will be subject to impacts by the proposed project. Waters within these drainages originate south of the project site in the Santa Ana Mountains and in adjacent urban areas and flow north into the Santa Ana River, just north of SR-91. All of the drainages surveyed are currently modified for flood control purposes and no longer follow their natural flow regime through the study area.

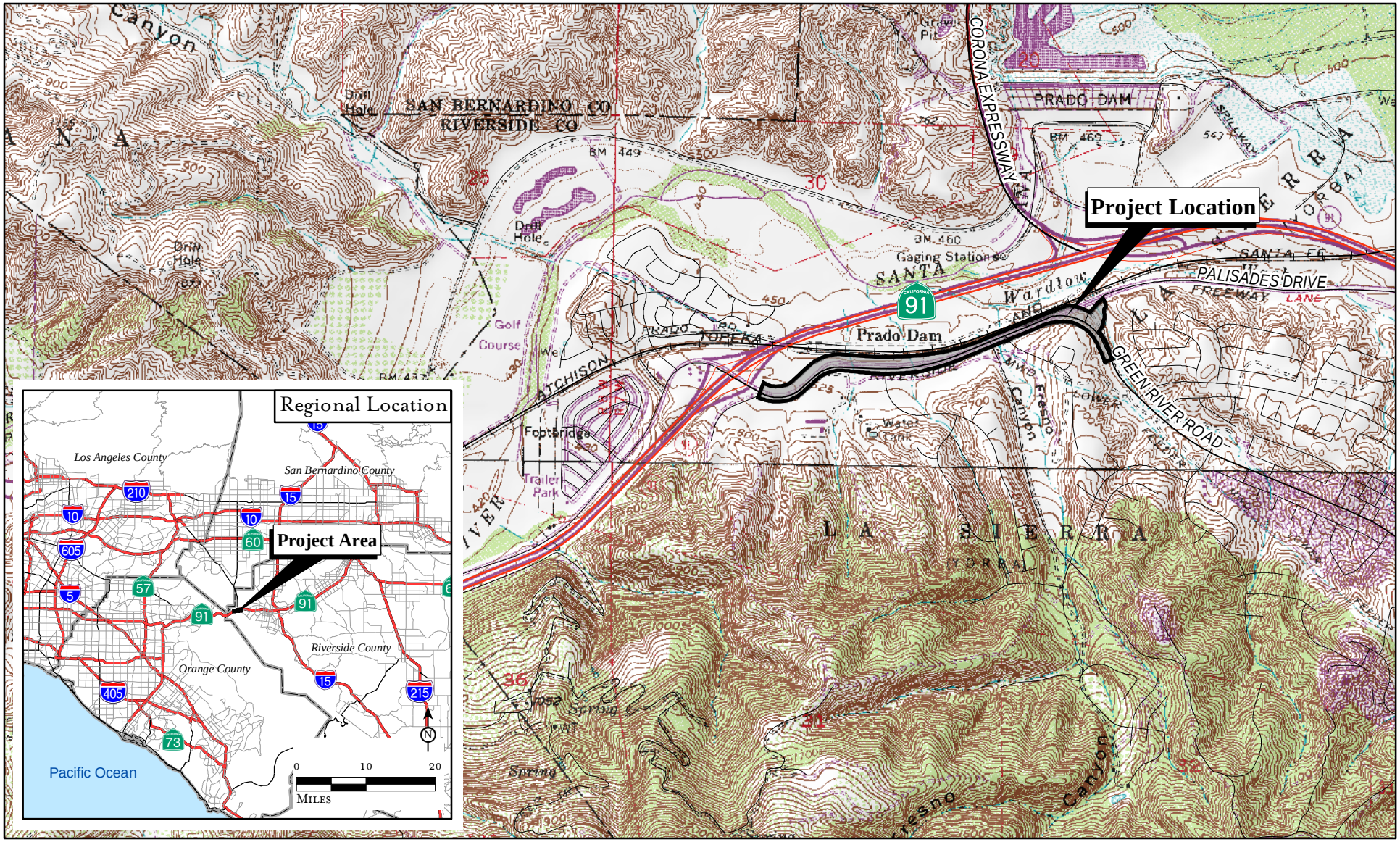
REGULATORY BACKGROUND

U. S. Army Corps of Engineers

The U.S. Army Corps of Engineers (ACOE) regulates discharges of dredged or fill material into waters of the United States under Section 404 of the Federal Clean Water Act (CWA). These waters include wetlands and non-wetland bodies of water that meet specific criteria. ACOE regulatory jurisdiction pursuant to Section 404 of the CWA is founded on a connection or nexus between the water body in question and interstate commerce. This connection may be direct (through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce) or may be indirect (through a nexus identified in the ACOE regulations). The following definition of waters of the United States is taken from the discussion provided in 33 Code of Federal Regulations (CFR) 328.3:

> "The term waters of the United States means:
>
> (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce...;
>
> (2) All interstate waters including interstate wetlands;
>
> (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams) … the use, degradation or destruction of which could affect interstate or foreign commerce…;
>
> (4) All impoundments of waters otherwise defined as waters of the United States under the definition; and
>
> (5) Tributaries of waters defined in paragraphs (a) (1)-(4) of this section."

In the past, an indirect nexus could potentially be established if isolated waters provided habitat for migratory birds, even in the absence of a surface connection to navigable waters of the United States. The 1984 rule that enabled the ACOE to expand jurisdiction over isolated waters of this type became known as the Migratory Bird Rule.



LSA

FIGURE 1

0 1,000 2,000
Feet

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

I:\ABE0701\G\Reports\JD\reg_loc.mxd (08/04/08)

Green River Road Widening
Jurisdictional Delineation Report

Regional and Project Location

On January 9, 2001, the United States Supreme Court narrowly limited the ACOE jurisdiction of "non-navigable, isolated, intrastate" waters based solely on the use of such waters by migratory birds. The Court's ruling derives from the case *Solid Waste Agency of Northern Cook County* (SWANCC) *v. U.S. Army Corps of Engineers*, No. 99-1178 (SWANCC January 9, 2001). The Supreme Court, in a 5:4 decision, determined the ACOE exceeded its statutory authority by asserting Federal Clean Water Act jurisdiction over an abandoned sand and gravel pit in northern Illinois that provides habitat for migratory birds.

In 2006, the Supreme Court in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (*Rapanos*) addressed CWA jurisdiction over wetlands adjacent or abutting navigable, non-navigable and ephemeral tributaries and jurisdiction over permanent and relatively permanent non-navigable tributaries (126. CT.2208 (2006), 33 U.S.C. §1251 et seq.). While there was no single opinion commanding a majority of the Court, the decision provides two new analytical standards for determining whether water bodies that are not TNWs, including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction.

The two analytical standards used for jurisdictional nexus determination are (1) RPW Standard: if the water body is relatively permanent and if the water body is a wetland that directly abuts an RPW, and (2) if the water body or wetland proposed to be impacted in combination with all wetlands adjacent to that water body has a significant nexus with a TNW.

For tributaries that are non-navigable and not relatively permanent, a "significant nexus" analysis must be performed to determine whether such waters and their adjacent wetlands are jurisdictional. A "significant nexus" may be found where waters, including adjacent wetlands, have more than an insubstantial effect on the chemical, physical, or biological integrity of TNWs. Application of this standard will involve a comprehensive review of the tributary flow characteristics, functions of the tributary, and functions of adjacent wetlands. The flow characteristics and functions of the tributary itself in combination with the functions performed by any wetlands adjacent to the tributary determine if they significantly affect the chemical, physical and biological integrity of TNWs. (Refer to http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/guidhigh_06-05-07.pdf.for more information.) The following factors require consideration.

- Hydrologic factors including, but not limited to, the following:
  - Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary;
  - Proximity to the TNW;
  - Size of the watershed;
  - Average annual rainfall; and
  - Average annual winter snow pack.
- Ecologic factors including, but not limited to, the following:
  - The ability of tributaries to carry pollutants and floodwaters to TNWs;
  - The ability of a tributary to provide aquatic habitat that supports a TNW;
  - The ability of wetlands to trap and filter pollutants or store floodwaters; and
  - Maintenance of water quality.

The analysis involves completion of a seven-page "Approved Jurisdictional Determination Form." The ACOE uses the standard to determine if the tributary or wetland significantly affects the hydrological, ecological, chemical, physical, and biological integrity of the downstream navigable water.

The ACOE will not assert jurisdiction over upland erosional features, gullies, and roadside ditches that have infrequent, low volume, and short duration of water flow. The ACOE typically regulates as "waters of the United States" any body of water displaying an OHWM. ACOE jurisdiction over non-tidal waters of the United States extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4). The OHWM is defined as:

> "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3).

Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible. As explained in ACOE Regulatory Guidance Letter No. 05-05, the ACOE looks at characteristics associated with ordinary high water events, which occur on a regular or frequent basis and do not look at evidence resulting from major flooding and storm surges when making OHWM determinations.

The ACOE and the Environmental Protection Agency (EPA) define wetlands as follows:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."

In order to be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several parameters may be analyzed to determine whether the criteria are satisfied.

Hydrophytic vegetation is plant life that grows and is typically adapted for life in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. Hydrophytic species are those included on the National List of Plant Species that Occur in Wetlands (Reed 1988), published by the United States Fish and Wildlife Service (USFWS). Each species on the list is rated according to a wetland indicator category, as shown in Table A.

Table A: Hydrophytic Vegetation

Category	Abbreviation	Probability
Obligate wetland	OBL	Almost always occur in wetlands (estimated probability > 99%)
Facultative wetland	FACW	Usually occur in wetlands (estimated probability 67–99%)
Facultative	FAC	Equally likely to occur in wetlands and non-wetlands (estimated probability 34–66%)

Table A: Hydrophytic Vegetation

Category	Abbreviation	Probability
Facultative upland	FACU	Usually occur in non-wetlands (estimated probability 67–99%)
Obligate upland	UPL	Almost always occur in non-wetlands (estimated probability > 99%)

To be considered hydrophytic, the species must have wetland indicator status (i.e., be rated as obligate wetland [OBL], facultative wetland [FACW], or facultative [FAC]).

The delineation of hydrophytic vegetation is typically based on the three (five, if only one or two strata are present) most dominant species from each vegetative stratum (strata are considered separately); when more than 50 percent of these dominant species are hydrophytic (i.e., FAC, FACW, or OBL), the vegetation is considered hydrophytic.

Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. Some soils are classified as hydric because the National Technical Committee for Hydric Soils (NTCHS) criteria are frequently met where these soils occur. The Natural Resource Conservation Service (NRCS) National Technical Committee for Hydric Soils periodically updates hydric soil classifications. The most recent list is 2007 National Hydric Soils List (NRCS 2007). The following description reflects those soils that may meet the definition of hydric soils.

> All Histels except Folistols and Histosols except Folists, or soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are: a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or b. poorly drained or very poorly drained and have either: water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or soils that are frequently ponded for long duration or very long duration during the growing season, or soils that are frequently flooded for long duration or very long duration during the growing season (Soil Survey Staff 1999).

There are a number of indirect indicators that may signify the presence of hydric soils including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration.

Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of floodplains (entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans. In some situations, it may be impossible to find any hydric soil indicators

due to recent deposits of sandy materials (e.g., accreting sandbars). These are described as "Atypical Situations" in the 1987 Manual, which prescribes use of the other two parameters (vegetation and hydrology) for wetland delineations when no hydric soils indicators can be found.

Under natural conditions, development of hydrophytic vegetation and hydric soils is dependent on a third characteristic: wetland hydrology. Areas with wetland hydrology are those where the presence of water has an overriding influence on vegetation and soil characteristics due to anaerobic and reducing conditions, respectively (Environmental Laboratory 1987). The wetland hydrology parameter is satisfied if the area is seasonally inundated or saturated to the surface for a consecutive number of days equal to 12.5 percent or more of the growing season (ACOE 1992).[1] Areas saturated to the surface for less than 5 percent of the growing season do not meet the hydrology criterion. Areas saturated to the surface between 5.0 and 12.5 percent of the growing season may or may not meet the hydrology criterion. In these situations, other hydrology indicators must be considered and the vegetation test should be critically reviewed (ACOE 1992).

Hydrology is often the most difficult criterion to measure in the field due to seasonal and annual variations in water availability. Some of the indicators that are commonly used to identify wetland hydrology include visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels resulting from prolonged anaerobic conditions.

Wetland delineations for Section 404 permitting purposes must be done according to the 1987 Manual (Environmental Laboratory 1987). This manual provides two different approaches to delineating wetlands (i.e., routine and comprehensive), depending upon the complexity of the site and whether there is a need for quantitative evaluation and extensive documentation. For the majority of wetland delineations, the routine on-site evaluation method is appropriate.

Determination of wetland limits may be obfuscated by a variety of natural environmental factors, including cyclic periods of drought and flooding or highly ephemeral stream systems. During periods of drought, for example, bank return flows are reduced and water tables lowered. This results in a corresponding lowering of ordinary high water and invasion of upland plant species into wetland areas. Conversely, extreme flooding may create physical evidence of high water well above what might be considered ordinary and may allow temporary invasion of hydrophytic species into non-wetland areas. In highly ephemeral systems, typical of southern California, these problems are encountered frequently. In these situations, professional judgment and knowledge of local ecological conditions come into play in delineating wetlands.

The ACOE has presented an *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Engineer Research and Development Center 2006) to address the regional wetland characteristics and to improve the accuracy and efficiency of wetland delineation procedures. The supplement is to be used in conjunction with the current version of the Corps Delineation Manual (Environmental Laboratory 1987). Where there are differences, the supplement takes precedence for applications in the arid west region.

[1] The growing season is defined as that portion of the year when the soil temperature at 50.04 centimeters (19.7 inches) below the ground surface is greater than biologic zero (5°C [41°F]) (United States Department of Agriculture Soil Survey Staff 1975); this can be estimated from regional climatological data such as that provided in County soil surveys.

Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) is responsible for the administration of Section 401 of the CWA, through water quality certification of any activity that may result in a discharge to jurisdictional *waters of the U.S*. For purposes of Section 401 Water Quality Certification, jurisdiction of the RWQCB coincides with that of the ACOE. The RWQCB also regulates "waters of the State" pursuant to the Porter-Cologne Water Quality Control Act (Act). "Waters of the State" is defined by the Act as any surface or subsurface water or groundwater, including saline waters, within the boundaries of the State.

California Department of Fish and Game

The CDFG, under Sections 1600 et seq. of the California Fish and Game Code, regulates alterations to lakes, rivers, and streams. Through provisions of Section 1600 et seq., the CDFG is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an intermittent flow of water.

The CDFG has various definitions and descriptions of the terms channel bed and banks. The following definitions are taken from Appendix C: Legal Opinions of the CDFG's *A Field Guide to Lake and Streambed Alteration Agreements Sections 1600–1607 California Fish and Game Code* to characterize the bed and bank:

> "An elevation of land which confines the waters of a stream when they rise out of the bed—Banks are fast land on which vegetation appropriate to such land in the particular locality grows wherever the band [sic] is not to [sic] steep to permit such growth and bed is soil of a different character and having no vegetation or only such as exists when commonly submerged in water." (This definition comes from *Black's Law Dictionary*, 5th Edition.)

Banks are further defined as:

> "A water-washed and relatively permanent elevation or acclivity at the outer line of a river bed which separates the bed from the adjacent upland."

In a discussion on pages 5 and 6 of CDFG Appendix C, riverbed and bank is also characterized as:

> "The line between the river bed and the river bank is the line between uplands and periodically flooded lands. This point is best defined are [sic] the location where hydrophytic vegetation gives way to upland vegetation in topographic profile of a watercourse."

CDFG staff has recently begun to interpret these guidelines more expansively than in the past, i.e., claiming CDFG jurisdiction to the "top of the bank" of streams. In the past, in the absence of riparian vegetation, jurisdiction typically extended to the top of the "currently active channel" but not to the top of the historic bank. The newer interpretation of the jurisdictional bank results in a larger jurisdictional area claimed by the CDFG.

CDFG regulates wetland areas only to the extent that those wetlands are a part of a river, stream, or lake as defined by CDFG. CDFG jurisdiction typically extends beyond the streambed/banks to the limits of the riparian vegetation (if present) associated with streams, rivers, or lakes. The CDFG defines riparian as:

> "On, or pertaining to, the banks of a stream. As riparian vegetation or riparian woodland."

The CDFG further defines riparian vegetation as:

> "Vegetation which occurs in and/or adjacent to a watercourse. For the purpose of administering Code Section 1600 et seq., this should be expanded to vegetation adjacent to lakes as well." (*A Field Guide to Lake and Streambed Alteration Agreements Sections 1600–1607 California Fish and Game Code* January 1994.)

METHODS

A routine wetland delineation was conducted and areas of potential jurisdiction were evaluated using the ACOE 1987 Manual, Arid West Regional Supplement, 1988 wetland indicator plant list, current hydric soils list and criteria, CWA Guidance for implementing *Rapanos* and *Carabell* Cases (ACOE 2007), and California Fish and Game Code. An ACOE Wetland Delineation Manual *Data Form 3: Atypical Situations* was also completed to summarize the altered state of hydrology, vegetation, and soils on the project site. Appendix A contains the Arid West Region Wetland Determination Data Forms.

LSA biologists used some or all of the following resources to prepare for the field delineation, to analyze field indicators to determine wetland status, and to make conclusions on the wetland status and significant nexus in the delineation report.

- Current and historical aerial photography;
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps;
- Municipal storm drain plans;
- USGS topographic maps (7.5-minute series and 1:100,000 scale);
- Flood Control District Area and Master Drainage Plans;
- Riverside County Flood Zone Maps;
- NRCS Soil Surveys;
- County Parcel Maps;
- County Hazard and Hydrology Maps;
- National Oceanic and Atmospheric Administration (NOAA) current and historical precipitation data;
- County Flood Control precipitation and gauge data;
- County Flood Control Hydrology Manual;
- Water Quality Control Board Basin Plan;
- Riverside County Geographic Information System (GIS) data; and
- Armstrong & Brooks Consulting Engineers site plans, Water Quality Management Plan, and hydrology calculations.

The entire study area was surveyed on foot for potential wetlands and non-wetland jurisdictional waters as well as streambed and riparian resources. Representative photographs of potential jurisdictional waters were taken during each of the field surveys. An aerial photograph was used to assist in mapping field conditions and for taking field notes.

The limits of jurisdictional areas were digitized using GIS software based on the plotted locations of measured widths from global positioning system (GPS) data collected in the field. Streambed widths, bed-and-bank, and ordinary high water marks were measured with cloth field tape in the field. The field data were compiled using GIS software in the office. The data were corrected by post-processing, and then areas and linear distances were calculated. Lastly, maps and figures were produced.

All areas supporting species of plants indicative of wetlands were evaluated according to routine wetland delineation procedures described in the 1987 Delineation Manual and also the Arid West Supplement. Representative sample plots were selected and examined in the field. A routine wetland determination data form was completed for each of the sample plots. Copies of the data forms are included in Appendix A of this report.

Channel widths of non-wetland waters of the United States/streambeds of CDFG were measured directly across the channel to the nearest foot. The biologists walked the centerline of the streambed with a GPS unit or noted the offset distances if the channel was inaccessible.

The ACOE OHWM was measured in the field between the scour marks from a recent 2-year storm event or subjective measure of the lowest channel width within the topographic depression, either a canyon, ditch, channel, terrace, or floodplain. The perimeter of a wetland outside of any OHWM is the maximum extent of ACOE jurisdiction.

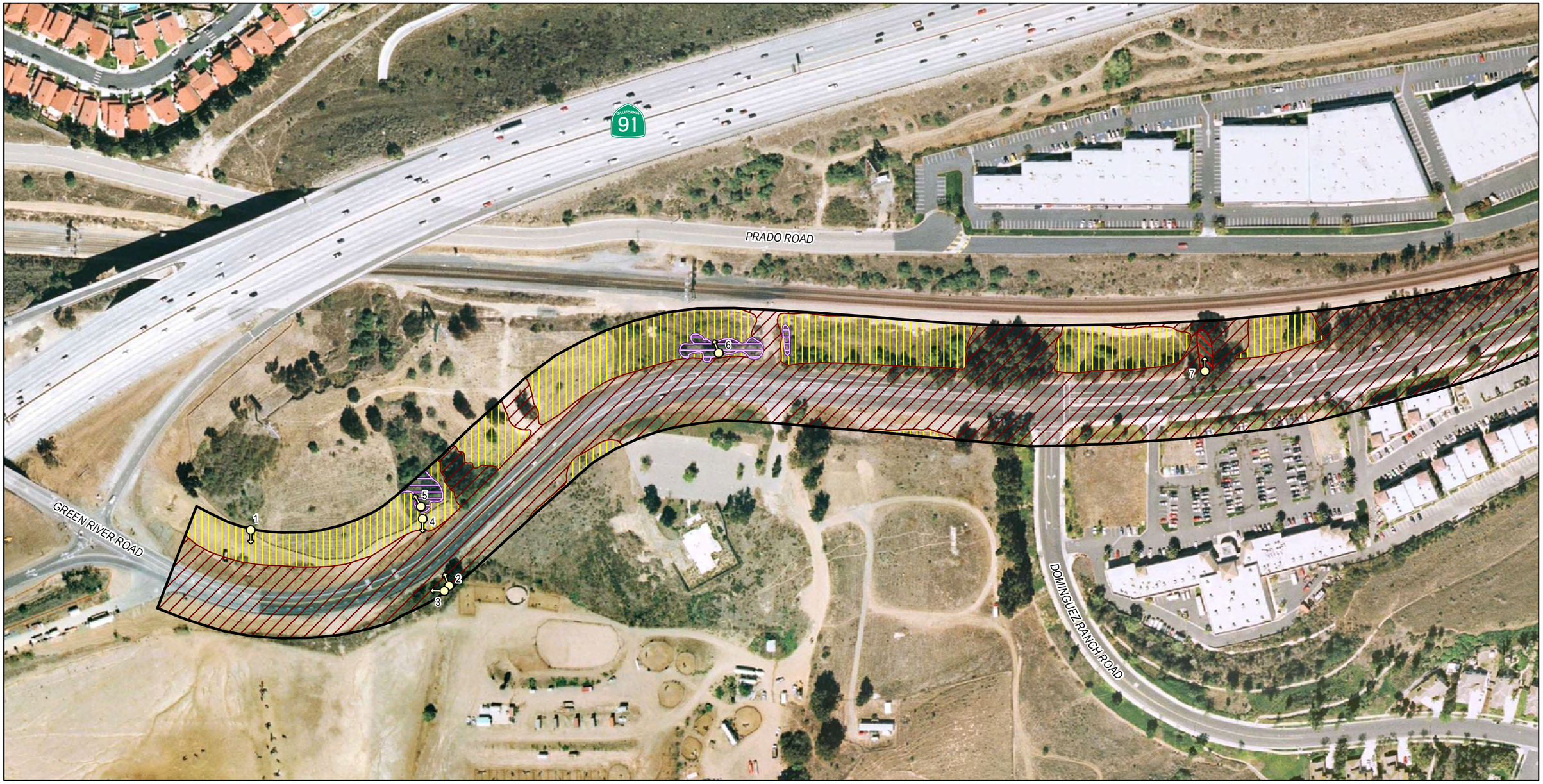
The limits of the CDFG jurisdiction, or streambed and bank, are based on a subjective estimate of a 5-year storm event. This can be evident in the field by scour from a recent known 5-year storm event or by the presence of a terrace above the lowest channel in the streambed with more mature riparian or upland vegetation. The canopy of plant species typically associated with riparian habitat is also subject to CDFG jurisdiction. Such riparian vegetation was mapped by walking the perimeter of the habitat with a GPS unit.

RESULTS AND DISCUSSION

Existing and Adjacent Land Use

The study area is highly developed and the natural drainage pattern has been historically altered for several decades. Development within and adjacent to the project study area includes Green River Road commercial centers, a horse ranch, landscaping, and disturbed vacant lands. Several storm drain structures that convey flows from the road directly into a subsurface storm drain system, including inlets and drop structures, occur in the median and on the sides of Green River Road (Figure 2, Sheets 1 and 2; and Figures 2A–2C).

All of the drainages within the study area have been modified to accommodate runoff from Green River Road, nearby railroad tracks and commercial development. Modifications include culverts directing flows



LSA

STUDY AREA

LAND COVER

ARROYO WILLOWS WITH EUCALYPTUS TREES

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN SCRUB

PHOTOGRAPH LOCATION

N

0 100 200

FEET

SOURCE: Air Photo USA (2007)

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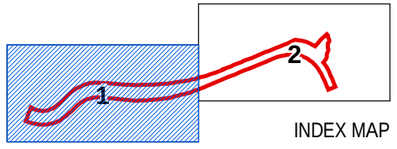

INDEX MAP

FIGURE 2

Sheet 1 of 2

Green River Road Widening

Jurisdictional Delineation Report

Land Cover and Photograph Location

LSA

STUDY AREA

LAND COVER

ARROYO WILLOWS WITH EUCALYPTUS TREES

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN SCRUB

PHOTOGRAPH LOCATION

N

0 100 200

FEET

SOURCE: Air Photo USA (2007)

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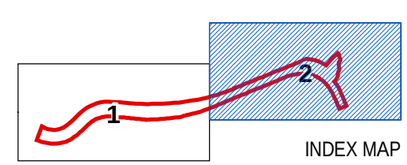

FIGURE 2
Sheet 2 of 2

Green River Road Widening
Jurisdictional Delineation Report

Land Cover and Photograph Location

PHOTOGRAPH 1: *Drainage 1-A - 3' drainage pipe with upland vegetation in drainage to the north.*

PHOTOGRAPH 2: *Drainage 2-A - 3' drainage pipe with upland vegetation in drainage to the south.*

PHOTOGRAPH 3: *Tamarisk and Mexican elderberry in roadside swale (non-wetland).*

PHOTOGRAPH 4: *Drainage 2 - 1939 box culvert on the north side of Green River Road.*

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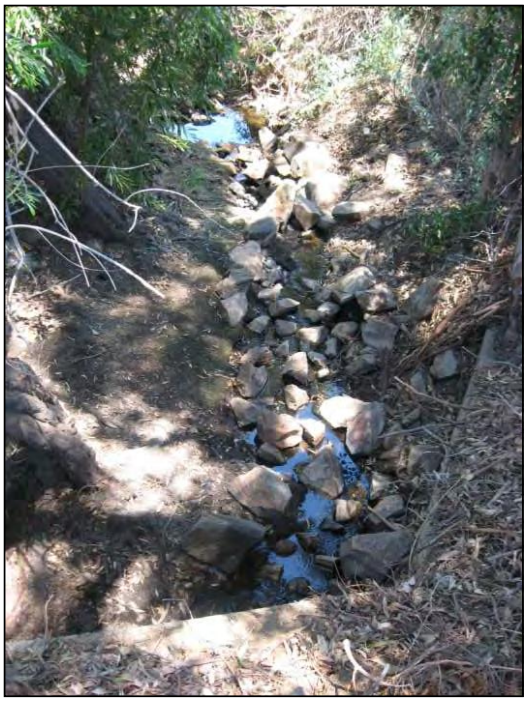
FIGURE 2A

Green River Road Widening
Jurisdictional Delineation Report

Site Photographs

PHOTOGRAPH 5: *Riparian scrub associated with Drainage 2 on the north side of Green River Road.*

PHOTOGRAPH 6: *Drainage 3 (with no outlet) – Area with upland vegetation and one black willow.*



PHOTOGRAPH 7: *Drainage 5 – Rock riprap channel with wetland characterisitics fed by irrigation and urban runoff.*

LSA

FIGURE 2B

Green River Road Widening
Jurisdictional Delineation Report

Site Photographs

PHOTOGRAPH 8: *Drainage 6 – Box culvert draining Fresno Canyon under Green River Road.*

PHOTOGRAPH 9: *Drainage 6 with upland vegetation upstream of Green River Road.*

PHOTOGRAPH 10: *Drainage 7– Concrete channel leading to a box culvert under Green River Road.*

LSA

FIGURE 2C

Green River Road Widening
Jurisdictional Delineation Report
Site Photographs

under Green River Road and the railroad tracks, storm drains, concrete support structures, rock riprap, and vegetation removal. Concrete culverts dated 1930 and 1931 were observed during the field survey, indicating that some of the drainages were modified at that time for either construction of Green River Road or railroad tracks. LSA biologists researched archival aerial photographs at Riverside County Flood Control and Water Conservation District office to determine past land uses in the area (Appendix C). The earliest aerial photograph available is from 1952. A paved road and the railroad tracks already existed in the study area at that time. Most of the adjacent property was undeveloped, although it appears that some of the land west of the study area may have been used for agriculture. More agricultural use appears in the 1962 aerial photograph, but little other development had occurred by that time. Green River Road was realigned to accommodate SR-91 through Corona, which opened in 1963. Urban development in the City, including housing developments draining into the study area occurred in the 1980s and the commercial centers along Green River Road were developed during the 1990s.

Ground surface cover in the study area consists of developed land, ruderal and landscaped vegetation, and small portions of exposed soil. Refer to Figure 2, Sheets 1 and 2, for an aerial photograph of the project site with site photograph key map.

Elevation and Topography

The study area is generally level and the elevation ranges from approximately 500 to 530 feet above mean sea level. A large drainage out of Fresno Canyon and several other smaller drainages exist in the study area and from the south flow out of the Santa Ana Mountains. Flows are generally conveyed toward the center of the study area and then to the north. Slopes within the drainages are minor, averaging approximately 4 percent (City of Corona Flood Control Master Plan). Table B identifies and briefly describes the drainages within the study area.

Table B: Drainages in Study Area

Drainage	Description	Sample Points
1	4' Corrugated Metal Pipe (CMP) and concrete box culvert emerging at north side of Green River Road. Earthen bottom, upland vegetation, with OHWM. Outside of project site.	1
2	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed with adjacent riparian scrub. A swale occurs adjacent to the streambed on the south side of the road.	2a, 2b, 2c
3	Detention basin with earthen bottom, riparian scrub vegetation, and OHWM. Water does not drain to TNW.	3
4	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed on south side of road and riparian scrub in streambed on south side of road.	4a, 4b
5	4' CMP and concrete box culvert originating south of Green River Road with surface flows and OHWM. Saturated soils and small amount of hydrophytic/riparian vegetation.	5
6	Fresno Canyon Drainage. Large braiding streambed with OHWM and upland vegetation. Flows under Green River Road via a large concrete box culvert. Water from a municipal storm drain flows into this drainage at the box culvert. Outside of project site.	6
7	Concrete v-ditch leading to CMP culvert that flows under Green River Road and Palisades Drive. Some riparian scrub adjacent to v-ditch. Outside of project site.	7

Precipitation

Total season-to-date Riverside area precipitation for the 2007–2008 annual monitoring season (July 1–June 30) and historical average precipitation for the Alberhill Station were taken from the University of California Integrated Pest Management web site (UC IPM Online 2008) and the Western Regional Climate Center (WRCC) web site (2008). Precipitation for the 2007–2008 season was considered typical for the region. Total season-to-date precipitation in the Riverside area was 10.73 inches, just below normal compared with the average of 12.71 inches for the season-to-date at the Corona, California Station recorded on the WRCC web-site. The annual growing season in this part of Riverside County is estimated at 220 to 300 days (USDA Soil Conservation Service 1980). The average annual temperature is 61° to 64°F.

Drainage Area

The project is located within the 1.82-million acre Santa Ana River watershed (hydrologic unit 180.70.203). The drainage area of the project site drains from south to north, through a system of earthen-bottomed drainages, concrete and CMP culverts, and storm drains. Surface water in the study area is diverted into City of Corona storm drains and eventually discharges into the Santa Ana River via the Wardlow Wash Flood Control Channel. The Santa Ana River is an RPW that is tributary to the Pacific Ocean, a TNW, and therefore is subject to ACOE jurisdiction.

Hydrology information for the project site was obtained from the City of Corona Drainage Master Plan (2003) and a hydrology study conducted by Armstrong & Brooks Consulting Engineers (2008). The entire drainage area of the project site is approximately 3,987 acres, calculated by adding up the drainage area west of Wardlow Wash and south of the Santa Ana River. This drainage area is designated as the ACOE Review Area (Figure 3).

The developed area south of the project site contributes an estimated Q_{10} = 2,066 cfs and Q_{100} = 3,468 cfs. The area north of the project site does not contribute to storm drain discharge as all flows in the study area are directed north. Flow rates were not available for all drainages; all Q_{10} and Q_{100} rates available are listed in Table C. All of the calculated flow rates are for a six-hour period.

U.S. Army Corps of Engineers and Wetlands Delineation of Potential Jurisdiction Waters

The following is a discussion of site conditions compared to the ACOE three-factor wetland indicator system and the Arid West Region Delineation Supplement. A discussion of wetland status and area of potential jurisdiction follows. A map of the potential jurisdictional wetlands and waters of the U.S. is provided as Figure 4, Sheets 1 and 2.

Vegetation. Vegetation communities within the project study area include nonnative grassland, developed/ruderal, riparian scrub and Goodding's willows with eucalyptus (Figure 2). All vegetation on the south side of Green River Road is developed/ruderal, including within the drainages. Vegetation on the north side is mostly nonnative grassland and developed/ruderal with small amounts of riparian scrub in several of the drainages and one patch of Goodding's willows with eucalyptus trees.

LSA

FIGURE 3

BIOLOGICAL STUDY AREA

DRAINAGE AREAS (CITY OF CORONA)

STRUCTURE TYPE

FORCE

STDRD

SWRLAT

TRUNK

Green River Road Widening
Jurisdictional Delineation Report

ACOE Drainage Review Area

SOURCE: Air Photo USA (2007); Armstrong & Brooks (2008).

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Table C: Potential ACOE & CDFG Jurisdictional Areas within the Green River Road Widening Study Area

Drainage	Sample Point	Water Type	Drainage Area (acres)	Q_{10} 6 hr (cfs)	Q_{100} 6 hr (cfs)	Nexus?	Length (ft)	ACOE OHWM Width (ft)	ACOE Jurisdiction (acres)	CDFG Streambed Width (ft)	CDFG Jurisdiction Streambed (acres)	CDFG Jurisdiction Riparian (acres)
1	1	Ephemeral	Not Available	—	—	Yes	74.2	2	0.0034	14	0.0238	0
2	2a	Ephemeral	—	90.7	155.0	Yes	55.8	3	0.0038	3	0.0038	0
	2b	Sample point only	69			No	0	0	0	0	0	0
	2c	Ephemeral	—			Yes	111.9	3	0.0077	7	0.0180	0.0839
3	3	Intermittent	Not Available	—	—	No	201.9	2	0.0093	20	0.0927	0.1157
4	4a	Ephemeral	149.2	191.7	328.3	Yes	50.3	2.5	0.0029	4	0.0046	0
	4b	Intermittent				Yes	108.3	2	0.0050	5	0.0124	0.0154
5	5	Perennial	662	205.8	312.4	Yes	104.9	7.5 (wet)	0.0181	15	0.0361	0
6	6	Intermittent	1,106	1,020.3	1,751.6	Yes	22.5	4	0.0041	36	0.0367	0.0043
7	None	Concrete v-ditch	600	557.8	921.0	Yes	55.2	1	0.0013	1	0	0.0013
TOTAL	—	—	—	—	—	—	—	—	**0.0556**	—	**0.229**	**0.219**

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FIGURE 4
Sheet 1 of 2

STUDY AREA
SAMPLE POINT
1 DRAINAGE NUMBER

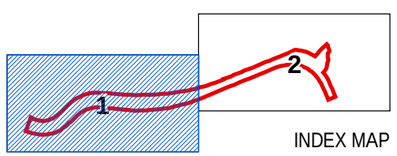
ARROYO WILLOWS WITH EUCALYPTUS TREES
USACE ISOLATED WATERS
USACE NON-WETLAND WATERS WITH FLOW DIRECTION
USACE WETLAND WATERS WITH FLOW DIRECTION
2' USACE WIDTHS (FT)

EXISTING STORM DRAIN

N

0 100 200
FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.



INDEX MAP

Green River Road Widening
Jurisdictional Delineation Report

ACOE Potential
Jurisdictional Areas

SOURCE: Air Photo USA (2007)
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LSA

FIGURE 4
Sheet 2 of 2

STUDY AREA
SAMPLE POINT
1 DRAINAGE NUMBER

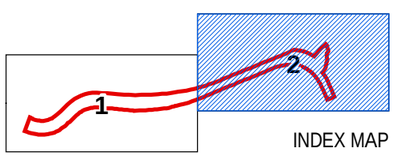
ARROYO WILLOWS WITH EUCALYPTUS TREES
USACE ISOLATED WATERS
USACE NON-WETLAND WATERS WITH FLOW DIRECTION
USACE WETLAND WATERS WITH FLOW DIRECTION
2' USACE WIDTHS (FT)

EXISTING STORM DRAIN

N

0 100 200
FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.



Green River Road Widening
Jurisdictional Delineation Report

ACOE Potential
Jurisdictional Areas

SOURCE: Air Photo USA (2007)
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Dominant plant species in the developed/ruderal community include tocalote, shortpod mustard, nonnative annual grasses (*Poaceae* family), and various ornamental landscaping species. Dominant species in the nonnative grassland community include shortpod mustard, tocalote, blue elderberry, and red brome (*Bromus madritensis* ssp. *rubens*). The areas mapped as riparian scrub consist primarily of mule fat with a nonnative herbaceous layer. The small area mapped as Goodding's black willow trees includes a few Goodding's black willows shaded by taller eucalyptus and a sparse herbaceous vegetation layer. A complete list of plant species observed on the site is included in Appendix A.

The streambeds within Drainages 1, 2, and 6 support the same nonnative grassland and ruderal communities present in the adjacent upland areas. Dominant species within the streambeds include short pod mustard and tocalote. A small roadside swale adjacent to Drainage 2 has riparian scrub that is hydrologically supported by sheet flows from the road. Vegetation within this swale is hydrophytic (Appendix B; Sample Point 2b), but the swale will not be affected by project activities. Drainage 3 is a detention basin that contains riparian scrub. Dominant species within Drainage 3 include mule fat, blue elderberry, branching phacelia, and mugwort. Vegetation within Drainage 3 is hydrophytic (Appendix B, Sample Point 3). The portion of Drainage 4 on the north side of Green River Road contains hydrophytic vegetation dominated by blue elderberry, mule fat, and scalebroom (Appendix B, Sample Point 4b).

Drainage 5 is a wetland area with perennial surface flows that support hydrophytic herbaceous plants within the streambed and riparian scrub dominated by a few Goodding's willows within the drainage. Hydrophytic vegetation was present within Drainage 5 (Appendix B, Sample Point 5).

Soils. The soils within the study area as mapped by the NRCS are Altamont clay, Arbuckle loam, Cortina cobbly loamy sand, Garretson very fine sandy loam, Garretson gravelly very fine sandy loam, Perkins gravelly loam, and Terrace escarpments (*Soil Survey for Western Riverside Area, California*, A.A. Knecht 1971) (Figure 5, Sheets 1 and 2). With the exception of some areas mapped as Garretson very fine sandy loam and a small area mapped as Cortina cobbly loamy sand within the Fresno Canyon drainage (Drainage 6), all areas of the site have been developed, graded, or otherwise altered and may not currently have the surface soils indicated in the mapping. The soils within all the streambeds to be developed and immediately upstream are non-hydric soils per the NRCS National Hydric Soils List. The one hydric soil mapped on site, Cortina cobbly loamy sand, occurs within the Fresno Canyon drainage, which will not be subject to impacts by project activities. Table D lists the soil types mapped for the study area.

Table D: Soil Types

Soil Type	Description	Hydric?
GaD2	Garretson very fine sandy loam, 8–15% slopes, eroded	No
GaC	Garretson very fine sandy loam, 2–8% slopes	No
AkD	Arbuckle loam, 8–15% slopes	No
CmC	Cortina cobbly loamy sand, 2–8% slopes	Yes
PgD2	Perkins gravelly loam, 8–15% slopes, eroded	No
AaF	Altamont clay, 25–50% slopes	No
TeG	Terrace escarpments	No
GdD2	Garretson gravelly very fine sandy loam, 8–15% slopes, eroded	No
PgC	Perkins gravelly loam, 5–8% slopes	No

Source: *Hydric Soils for Western Riverside Area*, 1992.

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STUDY AREA

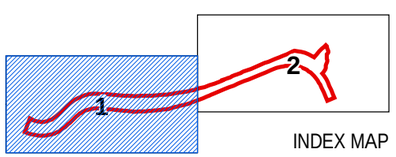
SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments

N

0 100 200

Feet



INDEX MAP

FIGURE 5
Sheet 1 of 2

Green River Road Widening
Jurisdictional Delineation Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)

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LSA

FIGURE 5
Sheet 2 of 2

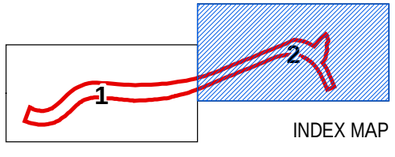
N

0 100 200
FEET

STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments



INDEX MAP

Green River Road Widening
Jurisdictional Delineation Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)
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The soils observed on the project site are similar to the soil types mapped by the NRCS. The soils in Drainages 1, 2, 3, 4, and 6 are coarse to fine sand with little organic matter accumulation. The saturated soils at Sample Point 5 are sandy with organic matter accumulation. The Arid West Region Wetland Delineation Manual (ACOE Research and Development Center 2006) describes several hydric soil indicators specifically for problematic sandy soils. The criteria of hydric soils are listed below.

- Mineral layers must have chroma of 2 or less within the top 6 inches of the soil surface;
- Gleying must start with 6 inches of the soil surface and occupy 60 percent of more of the particular gleyed layer;
- Redox concentrations within the upper 6 inches and at least 4 inches thick and in a matrix of chroma of 2 or less;
- Mucky layers in mineral soils must have at least 8 percent of organic carbon; and
- Mineral soils with high organic carbon content feel “greasy.”

Only the soils at Sample Point 5 met the hydric soil criteria for low chroma and/or redox conditions in sandy soils. Hydric soil indicators were not present at the other sample point locations.

Hydrology. The jurisdictional delineation was conducted during the dry season and the inundation and saturation that would normally be associated with wetlands was not expected. In addition to soil saturation and presence of surface water, dry season indicators as provided in the Arid West Supplement were used to determine if wetland hydrology was present within the drainages. Hydrology indicators observed include surface water, water marks (riverine and non-riverine), surface soil cracks, sediment deposits, and drainage patterns.

No secondary or primary wetland hydrology indicators were observed in Drainages 1, 2, 4, 6 or 7. Evidence an OHWM was present as shelving caused by erosion of the streambed following regular storm events.

Wetland hydrology occurs in Drainages 3 and 5 as well as in the roadside swale adjacent to Drainage 2 (Sample Point 2b). Drainage 3 displayed drainage patterns (B10) and non-riverine water marks (B6). Drainage 5 contained surface water (A1), saturation (A3), water-stained leaves (B9), aquatic invertebrates (B13), and a hydrogen sulfide odor (C1). The roadside swale adjacent to Drainage 2 had non-riverine water marks (B1) and surface soil cracks (B6).

Wetland Status. Drainage 5 is the only drainage in the project area that meets all three federal wetland criteria. It has hydrophytic vegetation dominated by black willows and scale broom, hydrophytic soils with a high organic matter content, identified by the presence of the Sandy Mucky Mineral soil indicator, and wetland hydrology evidence by surface water, soil saturation, water-stained leaves, aquatic invertebrates, and a hydrogen sulfide odor. Hydric soils and vegetation occur at 7.5 feet width centered over the drainage. Drainage 5 has 0.02 acre of potential ACOE jurisdictional wetland subject to project impacts. Refer to Table E for summary of Arid West Wetland Determination Criteria Results.

Table E: Arid West Wetland Determination Criteria Results Summary

Drainage	Sample Point	Vegetation Dominance Test Passed	Vegetation Prevalence Test Passed	FAC Neutral Test Passed	Wetland Hydrology		Soil Sample Taken	Hydric Soils	Wetland
					Primary Indicators	Secondary Indicators			
1	1	No	Not Required	No	None	None	No	No	No
2	2a	No	Not Required	No	None	None	No	No	No
	2b	Yes	Not Required	Not Required	Yes	None	Yes	No	No
	2c	No	Not Required	No	None	None	No	No	No
3	3	Yes	Not Required	Yes	Yes	Yes	Yes	No	No
4	4a	No	No	No	None	Yes	Yes	No	No
	4b	Yes	Not Required	No	None	None	No	No	No
5	5	Yes	Not Required	Not Required	Yes	Yes	Yes	Yes	Yes
6	6	Yes	No	No	None	None	No	No	No
7	None	None	Not Required	Not Required	None	None	Not Required	No	Concrete v-ditch

Potential ACOE Jurisdictional Areas. The total ACOE jurisdictional area is 0.06 acres, rounded to the nearest one-hundredth digit, and a total linear distance of 785 feet. This total includes 0.02 acre and 105 linear feet of perennial/wetland drainage.The potential area of ACOE jurisdiction over water bodies in the project area was identified and measured based on the presence of an OHWM. OHWMs were observed in all seven drainages analyzed. The widths between the OHWM were measured in the field based on scour marks formed as a result of a typical 2-year flood event or subjective measure of the lowest channel width within the topographic depression, such as a canyon, ditch, channel, field, or floodplain.

The final determination of jurisdiction depends upon the characteristics and functions of the tributary. These factors are:

- The volume, duration, and frequency of the water flow;
- Whether the tributary transports or reduces the amount of pollutants or floodwater to RPWs and TNWs;
- The tributary's capacity to transfer nutrients and organic carbon to support downstream food webs;
- Functions of the associated wetlands and riparian vegetation as wildlife habitat for species of concern;
- Whether the tributary has more than a speculative or insubstantial effect on the chemical, physical, and biological integrity of an RPW and TNW; and
- Significant nexus determination is not dependent upon the tributary or wetland location within a floodplain or solely on distance from an RPW and TNW.

Seven potential jurisdictional drainages were analyzed within the study area. Three of the drainages that were analyzed are within the study area and potentially jurisdictional but are not within the project site and will not be affected by project activities. The remaining four drainages were determined to be potentially jurisdictional and will be affected by project activities. Most of the drainages, with the exception of Drainage 3, have a significant nexus to traditional navigable waters of the U.S. based on:

- Flow into Wardlow Wash (RPW) through the storm drain and flood control system;
- Connection of Wardlow Wash into the Santa Ana River (RPW) less than 1 mile north of the project site; and
- Connection to the Santa Ana River to the Pacific Ocean (TNW).

California Department of Fish and Game Potential Streambed and Riparian Habitat

The following is a description of site conditions relative to CDFG streambed and riparian jurisdictional criteria, followed by descriptions of respective drainages that will and will not be affected by the proposed project.

CDFG Streambed and Bank. The project site is located within an upland drainage area that historically drained into the Santa Ana River Basin. The characteristics of the minor tributaries vary from deeply incised scoured channels to roadside swales and to engineered channels with rock riprap bottoms.

The CDFG bed-and-bank estimates include areas above the OHWM measured as the obvious water marks, drift lines, and debris lines. Measurements for the CDFG bed-and-bank focused on what could be inferred

as the extent of a larger storm event, such as a 5-year frequency, and the streambed topography. The next higher obvious terrace or bench in the stream channel was used to measure the CDFG jurisdictional area.

Riparian and Wetland Area. The riparian and wetland areas were measured to include the riparian shrubs and willow trees growing in and adjacent to the altered tributaries. This area is wider than the active streambed, since the mature riparian vegetation in the project site is supported by percolated surface runoff and ponded water. The vegetation growing within the streambed in Drainages 1, 2, 3, 4, and 6 consists of upland plants similar to those in adjacent upland areas. Drainage 2 has a portion of riparian scrub adjacent to the streambed that is growing as a result of ponding from sheet flows running off of Green River Road. Drainage 3, built as a retention basin, contains riparian scrub that is growing as a result of ponding from nuisance urban runoff. Drainage 4 contains riparian scrub within the streambed, as flows likely pond for extended periods of time in this drainage on the north side of Green River Road. Drainage 5 contains a small amount of riparian scrub consisting of a few Goodding's willows with eucalyptus trees intermixed. Although Drainage 5 is a wetland and had surface water at the time of the survey, very little riparian vegetation grew within the streambed—likely due to excessive saturation and a rock riprap bottom with low permeability.

Potential CDFG Jurisdiction Areas. The total CDFG streambed area is 0.23 acre. The total riparian and wetland area is 0.22 acre. Total potential CDFG jurisdictional area is 0.45 acre. Previously referenced Table C summarizes the potential area of CDFG jurisdiction. A map of the potential CDFG streambed and riparian area is provided as Figure 6.

CONCLUSIONS

Total jurisdictional areas are summarized in previously referenced Table C. The quantity of impacts is subject to change due to design changes prior to final project approval.

The ACOE will have jurisdiction due to presence of OHWMs and a nexus to a TNW. The CDFG will have jurisdiction due to presence of streambed and riparian vegetation. The RWQCB will have jurisdiction through CWA Section 401 (Water Quality Certification) and CWA Section 402 (National Pollutant Discharge Elimination System) if the ACOE asserts jurisdiction, or the Porter-Cologne Water Quality Control Act (Waste Discharge Reporting) if the ACOE determines that the tributary is not jurisdictional under the CWA Section 404 regulations. This jurisdictional determination is subject to verification by the ACOE, RWQCB, and CDFG if Section 401, Section 404, and/or Section 1600 et seq. permits are required.

The findings and conclusions presented in this report, including the location and extent of wetlands and other waters subject to regulatory jurisdiction, represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the ACOE and the CDFG.

LSA

STUDY AREA

SAMPLE POINT

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES

RIPARIAN SCRUB

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

EXISTING STORM DRAIN

N

0 100 200

FEET

SOURCE: Air Photo USA (2007)

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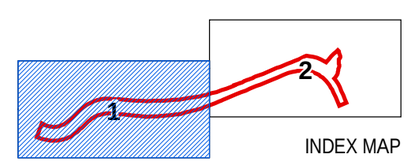
Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.



INDEX MAP

FIGURE 6

Sheet 1 of 2

Green River Road Widening
Jurisdictional Delineation Report

CDFG Potential
Jurisdictional Areas

LSA

STUDY AREA

SAMPLE POINT

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES

RIPARIAN SCRUB

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

EXISTING STORM DRAIN

N

0 100 200

FEET

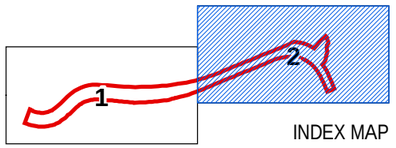


FIGURE 6
Sheet 2 of 2

Green River Road Widening
Jurisdictional Delineation Report

CDFG Potential
Jurisdictional Areas

SOURCE: Air Photo USA (2007)

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.

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APPENDIX A

PLANT AND ANIMAL SPECIES OBSERVED

Appendix A: Plant and Animal Species Observed

Scientific Name	Common Name
DICOT PLANTS	
Aizoaceae	**Carpet weed family**
Carpobrotus edulis (Nonnative species)	Hottentot-fig
Amaranthaceae	**Amaranth family**
Amaranthus albus (Nonnative species)	Tumbling pigweed
Anacardiaceae	**Sumac family**
Malosma laurina	Laurel sumac
Apiaceae	**Carrot family**
Foeniculum vulgare (Nonnative species)	Fennel
Asteraceae	**Sunflower family**
Ambrosia acanthicarpa	Annual bur-sage
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Baccharis pilularis	Coyote brush
Baccharis salicifolia	Mule fat
Baccharis sarothroides	Broom baccharis
Centaurea melitensis (Nonnative species)	Tocalote
Cirsium vulgare (Nonnative species)	Bull thistle
Conyza Canadensis	Canadian horseweed
Cotula australis (Nonnative species)	Australian brass-buttons
Encelia californica	California encelia
Isocoma menziesii	Goldenbush
Lactuca serriola (Nonnative species)	Prickly lettuce
Lepidospartum squamatum	Scalebroom
Picris echioides (Nonnative species)	Bristly ox-tongue
Pseudognaphalium luteoalbum (Nonnative species)	Jersey cudweed
Senecio vulgaris (Nonnative species)	Common groundsel
Silybum marianum (Nonnative species)	Milk thistle
Sonchus oleraceus (Nonnative species)	Common sow thistle
Taraxacum officinale (Nonnative species)	Common dandelion
Boraginaceae	**Borage family**
Amsinckia menziesii	Common fiddleneck
Brassicaceae	**Mustard family**
Hirschfeldia incana (Nonnative species)	Shortpod mustard
Sisymbrium irio (Nonnative species)	London rocket

Appendix A: Plant and Animal Species Observed

Scientific Name	Common Name
Caprifoliaceae	**Honeysuckle family**
Sambucus mexicana	Blue elderberry
Chenopodiaceae	**Saltbush family**
Chenopodium murale (Nonnative species)	Nettleleaf goosefoot
Salsola tragus (Nonnative species)	Russian thistle
Euphorbiaceae	**Spurge family**
Ricinus communis (Nonnative species)	Castor bean
Fabaceae	**Pea family**
Lupinus truncates	Collar lupine
Medicago lupulina (Nonnative species)	Black medick
Geraniaceae	**Geranium family**
Erodium cicutarium (Nonnative species)	Redstem stork's bill
Lamiaceae	**Mint family**
Marrubium vulgare (Nonnative species)	Horehound
Myrtaceae	**Myrtle family**
Eucalyptus sp. (Nonnative species)	Eucalyptus
Papaveraceae	**Poppy family**
Romneya coulteri	Coulter's matilija poppy
Platanaceae	**Sycamore family**
Platanus racemosa	Western sycamore
Plumbaginaceae	**Leadwort family**
Limonium perezii (Nonnative species)	Statice
Polygonaceae	**Buckwheat family**
Polygonum aviculare (Nonnative species)	Common knotweed
Portulacaeae	**Purslane family**
Portulaca oleracea (Nonnative species)	Common purslane
Primulaceace	**Primrose family**
Anagallis arvensis (Nonnative species)	Scarlet pimpernel
Salicaceae	**Willow family**
Salix gooddingii	Goodding's willow
Solanaceae	**Nightshade family**
Datura wrightii	Sacred thorn-apple
Nicotiana glauca (Nonnative species)	Tree tobacco
Tamaricaceae	**Tamarisk family**
Tamarix ramosissima (Nonnative species)	Mediterranean tamarisk

APPENDIX B

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona/Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 1

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam, Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): ephemeral drainage Local relief (concave, convex, none): none Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaD2 - Garretson very fine sandy loam, 8-15% slopes, eroded NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◉	
Hydric Soil Present?	Yes ◉	No ◉	Is the Sampled Area within a Wetland? Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◉	

Remarks: Ephemeral streambed that has been modified due to roadway development. Flows across horse pasture then is channelized in a rip-rap lined drainage. Directed under Green River Road via a CMP/Concrete Box Culvert. Resurfaces at rip-rap lined, earthen-bottomed channel with non-native upland vegetation. Evidence of OHWM due to shelving.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *None*			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Sambucus mexicana*	5	Yes	FAC
2. *Nicotiana glauca*	25	Yes	UPL
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Hirschfeldia incana*	15	Yes	UPL
2. *Centaurea melitensis*	10	Yes	UPL
3. *Marrubium vulgare*	2	Yes	UPL
4. *Chenopodium sp.*	2	Yes	
5.			
6.			
7.			
8.			
Total Cover:	29 %		
Woody Vine Stratum			
1. *None*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	16.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	52	x 5 =	260
Column Totals:	57 (A)		275 (B)

Prevalence Index = B/A = 4.82

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: Non-native grassland vegetation dominated by Hirschfeldia incana and Centaurea melitensis.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
NA								see remarks below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Soils mapped as GaD2 (non-hydric). Sandy streambed soils with no surface indicators of hydric soils. Soil sample was not done as wetland vegetation and wetland hydrology not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Evidence of flow given by erosion of earthen stream channel at 2-year storm event levels (OHWM). Ephemeral streambed - water does not stay in streambed long enough following rain event to create wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona/Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 2a

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam, Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): ephemeral drainage Local relief (concave, convex, none): none Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaD2 - Garretson very fine sandy loam, 8-15% slopes, eroded NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No (●)	Is the Sampled Area within a Wetland? Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No (●)	

Remarks: Ephemeral streambed that has been modified due to roadway development. Flows across horse pasture then is channelized in a rip-rap lined drainage. Directed under Green River Road via a CMP/Concrete Box Culvert. Resurfaces at rip-rap lined, earthen-bottomed channel (SP 2b) with non-native upland vegetation. Evidence of OHWM due to shelving.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Eucalyptus sp.*	20	Yes	UPL
2.			
3.			
4.			
Total Cover:	20 %		
Sapling/Shrub Stratum			
1. *Artemisia californica*	5	Yes	FAC
2. *Nicotiana glauca*	25	Yes	UPL
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Hirschfeldia incana*	10	Yes	UPL
2. *Centaurea melitensis*	10	Yes	UPL
3. *Marrubium vulgare*	3	Yes	UPL
4. *Baccharis emoryi*	2	Yes	FACW
5. *Salsola tragus*	10	Yes	Not Listed
6.			
7.			
8.			
Total Cover:	35 %		
Woody Vine Stratum			
1. *None*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	2	x 2 =	4
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	78	x 5 =	390
Column Totals:	85 (A)		409 (B)

Prevalence Index = B/A = 4.81

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Non-native grassland vegetation dominated with a sparse Eucalyptus overstory. Understory dominated by Nicotiana glauca, Hirschfeldia incana and Centaurea melitensis. Vegetation very dry.

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
NA								see remarks below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soils mapped as GaD2 (non-hydric). Sandy streambed soils with no surface indicators of hydric soils. Soil sample was not done as wetland vegetation and wetland hydrology not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Evidence of flow given by erosion of earthen stream channel at 2-year storm event levels (OHWM). Ephemeral streambed - water does not stay in streambed long enough following rain event to create wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona/Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 2b

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam, Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): roadside swale Local relief (concave, convex, none): concave Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaD2 - Garretson very fine sandy loam, 8-15% slopes, eroded NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No	

Remarks: Isolated roadside swale with riparian vegetation dominated by blue elderberry. Approximately 4 ft wide by 10 ft long. Adjacent to streambed but receives water as result of run-off from Green River Road

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sambucus mexicana*	90	Yes	FAC
2. *Tamarisk ramosissima*	10	Yes	FAC
3.			
4.			
Total Cover:	100%		
Sapling/Shrub Stratum			
1. *None*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Centaurea melitensis*	95	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1. *None*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	100	x 3 =	300
FACU species		x 4 =	0
UPL species	95	x 5 =	475
Column Totals:	195 (A)		775 (B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No

Remarks: Isolated area with approximately 4 Sambucus mexicana trees. Understory monotypic, dried-out Centuarea melitensis.

SOIL

Sampling Point: 2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
18	10YR 4/2	100	none				sandy loam	see remarks below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks: Fine alluvium deposited from upland area (horse pasture) due to erosion following unusual storm events. High organic matter as result of runoff from horse pasture. No redox features.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ● Depth (inches):
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
10.71" ppt for 7/1/07 - 6/30/08 season (nearest monitoring station is Alberhill)

Remarks: Sediment deposits at base of Sambucus trees and some surface soil cracks.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona/Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 2c

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam, Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): ephemeral drainage Local relief (concave, convex, none): none Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaD2 - Garretson very fine sandy loam, 8-15% slopes, eroded NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No (●)	Is the Sampled Area within a Wetland? Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No (●)	

Remarks: Sample point taken south of where ephemeral streambed enters a 1939 concrete box culvert, south of Green River Road. Streambed is earthen then lined with loose rip-rap as it enters culvert.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *None*			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Sambucus mexicana*	15	Yes	FAC
2. *Lepidospartum squamatum*	15	Yes	Not Listed
3. *Salvia mellifera*	2	Yes	Not Listed
4.			
5.			
Total Cover:	32 %		
Herb Stratum			
1. *Hirschfeldia incana*	15	Yes	Not Listed
2. *Centaurea melitensis*	10	Yes	Not Listed
3. *Foeniculum vulgare*	10	Yes	FACU
4. *Salsola tragus*	5	No	Not Listed
5.			
6.			
7.			
8.			
Total Cover:	40 %		
Woody Vine Stratum			
1. *None*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	16.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species		x 1 =	0	
FACW species		x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	10	x 4 =	40	
UPL species	47	x 5 =	235	
Column Totals:	72	(A)	320	(B)

Prevalence Index = B/A = 4.44

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Overland flow area (roadside swale) created by runoff from Green River Road is adjacent to the drainage. Flows appear to run from this roadside swale into drainage. Drainage also captures flows off of horse pasture to south.

SOIL

Sampling Point: 2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
NA								see remarks below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Some erosion sedimentation from flows off of Green River Road and horse pasture. Soil sample was not done at this location as wetland vegetation and wetland hydrology are not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This is an ephemeral streambed. Evidence of flow due to shelving (OHWM) but water does not remain in streambed for very long following rain event.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona / Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 3

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): Roadside Detention Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaC, Garretson very fine sandy loam, 2-8% slopes NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes ( )	No (●)	Is the Sampled Area within a Wetland? Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Roadside detention basin that catches runoff from Green River Road during regular storm events. Exhibits flow lines but no outlet.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sambucus mexicana*	25	Yes	FAC
2. *Salix gooddingii*	5	No	OBL
3.			
4.			
Total Cover:	30 %		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	10	Yes	FACW
2. *Baccharis emoryi*	10	Yes	FACW
3. *Isocoma squamatum*	10	Yes	Not Listed
4. *Salvia mellifera*	2	No	UPL
5.			
Total Cover:	32 %		
Herb Stratum			
1. *Phacelia ramosissima*	10	Yes	FACU
2. *Artemisia douglasiana*	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	30	x 2 =	60
FAC species	25	x 3 =	75
FACU species	10	x 4 =	40
UPL species	2	x 5 =	10
Column Totals:	72 (A)		190 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: This riparian community is dominated by Sambucus mexicana. It has one large willow tree. The lower layers are dominated by non-native species as well as mule fat, branching phacelia and mugwort.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	7.5YR 3/2	100	none				loose, porous	fine silty sandyloam
			no layers, stratification - none					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Soils mapped as GaC, non-hydric. NO REDOX

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☑ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheras along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ● No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona / Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 4a

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): ephemeral streambed Local relief (concave, convex, none): none Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaC, Garretson very fine sandy loam, 2-8% slopes NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ●	No ◉	
Hydric Soil Present?	Yes ◉	No ◉	Is the Sampled Area within a Wetland? Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◉	

Remarks: Eroded

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sambucus mexicana*	25	Yes	FAC
2. *Eucalyptus sp*	10	No	Not Listed
3.			
4.			
Total Cover:	35 %		
Sapling/Shrub Stratum			
1. Baccharis salicifolia	10	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Phacelia ramosissima*	5	Yes	FACU
2. *Artemisia douglasiana*	5	Yes	FACW
3. *Ricinis communis*	5	Yes	Not Listed
4. *Hirschfeldia incana*	15	Yes	Not Listed
5. *Marrubium vulgare*	2	No	FAC
6.			
7.			
8.			
Total Cover:	32 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species	27	x 3 =	81
FACU species	5	x 4 =	20
UPL species	30	x 5 =	150
Column Totals:	77 (A)		281 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ● No

Remarks: Dry streambed that leads into a 1939 concrete box culvert. Rip-rap at entrance to culvert. Sandy soils with highly disturbed, dry vegetation.

"Not Listed" indicator status is assumed "UPLAND"

SOIL

Sampling Point: 4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	10YR 6/2		none				loose sand, cobbles, gravel	
2-12	10YR 4/3		none				sandy loam	
12-16	10YR 4/4		none				sandy loam	

[1]Type: C=Concentretion, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soils mapped as GaC, non-hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators observed. Evidence of flow due to shelving. This is an ephemeral streambed that does not hold water for long after rain events.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona / Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 4b

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): ephemeral streambed/ravine Local relief (concave, convex, none): none Slope (%): 4

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaC, Garretson very fine sandy loam, 2-8% slopes NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◯	No ◉	Is the Sampled Area within a Wetland? Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: Deep ravine-like channel with steep slopes. 1939 box culverts at both south and north ends. Rip-rap at southern culvert. Large chunks of concrete used to build up slopes at northern end. Highly disturbed vegetation. Dry.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sambucus mexicana*	25	Yes	FAC
2.			
3.			
4.			
Total Cover:	25 %		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	15	Yes	FACW
2. *Foeniculum vulgare*	10	Yes	FACU
3.			
4.			
5.			
Total Cover:	25 %		
Herb Stratum			
1. *Lepidospartum squamatum*	10	Yes	FAC
2. *Artemisia douglasiana*	5	Yes	FACW
3. *Datura wrightii*	5	Yes	Not Listed
4. *Hirschfeldia incana*	10	Yes	Not Listed
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 20 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	57.1 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species	35	x 3 =	105
FACU species	10	x 4 =	40
UPL species	15	x 5 =	75
Column Totals:	80 (A)		260 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Dry deep ravine-like streambed that leads into a 1939 box culvert. Collects water from associated SP 4a, south of Green River Road. Dry vegetation.

SOIL

Sampling Point: 4b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-5	10YR 6/3		none				compacted surface;	cobbles & gravel
5-17	10YR 5/3	100%	none		;		roots, fine sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soils mapped as GaC, non-hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators observed. Evidence of flow due to shelving. This is an ephemeral streambed that does not hold water for long after rain events.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona / Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 5

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): perennial drainage Local relief (concave, convex, none): none Slope (%): 2-5

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GaC, Garretson very fine sandy loam, 2-8% slopes NWI classification: non-hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No	Is the Sampled Area within a Wetland? Yes (●) No
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Perennial channel fed by urban run-off from nearby commercial and residential development. Channel is diverted underground until it emerges from a CMP culvert at north side of Green River Road.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix goodingii*	40	Yes	FACW
2.			
3.			
4.			
Total Cover:	40 %		
Sapling/Shrub Stratum			
1. *Lepidospartum squamatum*	20	Yes	FAC
2. *Nicotiana glauca*	5	No	FAC
3.			
4.			
5.			
Total Cover:	25 %		
Herb Stratum			
1. *None (rock rip-rap bottom)*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 20 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	40	x 2 =	80
FAC species	25	x 3 =	75
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	65 (A)		155 (B)

Prevalence Index = B/A = 2.38

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Vegetation community associated with this channel is black willow/eucalyptus with sparse understory. Eucalyptus trees do not occur in streambed - they are found on slopes of channel above OHWM. Channel bottom is rock rip-rap that doesn't support herbaceous vegetation. Rocks in channel are covered with moss.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
1"	5Y 3/1	100					Sand	See remarks below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [x] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ● No

Remarks: High organic matter. Rip-rap over entire reach until it is diverted under the rail road. Moist soils and moss on soil and rocks.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [x] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [x] Water Marks (B1) (**Riverine**)
- [x] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ●	No ○	Depth (inches):
Water Table Present?	Yes ●	No ○	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ●	No ○	Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Nearest monitoring data from Alberhill: 10.71" ppt from 7/1/07 to 6/30/08

Remarks: Perennial streambed fed by irrigation and urban run-off.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Green River Road Widening City/County: Corona / Riverside Sampling Date: 6/23/08

Applicant/Owner: City of Corona State: CA Sampling Point: 6

Investigator(s): S. Barrera, M. Lum Section, Township, Range: Prado Dam Section 29 & 30, T3S, R7W

Landform (hillslope, terrace, etc.): wide ephemeral streambed Local relief (concave, convex, none): none Slope (%): 5-8

Subregion (LRR): C - Mediterranean California Lat: 33.879248 Long: -117.6477 Datum:

Soil Map Unit Name: GmC, Cortina cobbly loamy sand, 2-8% slopes NWI classification: hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◉	Is the Sampled Area within a Wetland? Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◉	

Remarks: Drainage out of Fresno Canyon. This is a wide streambed with braiding ephemeral channels along the course.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	35	Yes	FACW
2. *Lepidospartum squamatum*	10	Yes	FAC
3.			
4.			
5.			
Total Cover:	45 %		
Herb Stratum			
1. *Hirschfeldia incana*	25	Yes	Not Listed
2. *Marrubium vulgare*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	35	x 2 =	70
FAC species	15	x 3 =	45
FACU species		x 4 =	0
UPL species	25	x 5 =	125
Column Totals:	75 (A)		240 (B)

Prevalence Index = B/A = 3.20

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Vegetation within the channel is fairly sparse but is dominated by mule fat and short pod mustard.

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0 - 12	10YR 5/2	100%	none				sandy, coarse, cobbles, gravel	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Nearest monitoring data from Alberhill: 10.71" ppt from 7/1/07 to 6/30/08

Remarks: Evidence of flow due to shelving in several narrow braided channels. Ephemeral streambed that does not hold water for very long following storm event.

APPENDIX C

HISTORIC AERIAL PHOTOS

(1952 & 1962)

LSA

APPENDIX C-1

BIOLOGICAL STUDY AREA

Green River Road Widening
Jurisdictional Delineation Report

1952 Aerial

SOURCE: Riverside County Flood Control - 1952 Aerial

I:\ABE0701\G\Reports\JD\Old_Aerials_1952.mxd (09/09/08)

LSA

APPENDIX C-2

BIOLOGICAL STUDY AREA

Green River Road Widening
Jurisdictional Delineation Report

1962 Aerial

SOURCE: Riverside County Flood Control - 1962 Aerial

I:\ABE0701\G\Reports\JD\Old_Aerials_1962.mxd (09/09/08)

APPENDIX D

ATYPICAL SITUATIONS DATA FORM

DATA FORM 3: ATYPICAL SITUATIONS
(1987 ACOE Wetlands Delineation Manual)

Applicant Name: City of Corona Project Name: Green River Road Widening
Location: Corona, CA – Riverisde County Date: 8/5/08 Investigator: S. Barrera, M. Lum

I. VEGETATION

A. Type of Alteration: Channelization of streams for flood control, urban run-off and sheet flows off of Green River Road ponding in shallow depressions north of green River Road.

B. Effects on Vegetation: Establishment of mulefat at storm drain outlets and detention basin and Tamarisk in roadside swale

C. Previous Vegetation: non-native grassland; ruderal vegetation

D. Hydrophytic Vegetation? ☒ Yes ☐ No

II. SOILS

A. Type of Alteration: Road crossings for Green River Road, removal of soil for channelization, compaction of soil for construction of road and buildings

B. Effects on Soils: removal of top soil, compaction

C. Previous Soils: sandy loams,

D. Hydric Soils? ☐ Yes ☒ No

III. HYDROLOGY

A. Type of Alteration: Channelization of ephemeral streams and sheet flows, road crossing in-fills, topographic gross alteration, previous agricultural/ranching development, current adjacent urban development

B. Effects on Hydrology: created urban nuisance flows, impoundment and detention of storm water, surface run-off, creation of roadside swale

C. Previous Hydrology: Flows moved from canyons to the south directly to Wardlow Wash or the Santa Ana river.

D. Wetland Hydrology? ☒ Yes ☐ No

Note: Please attach documentation of previous conditions. USGS Topo, 2007 aerial

APPENDIX E

NATIONWIDE PERMIT 14 AND GENERAL CONDITION 27

NWP 14. Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

General Condition 27. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is 'no effect' on listed species or 'no potential to cause effects' on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the

United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With

the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete

PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either:

(1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit;

(2) That the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or

(3) That the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

APPENDIX F

PRELIMINARY DETERMINATION FORM

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. Report completion date for preliminary jurisdictional determination (JD): October 1, 2008

B. Name and address of person requesting preliminary JD: Maria Lum LSA Associates, Inc. 1500 Iowa Ave, Suite 200 Riverside, California 92507

C. District office, file name, and number: Los Angeles

D. Project location(s) and background information:
(Use the attached table to document multiple water bodies at different sites)

State: California County/parish/borough: RVSD City: Corona

Center coordinates of site (lat/long in degree decimal format): 117°39'14.163"W 33°52'42.387"N

Universal Transverse Mercator:

Name of nearest waterbody: Santa Ana River, Prado

Identify (estimate) amount of waters in the review area:

Two ephemeral drainages with upland vegetation, one isolated swale/basin with mulefat, and one perennial drainage with willows and eucalyptus trees.

Non-wetland waters: 205 linear feet × 2.3 feet wide or 0.011 acres.

Cowardin Class:
Stream Flow:

Wetlands: 0.014 acres or 65 linear feet × 7.5 ft wide

Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: 0
Non-Tidal: 0

E. Review performed for site evaluation (check all that apply):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

1. The U.S. Army Corps of Engineers (Corps) believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP), or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 CFR Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 CFR 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

   This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply; checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant.
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

☐ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☐ U.S. Geological Survey map(s). Cite scale & quad name: .

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: .

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: National Geodetic Vertical Datum of 1929

☒ Photographs: ☒ Aerial (Name & Date): 2008, 1952, 1962.

or ☒ Other (Name & Date): LSA report photos.

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the
signature is impracticable)

Refer to LSA Delineation Report Figure 4 Sheets 1 and 2 for location of drainages.

Table C: Drainages in Study Area

Drainage	Description	Sample Points
1	4' Corrugated Metal Pipe (CMP) and concrete box culvert emerging at north side of Green River Road. Earthen bottom, upland vegetation, with OHWM. Outside of project footprint.	1
2	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed with adjacent riparian scrub. A swale occurs adjacent to the streambed on the south side of the road.	2a, 2b, 2c
3	Detention basin with earthen bottom, riparian scrub vegetation, and OHWM. Water does not drain to TNW.	3
4	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed on south side of road and riparian scrub in streambed on south side of road.	4a, 4b
5	4' CMP and concrete box culvert originating south of Green River Road with surface flows and OHWM. Saturated soils and small amount of hydrophytic/riparian vegetation.	5
6	Fresno Canyon Drainage. Large braiding streambed with OHWM and upland vegetation. Flows under Green River Road via a large concrete box culvert. Water from a municipal storm drain flows into this drainage at the box culvert. Outside of project footprint.	6
7	Concrete v-ditch leading to CMP culvert that flows under Green River Road and Palisades Drive. Some riparian scrub adjacent to v-ditch. Outside of project footprint.	7

Table E: Potential Corps Jurisdictional Areas within the Green River Road Widening Project

Drainage	Sample Point	Water Type	Hydrophytic Vegetation?	Q_{10}	Q_{100}	Nexus?	Length (ft)	Width (ft)	Corps Jurisdiction (Acres)	
									OHWM	Wetland
2	2a	Ephemeral	No	191.7	328.3	Yes	27	3	0.001	0
	2b	N/A	No	—	—	No	0	4	0	0
	2c	Ephemeral	No	—	—	Yes	35	3	0.002	0
3 (swale)	3	Isolated Ephemeral	No	—	—	No	150	2	0.004	0
4	4a	Ephemeral	No	205.8	312.4	Yes	77	2.5	0.001	0
	4b	Ephemeral	No	—	—	Yes	66	2	0.003	0
5	5	Perennial	Yes	1,020.3	1,751.6	Yes	65	2	0.003	[0.011]
Total							**420**	**2.6**	**0.014**	**[0.011]**

APPENDIX D:

RIPARIAN BIRD SURVEYS

LSA

LSA ASSOCIATES, INC.
20 EXECUTIVE PARK, SUITE 200
IRVINE, CALIFORNIA 92614

949.553.0666 TEL
949.553.8076 FAX

BERKELEY
CARLSBAD
FORT COLLINS
FRESNO
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

November 7, 2008

Ms. Sandra Marquez
United States Fish and Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Road
Carlsbad, California 92011

Ms. Lyann Comrack
Nongame Unit, Wildlife Branch
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, California 95814

Subject: Final Results of Riparian Bird Surveys April 15 to July 15, 2008; For the State Route 91 Corridor Improvement Project (LSA Project No. PAZ0701), Eastbound State Route 91 Lane Addition (LSA Project No. CDT0805), State Route 91 Widening (LSA Project No. CDT0801B), and Green River Road Widening Project (LSA Project No. ABE0701)

Dear Ms. Marquez and Ms. Comrack:

This letter report documents the results of protocol surveys conducted by LSA Associates, Inc. (LSA) for two riparian bird species that are State and federally listed as endangered: the southwestern willow flycatcher *(Empidonax traillii extimus)* and least Bell's vireo (*Vireo bellii pusillus*; LBV). No willow flycatchers were observed, but LBV were found at 27 locations within the project study area (Figure 2).

PROJECT DESCRIPTIONS

The surveys were conducted for four overlapping projects in northern Orange and northwestern Riverside Counties, California (Figure 1; all figures attached). Because of this overlap, riparian bird surveys were combined for efficiency.

State Route 91 Corridor Improvement Project (SR-91 CIP)

The SR-91 CIP project proposes capacity, operational, and safety improvements along SR-91 and Interstate 15 (I-15). On SR-91, the project limits are from the State Route 241 (SR-241) interchange in the City of Anaheim to Pierce Street in the City of Riverside. On I-15, the project limits are between Cajalco Road and Hidden Valley Parkway in the City of Corona (see blue and black boundary in Figure 1).

Eastbound State Route 91 Lane Addition (SR-91 EB)

This project proposes capacity, operational, and safety improvements to the eastbound lanes of SR-91 between SR-241 in eastern Orange County and State Route 71 (SR-71) in western Riverside County (see white and black boundary in Figure 1).

State Route 91 Widening (SR-91 Widening)

This project proposes capacity, operational, and safety improvements to SR-91 in Orange County from the SR-91/State Route 55 (SR-55) connector to the SR-91/SR-241 interchange (see yellow boundary in Figure 1).

Green River Road Widening Project (Green River Widening)

The smallest project involves the Green River Road Widening Project. This project follows Green River Road from the SR-91 interchange east to approximately Palisades Drive in the City of Corona, Riverside County (see purple and black boundary in Figure 1).

SURVEY AREA

Because of the overlapping projects, the maximum extent of all the projects was combined into one large study area. Because of this, most of the project study area is 1,500 feet (ft) wide and is centered on existing State Route 91 (SR-91) and I-15. It extends for approximately 18 miles (mi), from State Route 55 (SR-55) in Orange County to Pierce Street in the City of Riverside, and approximately 6 mi on Interstate 15 (I-15) between Cajalco Road and Hidden Valley Parkway, as shown on the United States Geological Survey (USGS) 7.5-minute *Orange, Black Star Canyon, Prado Dam, Corona South,* and *Corona North, California* quadrangle maps. All areas within the study area potentially suitable for nesting willow flycatchers or LBV were surveyed. Thus, areas surveyed were dominated by various types of riparian vegetation. These areas were restricted to between Weir Canyon Road and Prado Dam. Approximate Universal Transverse Mercator (UTM) coordinates are $^{32}50^{500m}$ on the north, $^{37}42^{000m}$ on the south, $^{4}23^{000m}$ on the west, and $^{4}53^{400m}$ on the east. The topography is relatively flat, with elevations ranging from approximately 380 ft above mean sea level (amsl) near the SR-91/ SR-241 interchange to approximately 1,050 ft amsl along the I-15 near Hidden Springs Parkway.

METHODS

LSA biologists Richard Erickson and Ingri Quon and independent consultant James Pike conducted 17 protocol surveys from April 15, 2008, through July 15, 2008. California Department of Transportation (Caltrans) biologists Arianne Preite, Tina Gallegos, Scott Quinnell, and Josh Jaffery accompanied LSA biologists on several surveys. Due to the large size of the survey area, not all areas of suitable habitat within the project limits were surveyed during each visit. However, all areas with suitable habitat were surveyed at least six times, as required per protocol. Most surveys were conducted pursuant to LSA's Federal Fish and Wildlife Permit No. TE-777965-8 (expires April 17, 2012) and a temporary authorization from the California Department of Fish and Game (Department) (May 12, 2003–March 31, 2007; renewal request submitted March 26, 2007, extending coverage indefinitely). Mr. Pike's survey was pursuant to Federal Fish and Wildlife Permit No. TE-832946-3.

Date	Time	Weather	Surveyor	Results
April 15	0630–1200	edge of marine layer, cool, calm	Erickson	9 LBV
April 18	0705–0935	clear, cool–mild, light wind	Erickson/Preite, Gallegos	0
April 24	0630–1200	clear, cool, calm	Erickson	15 LBV
April 28	0600–1015	mostly clear, mild, light wind	Erickson/Preite	5 LBV
May 3	0600–0915	clear, cool, calm	Erickson	13 LBV
May 7	0540–0930	complete overcast, cool, calm	Erickson	4 LBV
May 15	0545–1015	partly cloudy, mild-warm, calm	Erickson	18 LBV
May 28	0520–0935	partly cloudy, cool-mild, calm	Erickson	14 LBV
June 4	0520–0900	complete marine layer, mild, calm	Erickson/Gallegos	8 LBV
June 11	0525–0920	complete marine layer, mild, calm	Erickson/Quinnell	12 LBV
June 16	0540–0840	mostly clear, mild, calm	Erickson	10+ LBV
June 25	0530–1000	complete marine layer, mild, calm	Erickson	8 LBV
June 26	0530–0940	complete marine layer, mild, calm	Erickson	18 LBV
July 7	0520–0830	complete marine layer, mild, calm	Erickson/Gallegos	2 LBV
July 10	0520–0910	partly cloudy, mild-warm, calm	Erickson/Preite, Quinnell, Jaffery	9 LBV
July 14	0520–1015	partly cloudy, mild-warm, calm	Quon	5 LBV
July 15	0525–1200	partly cloudy, mild-warm, calm	Pike	14 LBV

LBV = least Bell's vireo

RESULTS

No willow flycatchers were observed, but LBV were found at 27 locations within the study area and another eight just outside the study area (Figure 2). All of these birds were within or near the SR-91 CIP study area and none were within the other three study areas.

State Route 91 Corridor Improvement Project (SR-91 CIP)

LBV were found from the vicinity of the Gypsum Canyon Road Bridge to Prado Dam. Twenty of the locations within the study area are judged to have been territories, and successful nesting was confirmed at six of them. The other seven locations within the study area hosted singing males on one or more occasions, but long-term territories apparently were not established. All birds were north of SR-91 except for one male heard intermittently at the mouth of Fresno Canyon, near Wardlow Wash.

Eastbound State Route 91 Lane Addition (SR-91 EB)

No willow flycatchers or LBV were observed or otherwise detected within the SR-91 EB project limits.

State Route 91 Widening (SR-91 Widening)

No willow flycatchers or LBV were observed or otherwise detected within the SR-91 Widening project limits.

Green River Road Widening Project (Green River Widening)

No willow flycatchers or LBV were observed or otherwise detected within the Green River Widening project limits.

The brown-headed cowbird *(Molothrus ater)*, a brood parasite of willow flycatchers, LBV, and other passerines was found on four surveys: two birds on April 15, six on April 18, one on May 15, and one on July 15.

A complete list of animals observed is attached as Appendix A. California Native Species Field Survey Forms are included as Appendix B.

If you have any questions, please feel free to contact me at (949) 553-0666.

Sincerely,

LSA ASSOCIATES, INC.

Richard Erickson
Associate/Biologist

Attachments: Figure 1: Location Map
Figure 2: Riparian Bird Survey – Least Bell's Vireo Location Map
Appendix A: Animal Species Observed
Appendix B: California Native Species Field Survey Forms
Appendix C: Willow Flycatcher Survey and Detection Form

I CERTIFY THAT THE INFORMATION IN THIS SURVEY REPORT AND ATTACHED EXHIBITS FULLY AND ACCURATELY REPRESENT MY WORK:

SURVEYOR	PERMIT NUMBER	DATE
Richard Erickson	TE-777965-8	November 7, 2008
Ingri Quon	TE-777965-8	November 7, 2008
James Pike	TE-832946-3	November 7, 2008

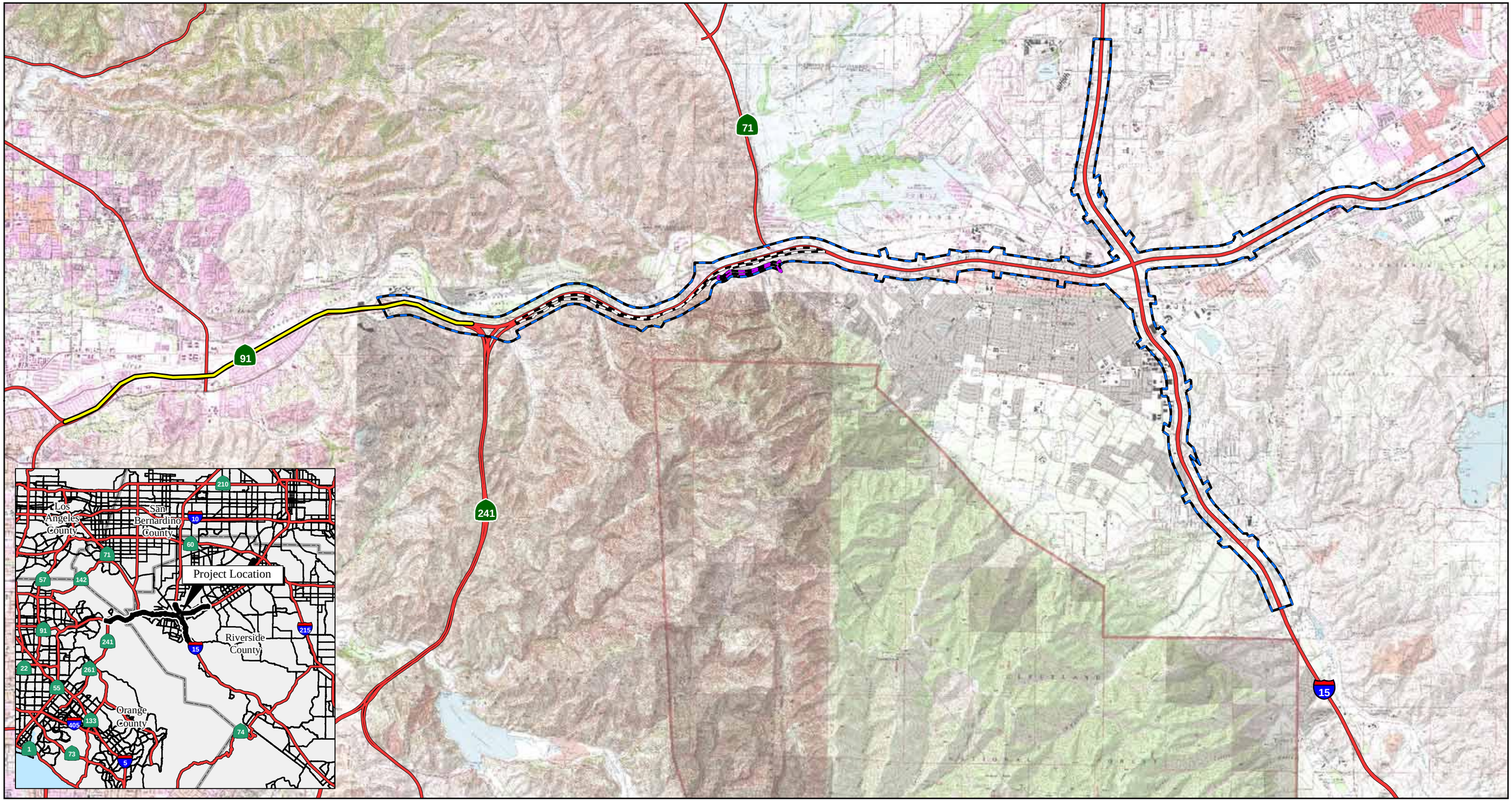

FIGURE 1

LEGEND

- SR-91 Widening Project -PAZ0701
- Project Study Area - CDT0801B
- EB SR-91 Lane Addition Project - CDT0805
- Green River Road Widening Project - ABE0701

N

0 3,750 7,500 FEET

SR-91 Corridor Improvement Project

Project Location - Riparian Bird Survey

PM 12-Ora-91-R14.431/R18.905
PM 08-Riv-91-R.0.000/R13.040
PM 08-Riv-15-35.641/45.135
EA# 0F5400

SOURCE: USGS 7.5' QUAD - BLACK STAR CANYON ('88), CORONA NORTH ('81), CORONA SOUTH ('88), PRADO DAM ('81), RIVERSIDE WEST ('81); CALIF.

I:\PAZ0701\GIS\Biology\Fig1_RIP_HAB.mxd (12/16/2008)

N

0 500 1,000
FEET

Project Study Area - CDT0801B
SR-91 Widening Project -PAZ0701
EB SR-91 Lane Addition Project - CDT0805
Green River Road Widening Project - ABE0701

Least Bell's Vireo
Potential Habitat
Territories with Confirmed Successful Nesting
Additional Territories
Additional Singing Males not Recorded Consistently

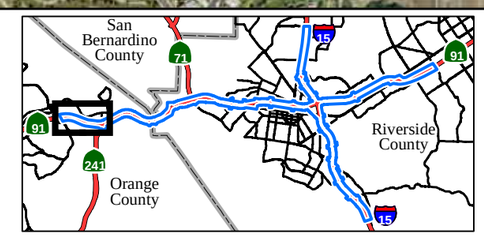

FIGURE 2
Sheet 1 of 3

SR-91 Corridor Improvement Project
Riparian Bird Survey - Least Bell's Vireo Locations

PM 12-Ora-91-R15.93/R18.91
PM 08-Riv-91-R0.00/R10.85
PM 08-Riv-15-36.58/42.47
EA# 0F5400

SOURCE: Air Photo USA (2007).

I:\PAZ0701\GIS\Biology\Fig2_RIP_HAB_Mapbook.mxd (12/18/2008)

Project Study Area - CDT0801B
SR-91 Widening Project -PAZ0701
EB SR-91 Lane Addition Project - CDT0805
Green River Road Widening Project - ABE0701

Least Bell's Vireo
Potential Habitat
Territories with Confirmed Successful Nesting
Additional Territories
Additional Singing Males not Recorded Consistently

N

0 500 1,000
FEET

SOURCE: Air Photo USA (2007).

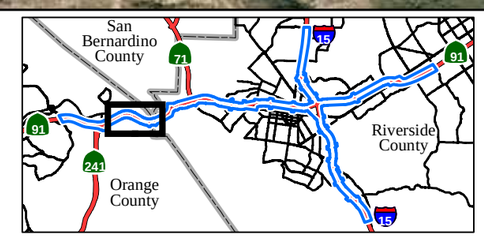

FIGURE 2
Sheet 2 of 3

SR-91 Corridor Improvement Project
Riparian Bird Survey - Least Bell's Vireo Locations

PM 12-Ora-91-R15.93/R18.91
PM 08-Riv-91-R0.00/R10.85
PM 08-Riv-15-36.58/42.47
EA# 0F5400

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N

0 500 1,000
FEET

Project Study Area - CDT0801B
SR-91 Widening Project -PAZ0701
EB SR-91 Lane Addition Project - CDT0805
Green River Road Widening Project - ABE0701

Least Bell's Vireo
Potential Habitat
Territories with Confirmed Successful Nesting
Additional Territories
Additional Singing Males not Recorded Consistently

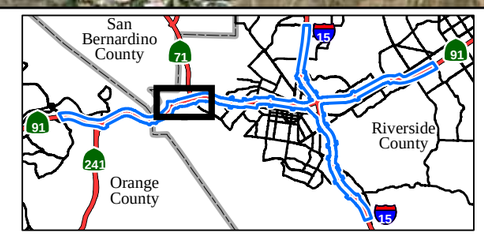

FIGURE 2
Sheet 3 of 3

SR-91 Corridor Improvement Project
Riparian Bird Survey - Least Bell's Vireo Locations

PM 12-Ora-91-R15.93/R18.91
PM 08-Riv-91-R0.00/R10.85
PM 08-Riv-15-36.58/42.47
EA# 0F5400

SOURCE: Air Photo USA (2007).

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APPENDIX A

ANIMAL SPECIES OBSERVED

This is a list of the conspicuous aerial insects, amphibians, reptiles, birds, and mammals noted in the study area by LSA biologists during the California gnatcatcher surveys. Presence may be noted if a species is seen or heard or identified by the presence of tracks, scat, or other signs.

* Introduced species

ZYGOPTERA	**DAMSELFLIES**
Calopterygidae	**Broad-Winged Damsels**
Hetaerina americana	American rubyspot
Coenagrionidae	**Pond Damsels**
Ischnura cervula	Pacific forktail
Ischnura denticollis	Black-fronted forktail
ANISOPTERA	**TYPICAL DRAGONFLIES**
Aeshnidae	**Darners**
Anax junius	Common green darner
Libellulidae	**Cruisers, Emeralds, Baskettails, and Skimmers**
Sympetrum corruptum	Variegated meadowhawk
Brechmorhoga mendax	Pale-faced clubskimmer
c.f. *Pantala hymenaea*	Spot-winged glider
LEPIDOPTERA	**BUTTERFLIES**
Papilionidae	**Swallowtails**
Papilio rutulus	Western tiger swallowtail
Pieridae	**Whites and Sulphurs**
Pontia protodice	Checkered white
* *Pieris rapae*	Cabbage white
Anthocharis sara	Sara orangetip
Colias eurytheme	Orange sulphur
Lycaenidae	**Gossamer-Wing Butterflies**
Strymon melinus	Gray hairstreak
Euphilotes battoides	Square-spotted blue
Glaucopsyche lygdamus	Silvery blue

Riodinidae	**Metalmarks**
Apodemia mormo	Mormon metalmark
Nymphalidae	**Brush-Footed Butterflies**
Nymphalis antiopa	Mourning cloak
Vanessa cardui	Painted lady
Vanessa anabella	West coast lady
Vanessa atalanta	Red admiral
Danaus gilippus	Queen
Hesperiidae	**Skippers**
Erynnis funeralis	Funereal duskywing
Hylephila phyleus	Fiery skipper
AMPHIBIA	**AMPHIBIANS**
Bufonidae	**True Toads**
Anaxyrus boreas	Western toad
Hylidae	**Treefrogs and Relatives**
Pseudacris hypochondriaca	Baja California treefrog
Ranidae	**True Frogs**
* *Lithobates catesbeiana*	American bullfrog
REPTILIA	**REPTILES**
Phrynosomatidae	**Phrynosomatid Lizards**
Sceloporus occidentalis	Western fence lizard
AVES	**BIRDS**
Anatidae	**Ducks, Geese, and Swans**
* *Branta canadensis*	Canada goose
Aix sponsa	Wood duck
Anas platyrhynchos	Mallard
Odontophoridae	**New World Quail**
Callipepla californica	California quail
Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus	Double-crested cormorant

Ardeidae	**Herons, Bitterns, and Allies**
Ardea herodias	Great blue heron
Ardea alba	Great egret
Egretta thula	Snowy egret
Bubulcus ibis	Cattle egret
Butorides striatus	Green heron
Nycticorax nycticorax	Black-crowned night-heron
Threskiornithidae	**Ibises and Spoonbills**
Plegadis chihi	White-faced ibis
Cathartidae	**New World Vultures**
Cathartes aura	Turkey vulture
Accipitridae	**Kites, Hawks, Eagles, and Ospreys**
Elanus leucurus	White-tailed kite
Accipiter cooperii	Cooper's hawk
Buteo lineatus	Red-shouldered hawk
Buteo jamaicensis	Red-tailed hawk
Falconidae	**Caracaras and Falcons**
Falco sparverius	American kestrel
Charadriidae	**Plovers and Lapwings**
Charadrius vociferus	Killdeer
Scolopacidae	**Sandpipers, Phalaropes, and Allies**
Actitis macularius	Spotted sandpiper
Laridae	**Jaegers, Gulls, and Terns**
Larus delawarensis	Ring-billed gull
Sterna forsteri	Forster's tern
Columbidae	**Pigeons and Doves**
* *Columba livia*	Rock (feral) pigeon
Patagioenas fasciata	Band-tailed pigeon
Zenaida macroura	Mourning dove
Cuculidae	**Cuckoos, Roadrunners, and Anis**
Geococcyx californianus	Greater roadrunner
Strigidae	**Typical Owls**
Bubo virginianus	Great horned owl
Apodidae	**Swifts**
Aeronautes saxatilis	White-throated swift

Trochilidae	**Hummingbirds**
Archilochus alexandri	Black-chinned hummingbird
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
Picidae	**Woodpeckers and Allies**
Melanerpes formicivorus	Acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides pubescens	Downy woodpecker
Picoides villosus	Hairy woodpecker
Tyrannidae	**Tyrant Flycatchers**
Contopus sordidulus	Western wood-pewee
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	Western kingbird
Vireonidae	**Vireos**
Vireo bellii pusillus	Least Bell's vireo
Vireo huttoni	Hutton's vireo
Vireo gilvus	Warbling vireo
Corvidae	**Jays, Magpies, and Crows**
Aphelocoma californica	Western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Hirundinidae	**Swallows**
Tachycineta bicolor	Tree swallow
Tachycineta thalassina	Violet-green swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
Petrochelidon pyrrhonota	Cliff swallow
Hirundo rustica	Barn swallow
Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Turdidae	**Thrushes**
Sialia mexicana	Western bluebird
Catharus ustulatus	Swainson's thrush
Turdus migratorius	American robin

Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	House wren
Timaliidae	**Babblers**
Chamaea fasciata	Wrentit
Mimidae	**Mimic Thrushes**
Mimus polyglottos	Northern mockingbird
Toxostoma redivivum	California thrasher
Sturnidae	**Starlings**
* *Sturnus vulgaris*	European starling
Bombycillidae	**Waxwings**
Bombycilla cedrorum	Cedar waxwing
Ptilogonatidae	**Silky-flycatchers**
Phainopepla nitens	Phainopepla
Parulidae	**Wood Warblers**
Vermivora celata	Orange-crowned warbler
Dendroica petechia	Yellow warbler
Dendroica coronata	Yellow-rumped warbler
Dendroica townsendi	Townsend's warbler
Oporornis tolmiei	MacGillivray's warbler
Geothlypis trichas	Common yellowthroat
Wilsonia pusilla	Wilson's warbler
Icteria virens	Yellow-breasted chat
Thraupidae	**Tanagers**
Piranga ludoviciana	Western tanager
Emberizidae	**New World Sparrows**
Pipilo maculatus	Spotted towhee
Pipilo crissalis	California towhee
Melospiza melodia	Song sparrow
Zonotrichia leucophrys	White-crowned sparrow
Cardinalidae	**Cardinals, Saltators, and Allies**
Pheucticus melanocephalus	Black-headed grosbeak
Passerina caerulea	Blue grosbeak
Passerina amoena	Lazuli bunting

Icteridae	**Blackbirds**
Agelaius phoeniceus	Red-winged blackbird
Quiscalus mexicanus	Great-tailed grackle
Molothrus ater	Brown-headed cowbird
Icterus cucullatus	Hooded oriole
Icterus bullockii	Bullock's oriole
Fringillidae	**Fringillid Finches**
Carpodacus mexicanus	House finch
Carduelis psaltria	Lesser goldfinch
Carduelis lawrencei	Lawrence's goldfinch
Carduelis tristis	American goldfinch
Passeridae	**Old World Sparrows**
* *Passer domesticus*	House sparrow
MAMMALIA	**MAMMALS**
Sciuridae	**Squirrels, Chipmunks, and Marmots**
Sciurus griseus	Western gray squirrel
Spermophilus beecheyi	California ground squirrel
Geomyidae	**Pocket Gophers**
Thomomys bottae	Botta's pocket gopher
Cricetidae	**Hamsters, Voles, Lemmings, and New World Rats and Mice**
Neotoma macrotis	Big-eared woodrat
Leporidae	**Rabbits and Hares**
Sylvilagus audubonii	Audubon's cottontail
Canidae	**Foxes, Wolves, and Allies**
Canis latrans	Coyote
Procyonidae	**Raccoons and Allies**
Procyon lotor	Raccoon

Taxonomy and nomenclature are based on the following.

Damselflies and dragonflies: Manolis, T. (2003, Dragonflies and Damselflies of California, University of California Press, Berkeley).

Butterflies: North American Butterfly Association. 2001. *NABA checklist & English Names of North American butterflies*, Second Edition. Morristown, New Jersey.

Amphibians and reptiles: Crother, B.I. ed. (2008. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico. *Herpetological Circular* 37) for species taxonomy and nomenclature; Stebbins, R.C. (2003, A Field Guide to Western Reptiles and Amphibians, third edition, Houghton Mifflin, Boston) for sequence and higher order taxonomy.

Birds: American Ornithologists' Union (1998, The A.O.U. Checklist of North American Birds, Seventh Edition, American Ornithologists' Union, Washington D.C.; and 2000, 2002, 2003, 2004, 2005, 2006, 2007, and 2008 supplements; see http://aou.org.whsites.net/checklist/index.php3).

Mammals: Wilson, D.E., and D.M. Reeder, eds. (2005. Mammal Species of the World, 3rd ed. Johns Hopkins University Press, Baltimore, Maryland; see http://nmnhgoph.si.edu/msw/).

APPENDIX B

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORMS

California Department of Fish and Game
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Office Use Only
Quad Code _____
Occ. No. _____
Map Index No. _____

Date of Field Work (mm/dd/yyyy) _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Em[illegible] trichilia extra[illegible]

Common Name: [illegible]

Species Found? ☐ Yes ☐ No _____ If not, why? _____

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ _____
Number Museum / Herbarium

Observer: [illegible]
Address: [illegible]
E-mail Address: [illegible]@[illegible].com
Phone: [illegible]

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

Stat[illegible] Cor[illegible]

County: O[illegible] Landowner / Mgr.: various

Quad Name: Coron[illegible] Elevation: 380 - 1050

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

various riparian [illegible]ats

Other rare taxa seen at THIS site on THIS date: Vireo belli[illegible]
(separate form preferred) Icteria virens

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: varie[illegible]

Visible disturbances: [illegible] housing [illegible]

Threats: [illegible]

Comments:

Determination: *(check one or more, and rank in order)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

Date of Field Work (mm/dd/yy): _____ Quad Code: _____ Elem Code: _____ Occ. No.: _____ Map Index No.: _____

Reset | California Rare Species Field Survey Form | Send Form

Scientific Name: [illegible]

Common Name: [illegible]

Species Found? ☑ Yes ☐ No — If not, why?

Total No. Individuals: >50 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Name: [illegible]

Address: [illegible] Suite 200 [illegible]

E-mail Address: richard.erickson@LSA-assoc.com

Phone: 949 553-0666

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
[illegible]	>12			

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☑ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

State Route 91 Corridor

County: Orange & Riverside Landowner / Mgr.: various

Quad Name: Black Star Canyon, Prado Dam, Corona North and South Elevation: 380 - 1050'

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

various riparian habitats

Other rare taxa seen at THIS site on THIS date: Dendroica petechia
(separate form preferred) Icteria virens

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: varied

Visible disturbances: roads, housing, pedestrians

Threats: "

Comments:

Determination: (check one or more, and fill in blanks)

☑ Keyed (cite reference): [illegible] experience

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

Reset

California Natural Diversity Database Field Survey Form

Send Form

Scientific Name:

Common Name: yellow bler

Species Found? Yes ☐ No ☐ If not, why?

Total No. Individuals ___ Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? ___ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: ___ Number ___ Museum / Herbarium

Reporter: ord

Address: L P Associate
Suite 200 Irvine CA

E-mail Address: richard.erickso@lpassoc.

Phone: 949 553-0666

Plant Information

Phenology: ___% vegetative ___% flowering ___% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
> 75	> 25			

☑ breeding ☐ wintering ☐ burrow site ☐ rookery ☑ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

State Route 91 Corr

County: Orange & Riverside Landowner / Mgr.: various

Quad Name: Black Star Canyon, Prado Dam, Corona North and South Elevation: 380 - 1050'

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): ___

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model ___

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy ___ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

various riparian habitats

Other rare taxa seen at THIS site on THIS date: (separate form preferred)

Vireo bellii pusillus
Icteria virens

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: varied

Visible disturbances: roads, housing, pedestrians

Threats: "

Comments:

Determination: (check one or more, and fill in blanks)

- ☑ Keyed (cite reference): personal experience
- ☐ Compared with specimen housed at: ___
- ☐ Compared with photo / drawing in: ___
- ☐ By another person (name): ___
- ☐ Other: ___

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

DFG/EDB/1747 Rev. 6/16/08

Field Index No.

Field Work (mm/dd/yyyy):

Reset

California Native Species Field Survey Form

Send For

Scientific Name: I

Common Name: Yellow-breast

Species Found: ☐ Yes ☐ No — If not, why?

Total No. Individuals: >10 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: ____ Number ____ Museum / Herbarium

Reporter: A. Erickson

Address: LSA Associates, 20 Executive, 200 Irvine CA 92614

E-mail Address: richard.erickson@LSA-assoc.com

Phone: 949 553-

Plant Information

Phenology: ____% vegetative ____% flowering ____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
>10	+			

☑ breeding ☐ wintering ☐ burrow site ☐ rookery ☑ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

State Route 91 Corridor

County: Orange & Riverside Landowner / Mgr.: various

Quad Name: Black Star Canyon, Prado Dam, Corona North and South Elevation: 280 - 1050'

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): ____

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model ____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy ____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

various riparian habitats

Other rare taxa seen at THIS site on THIS date: (separate form preferred)

Vireo bellii pusillus

Dendroica petechia

Site Information

Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: varied

Visible disturbances: roads, housing, pedestrians

Threats: "

Comments:

Determination: (check one or more, and fill in blanks)

- ☑ Keyed (cite reference): personal experience
- ☐ Compared with specimen housed at: ____
- ☐ Compared with photo / drawing in: ____
- ☐ By another person (name): ____
- ☐ Other: ____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

APPENDIX C

WILLOW FLYCATCHER SURVEY AND DETECTION FORM

Cour [illegible] ivec [illegible] A [illegible]

[illegible] are [illegible] s at [illegible] required: ☐ Yes ☐ No

Site C[illegible] E [illegible]

[illegible] 53 9 [illegible] UT[illegible] Zone 11

[illegible] -105c [illegible] circle one)

**** Fill in [illegible] information on back of this page ****

Survey # / Observer(s	Date (m/d/y) / Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1	Date 5-3 3 start [illegible] stop 0915 total hrs 3.25	0	0	0	N	N	N	
2 RAE	Date 5[illegible] Start [illegible] Stop [illegible] total hrs [illegible]	0	0	0	[illegible]	[illegible]	N	
3 RAE	Date 5 Start [illegible] Stop 1015 total hrs 4.5	0	0	0	N	Y	N	
4 RAE	Date 5 [illegible] start 05[illegible] stop 0935 total hrs 4.25	0	0	0	N	N	N	
5 [illegible]	Da[illegible] start [illegible] stop [illegible] total hrs [illegible]	0	0	0	[illegible]	N	N	

Overall Site Summary (Total only resident WIFLs)	Adults	Pairs	Territories	Nests
Total survey hrs 19.5	0	0	0	0

Were any WIFLs color-banded? Yes (No)

[illegible] for combinations [illegible] section on back [illegible]

[illegible] Reporting [illegible]vidu[illegible] [illegible] 10-1[illegible]

[illegible]

[illegible] Riverside [illegible] CA [illegible] Oc[illegible] etc

[illegible] map marked with survey area and WIFL sightings attached (as required)? ☐ Yes ☐ No

Site Center [illegible] N_____ E_____ UTM

[illegible] N_____ E_____ UTM Zone _____

[illegible] _____ feet [illegible]

[illegible] tion on back of this page **

Survey # / Observer(s)	Date (m/d/y) / Survey time	Number of WIFLs Found	Estimated Number of Pairs	Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
6 / RAE / S. Quinn[illegible]	Date 6[illegible] start [illegible] stop [illegible] total hrs ____	0	0	0	N	N	N	
7 / RAE	Date 6[illegible] Start [illegible] Stop [illegible] total hrs 2	0	0	0	N	[illegible]	N	
[illegible] / RAE	Date [illegible] Start [illegible] Stop 10[illegible] total hrs 4.5	0	0	0	N	N	N	
9 / RAE	Date 6[illegible] start [illegible] 3 stop [illegible] total hrs ____	0	0	0	N	[illegible]	N	
10 / [illegible]	Date 7 start [illegible] stop [illegible] total hrs ____	0	0	0	N	N	[illegible]	

Overall Site Summary (Total only resident WIFLs)	Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes [illegible]
Total survey hrs 18	0	0	0	0	If yes, report color [illegible] the [illegible] section on back of form

Name of Reporting Individu[illegible] _____ Date [illegible] Completed 10 [illegible]

[illegible] the [illegible]

[illegible] cher Su[illegible] evised A[illegible]

[illegible] Coc[illegible] State [illegible] County [illegible]

[illegible] Ic[illegible] r. [illegible]

[illegible] SGS map marked with survey area and WIFL sightings atta[illegible] as required)? [illegible] ☐ No

Site C[illegible] N[illegible] E[illegible] [illegible] Datum[illegible] (NAD27 pr[illegible]

Stop: N[illegible] E[illegible] UT[illegible] Zone [illegible]

***** Fill in additional site information on back of this page *****

Survey[illegible] Observer(s) (Full Na[illegible]ne)	Date (m/d/y) Survey time	Nu[illegible] W[illegible]	Estimated Number of Pairs	[illegible]ted [illegible]nber of [illegible]erritories	Nest(s) Found? Y or N	C[illegible] De[illegible] Y	[illegible]ence of Li[illegible]estock, Recent sign, [illegible]Yes, Describe Y or N	Comments about this survey (e.g., bird behavior, evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1 11 [illegible]	Date [illegible] Start [illegible] Stop 1015 Total hrs 5	0	0	0	N	N	N	
2 12 [illegible]	Date 7/[illegible] Start 0[illegible] Stop [illegible] Total hrs [illegible]	[illegible]	0	0	N	Y	N	
3	Date Start Stop Total hrs							
4	Date Start Stop Total hrs							
5	Date Start Stop Total hrs							

Overall Site Summary (Total resident WIFLs only)	Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes [illegible]
Total survey hrs 11 [illegible]	[illegible]	0	0	0	If yes, report color combination(s) in the c[illegible]ments section on back of form

Reporting Individual [illegible] Date Report Completed 10/1[illegible]

US Fish and Wildlife Service Permit [illegible] AZ Game and Fish Department (or other state) Permit # [illegible]

Subm[illegible] form by August 1st. Retain a copy for your records.

6

Col.

Yes (circle one)

State

Name Owner (e.g., Tonto

Length of area surveyed: ____ ____ specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? Yes (No) If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
- ☑ Mixed native and exotic plants (mostly native)
- ☐ Mixed native and exotic plants (mostly exotic)
- ☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: willow, fremont, mulefat

Average height of canopy: 10 m (specify units)

Was surface water or saturated soil present at or adjacent to site? (Yes) No (circle one)
Distance from the site to surface water or saturated soil: 0 (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes (No) (circle one)
If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary):

Survey [illegible] to cover in one [illegible]

Surveys [illegible] d [illegible] al [illegible] yon

APPENDIX E:

MSHCP CONSISTENCY ASSESSMENT

MSHCP CONSISTENCY ASSESSMENT

GREEN RIVER ROAD WIDENING

CITY OF CORONA

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

City of Corona Department of Public Works
400 S. Vicentia Avenue
Corona, California 92882
Attn: Clint Herrera
(951) 739-4888

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

LSA Project No. ABE0701

LSA

December 3, 2009

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APPENDIX C: JPR-PUBLIC PROJECT REVIEW FORM

RCA Joint Point Review Application
Western Riverside County MSHCP Joint Project Review-Public Projects

APPENDIX D: FOCUSED SURVEY REPORTS

Focused Survey for Riparian/Riverine Bird Species
Delineation of Potential Jurisdictional Waters
General Biological Resources Report (includes NEPSSA and BUOW survey results)
Riparian/Riverine Determination of Biologically Equivalent or Superior Preservation (DBESP)

PROJECT INFORMATION SHEET

GREEN RIVER ROAD WIDENING PROJECT

Case Numbers: _____
Related Environmental Documents: _____

Project Location: The project site is located in the City of Corona along Green River Road from Palisades Drive on the eastern boundary to just east of State Route 91 on the western boundary. It is in the *Prado Dam, California* U.S. Geological Survey 7.5-minute series topographic map in the western ½ of Section 4 of Township 3 South, Range 4 West.

Prepared for:
City of Corona Department of Public Works
400 S. Vicentia Avenue, Corona, California 92882
Attn: Clint Herrera
(951) 739-4888

Prepared by:
LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
Phone (951) 781-9310; Fax (951) 781-4277

Principal Investigator: Maria A. Lum

Report Prepared by: Maria A. Lum

Summary: Refer to Section 7.0

Certification Statement: I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation and the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: December 3, 2009 Signed: Maria A. Lum

1.0 INTRODUCTION

LSA Associates, Inc. (LSA) was retained by Armstrong & Brooks Consulting Engineers, Inc. to conduct several biological surveys for the approximately one mile long Green River Road Widening Project, east of the Green River Road/State Route 91 (SR-91) interchange and west of Palisade Drive, in the City of Corona, Riverside County.

This report presents the results of the surveys, discusses environmental policies related to biological resources, and makes recommendations for compliance with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and with MSHCP Section 6.1.2, Riverine/Riparian Analysis.

This report includes the following attached as appendices:

- Appendix A: Figures;
- Appendix B: Tables;
- Appendix C: Forms; and
- Appendix D: Focused Survey Reports.

1.1 PROJECT SITE

The proposed project is located in the City of Corona, California, and consists of the widening of Green River Road for approximately 4,950 feet between SR-91 and Palisades Drive. The project is located on a portion of Sections 29 and 30, Township 3 South, Range 7 West, as shown on the U.S. Geological Survey (USGS) *Prado Dam, California* 7.5-minute quadrangle. Refer to Figure 1 for regional location map.

The project site is within the MSHCP Criteria Area and crosses Proposed Constrained Linkage 1 (unnamed ephemeral drainage) and Proposed Constrained Linkage 2 (Fresno Canyon) of the Temescal Canyon Area Plan (Subunits 1 and 2). The project is located with the southern ⅛ of Criteria Cell No. 1616 and the northern ¼ of Criteria Cells 1702, 1704, and 1706.

The project is located within Species Survey Areas for Burrowing Owl and Narrow Endemic Plants. Riparian vegetation is present in the project study area. An estimated 0.19 acre will be subject to permanent impacts and 0.08 acre will be subject to temporary impacts in the project construction site.

1.2 PROJECT DESCRIPTION

1.2.1 Proposed Project

Within the project limits, existing Green River Road is approximately 79 feet across curb to curb and includes 4 lanes. Within the project limits, Green River Road currently has two eastbound and two westbound travel lanes. The two eastbound travel lanes start at the Green River Road/SR-91 ramps and continue to Palisades Drive. The two westbound lanes start at Palisades Drive and continue to the SR-91 ramps.

The typical cross-section proposed for widening Green River Road between SR-91 and Dominguez Ranch Road (approximately 1,985 feet) includes a curb-to-curb distance of 100 feet and a right-of-way of 130 feet. The proposed cross-section between Dominguez Ranch Road and the east project limits (approximately 3,640 feet) will be widened 7 feet to the south side of Green River Road and will allow for two additional 11-foot travel lanes for a total of 86 feet curb-to-curb and a right-of-way of 108 feet.

Implementation of the proposed project would result in Green River Road having two lanes in the eastbound direction from the Green River Road/SR-91 Interchange eastbound off-ramp to Fresno Canyon Road. After Fresno Canyon Road, a third travel lane will be added to Green River Road and will continue to Palisades Drive. Implementation of the proposed project would also result in Green River Road having three lanes in the westbound direction from Palisades Drive to Dominguez Ranch Road. After Dominguez Ranch Road, the inside lane would be a “freeway only” lane that will merge onto the westbound SR-91 on-ramp. The two outside lanes will remain through lanes across the existing bridge.

Implementation of the proposed project would include the following:

- Widening of Green River Road from varying roadway widths to an arterial street with a cross-section of six (6) lanes;
- Curb and gutter;
- Sidewalks
- Utility relocation;
- Storm drain laterals;
- Culverts;
- Installation of new traffic signal system at the intersection of Green River Road and Palisades Drive; and
- Traffic signal modification at the intersection of Green River Road and Dominquez Ranch Road.

Green River Road is generally an east-west, four-lane, divided roadway west of Palisades Drive in the City of Corona. The speed limit on Green River Road is 45 mph and parking is not permitted on either side of the roadway. Green River Road is designated as a 6-lane Major Arterial west of Palisades Drive and a 4-lane Major Arterial east of Palisades Drive in the City’s General Plan Circulation Element. The ramp intersections at Green River Road and SR-91 are signalized intersections. The recently completed Green River Road/SR-91 interchange improvement project

(Corona, RCTC, Caltrans project) has replaced and reconstructed the interchange bridge, including widening of the bridge from 3 to 6 lanes. The interchange improvement project also made modifications to the Green River Road/SR91 eastbound and westbound ramps and was completed in December 2008.

For purposes of analysis, the project study area is the broader area of the project's indirect impacts while the project footprint is the area defined by the direct impacts of the project. For this document, the project footprint is considered to be the area needed to widen Green River Road. This area includes the land associated with the construction required to widen Green River to its ultimate build out width as well as other roadway facilities (e.g., curb and gutter) associated with the widening of Green River Road.

1.2.2 Culvert Improvements

The culvert in Drainage 1 will not be modified. Refer to the figures provided in the Jurisdictional Delineation report (Appendix D) for drainage locations. The 48-inch corrugated metal pipe (CMP) in Drainage 2 will increase from 92 feet to 125 feet and the riprap placement will occupy another 25 square feet at both the inlet and outlet. In Drainage 3, the existing 18-inch reinforced concrete pipe (RCP), headwall, and riprap will be extended 40 feet to the north. The RCP that empties into Drainage 3 (a narrow and isolated ponding area) is an outlet for two street curb catch basins. In Drainage 4, the north side will be extended 50 feet for the new section of concrete channel (4 × 5.5-foot box culvert) including a 5-foot × 5-foot riprap pad. The south end of the channel (box culvert) in Drainage 4 will be extended 11 feet with another 5 linear feet for the riprap pad. The new channel (box culvert) in Drainage 4 will be a total of 160 linear feet. Drainage 5 (perennial water) will be impacted within the existing riprap pad for total of 20 linear feet required to install a 54-inch RCP, headwall, and 5 × 5-foot riprap pad.

2.0 METHODS

2.1 LITERATURE REVIEW

A literature review was conducted to determine the existence or potential occurrence of sensitive plant and animal species on or in the vicinity of the project site. Database records for the *Corona North, California; Corona South, California, Prado Dam, California;* and *Black Star Canyon, California* USGS 7.5-minute quadrangles were searched on July 10, 2007, using the California Department of Fish and Game (CDFG) Natural Diversity Data Base application *Rarefind 3* (version 3.1.0, dated February 3, 2007) and the California Native Plant Society (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (online edition, v7-07d, 2007, http://www.cnps.org/inventory).

Aerial photographs (1952, 1962, 2006, and 2007) were reviewed and maps of U.S. Fish and Wildlife Service (USFWS) designated critical habitats were used to determine the locations of critical habitats relative to the project site. Volume 1 of the *Western Riverside County Multiple Species Habitat Conservation Plan* was also used to prepare the report. Soil information was taken from *Soil Survey of Western Riverside Area, California* (A.A. Knecht 1971).

2.2 FIELD RECONNAISSANCE AND FOCUSED SURVEYS

General field surveys were conducted on June 28, 2007, by LSA biologist Stanley Spencer and on July 26, 2007, by LSA biologists Stanley Spencer and Paul Kielhold. Follow-up visits were made by Stanley Spencer on August 7, 2007, and February 13, 2008, to evaluate areas added to the study area due to project refinements. These surveys constituted 100 percent survey coverage of the project site. Notes were made on general site conditions, vegetation, potential jurisdictional waters of the U.S., and suitability of habitat for various sensitive elements. All plant and animal species observed during field surveys were noted. A burrowing owl (*Athene cunicularia*) burrow survey was conducted by Stan Spencer on June 28, 2008. Dr. Spencer also conducted a Narrow Endemic Plant Species Survey for Brand's phacelia (*Phacelia stellaris*) on March 26, 2008. A delineation of potential jurisdictional waters and riparian areas was completed by LSA biologists Maria Lum and Sarah Barrera on June 23, and July 9, 2008. Riparian bird survey was conducted from April to July 2008 by LSA biologists Richard Erickson and Ingri Quon, and independent consultant James Pike. A table summarizing the site visits is included as Table A in Appendix B. All survey reports are attached in Appendix D.

2.2.1 Vegetation Mapping

The extent of vegetation and land uses was mapped on a current aerial photograph during the field visits. The various areas were then digitized and converted into GIS shape files. Vegetation community classifications used in this report were *The Vegetation Classification and Mapping Program List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Data Base* (CDFG 2008) and Holland's (1986) vegetation community descriptions.

2.2.2 Species Associated with Riparian/Riverine/Vernal Pool Surveys

A habitat assessment for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) was conducted on March 19, 2008, by LSA biologists Richard Erickson and Stanley Spencer. All areas mapped as riparian forest and riparian scrub were evaluated for habitat suitability.

Surveys were conducted for riparian birds by LSA biologists Richard Erickson and Ingri Quon (LSA FWS Permit No. TE-777965-8), and independent consultant James Pike (FWS Permit No. TE-832946-3 and temporary CDFG authorization). The permitted biologists completed the surveys between April 15 and July 15, 2008.

2.2.3 Burrowing Owl Survey

A focused burrowing owl survey was conducted at the time of the June 28, 2007, field visit by Stan Spencer. The entire site was walked with 10-foot to 50-foot transects to assess habitat suitability and to survey for burrowing owl burrows. Transects were meandering because of obstacles on the property but provided for 100 percent coverage of the site. It had not rained on the site within the five previous days.

2.2.4 NEPSSA/CASSA Survey

A focused survey for Brand's phacelia was conducted on March 26, 2008, by LSA biologist Stan Spencer. This survey was limited to potentially suitable habitat within the Fresno Canyon drainage, consisting of 0.01 acre of riparian scrub.

2.2.5 Delineation of Waters of the U.S. and Streambeds of the State

A routine wetland delineation was conducted by Sarah Barrera and Maria Lum on June 23, 2008 and Maria Lum on July 9, 2008. Areas of potential jurisdiction were evaluated using to the U.S. Army Corps of Engineers (ACOE) 1987 Manual, Arid West Regional Supplement, 1988 wetland indicator plant list, current hydric soils list and criteria, Federal Clean Water Act (CWA) Guidance for implementing *Rapanos* and *Carabell* Cases (ACOE 2007), and California Fish and Game Code. An ACOE Wetland Delineation Manual *Data Form 3: Atypical Situations* was also completed to summarize the altered state of hydrology, vegetation, and soils on the project site. LSA biologists used some or all of the following resources to prepare for the field delineation, to analyze field indicators to determine wetland status, and to make conclusions regarding the wetland status and significant nexus in the delineation report.

- Current and historical aerial photography;
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps;
- Municipal storm drain plans;
- USGS topographic maps (7.5-minute series and 1:100,000 scale);
- Flood Control District Area and Master Drainage Plans;

- Riverside County Flood Zone Maps;
- National Resources Conservation Service (NRCS) Soil Surveys;
- County Parcel Maps;
- County Hazard and Hydrology Maps;
- National Oceanic and Atmospheric Administration (NOAA) current and historical precipitation data;
- County Flood Control precipitation and gauge data;
- County Flood Control Hydrology Manual;
- Water Quality Control Board Basin Plan;
- Riverside County Geographic Information System (GIS) data; and
- Armstrong & Brooks Consulting Engineers site plans, Water Quality Management Plan, and hydrology calculations.

The entire study area was surveyed on foot for potential wetlands and non-wetland jurisdictional waters as well as streambed and riparian resources. Representative photographs of potential jurisdictional waters were taken during each of the field surveys. An aerial photograph was used to assist in mapping field conditions and for taking field notes.

The limits of ACOE and CDFG jurisdictional areas (bed, banks, wetland, and riparian) were digitized using Geographic Information System (GIS) software based on the plotted locations of measured widths from global positioning system (GPS) data collected in the field. Streambed widths, bed-and-bank, and ordinary high water marks were measured with cloth field tape in the field. The field data were compiled using GIS software in the office. Wetland and riparian areas were mapped in the field using GPS. The canopy of plant species typically associated with riparian habitat is also subject to CDFG jurisdiction. Such riparian vegetation was mapped by walking the perimeter of the habitat with a GPS unit. The data were corrected by post-processing and then areas and linear distances were calculated. Lastly, maps and figures were produced.

3.0 PHYSICAL CHARACTERISTICS

3.1 ENVIRONMENTAL SETTING

The project is located in an urban and developed area in the southwestern section of the City of Corona. The road is located in the canyon pass between foothills of the Santa Ana Mountains, parallels the Santa Ana River, and is below Prado Dam. The project is located east of the Riverside County and Orange County boundary and west of SR-71/Green River Road intersection with SR-91.

3.2 LAND USES ON SITE

The study area is centered on an approximately 3-mile segment of Green River Road. It includes the road segment itself, as well as adjacent commercial development, residential and commercial landscaping, and disturbed open space.

3.3 TOPOGRAPHY

The site elevation ranges from approximately 500 to 530 feet above mean sea level. The site is generally flat and level. It is traversed by a drainage out of Fresno Canyon and other smaller drainages. The study area is highly developed and the natural drainage pattern has been historically altered for several decades. Development within and adjacent to the project study area includes Green River Road commercial centers, a horse ranch, landscaping, and disturbed vacant lands. Several storm drain structures that convey flows from the road directly into a subsurface storm drain system, including inlets and drop structures, occur in the median and on the sides of Green River Road.

All of the drainages within the study area have been modified to accommodate runoff from Green River Road, nearby railroad tracks, and commercial development. Modifications include culverts directing flows under Green River Road and the railroad tracks, storm drains, concrete support structures, rock riprap, and vegetation removal. Concrete culverts dated 1930 and 1931 were observed during the field survey, indicating that some of the drainages were modified at that time for either construction of Green River Road or railroad tracks. LSA biologists researched archival aerial photographs at Riverside County Flood Control and Water Conservation District office to determine past land uses in the area. (Refer to Delineation Report provided in Appendix D.) The earliest aerial photograph available is from 1952. A paved road and the railroad tracks already existed in the study area at that time. Most of the adjacent property was undeveloped, although it appears that some of the land west of the Santa Ana River and along Green River Road was used for agriculture. Green River Road was realigned to accommodate SR-91 through Corona, which opened in 1963. Urban development in the City, including housing developments conveying runoff into the study area occurred in the 1980s and the commercial centers along Green River Road were developed during the 1990s.

Ground surface cover in the study area consists of developed land, ruderal, and landscaped vegetation, and small portions of exposed soil. Refer to Appendix A: Figure 2, Sheets 1 and 2, for an aerial photograph of the project site with site photograph key map.

3.4 SOILS

The soils within the study area, as mapped by the NRCS, are Altamont clay, Arbuckle loam, Cortina cobbly loamy sand, Garretson very fine sandy loam, Garretson gravelly very fine sandy loam, Perkins gravelly loam, and Terrace escarpments (*Soil Survey for Western Riverside Area, California*, A.A. Knecht 1971). Refer to Figure 2, Sheets 1 and 2 in Appendix A.

With the exception of some areas mapped as Garretson very fine sandy loam and a small area mapped as Cortina cobbly loamy sand within the Fresno Canyon drainage (Drainage 6), all areas of the site have been developed, graded, or otherwise altered and may not currently have the surface soils indicated in the mapping.

The soils within all of the streambeds to be developed and immediately upstream of the study area are nonhydric soils per the NRCS National Hydric Soils List. The one hydric soil mapped on site, Cortina cobbly loamy sand, occurs within the Fresno Canyon drainage, which will not be subject to impacts from the proposed project. In Appendix B, Table B lists the soil types with descriptions that are mapped in the study area and the status of each from *Hydric Soils for Western Riverside Area*, 1992. The soils observed on the project site are similar to the soil types mapped by the NRCS. The soils in Drainages 1, 2, 3, 4, and 6 are coarse to fine sand with little organic matter accumulation.

3.5 PRECIPITATION

As of July 1, 2009, total season-to-date precipitation in the Riverside area was 3.04 inches at University of California-Riverside as reported by UC Integrated Pest Management weather stations. The total season precipitation was just below normal compared with the average of 12.71 inches for the season-to-date at the Corona, California Station recorded on the WRCC website. The 2007–2008 season was 2.97 inches. The annual growing season in this part of Riverside County is estimated at 220 to 300 days (Soil Conservation Service 1980). The average annual temperature is 61° to 64° F.

4.0 RESULTS AND IMPACTS

4.1 VEGETATION COMMUNITIES AND LAND COVERS

Most of the study area is developed or with only ruderal or ornamental vegetation. Dominant plant species in these areas include tocalote (*Centaurea melitensis*), shortpod mustard (*Hirschfeldia incana*), nonnative annual grasses, and various ornamental landscaping species. Dominant species in non-native grassland include shortpod mustard, tocalote, blue elderberry (*Sambucus mexicana*), and red brome (*Bromus madritensis* ssp. *rubens*). Figure 3 shows vegetation and land use. A complete list of plant species observed on the site is included in this report as Table E in Appendix B.

The plant species typically found in riparian/riverine habitat areas are present in the roadside drainage courses on site. The riparian plant species are found in the 50-foot to 200-foot wide easement area between the road and the elevated railroad tracks. The small area mapped as riparian forest consists of three or four Goodding's willow (*Salix gooddingii*) trees shaded by taller eucalyptus (*Eucalyptus* sp.) and without a substantial herbaceous understory. The three areas mapped as riparian scrub consist primarily of a few large individuals of mule fat (*Baccharis salicifolia*) and elderberry with a non-native herbaceous understory. Refer to Appendix A, Figure 1 of this report for a map of riparian vegetation in the project site. The riparian vegetation within the Green River Road Widening study area was decided to be marginally suitable for least Bell's vireo and a focused survey was conducted. Refer to the riparian bird survey report in Appendix D of this report.

4.2 IMPACTS TO VEGETATION COMMUNITIES AND LAND COVERS

An estimated 0.19 acre of riparian vegetation will be subject to permanent impacts from construction activities and 0.08 acre will be temporarily disturbed due to equipment access across the drainages. A larger drainage out of Fresno Canyon will not be affected. Additional vegetation temporarily and permanently affected within the project site includes 2.83 acres of nonnative annual grassland and 18.11 acres of developed or other disturbed (no vegetation) land. Refer to Figure 3, Sheets 1 and 2: *Impacts to Vegetation Communities and Land Covers* in Appendix A of this report.

4.3 RIPARIAN/RIVERINE/VERNAL POOL/FAIRY SHRIMP HABITAT REQUIREMENTS

4.3.1 Riparian/Riverine Resources

The project intersects seven drainage courses. The drainage courses are then diverted into concrete-lined channels or culverts that outlet north of SR-91. The vegetation growing within the streambed in Drainages 1, 2, 4, and 6 consists of mainly upland plants similar to those in adjacent upland areas. The four areas of riparian scrub or isolated willow and elderberry trees would be disturbed by the proposed project. The plant species associated with riparian habitat are located in Drainages 2, 3, 4, and 5. Drainage 6 is Fresno Canyon and the storm drain in Drainage 7 empties into Wardlow Wash

north of Palisades Drive. Refer to the figures provided in the Jurisdictional Delineation report (Appendix D) for drainage locations and site photographs of existing conditions.

Total impact area within the project site (temporary and permanent impact areas) is 0.27 acre. These areas are marginally suitable or low habitat quality for least Bell's vireo due to the limited extent of the riparian vegetation and its relative isolation from larger riparian areas.

Based on the draft grading plans available to date, the project will result in 0.08 acre of temporary and 0.19 acre of permanent impacts to drainage courses and associated vegetation (i.e., CDFG jurisdiction). Drainages 1 and 2 are ephemeral drainages with earthen bottoms.

Drainage 1 was previously cleared during the Green River Road/SR-91 interchange project. This project will not create any additional impacted to vegetation. There is the possibility of 0.01 acre of temporary impacts to a maintained drainage.

The project will result in temporary impacts to 0.03 acre of transitional riparian vegetation associated with Drainage 2. Permanent impacts will involve 0.01 acre for culvert extension and riprap pad. This vegetation was cleared in summer of 2009.

Drainage 3 is a constructed roadside ditch with an undefined detention area located within the project site. This drainage originates and ends within the project right-of-way. Impacts to Drainage 3 feature will permanently alter 0.15 acre and 0.02 acre temporary impacts.

The portion of Drainage 4 on the north side of Green River Road contains riparian vegetation. The project will result in minimal temporary impacts (0.01 acre) and permanent impacts to 0.02 acre of the Drainage 4 and associated vegetation.

The project will result in 0.01 acre of temporary or permanent impacts to 0.01 acre of Drainage 5 and the associated vegetation. A list of the temporary and permanent impacts, along with brief description of the vegetation in each drainage, is provided in Table C.

4.3.2 Vernal Pools

No suitable conditions (soil, topography, or drainage patterns) are present for the formation of vernal pools. The project is not located in an MSHCP species survey area for vernal pool endemic plants.

4.3.3 Listed Fairy Shrimp Habitat

No suitable habitat is present. No focused surveys are required.

4.4 SPECIES SURVEY REQUIREMENTS

4.4.1 Criteria Area Species

The project is not located in the Criteria Area Species Survey Area. No habitat suitability assessments or species surveys are required.

4.4.2 Narrow Endemic Plant Species

The project site is within MSHCP survey areas for three Narrow Endemic Plant Species Survey Area (NEPSSA) species (Area ID 7). A survey was conducted for Brand's phacelia within the riparian scrub area of the Fresno Canyon drainage, and the species was determined to be absent. No mitigation is required.

Suitable habitat does not exist on the site for the other two species, San Diego ambrosia (*Ambrosia pumila*) and San Miguel savory (*Satureja chandleri*). See Appendix B, Table F: MSHCP Narrow Endemic and Criteria Area Plant Survey Species.

4.4.3 Burrowing Owl

A burrowing owl survey was conducted as described in Section 2.2.3, and the species was determined to be absent from the site based on the absence of suitable burrows at the time of the survey. However, a pre-construction survey is required within 30 days prior to beginning of site grading in order to determine whether any owls may have subsequently moved onto the site.

4.4.4 Mammals

The project is not located in an MSHCP Special Survey Area for mammals.

4.4.5 Species Associated with Riparian/Riverine Habitat and Vernal Pools

During the 2008 focused riparian bird survey, no willow flycatchers or Least Bell's vireos (LBV) were observed or otherwise detected within the Green River Road Widening project limits, but the LBV was observed in adjacent Wardlow Wash. The male LBV was observed 250 feet north of Green River Road in the confluence of Fresno Canyon with Wardlow Wash.

No surveys necessary for species associated with vernal pool habitat.

4.5 MSHCP RESERVE ASSEMBLY REQUIREMENTS

4.5.1 Cores and Linkages

The MSHCP provides for the assembly of a Conservation Area consisting of Core Areas and Linkages for the conservation of covered species. The project intersects two proposed constrained linkages Refer to Appendix A, Figure 5 for a view of the linkages in context with the Core Areas and Figure 6 for a map of MSHCP Proposed Constrained Linkages 1 and 2. The project area crosses two MSHCP Proposed Constrained Linkages. The applicability of wildlife crossing for the proposed constrained linkages in the Green River Road area is limited to the existing culverts and channels, since the area is already developed by railroad, freeway improvement projects, and commercial and residential development and will be developed by the approved Green River Specific Plan (LSA 2001). The proposed project is constrained to the existing right-of-way over adjacent parcels under third party ownership.

4.5.1.1: MSHCP Proposed Constrained Linkage 1. MSHCP Proposed Constrained Linkage 1-Green River Ranch crosses Green River Road near its interchange with SR-91. The Linkage connects Existing Core A (Prado Basin/Santa Ana River) with Existing Core B (Cleveland National Forest) to the south. Existing urban development constrains the Linkage at its northern terminus; the Linkage is unconstrained in the south. In addition, SR-91 intersects this Linkage at its northern border. Despite this, it is unlikely that Proposed Constrained Linkage 1 provides for movement of mountain lion and bobcat from the Santa Ana Mountains to the Chino Hills area, as originally conceived during the drafting of the MSHCP. Existing agricultural use, city streets, state highways, and local urban development constrain the Linkage adjacent to the project site. This linkage does not have perennial water or wetland habitat for aquatic species movement, such as coast range newt and western pond turtle, through the project area. In addition, the vast majority of the Linkage is surrounded by Green River Specific Plan approved prior to MSHCP authorization.

4.5.1.2: MSHCP Proposed Constrained Linkage 2. MSHCP Proposed Constrained Linkage 2-Fresno Canyon crosses Green River Road near Nicholas Place and is centered on the Fresno Canyon drainage. Proposed Constrained Linkage 2 consists of Fresno Canyon, located along the eastern border of the Plan Area. Like Proposed Constrained Linkage 1, this Linkage connects Existing Core A (Prado Basin and Santa Ana River) with Existing Core B (Cleveland National Forest) to the south. Unlike Constrained Linkage 1, however, the Fresno Canyon Constrained Linkage provides a riparian connection from the Prado Basin and Santa Ana River to the Cleveland National Forest, thus allowing for movement of species such as coast range newt and western pond turtle. This Linkage is also likely to be important for mountain lion movement from the Santa Ana Mountains to the Chino Hills beyond the Plan Area. Maintenance of contiguous habitat blocks with appropriate refugia for resting, such as rock piles, brush piles, windfalls, hollow snags and hollow trees, is important for dispersal of juveniles in this proposed Linkage.

This Proposed Constrained Linkage 2 is currently part of the MSHCP Conservation Area on the south side of Green River Road. The project will widen the road to the greatest extent possible within the existing right-of-way above Fresno Canyon channel (box culvert). The slopes will not be extended into Fresno Canyon. Replacement street lighting and landscaping will be designed to avoid indirect impacts associated with the road widening project per MSHCP Guidelines.

According to a wildlife movement study prepared for the Corona 850, LLC. in 2007 (Glenn Lukos Associates 2007), track stations and remote cameras observed coyotes and small mammals on the north and south sides the Fresno Canyon overpass, and in the east-west vegetated corridor parallel between Green River Road and the railroad. Refer to Figure 5 for locations of various sized culverts suitable for wildlife movement in the project vicinity.

4.5.2 Area Plans and Subunits

The project site is located within Temescal Canyon Area Plan Subunit 1: Santa Ana River to Santa Ana Mountains Criteria Cells 1702, 1704, and 1706; and Temescal Canyon Area Plan Subunit 2: Prado Basin Criteria Cell 1616. Refer to Appendix A. Figure 5 for map of the MSHCP Area Plan Subunits and Criteria Cells. The MSHCP (Volume I, Section 3.3.16) identifies the following Planning Species for Subunit 1:

- Coast range newt (*Taricha torosa torosa*);
- Coastal California gnatcatcher (*Polioptila californica californica*);
- Cooper's hawk (*Accipiter cooperii*);
- Bobcat (*Lynx rufus*);
- Mountain lion (*Felis concolor*); and
- Western pond turtle (*Clemmys marmorata pallida*).

The MSHCP also identifies the following Biological Issues and Considerations for Subunit 1:

- Provide for and maintain connection(s) from Prado Basin and the Santa Ana River to Chino Hills State Park outside the Plan Area;
- Maintain linkage area for bobcat;
- Maintain linkage area for mountain lion;
- Maintain Core and Linkage Habitat for coast range newt; and
- Maintain Core and Linkage Habitat for western pond turtle.

The extreme eastern end of the study area is located within the MSHCP Temescal Canyon Area Plan, Subunit 2: Prado Basin. This portion of the study area is mapped solely as developed/ruderal. The MSHCP (Volume I: Section 3.3.16) identifies the following Planning Species for Subunit 2:

- Coast range newt;
- Cactus wren (*Campylorhynchus brunneicapillus*);
- California horned lark (*Eremophila alpestris actia*);
- Northern harrier (*Circus cyaneus*);
- White-tailed kite (*Elanus leucurus*);
- Bobcat;
- Mountain lion; and
- Western pond turtle.

The MSHCP Biological Issues and Considerations for Subunit 2 are the same as those given for Subunit 1 above.

The MSHCP Biological Issues and Considerations for these two Subunits, as they relate to the proposed project, are all concerned with the two Proposed Constrained Linkages discussed in Section 4.7. Specifically, both linkages are intended to maintain connectivity between MSHCP Conservation Area to the north and south of the project site, particularly for movement of bobcat and mountain lion. Proposed Constrained Linkage 2 is also intended to provide movement for coast range newt and western pond turtle through the Fresno Canyon drainage. The project area does not include core habitat for coast range newt or western pond turtle.

The project impact area consists of disturbed and developed areas. Although there is a small amount of riparian habitat within the impact area, it is also disturbed and unlikely to provide substantial habitat for any of the planning species listed above. None of the planning species for these two Subunits was observed on the project site. Cooper's hawk may occasionally forage on the site but is unlikely to nest within the area to be disturbed. California horned lark, northern harrier, and white-tailed kite are planning species only for Subunit 2. The portion of the project site in Subunit 2 is all mapped as developed/ruderal and does not provide habitat for these species. Bobcat and mountain lion may occasionally move through the site. The project site's impact area does not provide habitat for coastal California gnatcatcher (CAGN), cactus wren, coast range newt, or western pond turtle, although the latter two species may move through the vicinity along the Fresno Canyon drainage. The CAGN was observed in remnant Diegan sage scrub in the vicinity of the project during biological surveys conducted by PCR in 1999 (PCR Services Corporation 2002).

4.5.3 Cell Criteria

The project will not be contributing land to the Conservation Area, but will pay the required MSHCP fees as set forth in the MSHCP Implementation Agreement and by the City of Corona. Below is a list of each Criteria Cell intersected by the Green River Road Widening Project, including each cell's conservation objective, limitation to meeting that objective, most suitable or likely location for conserving habitat, and proposed consistency measures for the Green River Road Widening Project.

- **Cell 1616**
  - *Objective:* Conservation of wetlands and grassland habitat for Existing Core A in the central and western two-thirds of the Cell.
  - *Most Suitable Location:* Fresno Canyon and Wardlow Wash.
  - *Limitations:* Fresno Canyon is not dedicated for conservation north of Green River Road. Land use is zoned for commercial development on both sides of Fresno Canyon north of Green River Road.
  - *Consistency Measures:* Avoidance of Fresno Canyon Wash. Landscaping in the right-of-way and on the slope above the channel/box culvert will adhere to the planting restrictions described in the MSHCP and the list of Plants to Avoid." Street lighting will not be installed near or directed toward Fresno Canyon.
- **Cell 1702**
  - *Objective:* Conservation of coastal sage scrub habitat for Constrained Linkage 1.
  - *Most Suitable Location:* The drainage parallel to the Green River Road/SR-91 northbound ramp and additional access via Drainage 2 coastal sage scrub and riparian scrub/elderberry plant cover.
  - *Limitations:* Land use in the northeast quarter of the Cell is approved for a commercial development project.
  - *Consistency Measures:* Replant vegetation associated with Drainage 2, maintain openness of the culverts, and retain earthen bed and banks.

- **Cell 1704**
  - *Objective:* Conservation of coastal sage scrub for Constrained Linkage 1 in the southwest quarter of the Cell.
  - *Most Suitable Location:* Not a part of the proposed project.
  - *Limitations:* Not applicable.
  - *Consistency Measures:* Not applicable.
- **Cell 1706**
  - *Objective:* Conservation of riparian scrub, woodland, and forest for Constrained Linkage 2 in the western half of the Cell.
  - *Most Suitable Location:* Fresno Canyon; City of Corona and Riverside Conservation Authority (RCA) have conserved riparian habitat in Fresno Canyon through an easement and maintenance agreement in 2004.
  - *Limitations:* Bottlenecks at Green River Road and by housing subdivisions one-quarter mile to the south of Green River Road.
  - *Consistency Measures:* Avoidance of Fresno Canyon Wash. Landscaping in the right-of-way will not include plants on the MSHCP "Plants to Avoid" list. Street lighting will not be installed near or directed toward Fresno Canyon.

4.6 URBAN/WILDLANDS INTERFACE GUIDELINES

Projects located in proximity to the MSHCP Conservation Area may result in edge effects or indirect impacts that could adversely affect biological resources within the MSHCP Conservation Area. The MSHCP Conservation Area is defined by hard-lined boundaries; either a parcel boundary or conservation easement boundary of acquired Additional Reserve Lands, Conserved Habitat, or Public/Quasi-Public Lands. These guidelines are not applicable to parcels in the Criteria Cells or in the conceptual Proposed Habitat Linkages that have not been acquired by the RCA.

This project is located adjacent to MSHCP Conserved Habitat. Land in Fresno Canyon was contributed to the MSHCP Conservation Areas as Conserved Habitat in 2004 under a conservation easement between the City of Corona and the RCA. There are no Public/Quasi-Public lands adjacent to the project site. The project will apply project-specific mitigation measures for potential edge effects/indirect impacts to Fresno Canyon following MSHCP Section 6.1.4 Guidelines Pertaining to the Urban/Wildlands Interface (RCA 2007).

4.6.1 Drainage

Proposed developments in proximity to the MSHCP Conservation Area shall incorporate measures, including those required through the National Pollutant Discharge Elimination System (NPDES), to ensure that the quantity and quality of runoff discharged to the MSHCP Conservation Area is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put into place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area. Stormwater systems shall be designed to prevent the release of toxins,

chemicals, petroleum products, exotic plant materials, or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area. This can be accomplished using a variety of methods, including natural detention basins, grass swales, or mechanical trapping devices. Regular maintenance shall occur to ensure effective operation of runoff control systems.

4.6.2 Toxics

Land uses proposed in proximity to the MSHCP Conservation Area that use chemicals or generate bioproducts, such as manure, that are potentially toxic or that may adversely affect wildlife species, habitat, or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Conservation Area. Measures such as those employed to address drainage issues shall be implemented.

4.6.3 Lighting

Night lighting shall be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in the MSHCP Conservation Area is not increased.

4.6.4 Noise

Proposed noise-generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms, or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations, and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subjected to noise that would exceed residential noise standards.

4.6.5 Invasive Species

When approving landscaping plans for development that is proposed adjacent to the MSHCP Conservation Area, Permittees shall consider the invasive, non-native plant species listed in MSHCP Table 6-2 and shall require revisions to landscape plans (subject to the limitations of their jurisdiction) to avoid the use of invasive species for the portions of development that are adjacent to the MSHCP Conservation Area. Considerations in reviewing the applicability of this list shall include the proximity of planting areas to the MSHCP Conservation Areas, species considered in the planting plans, resources being protected within the MSHCP Conservation Area and their relative sensitivity to invasion, and barriers to plant and seed dispersal, such as walls, topography, and other features.

4.6.6 Barriers

Proposed land uses adjacent to the MSHCP Conservation Area shall incorporate barriers, where appropriate, in individual project designs to minimize unauthorized public access, domestic animal predation, illegal trespass, or dumping in the MSHCP Conservation Area. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.

4.6.7 Grading/Land Development

Manufactured slopes associated with proposed site development shall not extend into the MSHCP Conservation Area.

4.7 OTHER CONSTRUCTION GUIDELINES

The MSHCP provides specific construction guidelines for Covered Activities in the MSHCP Criteria Area to ensure consistency with conservation objectives. These are provided in MSHCP Volume I Section 7.0-Covered Activities and Allowable Uses and Appendix C Standard Best Management Practices. Specifically, these are explained in the MSHCP subsections listed below.

- 7.3.4. Existing Roads within the Criteria Area;
- 7.3.5. Planned Roads;
- Table 7-4. Planned Facilities;
- 7.4.1. Compatible Uses;
- 7.5.1. Siting and Design of Planned Roads with the Criteria Area and Public/Quasi-Public Lands;
- 7.5.2. Guidelines for Construction of Wildlife Crossings;
- 7.5.3. Construction Guidelines; and
- Appendix C. Standard Best Management Practices.

Existing roads are Covered Activities under the MSHCP. Maintenance and widening are allowable actions under MSHCP Section 7.3.4.

Caltrans submitted several State freeway and interchange projects and circulation element roadways to be part of the MSHCP environmental impact analysis. Green River Road improvements were provided as part of the Planned Facilities to be considered during the environmental review process by the County of Riverside and the Agencies. This project action is therefore a component of the planned road projects included in MSHCP Section 7.3.5 as Covered Activities.

Section 7.4.1 addresses emergency repairs for public infrastructure in MSHCP Criteria Area. An after-the-fact notification to the RCA is required within 48 hours and remediation or restoration work may be required.

MSHCP Section 7.5 provides guidelines for facilities with the Criteria Area and Public/Quasi-public lands. The project will comply with siting and design guidelines listed in MSHCP Section 7.5.1.

Volume I: Section 6.6.2 E(2) of the MSHCP indicates that MSHCP permittees proposing infrastructure projects that have the potential to affect connectivity of habitat within the Criteria Area shall consult with the RCA at the pre-design stage regarding the size, location, and configuration of wildlife crossings pursuant to the Guidelines for Construction of Wildlife Crossings (MSHCP Volume I, Section 7.5.2).

Maintenance of existing roads in the Criteria Area must comply with BMPs detailed in MSHCP Volume I Appendix C. Road improvements and new roads in the Criteria Area must comply with Section 7.5.3-Construction Guidelines, in addition to implementing Appendix C-BMPs. Table 7-4 lists specific mitigation considerations for Planned Facilities in the Criteria Area with special environmental issues.

5.0 CONSISTENCY ANALYSIS

5.1 RIPARIAN/RIVERINE ANALYSIS

Impacts are to four ephemeral drainages and one perennial drainage associated with a storm drain outlet. The project will permanently impact 0.19 acre of associated vegetation and temporarily impact 0.08 acre of associated vegetation. A map of the drainages and vegetation associated with the channels is included as Figure 3 in Appendix A.

The preferred project has been contemplated and accounted for in the City's General Plan Circulation Element. The project is limited to smallest extent possible to meet the project need and purpose. The purpose of the proposed project is to alleviate existing and future traffic congestion along Green River Road. The impacts to the drainages and associated vegetation are limited to the smallest area feasible. The culverts extensions are restricted to the edge of fill necessary for the two additional lanes. Equipment access is limited to one track in front of the riprap pads.

Fifty elderberry trees, along with other native trees and shrubs, will be planted in the temporary impact areas and landscaping along Green River Road. Michael Flores, CDFG Streambed Alteration Team, requested 5:1 replacement ratio for elderberry trees. Ten mature elderberry trees will be removed for the road and culvert improvements. The replacement native landscape will total 0.51 acre to mitigate for the temporary and permanent impacts to CDFG jurisdictional area at a 2:1 ratio. Trees will be replanted in the landscaping areas above Fresno Canyon to provide a buffer along the road corridor and a flight way for birds over the road. The on-site mitigation measure is adequate for the existing conditions on the project site. The vegetation will be higher quality habitat due to regular irrigation. Refer to Figure 8 for illustration of the on-site mitigation.

If additional mitigation area is recommended by reviewing agencies, then a conceptual riparian habitat mitigation plan will be proposed to the City of Corona and the RCA for approval prior to proceeding with the preparation of a comprehensive mitigation and monitoring plan, which would describe the plan specifications, as well as the maintenance and monitoring requirements. The additional or alternative mitigation site is located at the south end of Fresno Canyon. There are level areas that can be planted with riparian trees and scrubs. There is a 0.55-acre area available. Perennial water is in the creek and irrigation is available from the adjacent landscaping infrastructure. The mitigation plan will be subject to final approvals from City of Corona, RCA, the Army Corps of Engineers under MSHCP Guidelines, Clean Water Act Section 404 permitting requirements, and California Fish and Game Code Section 1602 streambed alteration agreement terms and conditions. Figure 9 shows the location of the off-site mitigation alternative in the south end of Fresno Canyon.

5.2 SPECIES SURVEY ANALYSIS

5.2.1 Narrow Endemic Plant Species Analysis

The project site is within MSHCP survey areas for three NEPSSA species; however, suitable habitat does not exist on the site for two of the species: San Diego ambrosia (*Ambrosia pumila*) and San

Miguel savory (*Satureja chandleri*). A focused survey was conducted for Brand's phacelia **(***Phacelia stellaris*) within potentially suitable habitat of 0.01 acre of riparian scrub in the Fresno Canyon drainage. The species was determined to be absent.

No mitigation is required primarily because Fresno Canyon will not be affected by the road improvements. Compliance with Urban/Wildlands Interface Guidelines will be implemented to avoid indirect effects to Fresno Canyon Conserved Land.

5.2.2 Burrowing Owl Analysis

No suitable nesting locations or burrows were found. Nevertheless, due to the changing site conditions and mobility of the species, a pre-construction survey will be required within 30 days before utility relocation and vegetation clearing.

5.2.3 Species Associated with Riverine/Riparian Habitat

A focused survey for the riparian birds was conducted for several road projects in the Prado Basin and Santa Ana River valley. During this focused survey, a Least Bell's vireo was observed in Wardlow Wash at the confluence with Fresno Canyon. The riparian habitat in Wardlow Wash and Fresno Canyon will not be affected. Mitigation entails compliance with the Urban/Wildlands Interface Guidelines.

5.3 RESERVE ASSEMBLY ANALYSIS

The project is located in the Santa Ana River/Santa Ana Mountains subunit 1 of the Temescal Canyon Area Plan. It is south of the Prado Basin Subunit 2. The project will widen an existing road in this planning area. The work will be limited to the existing right-of-way. Since it is an existing road in an urban area, the site constraints do not lend the project to contribute greatly to the conservation goals of the MSHCP or linkage assembly.

The purpose of the Criteria Cells in Subunit 1 is for habitat and movement linkages for the coast range newt, California gnatcatcher, Cooper's hawk, bobcat, mountain lion, and western pond turtle between the Prado Basin, Santa Ana Mountains (Cleveland National Forest and Chino Hills State Park), and the Santa Ana River. Currently, there is no habitat for the California gnatcatcher in the project area. Most of the ornamental and native vegetation between the road and the railroad will be cleared. The large eucalyptus trees will be removed, thus eliminating roosting or nesting habitat for raptors, such as the Cooper's hawk. Any small common wildlife species may use the drainages to move from the river to the foothills, such as coyote, raccoon, opossum, and skunk. Western pond turtle and coast range newt most likely would not travel a long distance from wetland habitat in the Prado Basin and riverbed. There are no functioning linkage areas for bobcat or mountain lion and no recent documented movement near Green River Road (Glen Lukos and Associates 2007).

Proposed Constrained Linkage 1 (PCL-1) is already cut off by the Green River Road/SR-91 Interchange. Currently, any animal movement would be at grade across Green River Road and down a drainage in the transportation rights-of-way, then under SR-91 at the railroad. Riparian vegetation is

no longer present in the drainages located in the southeast quadrant of the Green River Road interchange.

The project can improve the function of the PCL-1 through the replanting of native shrubs and trees in the drainages within the Green River Road right-of-way. The other proposed large and medium-sized animal movement linkage (Proposed Constrained Linkage 2-Fresno Canyon) will not be affected by the project and the trees on the overpass will not be removed. The temporarily affected areas (road shoulders, parkways, and median) will be landscaped with native or MSHCP acceptable drought-tolerant plants.

The project is consistent with conservation objectives of the Criteria Cells in that the project is not greatly different that the existing condition. The road will be widened and the culverts extended. The culverts that span the entire width of the road will be extended but will have the same diameter and continue to be accessible to wildlife. Mitigation will be implemented in the form of replacing ornamental vegetation with native and drought-tolerant vegetation in all temporarily disturbed areas and in as much open space within the right-of-way, as possible. Fresno Canyon will be avoided entirely. Other indirect effects will be mitigated through compliance with the Urban/Wildlands Interface Guidelines.

5.4 URBAN/WILDLANDS INTERFACE ANALYSIS

5.4.1 Drainage

All runoff from the new paved areas will be directed into storm drains. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared to satisfy National Pollutant Discharge Elimination System (NPDES) requirements. No alteration, modification, or expansion to the existing City-owned, operated and maintained Municipal Separate Storm Sewer System (MS4) is included as part of the Green River Road Widening Project.

Construction erosion control best management practices (BMPs) to be implemented include preserving existing vegetation when feasible, temporary erosion control per California Stormwater BMPs Handbook, seed inactive areas immediately, and apply permanent erosion construction upon completion of construction. More information can be obtained from the Storm Water Pollution Prevention Plan (SWPPP) prepared by Armstrong & Brooks Consulting Engineers (2009). Implementation tasks include hydroseeding, fiber rolls, gravel bag berms, street sweeping, vacuuming, sand bag barrier, tire wash, dust suppression (water truck), spill avoidance and containment, stockpile protection, concrete waste management, waste collection, and contractor education.

Post-construction measures include street maintenance, sidewalk cleaning, landscape maintenance, drainage/stormwater system maintenance, and annual replacement of drain inlet filter.

The SWPPP WDID No. is 8-33C355208. Project-related permits include RWQCB Order No. 99-08-DWQ and NPDES General Permit No. CAS000002. The California Department of Water Quality has adopted a new Construction General Permit 2009-0009-DWQ. It will be in effect on July 1, 2010. The project will require the new permit in 2010 to continue work for the remainder of the year. Projects under construction are exempt from Risk Determination until September 2, 2011.

5.4.2 Toxics

Expected and potential pollutants from landscaping are sediment, nutrients, oxygen-demanding substances, and herbicides/pesticides. Expected and potential pollutants from vehicles are organic compounds, metals, and oil/grease; and from pet waste are bacteria/virus pathogens.

The project-specific Water Quality Management Plan (WQMP) prepared by Armstrong & Brooks Consulting Engineers (2009) describes project BMPs to minimize impacts to water quality. The existing and relocated catch basins will have a drain insert (Flow Guard Plus) to treat the storm runoff for sediment, and partially treats nutrients, trash/debris, metals, organics, and oil/grease. Inspection and maintenance will occur quarterly by the City of Corona. Applicable site design BMPs are maximizing permeable area, landscaped buffer areas (parkways), preserving existing vegetation and planting additional native or drought-tolerant plants, and use of natural drainage systems. Landscaping will buffer drainage in the road median and between sidewalks and streets. Existing trees will be avoided and additional native plants will be planted. Natural or earthen drainage systems will be used. Inspections and maintenance will occur quarterly by the City of Corona. Application of chemicals will be consistent with labeling. Concrete washout stations will be at least 50 feet from storm drains, ditches, drainage courses, or streambeds.

5.4.3 Lighting

Shielding shall be incorporated in project designs to ensure that ambient lighting in the MSHCP Conservation Area is not increased. The project will not place additional lighting at Fresno Canyon overpass.

5.4.4 Noise

A noise study for the project has not been conducted as of this date. The Initial Study prepared by LSA Associates, Inc. (2009) states the widened Green River Road is not anticipated to increase traffic volume with the additional lane capacity, but is being built to accommodate traffic volumes already occurring at this SR-91 interchange. City noise standards require noise levels remain below 65 dBA CNEL. This standard is consistent with noise standards for projects located adjacent to MSHCP Conservation Areas. Noise levels may already exceed the residential noise level standard due to the existing traffic conditions on Green River Road and SR-91, however.

5.4.5 Invasive Species

MSHCP Table 6-2 contains a list of plants to be avoided adjacent to the MSHCP Conservation Area. For portions of the project that are adjacent to the Fresno Canyon, these species will not be part of the project design or landscape plans. Any of these undesirable plants in the existing landscaping will be removed, wherever possible, and replanted with native and drought-tolerant plants that are consistent with the MSHCP.

5.4.6 Barriers

The proposed project would not create new means of accessing adjacent natural areas and would reduce vehicular access to such areas by eastward extension of curb and gutter and an asphalt concrete berm, as indicated in the Street Improvement Plans (Appendix D, General Biological Resources Report). A temporary exclusionary fence will be installed between the work area and natural areas to be avoid prior to construction.

5.4.7 Grading/Land Development

Manufactured slopes associated with proposed site development will not to extend into the MSHCP Conservation Area in Fresno Canyon. All grading will be limited to the impact area depicted in Appendix A, Figure 4.

Erosion-control measures include leaving existing vegetation in place where feasible, use of temporary erosion control measures at regular intervals throughout the rainy season, stabilizing non-active areas, and use of designated entry points, tire wash stations, street vacuuming, dust suppression, silt fencing, sandbags, gravel bag berms, erosion-control blankets, hydroseeding using native plant species, and swales in concentrated flow areas. Permanent erosion-control measures will be installed as part of completion of construction.

Vehicle repair will occur off site or in designated separate maintenance areas located away from drainage courses. Drip pans and spill kits will be used in the construction site and staging areas.

5.5 OTHER CONSTRUCTION GUIDELINES ANALYSIS

5.5.1 Wildlife Crossings

Given the physical constraints in the immediate area, large mammal wildlife movement is more likely to occur farther to the west outside of the project area, in the two existing concrete box culverts located under SR-91 across from Green River Golf Course and northeast of the Coal Canyon wildlife corridor. These are indentified as Underpasses A and B as shown on Figure 5, Appendix A. Adjacent wildlife movement linkages for small to medium-sized mammals are culverts in Wardlow Wash overcrossing, Fresno Canyon Overpass C, BNSF right-of-way culverts, and the SR-91 rail grade separation Overcrossing D (Glen Lukos Associates 2007). Figure 5 includes the locations of the existing overcrossings, underpasses, and culverts.

Based on the Glen Lukos wildlife movement study (2007), wildlife movement within the project study area is limited to coyotes and other smaller wildlife species. Only three locations that could be modified offer an opportunity to improve upon the function of the conduits for wildlife movement. Refer to Figure 7 for illustrations of the culvert improvements. The corrugated metal pipes (CMPs) in Drainage 1 and 2 (Line A) will be cleaned out and extended. The temporarily disturbed areas surrounding the north outlet will be replanted with elderberry. The south end will be seeded with native upland plants that are suitable for rights-of-way and road line-of-sight requirements. Elevation and profile drawings of the culvert improvements are provided in Appendix A as Figures 7A. The 48-inch CMPs in Drainages 1 and 2 (Line A) are suitable for small wildlife species movement under Green River Road if it were maintained as a wildlife passage, but it is restricted by the subsequent

culvert under the railroad bed. This culvert will be extended using the same construction design. The culvert length will increase from 92 feet to 125 feet and riprap placement will occupy another 25-square foot area at the inlet and outlet.

An additional location in Drainage 4 with an existing 4 by 5.5-foot channel (or box culvert) could function as a constrained linkage for small to medium-sized mammals. This channel will increase in length from 100 to 160 linear feet. The channel will remain straight. Adjacent private development and maintenance activities in the right-of-way would need to be coordinated to ensure that the channel and associated vegetation are managed so the channel may function as a wildlife habitat linkage. Drainage 4 (Line E-1) will be extended and the temporary work areas will be replanted with native shrubs and trees to provide cover at the inlet and outlets. The riprap pads and drainages will not be planted in order to establish a clear flow path and to preserve a clear line-of- sight through the channel (box culvert). Based on wildlife corridor research, the 48-inch CMP and the 4 × 5.5-foot box culvert in Drainage 4 would remain suitable for use by small mammals, i.e., coyote or smaller, despite the increased lengths (LSA 2004).

The pipe and box culverts will be extended to accommodate the new lanes. The culvert design will remain the same as existing culverts. There will not be any bends or angles in the new pipe. The culvert modifications will provide an opportunity to remove accumulated sediment from the pipes, to remove nonnative vegetation, and to plant native plants for wildlife cover on the adjacent stream banks and in the temporarily disturbed upland areas. The inlets and outlets will be left open for wildlife access, and there will be no artificial lighting at the drainage culvert locations. As feasible, fencing will be included in the landscape plan to discourage human intrusion into adjacent natural areas.

5.5.2 Appendix C: Best Management Practices

- Water pollution and erosion control plans will be prepared in accordance with Santa Ana Regional Water Quality Control Board (RWQCB) requirements. The plans will include sediment and hazardous material control measures, and describe dewatering process and diversion structures, fueling and equipment management practices, and plant materials used for erosion control.
- The project footprint and access routes will be minimized. Limits of ground disturbance will be clearly defined in the field and verified by project biologist prior to start of work. Construction limits shall be fenced with orange snow screen and maintained until completion of the project.
- Vegetation clearing will be done outside bird active breeding season, which is arbitrarily designated as March 1 to June 30 for purpose of the MSHCP general construction guidelines. Possibly, a longer avoidance period will be required to avoid impacts to CAGN (February 15 through August 31).
- Water will be used in construction areas to control dust.
- Short-term diversion of drainages associated with road culverts will be accomplished by the use of sandbags and other minimal impact methods.
- Silt fencing and other sediment trapping materials will be used down-slope of construction activities.

- Precautions shall be taken to prevent the release of cement and other toxic substances into sensitive habitat.
- Settling ponds will be constructed and regularly maintained to prevent any sediment from entering drainage culverts and Murrieta Creek.
- No material will be deposited into water courses.
- No trash or debris or stockpiling shall be deposited outside the ADE.
- Equipment storage, fueling, and staging will be sited in non-sensitive upland areas which have minimal risk to discharge to sensitive habitat areas and streams.
- Fueling and equipment maintenance will occur only in a designate area in the grading limits that contains runoff.
- No equipment is to be placed in stream bed or bank.
- Exotic species removed during construction will be properly disposed of to prevent regrowth and spreading.
- Temporary impact areas will be returned to pre-existing contours and planted with locally adapted native species.
- Avoid attracting predators or species (e.g., starlings, cowbirds, crows, ravens, raccoons; and exotic species, such as domestic pets) that displace species of concern to project site and the natural habitat areas.
- Construction personnel will receive environmental awareness training from a qualified biologist.
- Monitoring and reporting on compliance with avoidance and minimization measures and other BMPs will occur over the duration of the construction activity.
- Caltrans Biological Studies and Permits Branch will conduct regular monitoring during all phases of construction.
- Firefighting equipment will be available on site.
- The Permittee (City of Corona) shall have the right to access and inspect the project for compliance with project approval conditions.
- Night lighting shall be directed away from habitat areas.

6.0 SUMMARY OF PROJECT-SPECIFIC REQUIREMENTS

6.1 VEGETATION COMMUNITIES AND LAND COVERS

The project will affect 18.11 acres of previously disturbed or developed land, 2.83 acres of non-native grassland, and 0.22 acre of elderberry and mule fat scrub.

6.2 MSHCP SPECIES SURVEY AREAS

Burrowing owl burrow survey conducted in 2008 did not find suitable nesting burrows in the project study area. Burrowing owls were not observed on the project site. Focused survey for Brand's phacelia in Fresno Canyon Wash did not detect the target plant species. Suitable habitat for San Diego ambrosia and San Miguel Savory is not present in the project study area. During a 2008 focused survey for southwestern willow flycatcher and least Bell's vireo, permitted biologists found a male least Bell's vireo off site in the higher quality riparian habitat in Wardlow Wash and Santa Ana River but not in the project study area.

6.3 SPECIES NOT COVERED BY THE MSHCP

Other Species of Special Concern (SSC) not covered by the MSHCP were either deemed to be absent due to lack of suitable habitat, out of species range, or no known occurrences in the vicinity of the project. Five SSC are predicted to have low potential to be present, but are not likely to be affected by the project due to lack of quality habitat in the project area.

6.4 MSHCP ADDITIONAL RESERVE LANDS ASSEMBLY

The proposed project is constrained to the existing right-of-way over adjacent parcels under third-party ownership. The project will not be contributing land to the Conservation Area, but will pay the required transportation project mitigation fees as set forth in the MSHCP Implementation Agreement and by the City of Corona. The project site is located within the Temescal Canyon Area Plan, Subunit 2: Prado Basin Criteria Cell 1616; and Temescal Canyon Area Plan Subunit 1: Santa Ana River to Santa Ana Mountains Criteria Cells 1702, 1704, and 1706. The project intersects the conceptual bubble map of Proposed Constrained Linkage 1 and 2. The MSHCP Biological Issues and Considerations for these two subunits, as they relate to the proposed project, are concerned with the two Proposed Constrained Linkages 1 and 2. The project is adjacent to the northern end of the Fresno Canyon Conserved Habitat area, part of Constrained Linkage 2. The pipe and box culverts will be extended to accommodate the new lanes. The culvert modifications will provide an opportunity to remove accumulated sediment from the pipes, remove non-native vegetation, and plant native plants for wildlife cover on the adjacent stream banks and the temporarily disturbed upland areas. The inlets and outlets will be left open for wildlife access with no artificial lighting at the drainage culvert locations. As feasible, fencing will be included in the landscape plan to discourage human intrusion into adjacent natural areas.

7.0 SUMMARY

7.1 OVERALL RESERVE ASSEMBLY CONSISTENCY DETERMINATION

MSHCP Section 6.6.2, Guidelines for Construction of Wildlife Crossings, is not applicable to this project. The Green River Road Project entails the widening of an existing road within developed area in the City of Corona. Construction of a large mammal crossing structure is not feasible and would not be biologically functional in this project location. The project will be consistent with Section 7.5.1, Guidelines for Siting and Design of Planned Roads within the Criteria Area, and Section 6.1.4, Guidelines Pertaining to Urban/Wildlands Interface. This will be accomplished by limiting the project to within the existing rights-of-way; minimizing impacts to adjacent vegetation; obtaining necessary local, state, and federal natural resource agency permits; and implementing mitigation requirements; implementing construction and post-construction BMPs; and avoiding active breeding season of migratory and resident birds. The project will be consistent with MSHCP Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, by minimizing direct impacts and indirect effects through application of related MSHCP guidelines, planting temporary impact areas and landscape areas with native riparian scrub and coastal sage scrub, and implementing an off-site riparian habitat enhancement plan.

7.2 OVERALL OTHER PLAN REQUIREMENTS CONSISTENCY DETERMINATION

7.2.1 Guidelines for Construction of Wildlife Crossings

Section 6.6.2 of the MSHCP is not applicable to this project. A “wildlife crossing” is not part of the proposed project since this is an existing road. Widening will be confined to the existing right-of-way.

7.2.2 Guidelines for the Siting and Design of Planned Roads within the Criteria Area

The MSHCP (Volume I, Section 7.5.1) identifies the following guidelines for planned roadways within the Criteria Area in order to avoid and minimize impacts to sensitive species and habitats:

- Planned roads will be located in the least environmentally sensitive location feasible, including disturbed and developed areas or areas that have been previously altered. Alignments will follow existing roads, easements, rights-of-way, and disturbed areas, as appropriate to minimize habitat fragmentation.
    - The project is within the existing street right-of-way of Green River Road, which includes disturbed areas and thereby minimizes habitat fragmentation.
- Planned roads will avoid, to the greatest extent feasible, impacts to Covered Species and wetlands. If wetlands avoidance is not possible, then impacts to wetlands will require issuance of and mitigation in accordance with a Federal Section 404 and/or a State Section 1600 permit.

  - Project applications for the necessary CWA and CDFG permits for impacts to a stormwater drainage with perennial water are being processed and include applicable mitigation measures.
- Design of planned roads will consider wildlife movement requirements.
  - Refer to proposed constrained linkage discussion in Section 4.5 of this report. Furthermore, the widening of the road will follow the existing right-of-way for Green River Road, which is an already constructed street.
- Narrow Endemic Plant Species will be avoided; if avoidance is not feasible, then mitigation as described in the Narrow Endemics Plant Policy will be implemented.
  - There are no Narrow Endemic Plant Species in the project impact area, based on focused survey results.
- Any construction, maintenance, and operation activities that involve clearing of natural vegetation will be conducted outside the active breeding season.
  - In the MSHCP Federal Endangered Species Act Section 7 permit, the California gnatcatcher active breeding season to avoid is March 1 through June 30. For other bird species (i.e., riparian birds and raptors), the CDFG typically sets the breeding season avoidance period as February 1 through August 31. Activities associated with the proposed project will not occur within these breeding season windows.
- Prior to design and construction of transportation facilities, biological surveys will be conducted within the study area for the facility including vegetation mapping and species surveys and/or wetland delineations. The appropriate biological surveys to be conducted will be based on field conditions and recommendations of the project manager in consultation with a qualified biologist. The results of the biological resources investigations will be mapped and documented. The documentation will include preliminary conclusions and recommendations regarding potential effects of facility construction on MSHCP Conservation Area resources and methods to avoid and minimize impacts to MSHCP Conservation Area resources in conjunction with project siting, design, construction, and operation. The project biologist will work with facility designers during the design and construction phase to ensure implementation of feasible recommendations.
  - All required surveys with project effects analysis and mitigation recommendations were completed and are described in this report.

7.2.3 Construction Guidelines and Best Management Practices

The MSHCP (Volume I, Section 7.5.1) provides construction guidelines and best management practices (BMPs) (MSHCP Appendix C) applicable to planned roads, including the proposed project, within the Criteria Area. These include the following:

- A qualified biologist will lead tailgate meetings to train construction personnel to recognize species and habitats of concern and familiarize them with applicable environmental regulations.
- Water pollution and erosion control plans will be followed per Regional Water Quality Control Board (RWQCB) requirements.
- Project footprint and access routes will be minimized to greatest extent possible.

- Project limits marked in the field by an exclusionary fence and the placement will be reviewed by the project biologist.
- Avoid placing of equipment, materials, and personnel in streambeds and adjacent upland habitats.
- Avoid work in riparian areas during active breeding season; typically designated as February 1 through August 31 by the CDFG. Disturbance is restricted to a minimum of 300 feet away from any active least Bell's vireo nest.
- If vegetation removal must occur during this avoidance period, then a nest survey by a qualified biologist is required. The nest survey shall be conducted for five consecutive days and no more than three days prior to clearing. If an active nest is observed, then the nest location shall be fenced off surrounding a minimum 300-foot (500 feet for raptors) radius buffer zone. The buffer zone shall not be disturbed until the nest is inactive.
- Stream diversions will be conducted using standard construction protocol acceptable to RWQCB.
- Hazardous materials, equipment repair, and fueling will occur in designated safe areas and all spills must be cleaned up and disposed of properly and reported to City of Corona.
- There is to be no erodible fill or stockpiling of debris in streambeds or banks.
- Biological monitoring will occur during vegetation removal activities.
- Temporary impacts are to be minimized to the greatest extent practicable and all temporary impact areas are to be returned to pre-existing contours and revegetated with native plants.
- Exotic plants are to be removed from the project site.
- The project site will be kept clean of food-related items.

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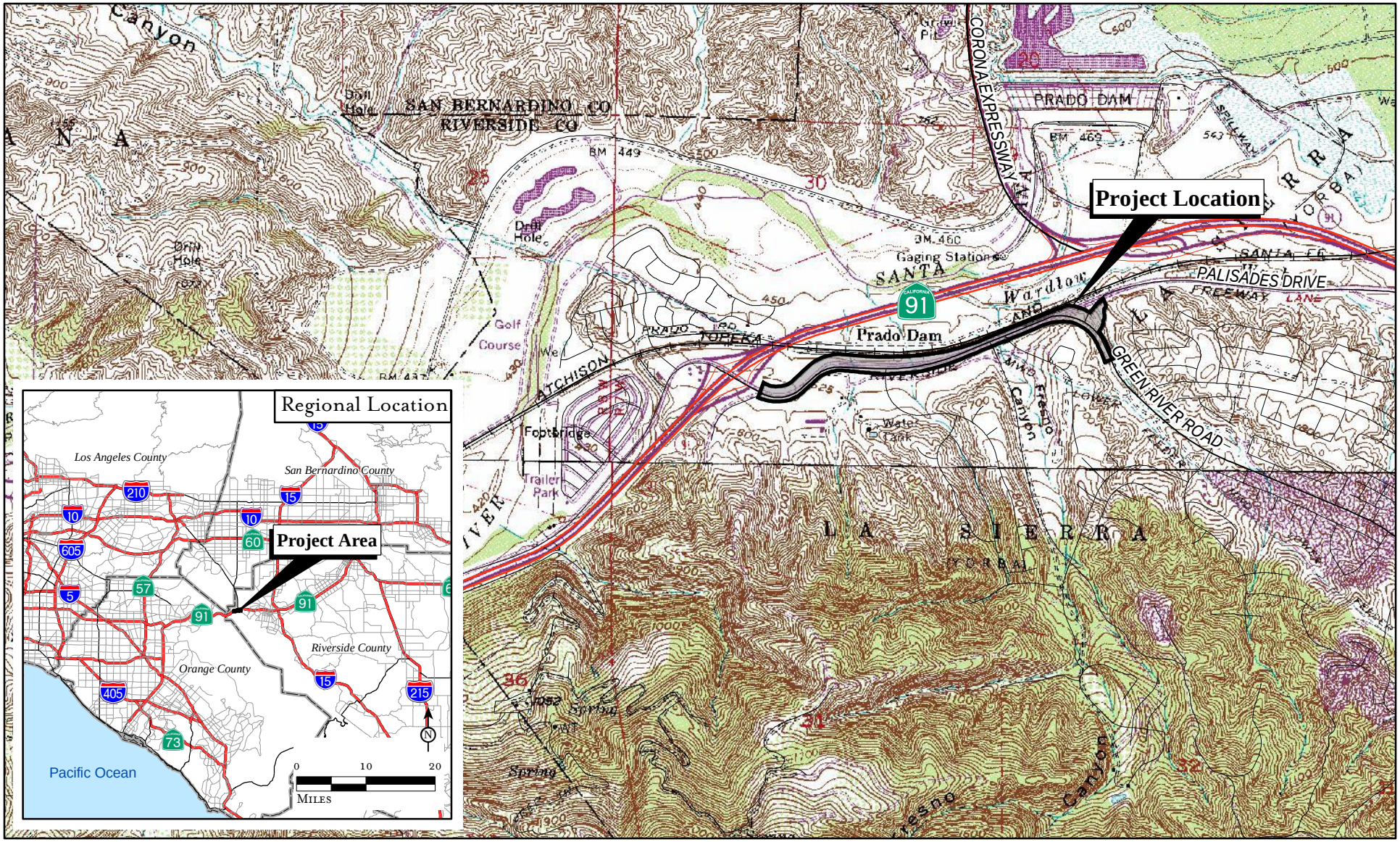
APPENDIX A

FIGURES



LSA

FIGURE 1

Green River Road Widening
MSHCP Consistency Report

Regional and Project Location

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

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LSA

STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments

N

0 100 200

Feet

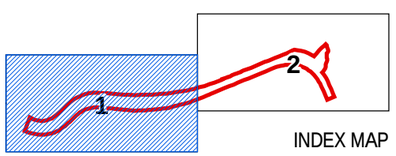

FIGURE 2
Sheet 1 of 2

Green River Road Widening
MSHCP Consistency Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)

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LSA

FIGURE 2
Sheet 2 of 2

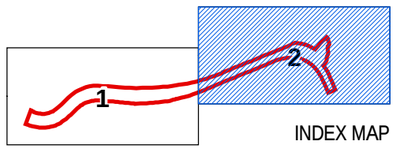
N

0 100 200
FEET

STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments



Green River Road Widening
MSHCP Consistency Report

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)
I:\ABE0701\G\Reports\MSHCP\fig2_Soils.mxd (11/19/09)

LSA

PERMANENT EXTENTS OF CUT/FILL

SAMPLE POINT

TEMPORARY WORK AREA

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES (0.02 Ac*)

RIPARIAN SCRUB (0.25 Ac*)

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

PROPOSED STORM DRAIN

Acreage shown is total for both sheets, and includes both temporary and permanent impacts

N

0 100 200

FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.

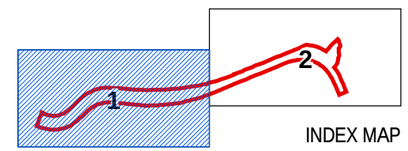


FIGURE 3
Sheet 1 of 2

Green River Road Widening
MSHCP Consistency Report

Vegetation Communities and Land Cover

SOURCE: Air Photo USA (2008)

I:\ABE0701\G\Reports\MSHCP\fig1_Veg.mxd (11/25/09)

LSA

PERMANENT EXTENTS OF CUT/FILL

SAMPLE POINT

TEMPORARY WORK AREA

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES (0.02 Ac*)

RIPARIAN SCRUB (0.25 Ac*)

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

PROPOSED STORM DRAIN

Acreage shown is total for both sheets, and includes both temporary and permanent impacts

N

0 100 200

FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.

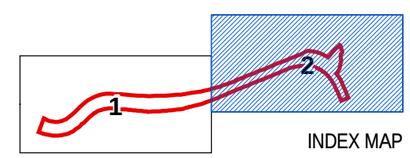


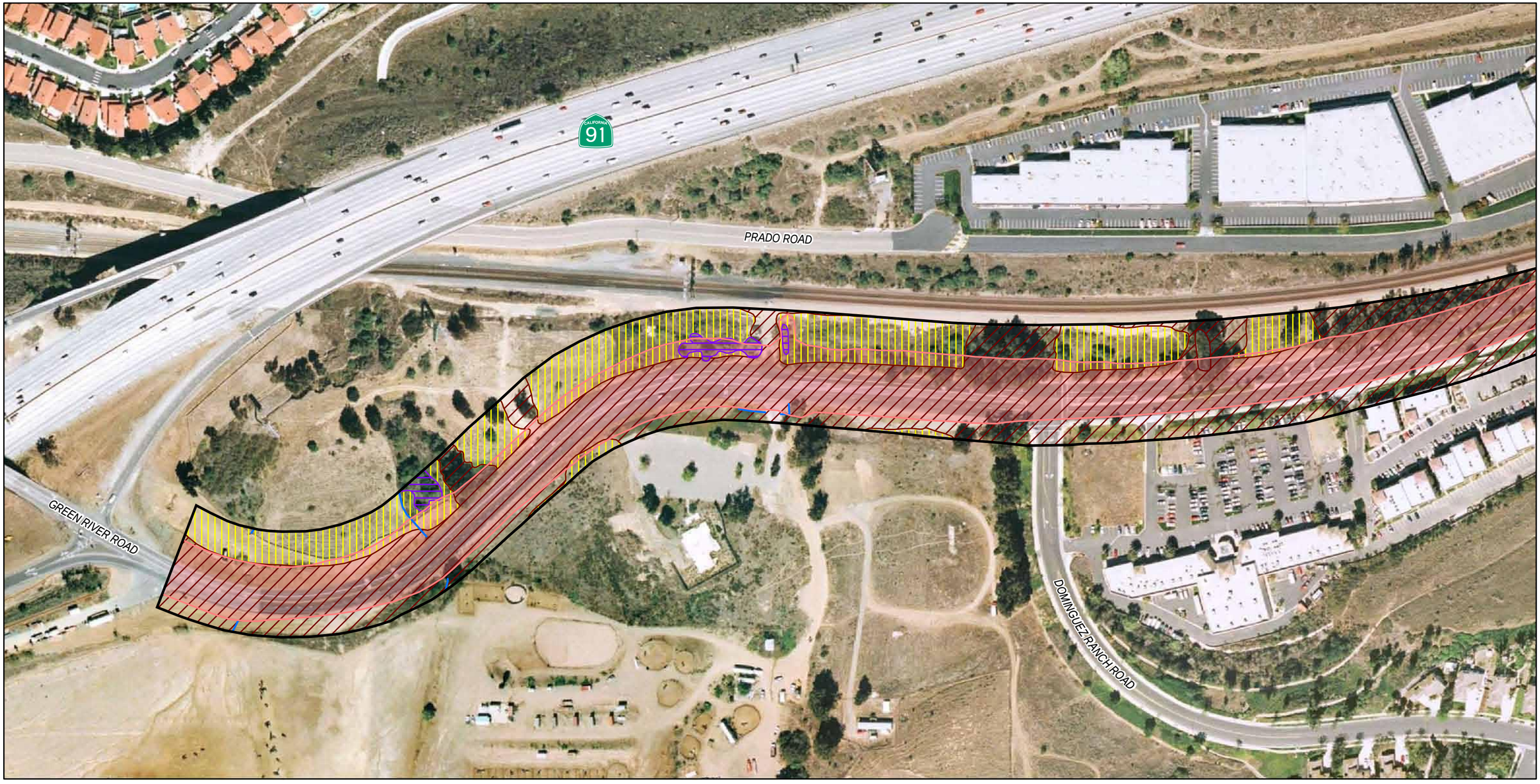
FIGURE 3
Sheet 2 of 2

Green River Road Widening
MSHCP Consistency Report

Vegetation Communities and Land Cover

SOURCE: Air Photo USA (2008)

I:\ABE0701\G\Reports\MSHCP\fig1_Veg.mxd (11/25/09)



LSA

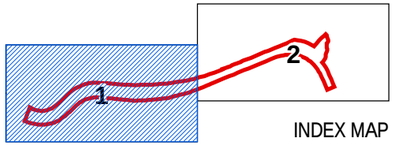
FIGURE 4
Sheet 1 of 2

STUDY AREA
PROJECT IMPACT AREA
DRAINAGE WITH UPLAND VEGETATION

LAND COVER
DEVELOPED/RUDERAL
NON-NATIVE GRASSLAND
RIPARIAN FOREST
RIPARIAN SCRUB

N

0 100 200
FEET



Green River Road Widening
MSHCP Consistency Report

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)
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LSA

STUDY AREA

PROJECT IMPACT AREA

DRAINAGE WITH UPLAND VEGETATION

LAND COVER

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN FOREST

RIPARIAN SCRUB

N

0 100 200

FEET

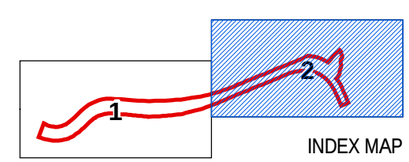


FIGURE 4

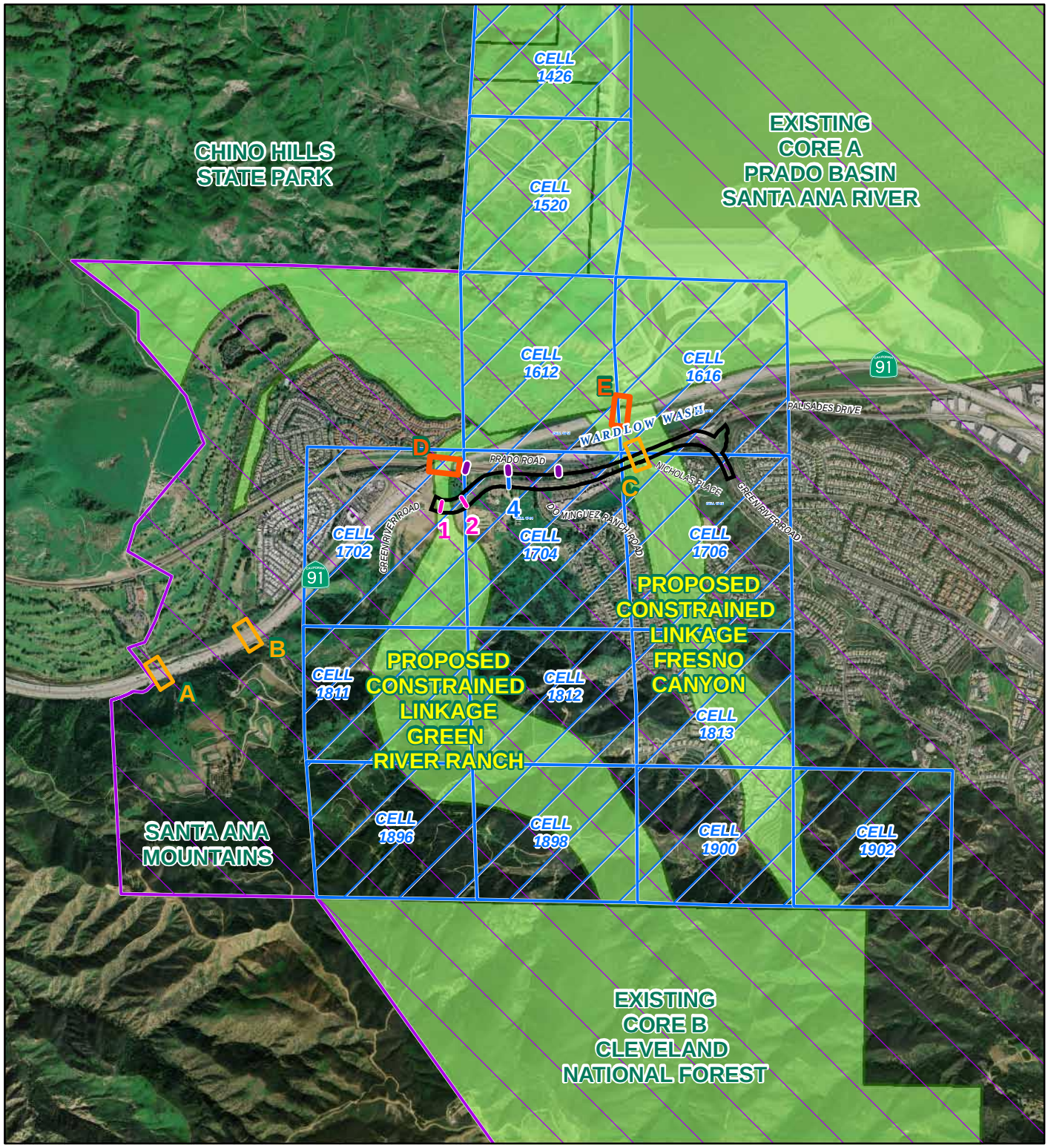
Sheet 2 of 2

Green River Road Widening
MSHCP Consistency Report

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)

I:\ABE0701\G\Reports\MSHCP\fig4_Project_Impact.mxd (11/25/09)



LSA

N

0 1,200 2,400
FEET

Project Site

Proposed Constrained Linkage*

Criteria Cells

Area Plan Boundary

Underpasses

A. Corona 850 Property

B. Star Ranch to Green River Golf Course

C. Fresno Canyon

SR-91 Overcrossings

D. Railroad

E. Wardlow Wash

BNSF Railroad Culverts

Green River Road Drainage No.

1 & 2. Pipe Culvert (Line A)

4. Box Culvert (Line E)

**Note: Proposed Linkages are conceptual only. Locations are not predetermined as shown in the Final MSHCP.*

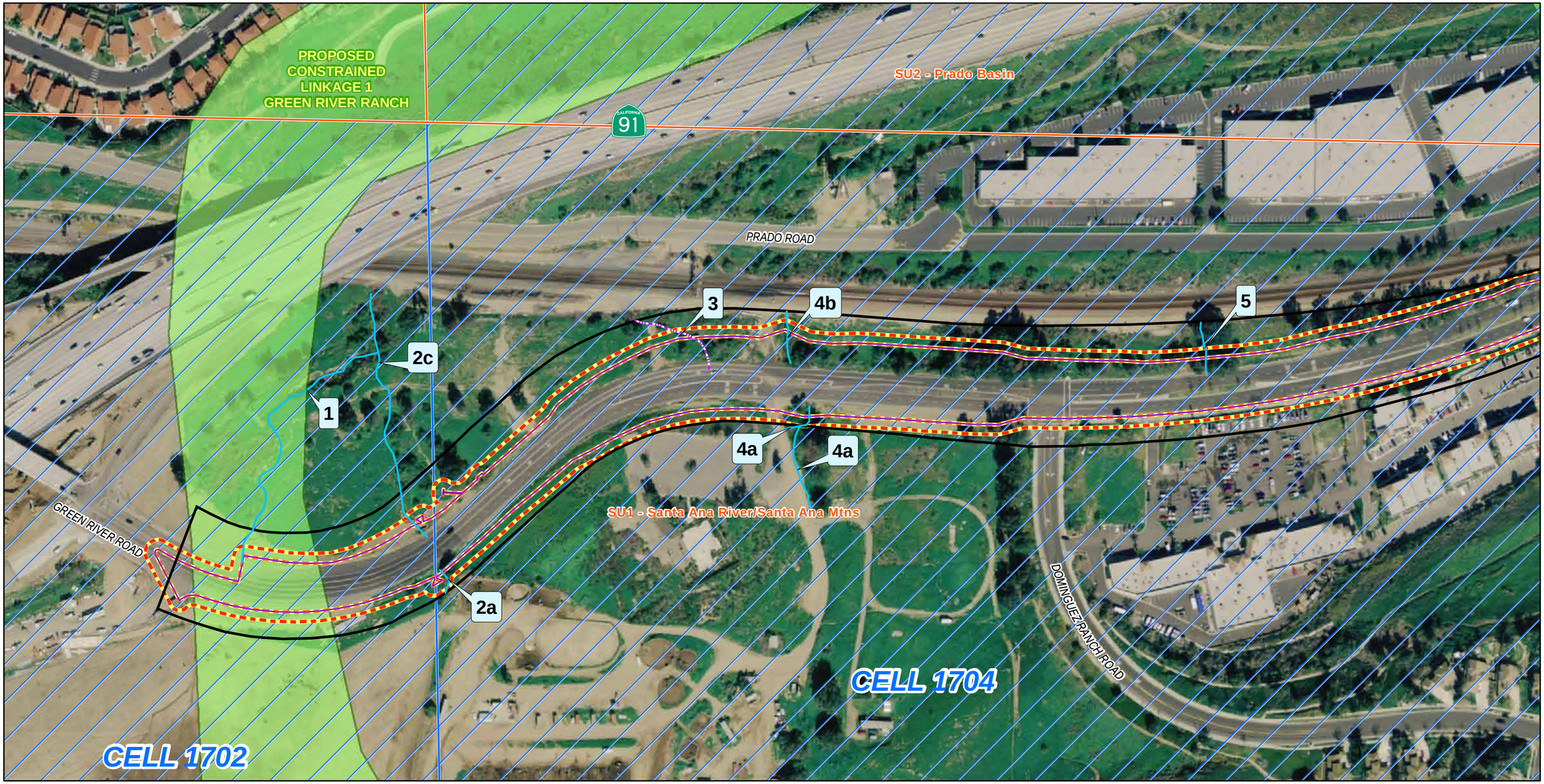
FIGURE 5

Green River Road Widening
MSHCP Consistency Report

WRC MSHCP Regional Map

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\MSHCP\fig5_WRC_MSHCP_Regional.mxd (11/30/09)



LSA

N

0 175 350
FEET

TEMPORARY WORK AREA
PERMANENT EXTENTS OF CUT/FILL
PROJECT SITE
CDFG STREAMBED
ISOLATED STREAMBED
AREA PLAN SUBUNITS
PUBLIC/QUASI-PUBLIC CONSERVED LANDS
MSHCP CONSERVED HABITAT (13 ACRES)
PROPOSED CONSTRAINED LINKAGE *
CRITERIA CELLS
1 DRAINAGE NUMBER

**Note: Proposed Linkages are conceptual only. Locations are not predetermined as shown in the Final MSHCP.*

FIGURE 6
Sheet 1 of 2

Green River Road Widening
MSHCP Consistency Report

Proposed Constrained Linkages and MSHCP Criteria Cells

SOURCE: Air Photo USA (2007)
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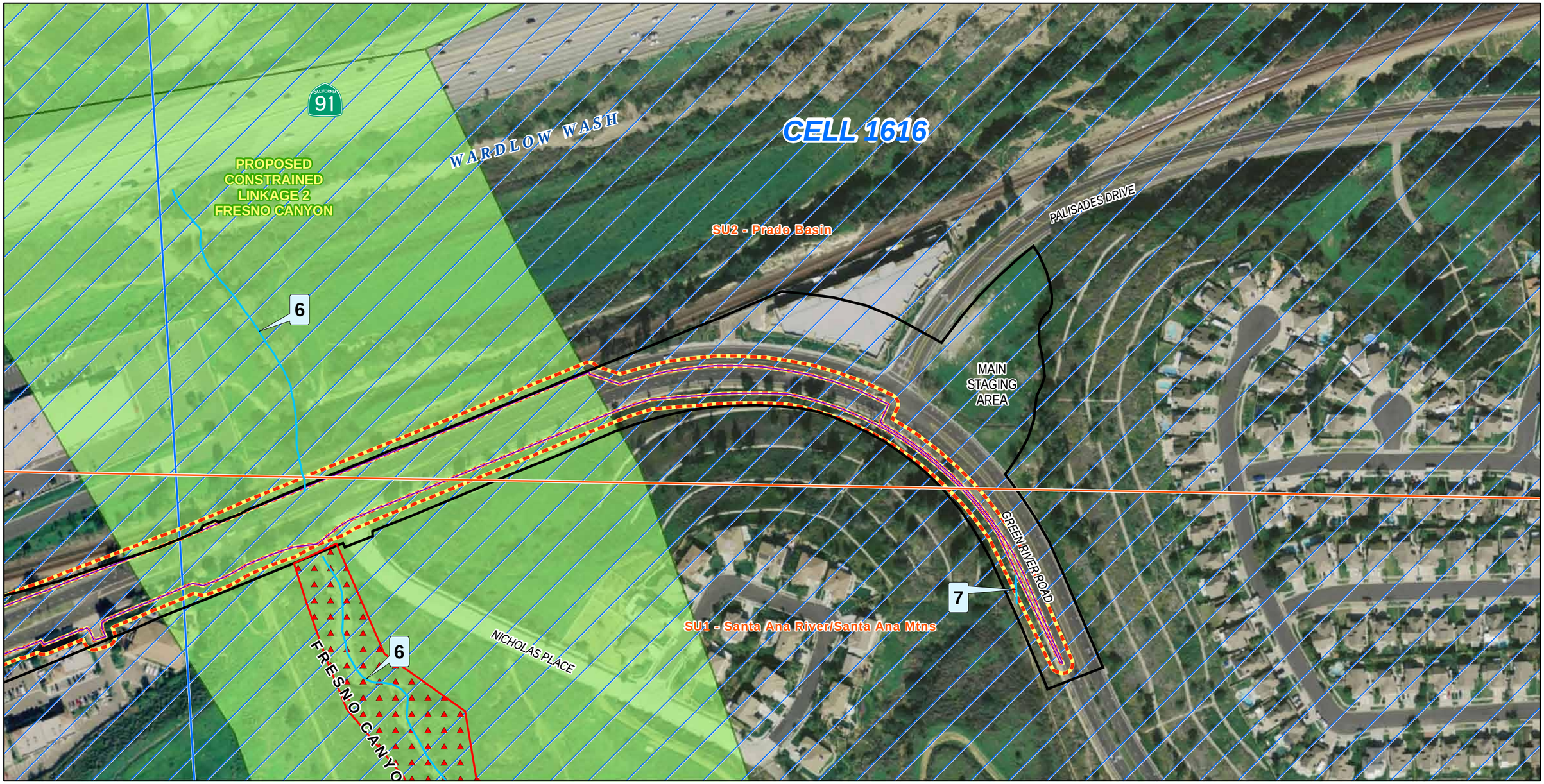

LSA

N

0 175 350
FEET

TEMPORARY WORK AREA
PERMANENT EXTENTS OF CUT/FILL
PROJECT SITE
CDFG STREAMBED
ISOLATED STREAMBED
AREA PLAN SUBUNITS
PUBLIC/QUASI-PUBLIC CONSERVED LANDS
MSHCP CONSERVED HABITAT (13 ACRES)
PROPOSED CONSTRAINED LINKAGE *
CRITERIA CELLS
1 DRAINAGE NUMBER

*Note: Proposed Linkages are conceptual only. Locations are not predetermined as shown in the Final MSHCP.

FIGURE 6
Sheet 2 of 2

Green River Road Widening
MSHCP Consistency Report

Proposed Constrained Linkages and MSHCP Criteria Cells

SOURCE: Air Photo USA (2007)
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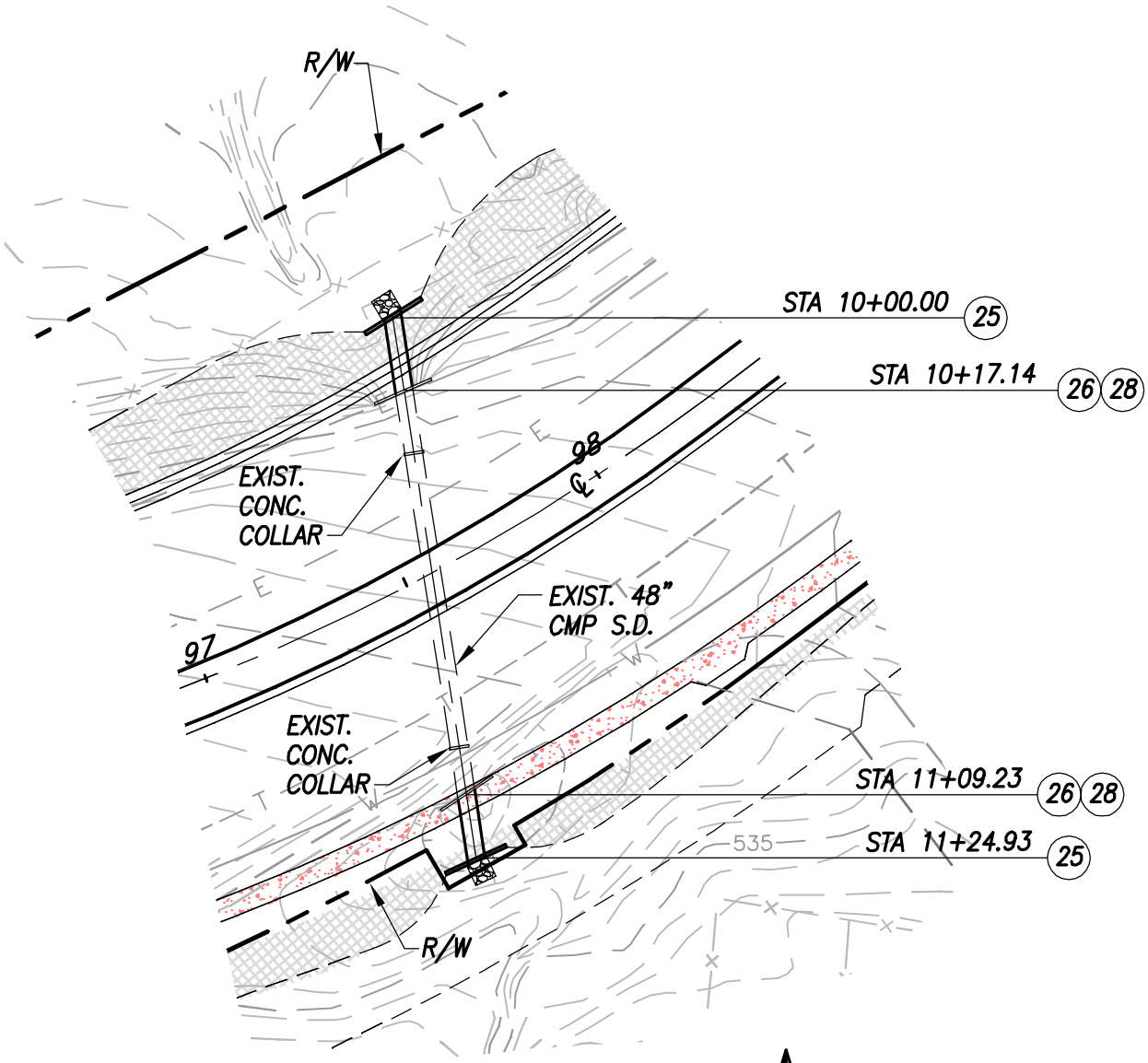


LINE "A"

SCALE 1" = 40'

CONSTRUCTION NOTES - STORM DRAIN	
25	CONSTRUCT PIPE CULVERT HEADWALL PER CALTRANS STD. DWG. NO. D89
26	CONSTRUCT CONCRETE COLLAR PER C.O.C. STD. NO. 209-0
28	REMOVE EXISTING HEADWALL

LSA

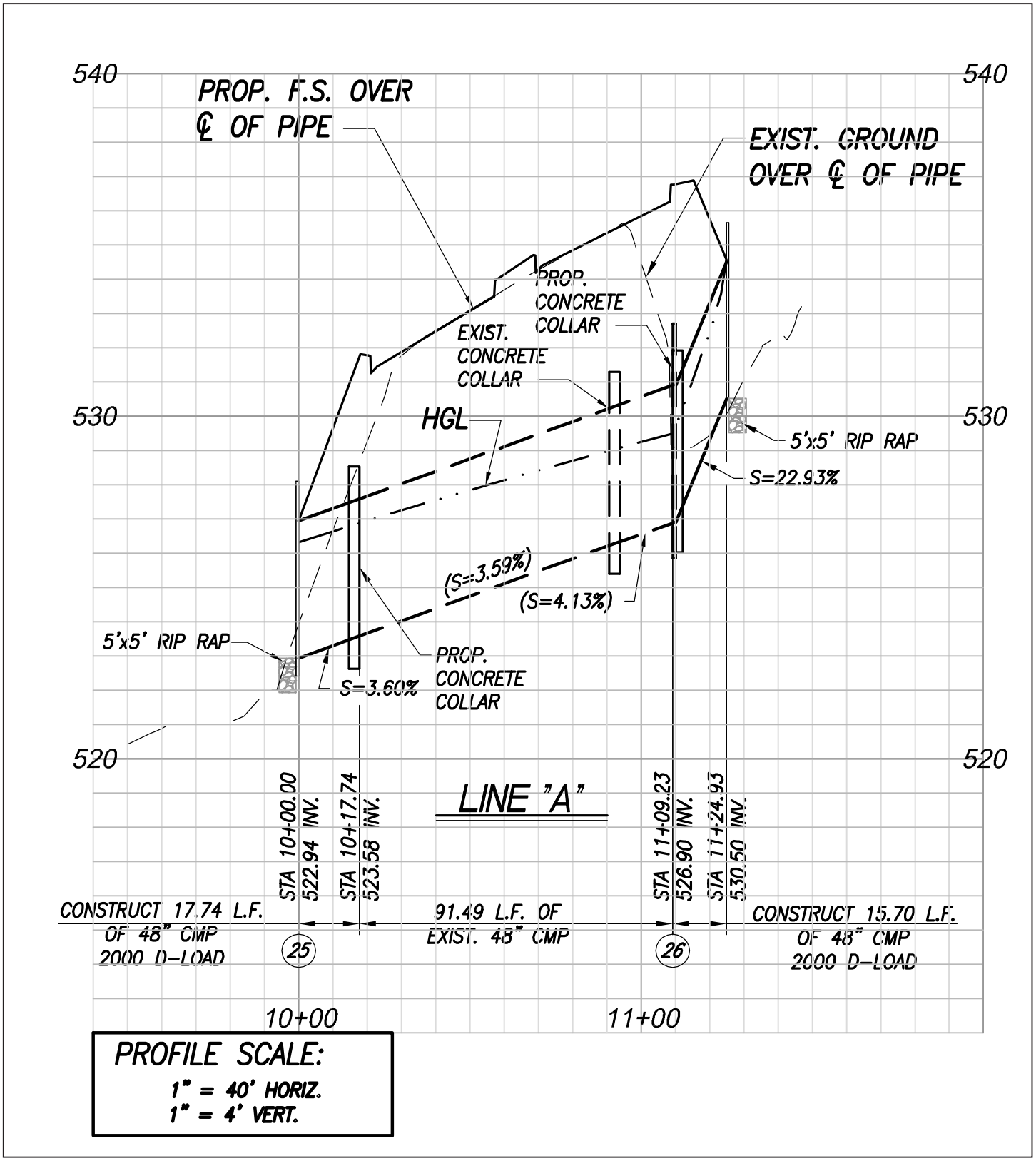
FIGURE 7A

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 2 - Plan View

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

I:\ABE0701\Reports\MSHCP\fig7A_Drainage2Plan.ai (11/20/09)



LSA

FIGURE 7B

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 2 - Profile

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

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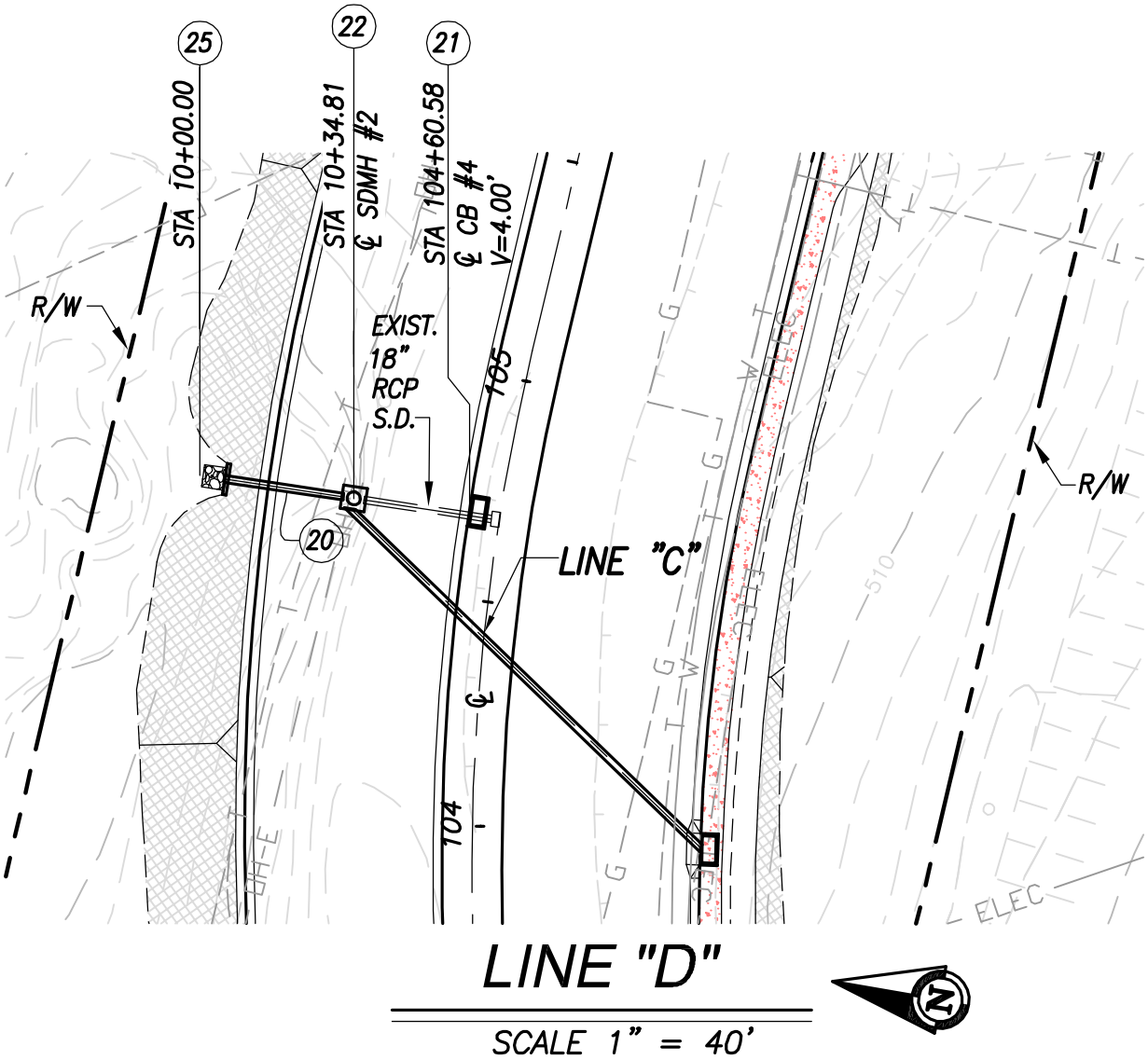


CONSTRUCTION NOTES - STORM DRAIN	
20	CONSTRUCT 18" RCP SD 2000 D-LOAD
21	CONSTRUCT C.B. PER C.O.C. STD. DWG. NO. 201-0 (WIDTH PER PLAN)
22	CONSTRUCT M.H. PER C.O.C. STD. DWG. NO. 207-0
25	CONSTRUCT PIPE CULVERT HEADWALL PER CALTRANS STD. DWG. NO. D89

LSA

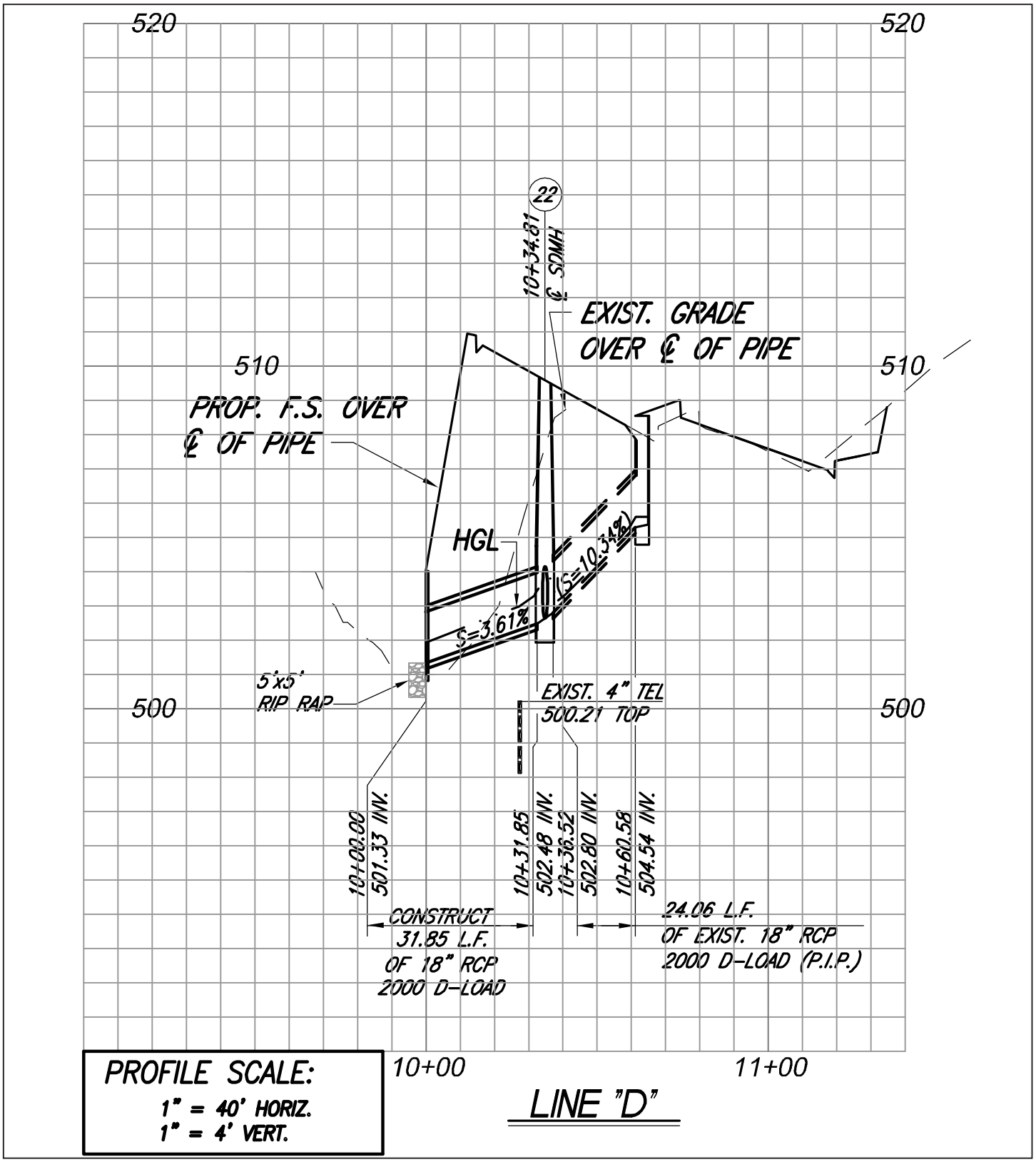
FIGURE 7C

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 3 - Plan View

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

I:\ABE0701\Reports\MSHCP\fig7C_Drainage3PlanView.ai (11/20/09)



LSA

FIGURE 7D

Green River Road Widening
MSHCP Consistency Repor

Drainage Exhibit
Drainage Number 3 - Profile

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

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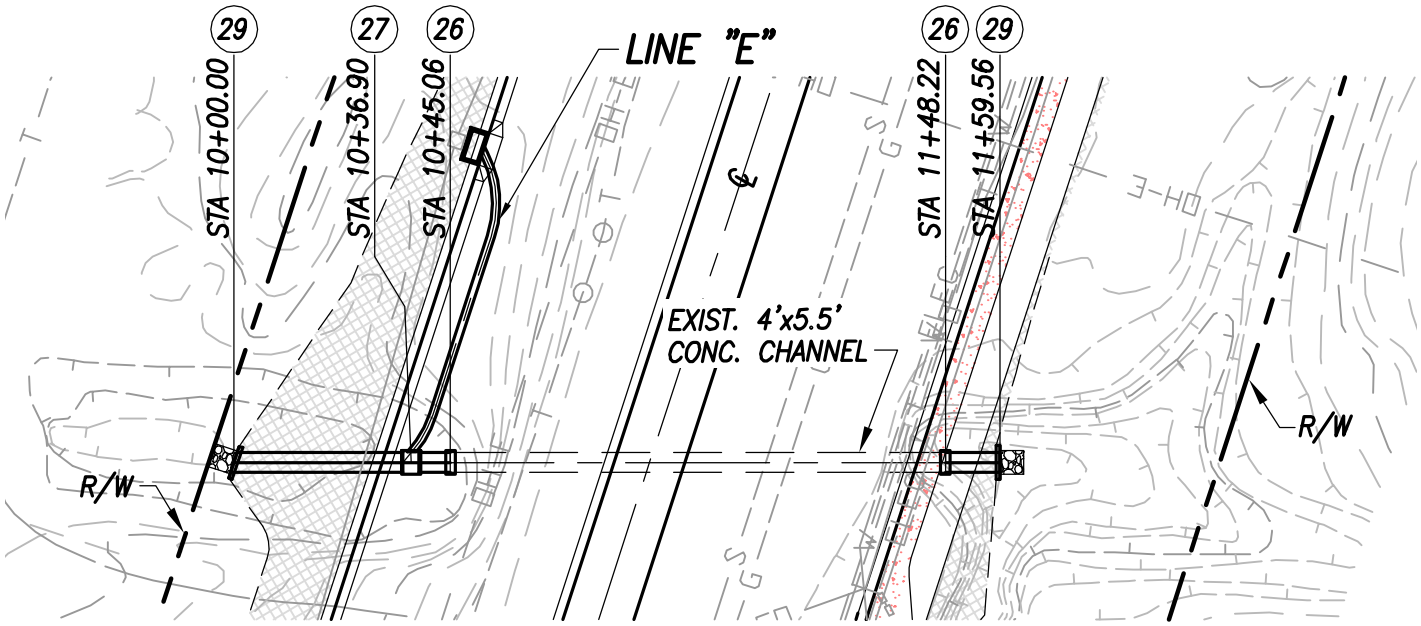

LINE "E-1"

SCALE 1" = 40'

CONSTRUCTION NOTES - STORM DRAIN	
26	CONSTRUCT J.S. NO. 3 PER RCFCD&WCD STD. DWG. NO. JS228
27	CONSTRUCT CONCRETE COLLAR PER C.O.C. STD. DWG. NO. 209-0
29	CONSTRUCT HEADWALL WITH RIP RAP

LSA

FIGURE 7E

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 4 - Plan View

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

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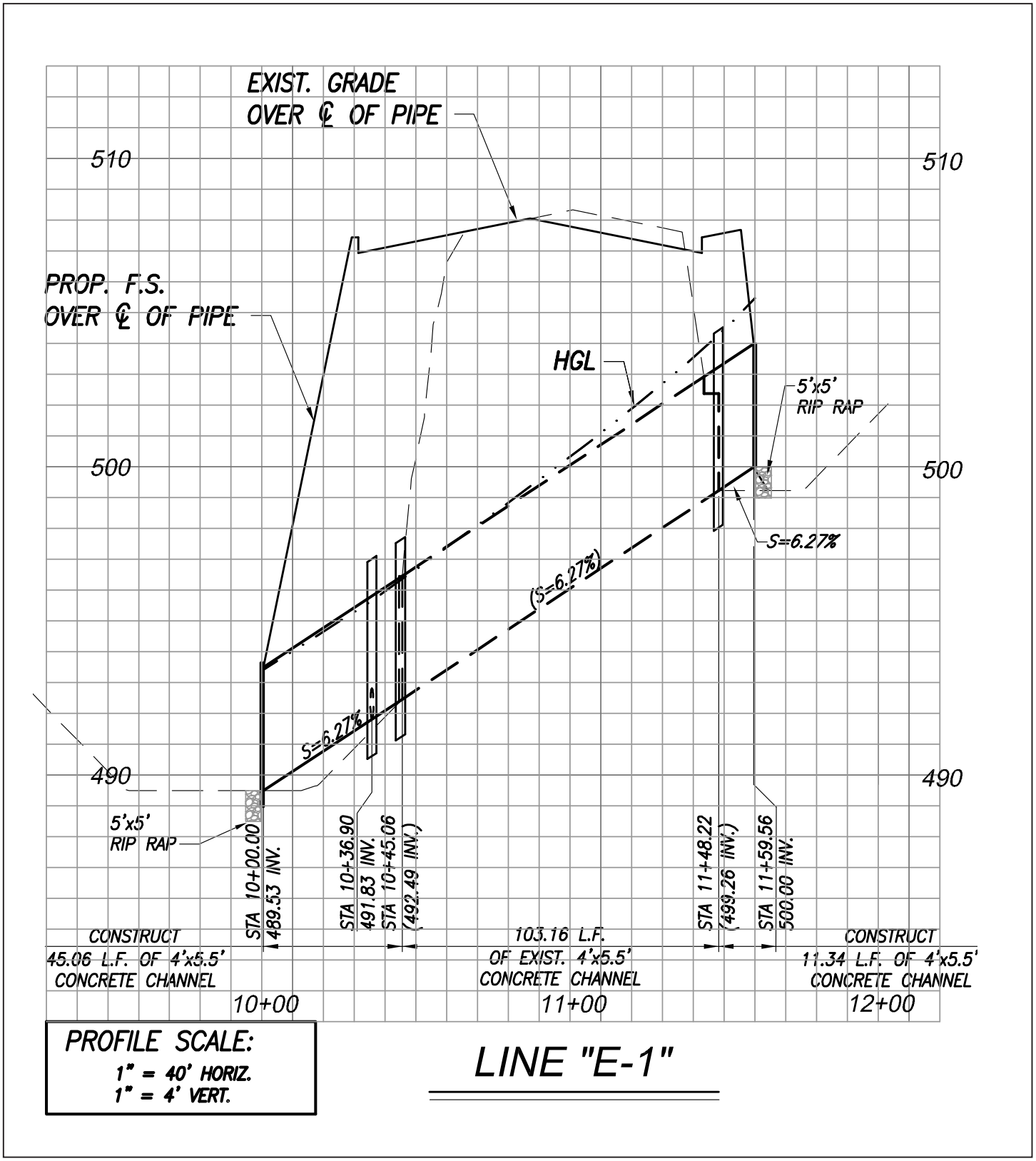

LSA

FIGURE 7F

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 4 - Profile

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

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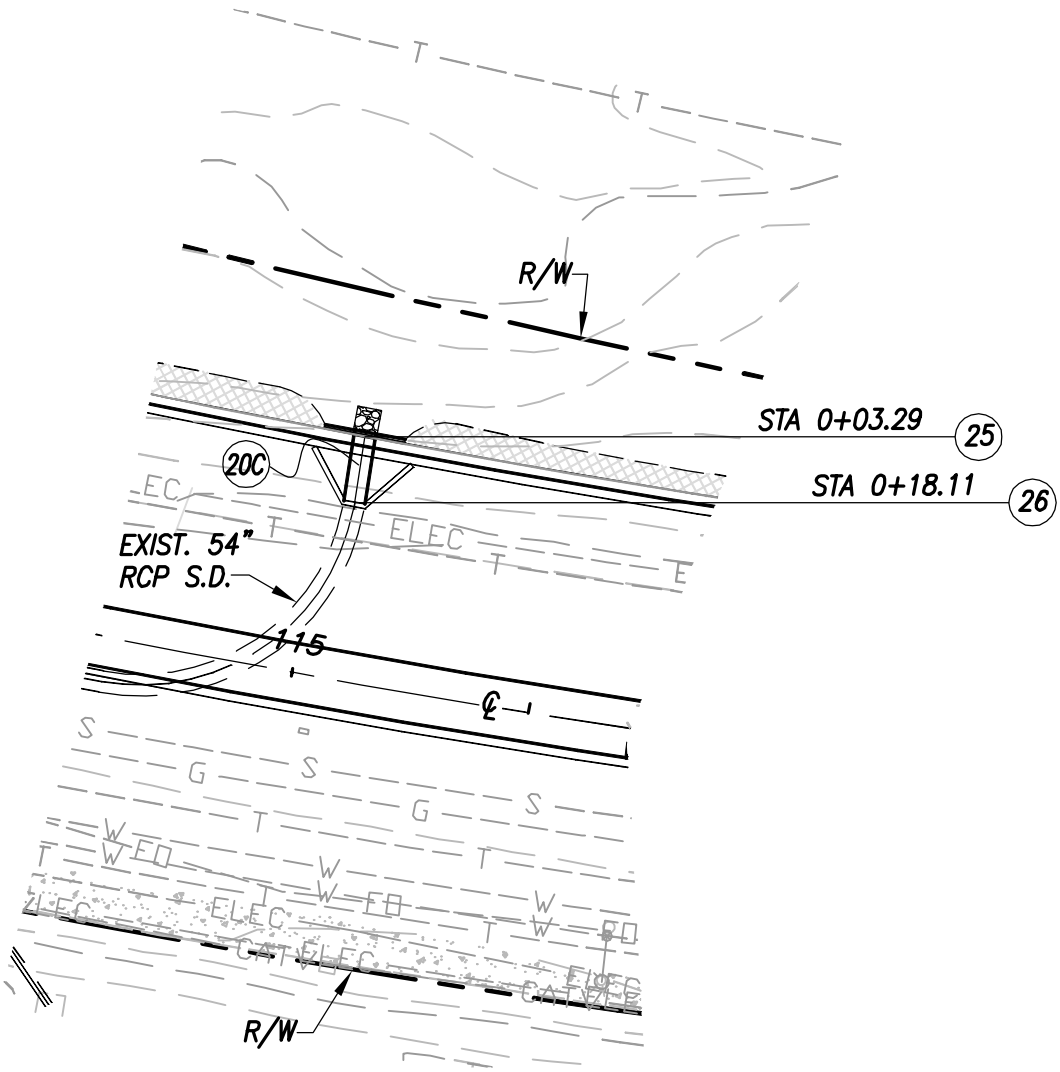


LINE "H"

SCALE 1" = 40'

CONSTRUCTION NOTES - STORM DRAIN	
20C	CONSTRUCT 54" RCP SD 1300 D-LOAD
25	CONSTRUCT PIPE CULVERT HEADWALL PER CALTRANS STD. DWG. NO D89
26	CONSTRUCT CONCRETE COLLAR PER C.O.C STD. NO. 209-0

LSA

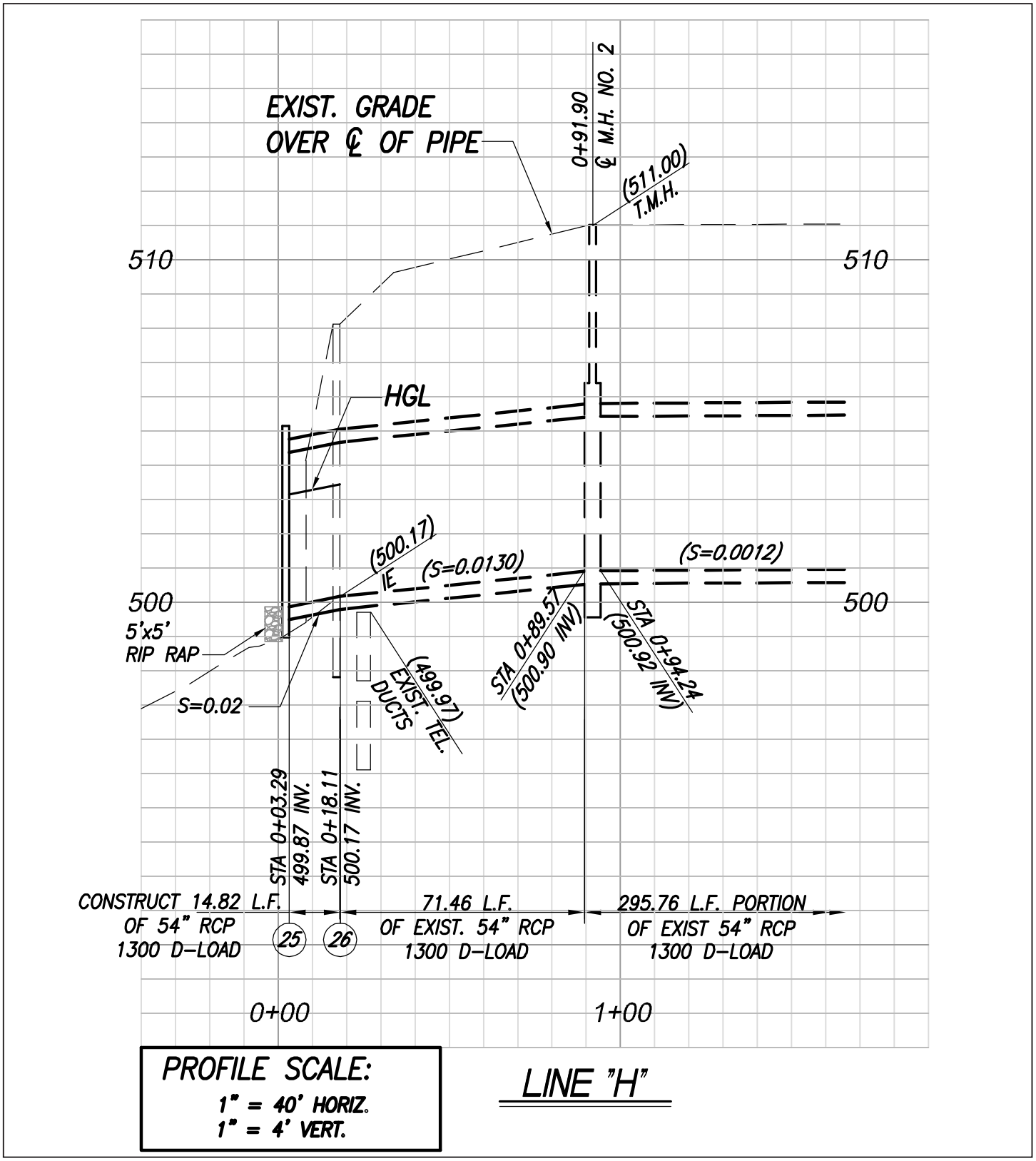
FIGURE 7G

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 5 - Plan View

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

I:\ABE0701\Reports\MSHCP\fig7G_Drainage5PlanView.ai (11/20/09)



LSA

FIGURE 7H

Green River Road Widening
MSHCP Consistency Report

Drainage Exhibit
Drainage Number 5 - Profile

SOURCE: Armstrong & Brooks Consulting Engineers, 4/10/09.

I:\ABE0701\Reports\MSHCP\fig7H_Drainage5Profile.ai (11/20/09)

LSA

FIGURE 8
Sheet 1 of 4

ISOLATED STREAMBED

1 DRAINAGE NUMBER

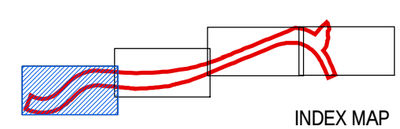
PROPOSED STORM DRAIN

"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

N

0 50 100
FEET



Green River Road Widening
MSHCP Consistency Report

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\MSHCP\fig8_On-Site_Mitig.mxd (11/20/09)

On-Site Mitigation Alternative

LSA

FIGURE 8
Sheet 2 of 4

ISOLATED STREAMBED

1 DRAINAGE NUMBER

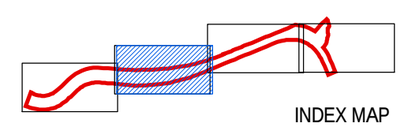
PROPOSED STORM DRAIN

"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

N

0 50 100
FEET



Green River Road Widening
MSHCP Consistency Report

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\MSHCP\fig8_On-Site_Mitig.mxd (11/20/09)

On-Site Mitigation Alternative

LSA

FIGURE 8
Sheet 3 of 4

ISOLATED STREAMBED

PROPOSED STORM DRAIN

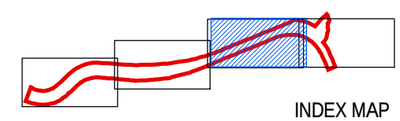
"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

1 DRAINAGE NUMBER

N

0 50 100
FEET



Green River Road Widening
MSHCP Consistency Report

SOURCE: Air Photo USA (2007)

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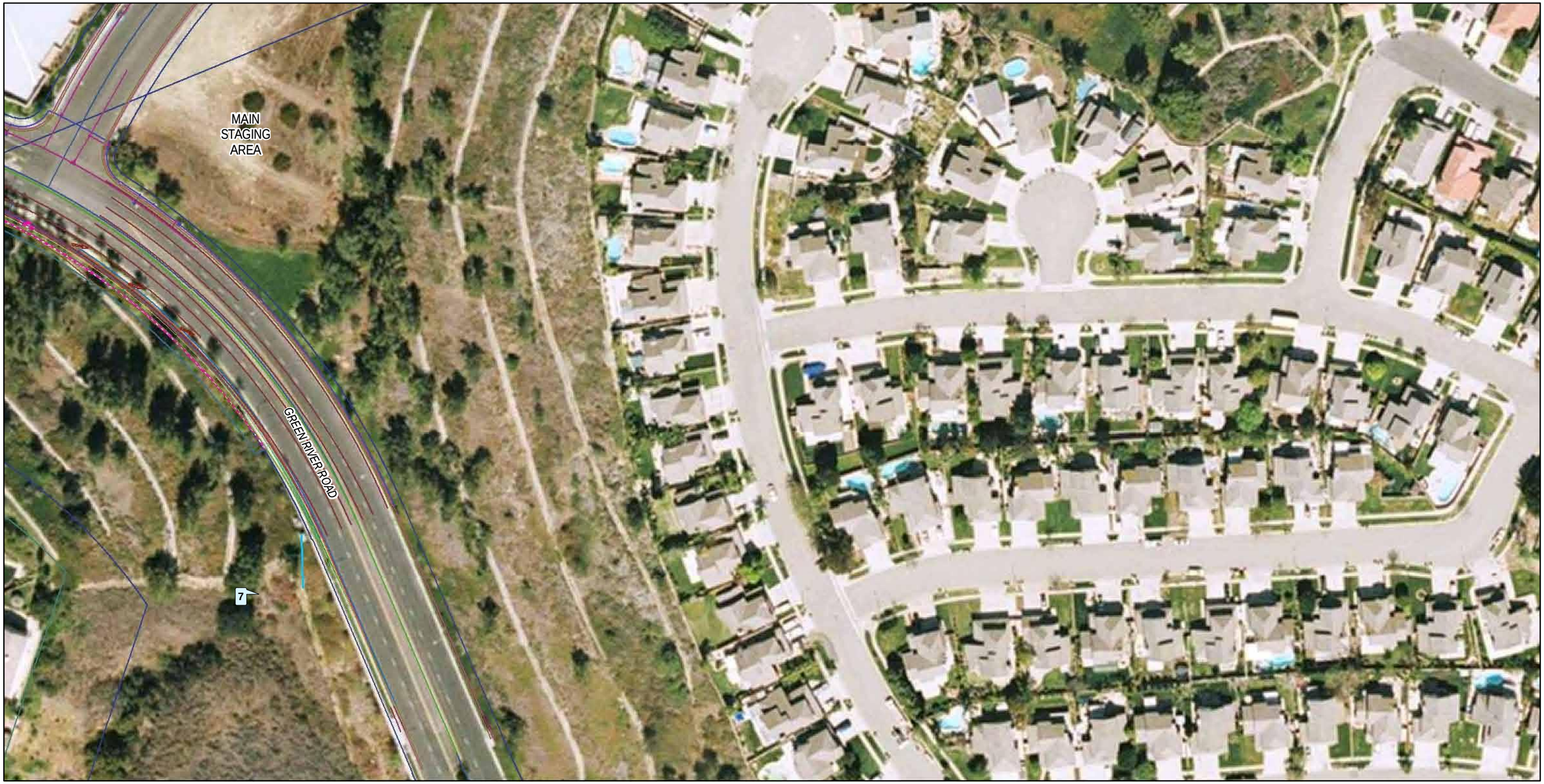
On-Site Mitigation Alternative



LSA

FIGURE 8
Sheet 4 of 4

ISOLATED STREAMBED

PROPOSED STORM DRAIN

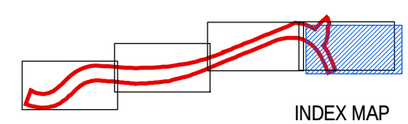
"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

1 DRAINAGE NUMBER

N

0 50 100
FEET



Green River Road Widening
MSHCP Consistency Report

SOURCE: Air Photo USA (2007)

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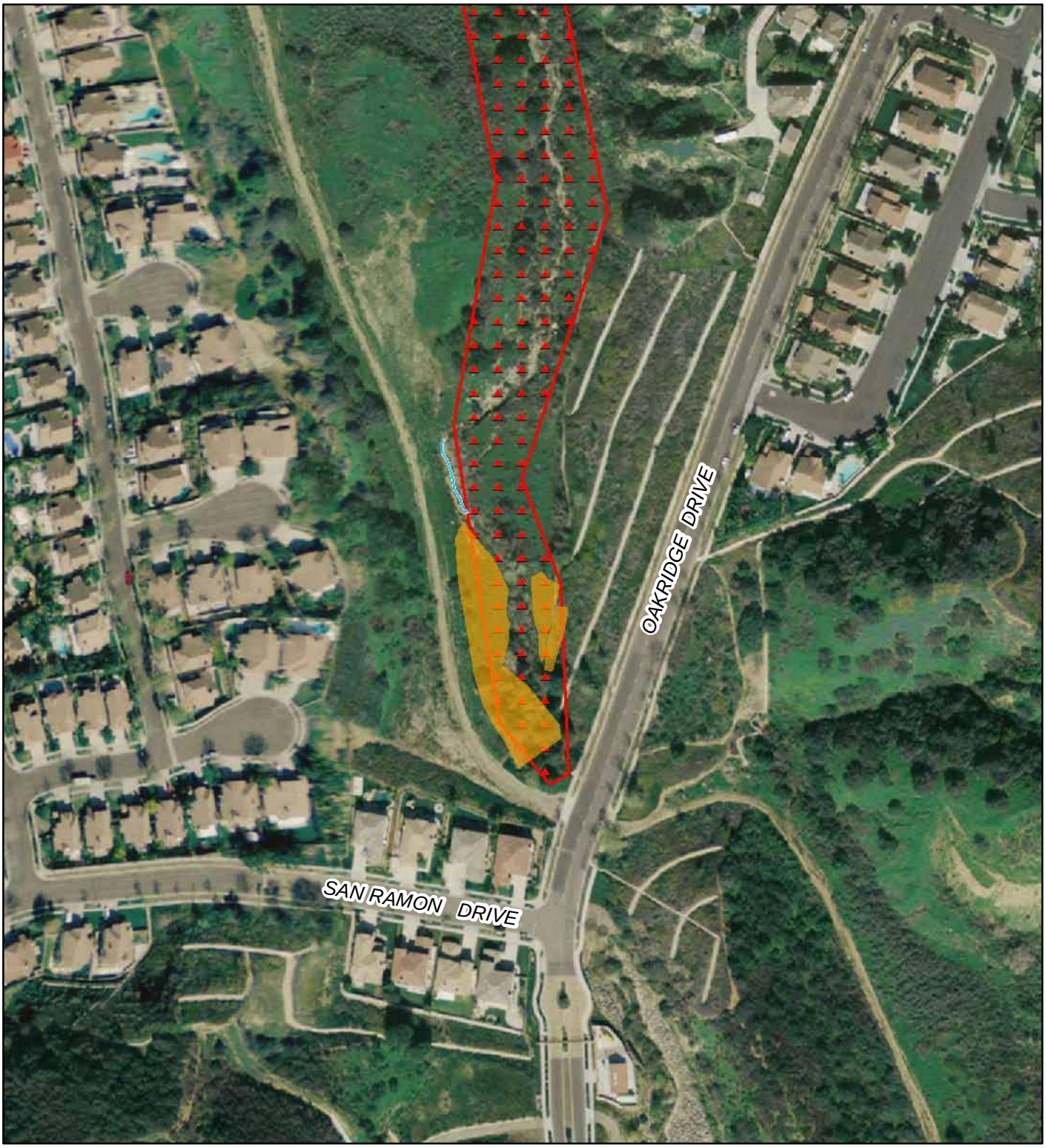
On-Site Mitigation Alternative



LSA

FIGURE 9

N

MSHCP CONSERVED LAND

SIDE DRAINAGE

RIPARIAN ENHANCEMENT (0.55 ACRES)

0 100 200

FEET

Green River Road Widening
MSHCP Consistency Report

Off-Site Mitigation Alternative

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\MSHCP\fig9_Off-Site_Mitig.mxd (11/20/09)

APPENDIX B

TABLES

Table A: List of Biological Surveys and Site Visits for Green River Road Widening Project

Date	Weather	Surveyor	Survey Type	Results
June 28, 2007		S. Spencer	Biological Resources	
June 28, 2007		S. Spencer	Burrowing Owl HSA and burrow survey	No owl sign observed
July 26, 2007		S. Spencer, P. Kielhold	Biological Resources	
August 7, 2007		S. Spencer	Biological Resources, additional survey area	
February 13, 2008		S. Spencer	Biological Resources, additional survey area	
March 19, 2008		R. Erikson, S. Spencer	Riparian Bird HSA	Focus survey recommended
April 15 through July 15, 2008	Refer to report	R. Erikson and others	Riparian Bird Focused Survey	LBV observed adjacent to/outside of study area
May 26, 2008		S. Spencer	Brand's phacelia focus survey	Suitable habitat in Fresno Canyon. None observed.
June 23, 2008	Warm, calm	M. Lum, S. Barrera	Jurisdictional Waters Delineation	
March 26, 2009	Warm, calm	M. Lum	Delineation additional fieldwork	

Table B: Soil Types

Soil Type	Description	Hydric?
AaF	**Altamont clay, 25–50% slopes**: hilly to steep uplands, slightly acid to neutral, subsurface (C1 layer) is alkali and clay, slow permeability, rapid runoff, high erosion hazard	No
AkD	**Arbuckle loam, 8–15% slopes**: found on alluvial fans, metasedimentary parent material, slightly acid to neutral, then slightly alkali with depth, no gravel in upper layers	No
CmC	**Cortina cobbly loamy sand, 2–8% slopes**:	Yes
GaD2	**Garretson very fine sandy loam, 8–15% slopes, eroded**: found on alluvial fans, metasedimentary parent material, slightly acid, free of gravel, medium runoff, moderate erosion hazard	No
GaC	**Garretson very fine sandy loam, 2–8% slopes**: found on alluvial fans, metasedimentary parent material, slightly acid, moderate permeability, moderate erosion hazard, high fertility, slow to medium runoff.	No
GdD2	**Garretson gravelly very fine sandy loam, 8–15% slopes, eroded**: alluvial fans, neutral, fine loam throughout, moderate permeability, slow runoff, high fertility	No
PgC	**Perkins gravelly loam, 5–8% slopes**: alluvial fans and terraces from fine grain sandstone, slightly acid to neutral throughout, slow permeability, moderate fertility, medium runoff	No
TeG	**Terrace escarpments**: alluvial terraces, unaltered outwash, various materials, sizes, and quantities.	No

Table C: Impacts to Riparian Vegetation

Drainage Feature	Vegetation Description	Temporary Impacts (acre)	Permanent Impacts (acre)
1	Ephemeral drainage with non-native upland vegetation.	0.01	0
2	Four-foot CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed with adjacent riparian scrub. A swale occurs adjacent to the streambed on the south side of the road.	0.03	0.01
3	Detention basin with earthen bottom, riparian scrub vegetation, and OHWM. Water does not drain to TNW. Vegetation is willow, mule fat, elderberry, and branching phacelia.	0.02	0.15
4	Four-foot CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed on south side of road and riparian scrub in streambed on south side of road. Species include elderberry and mule fat including non-native upland vegetation.	0.01	0.02
5	Four-foot CMP and concrete box culvert originating south of Green River Road with perennial surface flows and OHWM. Saturated soils and small amount of hydrophytic/riparian vegetation. Perennial drainage/rock and fabric-lined channel with adjacent willows and eucalyptus trees.	0.01	0.01
6	Fresno Canyon Drainage. Large braiding streambed with OHWM and upland vegetation. Flows under Green River Road via a large concrete box culvert. Water from a municipal storm drain flows into this drainage at the box culvert. Outside of project site.	0	0
7	Concrete v-ditch	0	0
Total		**0.08**	**0.19**

Table D: Proposed Impacts to Existing Vegetation and Land Use

Vegetation or Land Use	Acreage of Proposed Impacts in Project Site
Non-native Grassland (Red Brome, 42.025.00)	2.83
Disturbed/Developed/Ornamental	18.11
Mexican Elderberry (63.410.00) and Mule fat Scrub (63.510.00)	0.22
Total	21.16

Table E: Plant and Animal Species Observed

Scientific Name	Common Name
DICOT PLANTS	
Aizoaceae	**Carpet weed family**
Carpobrotus edulis (non-native species)	Hottentot-fig
Amaranthaceae	**Amaranth family**
Amaranthus albus (non-native species)	Tumbling pigweed
Anacardiaceae	**Sumac family**
Malosma laurina	Laurel sumac
Apiaceae	**Carrot family**
Foeniculum vulgare (non-native species)	Fennel
Asteraceae	**Sunflower family**
Ambrosia acanthicarpa	Annual bur-sage
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Baccharis pilularis	Coyote brush
Baccharis salicifolia	Mule fat
Baccharis sarothroides	Broom baccharis
Centaurea melitensis (non-native species)	Tocalote
Cirsium vulgare (non-native species)	Bull thistle
Conyza Canadensis	Canadian horseweed
Cotula australis (non-native species)	Australian brass-buttons
Encelia californica	California encelia
Isocoma menziesii	Goldenbush
Lactuca serriola (non-native species)	Prickly lettuce
Lepidospartum squamatum	Scalebroom
Picris echioides (non-native species)	Bristly ox-tongue
Pseudognaphalium luteoalbum (non-native species)	Jersey cudweed
Senecio vulgaris (non-native species)	Common groundsel
Silybum marianum (non-native species)	Milk thistle
Sonchus oleraceus (non-native species)	Common sow thistle
Taraxacum officinale (non-native species)	Common dandelion
Boraginaceae	**Borage family**
Amsinckia menziesii	Common fiddleneck
Brassicaceae	**Mustard family**
Hirschfeldia incana (non-native species)	Shortpod mustard
Sisymbrium irio (non-native species)	London rocket
Caprifoliaceae	**Honeysuckle family**
Sambucus mexicana	Blue elderberry

Table E: Plant and Animal Species Observed

Scientific Name	Common Name
Chenopodiaceae	**Saltbush family**
Chenopodium murale (non-native species)	Nettleleaf goosefoot
Salsola tragus (non-native species)	Russian thistle
Euphorbiaceae	**Spurge family**
Ricinus communis (non-native species)	Castor bean
Fabaceae	**Pea family**
Lupinus truncates	Collar lupine
Medicago lupulina (non-native species)	Black medick
Geraniaceae	**Geranium family**
Erodium cicutarium (non-native species)	Redstem stork's bill
Lamiaceae	**Mint family**
Marrubium vulgare (non-native species)	Horehound
Myrtaceae	**Myrtle family**
Eucalyptus sp. (non-native species)	Eucalyptus
Papaveraceae	**Poppy family**
Romneya coulteri	Coulter's matilija poppy
Platanaceae	**Sycamore family**
Platanus racemosa	Western sycamore
Plumbaginaceae	**Leadwort family**
Limonium perezii (non-native species)	Statice
Polygonaceae	**Buckwheat family**
Polygonum aviculare (non-native species)	Common knotweed
Portulacaeae	**Purslane family**
Portulaca oleracea (non-native species)	Common purslane
Primulaceace	**Primrose family**
Anagallis arvensis (non-native species)	Scarlet pimpernel
Salicaceae	**Willow family**
Salix gooddingii	Goodding's willow
Solanaceae	**Nightshade family**
Datura wrightii	Sacred thorn-apple
Nicotiana glauca (non-native species)	Tree tobacco
Tamaricaceae	**Tamarisk family**
Tamarix ramosissima (non-native species)	Mediterranean tamarisk
Urticaceae	**Nettle Family**
Urtica urens (non-native species)	Dwarf nettle

Table E: Plant and Animal Species Observed

Scientific Name	Common Name
MONOCOT PLANTS	
Poaceae	**Grass family**
Agrostis viridis (non-native species)	Water bentgrass
Avena barbata (non-native species)	Slender wild oat
Bromus diandrus (non-native species)	Common ripgut grass
Bromus madritensis ssp. *rubens* (non-native species)	Red brome
Cynodon dactylon (non-native species)	Bermuda grass
Hordeum murinum (non-native species)	Foxtail barley
Piptatherum miliaceum (non-native species)	Smilo grass
Poa annua (non-native species)	Annual bluegrass
REPTILES	
Phrynosomatidae	**Phrynosomatid Lizards**
Sceloporus occidentalis	Western fence lizard
BIRDS	
Cathartidae	**American Vultures**
Cathartes aura	Turkey vulture
Accipitridae	**Kites, Hawks, and Eagles**
Buteo jamaicensis	Red-tailed hawk
Corvidae	**Crows and Ravens**
Corvus brachyrhynchos	American crow
MAMMALS	
Leporidae	**Rabbits and Hares**
Sylvilagus audubonii	Desert cottontail
Sciuridae	**Squirrels**
Spermophilus beecheyi	California ground squirrel

Table F: MSHCP Narrow Endemic and Criteria Area Plant Survey Species

Species	MSHCP Habitat	Growth Form & Blooming Period	Habitat Suitability
San Diego ambrosia *Ambrosia pumila*	Open floodplain terraces on Garretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to Willow silty alkaline soils. Occurs in sparse annual vegetation.	Perennial Generally non-flowering	**Absent.** No Las Posas or Willows soils on site. Garretson gravelly sandy loam mapped within the study area is within the existing pavement of Green River Road and over 1,000 feet from any natural vegetation in the study area. This perennial species was not observed during full botanical inventory of the site.

Table F: MSHCP Narrow Endemic and Criteria Area Plant Survey Species

Species	MSHCP Habitat	Growth Form & Blooming Period	Habitat Suitability
Brand's Phacelia *Phacelia stellaris*	Sandy soils of washes or benches in alluvial flood plains. This species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside County, Brand's phacelia is restricted to sandy benches along the Santa Ana River."	Annual March–June	**Absent.** Potential habitat within the study area is of marginal suitability and is limited to a small area mapped as riparian scrub in the Fresno Canyon drainage. This area was surveyed and the species determined to be absent.
San Miguel savory *Satureja chandleri*	Rocky, gabbroic and metavolcanic substrates in chaparral or oak woodland. MSHCP Table 6-1 lists chaparral, coastal sage scrub, cismontane woodland, riparian woodland, and valley and foothill grasslands as potential habitat for this species. However, this species prefers moist rocky canyons with trees or large shrubs and would not be expected in coastal sage scrub or open grassland except at the margins of chaparral or oak woodland, nor would it be expected in woodlands outside of rocky canyons (Andrew C. Sanders, UC Riverside Herbarium, pers. comm. to Stan Spencer, December 8, 2004, and March 9, 2005). All occurrences of this species in the California Natural Diversity Database that include habitat information (16 occurrences in Riverside, Orange, and San Diego Counties) list coast live oak (*Quercus agrifolia*) or chaparral species as associates, or indicate that the habitat is chaparral, oak woodland, a chaparral-coastal sage scrub interface, or grassy openings in chaparral. In Riverside County, this species is known only from the Santa Ana Mountains and Santa Rosa Plateau, except for a dubious record of an occurrence near Sage Road south of Hemet (Andrew C. Sanders, UC Riverside Herbarium, pers. comm. to Stan Spencer, Mar. 10, 2005; MSHCP species account for San Miguel savory).	Perennial March–May	**Absent.** No chaparral or oak woodland or other suitable habitat on site.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Plants				
Abronia villosa var. *aurita* **Chaparral sand-verbena**	US: – CA: SP CNPS: 1B	Sandy areas in chaparral and coastal sage scrub 80 to 1,600 meters (300 to 5,300 feet) elevation. Known only from Riverside, Orange (believed extirpated), and San Diego Counties.	January through August (annual herb)	**Absent.** No chaparral or coastal sage scrub on site.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Astragalus brauntonii **Braunton's milk-vetch**	US: FE CA: SP CNPS: 1B	Considered a limestone endemic and dependent on fire. Typically associated with the fire-dependent chaparral habitat on limestone and on down-wash sites. Elevation is below 640 meters (3,000 feet). Los Angeles, Orange, and Ventura Counties.	Blooms March through July (perennial herb)	**Absent.** No chaparral or limestone on site.
Atriplex coulteri **Coulter's saltbush**	US: – CA: SP CNPS: 1B	Alkaline or clay soils in ocean bluffs and ridgetops and alkaline low places in coastal bluff scrub, coastal dunes, coastal sage scrub, and valley and foothill grasslands below 460 meters (1,500 feet) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Bernardino, and San Diego Counties. Reports of this species from Riverside County are based on misidentification of *Atriplex serenana* ssp. *davidsonii* (*The Vascular Plants of Western Riverside County, California*. F.M. Roberts et al. 2004).	March through October (perennial herb)	**Absent.** No alkaline areas or clay bluffs on site.
Baccharis malibuensis **Malibu baccharis**	US: – CA: SP CNPS: 1B	Deciduous shrub of conejo volcanic substrates (often on exposed roadcuts), in coastal scrub, chaparral, or cismontane (oak) woodland at 150 to 260 meters (490 to 850 feet) elevation. Known only from near Malibu Lake in the Santa Monica Mountains in Los Angeles County, and from Fremont Canyon of the Santa Ana Mountains in Orange County.	Blooms in August (deciduous shrub)	**Absent.** No chaparral, coastal scrub, or oak woodland on site. Nearest location is about 6 miles southwest of site in Orange County.
Calochortus plummerae **Plummer's mariposa lily**	US: – CA: SP CNPS: 1B	Sandy or rocky sites of (usually) granitic or alluvial material in valley and foothill grassland, coastal scrub, chaparral, cismontane woodland, and lower montane coniferous forest at 100 to 1,700 meters (300 to 5,600 feet) elevation. Known from the Santa Monica Mountains to San Jacinto Mountains in Riverside, San Bernardino, Los Angeles, and Ventura Counties. In the western Riverside County area, this species is known from the foothills of the San Bernardino Mountains, northeastern Santa Ana Mountains, Box Springs Mountains, and from the Lake Skinner area (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	Blooms May through July (perennial herb)	**Absent.** No sandy or rocky areas in natural upland plant communities on site. All grasslands on site are on loams, not sands.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Calochortus weedii var. *intermedius* **Intermediate mariposa lily**	US: – CA: SP CNPS: 1B	Rocky areas in hills with annual grassland and coastal sage scrub. 180 to 855 meters (600 to 2,800 feet) elevation. Los Angeles, Orange, and Riverside Counties. In the western Riverside County area, this species is known from the hills and valleys west of Lake Skinner and Vail Lake (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	June through July (perennial herb)	**Absent.** No natural communities in rocky, hilly areas on site.
Chorizanthe parryi var. *parryi* **Parry's spineflower**	US: – CA: SP CNPS: 3	Dry sandy soils in chaparral or coastal scrub at 40 to 1,750 meters (100 to 5,700 feet) elevation. Known only from Riverside and San Bernardino Counties and possibly extending into Los Angeles County.	April through June (annual herb)	**Absent.** No chaparral or coastal scrub on site.
Chorizanthe xanti var. *leucotheca* **White-bracketed spineflower**	US: – CA: SP CNPS: 1B	Mojave desert scrub and pinyon and juniper woodland 300 to 1,200 meters (900 to 4,000 feet) elevation. Reported from Los Angeles, Riverside, and San Bernardino Counties. However, reports of this species from western Riverside County are doubtful (The Vascular Plants of Western Riverside County, California. F.M. Roberts et al. 2004).	April through June (annual herb)	**Absent.** No desert scrub or pinyon and juniper woodland on site. Reports from general project vicinity are doubtful.
Cupressus forbesii **Tecate cypress**	US: – CA: SP CNPS: 1B	Evergreen tree found in closed-cone coniferous forest and chaparral at elevations from 255 to 1,500 meters (800 to 4,900 feet). Known from Orange and San Diego Counties; fewer than five occurrences. Trees known from Riverside County are planted.	Evergreen tree	**Absent.** No coniferous forest or chaparral on site.
Lepidium virginicum var. *robinsonii* **Robinson's pepper-grass**	US: – CA: SP CNPS: 1B	Dry soils in coastal sage scrub and chaparral, typically below 500 meters (1,600 feet) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and San Diego Counties.	January through July	**Absent.** No coastal sage scrub or chaparral on site.
Nolina cismontana **Chaparral nolina**	US: – CA: SP CNPS: 1B	Sandstone, shale, and occasionally gabbro substrates in chaparral and coastal scrub from 140 to 1,275 meters (500 to 4,200 feet) elevation. Known only from Orange, San Diego, and Ventura Counties, California.	May through July (evergreen shrub)	**Absent.** No coastal scrub or chaparral on site.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Phacelia suaveolens ssp. *keckii* **Santiago Peak phacelia**	US: – CA: SP CNPS: 1B	Closed-cone coniferous forest and chaparral in elevations from 545 to 1,600 meters (1,800 to 5,200 feet). Known from Orange and Riverside Counties. In the western Riverside County area, this species is scarce and known from higher elevations in the Santa Ana Mountains, Agua Tibia Mountains, and Arroyo Seco Creek (*The Vascular Plants of Western Riverside County, California*. F.M. Roberts et al. 2004).	Blooms May through June (annual herb)	**Absent.** No coniferous forest or chaparral on site.
Pseudognaphalium leucocephalum **White rabbit-tobacco**	US: – CA: SP CNPS: 2	Sand and gravel at the edges of washes or mouths of steep canyons at 0 to 2,100 meters (0 to 7,000 feet) elevation. In California, known from Los Angeles, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties. Also occurs in Arizona, New Mexico, Texas, and Mexico.	Usually August through November (perennial herb)	**Absent.** Potential habitat in the study area occurs only within the Fresno Canyon drainage. This area was fully surveyed and the species determined to be absent.
Senecio aphanactis **Rayless ragwort**	US: – CA: SP CNPS: 2	Drying alkaline flats in cismontane woodland, coastal sage scrub, and chaparral at 15 to 575 (800?) meters (50 to 1,900 [2,600] feet) elevation. Known in California from Alameda, Contra Costa, Fresno, Los Angeles, Merced, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura Counties.	Blooms January through April (annual herb)	**Absent.** No alkaline areas on site.
Sidalcea neomexicana **Salt spring checkerbloom**	US: – CA: SP CNPS: 2	Alkaline springs and marshes below 1,530 meters (5,000 feet) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and Ventura Counties.	Blooms March through June (perennial herb)	**Absent.** No alkaline springs or marshes on site.
Symphyotrichum defoliatum (Aster defoliatus) **San Bernardino aster**	US: – CA: SP CNPS: 1B	Vernally wet sites (such as ditches, streams, and springs) in many plant communities below 2,040 meters (6,700 feet) elevation. In California, known from Ventura, Kern, San Bernardino, Los Angeles, Orange, Riverside, and San Diego Counties. In the western Riverside County area, this species is scarce, and documented only from Temescal and San Timoteo Canyons (*The Vascular Plants of Western Riverside County, California*. F.M. Roberts et al. 2004).	Blooms July through November (perennial herb)	**Absent.** Ditches on site are extremely disturbed and devoid of natural vegetation. Potential habitat in the study area within the Fresno Canyon drainage was surveyed and the species determined to be absent.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Reptiles				
Lampropeltis zonata pulchra **San Diego mountain kingsnake**	US: – CA: CSC	In the interior mountain ranges, this subspecies occurs primarily in associations of ponderosa, Jeffrey, and Coulter pine, and black oak. At lower elevations and in the coastal ranges, it occurs in riparian woodlands, usually in canyon bottoms, that have western sycamore, Fremont's cottonwood, coast live oak, willows, wild rose, poison oak, and blackberries. Found most commonly in the vicinity of rocks or boulders near streams or lake shores. This species ranges from the Santa Monica Mountains (Los Angeles County), Santa Ana Mountains (Orange and Riverside Counties), Santa Rosa Mountains (Riverside County), to the mountain areas of San Diego County. Documented from sea level to about 1,800 meters (5,900 feet) elevation. The lower elevational ranges are for coastal situations with lower temperatures and fog or abundant cloud cover. The inland locations are more typical and primarily support the subspecies between 1,220 meters (4,000 feet) and 1,830 meters (6,000 feet).	Active diurnally throughout most of the year. Nocturnal in warm weather.	**Absent.** The project site includes neither the low coastal nor the mountainous habitat of this species. Riparian woodland on site is an isolated stand of 3-4 willows with a sparse weedy understory. Inland populations are typically at much higher elevations.
Salvadora hexalepis virgultea **Coast patch-nosed snake**	US: – CA: CSC	Coastal chaparral, washes, sandy flats, and rocky areas. Widely distributed throughout lowlands, up to 2,130 meters (7,000 feet) elevation, of Southern California from coast to the eastern border.	Active diurnally throughout most of the year	**Low.** Marginally suitable habitat for this species occurs in Fresno Canyon, which is within the study area but not within the project impact area.
Thamnophis hammondii **Two-striped garter snake**	US: – CA: CSC	Highly aquatic. Only in or near permanent sources of water. Streams with rocky beds supporting willows or other riparian vegetation. From Monterey County to northwest Baja California.	Diurnal Year-round	**Absent.** No permanent water on site.
Birds				
Asio otus (nesting) **Long-eared owl**	US: – CA: CSC	Scarce and local in forests and woodlands throughout much of the Northern Hemisphere. Rare resident in coastal southern California. Nests and roosts in dense willow-riparian woodland and oak woodland, but forages over wider areas. Breeds from valley foothill hardwood up to ponderosa pine habitat.	Nocturnal Year-round	**Low.** No dense oak or riparian woodlands on site, but this species may occasionally forage on site.

Table G: Special Interest Species Potentially Occurring in the Project Vicinity that are Not Adequately Covered by the MSHCP

Species	Status	Habitat and Distribution	Activity Period	Occurrence Probability
Mammals				
Antrozous pallidus **Pallid bat**	US: – CA: CSC	Day roosts in caves, crevices, mines and occasionally hollow trees and buildings. Night roosts may be more open sites, such as porches and open buildings. Hibernation sites are probably rock crevices. Grasslands, shrublands, woodlands, and forest in western North America.	Year-round Nocturnal	**Low.** Unlikely to roost on buildings or in culvert at Fresno Canyon. No roosting habitat within project impact area. May occasionally forage over site.
Eumops perotis **Western mastiff bat**	US: – CA: CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc.; roosts in crevices in vertical cliff faces, high buildings, and tunnels, and travels widely when foraging.	Primarily the warmer months	**Low.** Unlikely to roost on buildings or in culvert at Fresno Canyon. No roosting habitat within project impact area. May occasionally forage over site.
Lasiurus xanthinus **Western yellow bat**	US: – CA: SA	Occurs in southern California in palm oases and in residential areas with untrimmed palm trees. Roosts primarily in trees, especially the dead fronds of palm trees. Forages over water and among trees.	Primarily the warmer months	**Low.** May occasionally forage over site.

LEGEND	
US: Federal Classifications	
FE	Taxa listed as Endangered.
CA: State Classifications	
CSC	California Species of Special Concern. Refers to animals with vulnerable or seriously declining populations.
SA	Special Animal. Refers to any other animal monitored by the Natural Diversity Data Base, regardless of its legal or protection status.
SP	Special Plant. Refers to any other plant monitored by the Natural Diversity Data Base, regardless of its legal or protection status.
CNPS: California Native Plant Society Classifications	
1B	Plants considered by CNPS to be rare, threatened, or endangered in California and elsewhere.
2	Plants considered by CNPS to be rare, threatened, or endangered in California, but more common elsewhere.
3	Plants suggested by CNPS for consideration as endangered but about which more information is needed.

APPENDIX C

JPR-PUBLIC PROJECT REVIEW FORM

Western Riverside County
Regional Conservation Authority

A Joint Powers Authority

RCA Joint Project Review Application

The 14-day Joint Project Review Timeline does not start until the RCA receives this completed application, the required project information and the $1,500 deposit.

Date: _____

Permittee Name: _____

Address: _____

_____

_____

Contact Name: _____

Email: _____

Phone #: _____

Fax #: _____

Permittee Project Number/Name: _____

APN #(s): _____

_____

_____

Total Acres of Project Site: _____

Total Acres Planned for Development: _____

Total Acres Planned for Conservation: _____

Project Description: _____

_____

_____

_____

- **JPR Processing Deposit: Prior to commencement of JPR, payment of the $1,500 deposit for processing must be made. Checks should be made payable to the Regional Conservation Authority, and the check memo must include a local project identifier. JPR application materials will not be reviewed until full deposit is made.**
- **Attach all relevant maps/biological resource information/permittee findings to this form.**

Public Projects
Joint Project Review Form

Date Submitted to RCA: _____

Permittee Contact Information

Project Manager Name: _____
Email: _____
Phone Number: _____

Project Information

Project Name: _____

Project APNs: _____
_____

Project Acreage (**attach/send electronic shapefiles**): _____

Project Type: (check one)
_____ Flood Control
_____ Transportation
_____ Water/Wastewater
_____ Other: _____

Project Description: _____
_____
_____
_____
_____

Area Plan: _____

Reserve Assembly

Is the Project Located in the Criteria Area? _____

If yes, what are the affected Cell(s)? _____
_____

Is the Project located either partially or wholly on Public/Quasi-Public (PQP) Lands? _____

If yes, Will project affect the biological conservation value of these PQP lands? _____
If yes, **attach PQP replacement analysis**. (See Section 3.2.1 of the MSHCP.)

Public Projects
Joint Project Review Form

Is the Project a Covered Activity, as described in Section 7 of MSHCP?

_____Yes: List which Section of MSHCP describes the Project, along with justification of how project meets the definition of a Covered Activity:

_____
_____
_____
_____

_____No. If the project is located in the Criteria Area, **attach description** of how project contributes to Reserve Assembly by assessing project's location in relation to the Cell Criteria.

For Transportation Projects in Criteria Area or on Public/Quasi-Public Lands **attach documentation** addressing the project's consistency with, and incorporation of, the following:

_____ Section 7.5.1 – Siting and Design
_____ Section 7.5.2 – Wildlife Crossings
_____ Section 7.5.3 – Construction
_____ MSHCP Appendix C/BMPs

Survey Requirements

Section 6.1.2: Riparian, Riverine, Fairy Shrimp and Vernal Pool Habitats

Attach biological report(s) addressing the presence/absence of the following:

Does the project footprint impact riparian habitat? _____

Does the project footprint impact riverine habitat? _____

Does the project footprint impact vernal pools? _____

Does the project footprint impact fairy shrimp? _____

If yes to any of the above, attach a DBESP.

Does the project footprint impact (directly or indirectly) suitable habitat for species listed in Section 6.1.2?

_____ Yes: Attach focused surveys.
_____ No: Attach documentation.

Public Projects
Joint Project Review Form

Section 6.1.3 – Narrow Endemic Plant Species Survey Area (NEPSSA)

Is the project subject to NEPSSA surveys? _____

If yes, **attach Habitat Assessment and any relevant Focused Surveys**.

Attach DBESP if 90% of the habitat with long term conservation value is NOT being avoided.

Section 6.3.2 – Additional Species Surveys

Is the project subject to surveys? _____

If yes, **attach Habitat Assessment and any relevant Focused Surveys**.

Attach DBESP if 90% of the habitat with long term conservation value is NOT being avoided.

Section 6.1.4 – Urban Wildlands Interface Guidelines

_____**Attach documentation** how project is consistent with this Section of MSHCP.

Mitigation

(check one)	Project Type	Method of Mitigation
	Maintenance/Safety per Section 7.2.1, 7.3.4 of MSHCP	Exempt
	Transportation Infrastructure	Regional payments from Measure A/TUMF or Caltrans mitigation bank
	Public Infrastructure on PQP Lands	purchase and dedication of lands with equivalent or superior conservation value at no less than 1:1
	Public Facilities	payment of MSHCP Fee at commercial/industrial per acre rate
	Flood Control	3% of capital costs, may be offset by replacement or creation of habitat
	Parks	1:1 replacement habitat and/or payment of MSHCP Fees (commercial/industrial per acre rate)
	Waste	landfill tipping fees

APPENDIX D

FOCUSED SURVEY REPORTS

APPENDIX F:

DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

GREEN RIVER ROAD WIDENING

CITY OF CORONA

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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LSA Project No. ABE0701

LSA

December 3, 2009

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PURPOSE

LSA Associates, Inc. (LSA) was retained by Armstrong & Brooks Consulting Engineers, Inc. to conduct several biological surveys for the approximately one-mile-long Green River Road Widening Project, east of the Green River Road/State Route 91 (SR-91) interchange and west of Palisades Drive, in the City of Corona, Riverside County. The project study area contains several ephemeral drainages and associated transitional upland and riparian vegetation. Thus, in compliance with Section 6.1.2 of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), this report will document the feasible alternative and mitigation measures for unavoidable impacts to riparian/riverine areas.

The purpose of this Determination of Biologically Equivalent or Superior Preservation (DBESP) report is to discuss the functions and values of the riparian/riverine areas in the project study area; to describe the most practicable alternative; to provide specific quantities of direct impacts; and to document a determination of equivalent preservation for the mitigation measures designed for the project.

1.0 PROJECT DESCRIPTION

1.1 PROJECT LOCATION

The proposed project is located in the City of Corona, California, and consists of the widening of Green River Road for approximately 4,950 feet between SR-91 and Palisades Drive. The project is located on a portion of Sections 29 and 30, Township 3 South, Range 7 West, as shown on the U.S. Geological Survey (USGS) *Prado Dam, California* 7.5-minute quadrangle, as shown in Figure 1. (Note: Appendix A contains all referenced figures.)

1.2 PREFERRED PROJECT

The project is limited to smallest extent possible to meet the project need and purpose. The purpose of the proposed project is to alleviate existing and future traffic congestion along Green River Road. The impacts to the drainages and associated vegetation are limited to the smallest area feasible. The culvert extensions are restricted to the edge of fill necessary for the two additional lanes. Equipment access is limited to one track in front of the riprap pads. The preferred project has been contemplated and accounted for in the City's General Plan Circulation Element.

Within the project limits, existing Green River Road is approximately 79 feet curb-to-curb and includes four lanes. Green River Road currently has two eastbound and two westbound travel lanes within the project limits. The two eastbound travel lanes start at the Green River Road/SR-91 ramps and continue to Palisades Drive. The two westbound lanes start at Palisades Drive and continue to the SR-91 ramps.

The typical cross-section proposed for widening Green River Road between SR-91 and Dominguez Ranch Road (approximately 1,985 feet) includes a curb-to-curb distance of 100 feet and a right-of-way of 130 feet. The proposed cross-section between Dominguez Ranch Road and the east project limits (approximately 3,640 feet) will be widened 7 feet to the south side of Green River Road and will allow for two additional 11-foot travel lanes for a total of 86 feet curb-to-curb and a right-of-way of 108 feet.

Implementation of the proposed project would result in Green River Road having two lanes in the eastbound direction from the Green River Road/SR-91 Interchange eastbound off-ramp to Fresno Canyon Road. After Fresno Canyon Road, a third travel lane will be added to Green River Road and will continue to Palisades Drive. Implementation of the proposed project would also result in Green River Road having three lanes in the westbound direction from Palisades Drive to Dominguez Ranch Road. After Dominguez Ranch Road, the inside lane would be a "freeway only" lane that will merge onto the westbound SR-91 on-ramp. The two outside lanes will remain through lanes across the existing bridge.

Implementation of the proposed project would include the following:

- Widening of Green River Road from varying roadway widths to an arterial street with a cross-section of six (6) lanes;
- Curb and gutter;
- Sidewalks
- Utility relocation;
- Storm drain laterals;
- Culverts;
- Installation of a new traffic signal system at the intersection of Green River Road and Palisades Drive; and
- Traffic signal modification at the intersection of Green River Road and Dominquez Ranch Road.

Green River Road is generally an east-west, four-lane, divided roadway west of Palisades Drive in the City of Corona. The speed limit on Green River Road is 45 mph and parking is not permitted on either side of the roadway. Green River Road is designated as a 6-lane Major Arterial west of Palisades Drive and a 4-lane Major Arterial east of Palisades Drive in the City's General Plan Circulation Element. The ramp intersections at Green River Road and SR-91 are signalized intersections. The recently completed Green River Road/SR-91 interchange improvement project (Corona, RCTC, Caltrans project) has replaced and reconstructed the interchange bridge, including widening of the bridge from 3 to 6 lanes. The interchange improvement project also made modifications to the Green River Road/SR-91 eastbound and westbound ramps and was completed in December 2008.

For purposes of analysis, the project study area is the broader area of the project's indirect impacts while the project footprint is the area defined by the project's direct impacts. For this document, the project footprint is considered to be the area needed to widen Green River Road. This area includes the land associated with the construction required to widen Green River to its ultimate build out width as well as other roadway facilities (e.g., curb and gutter) associated with the widening of Green River Road.

1.3 WHY THE AVOIDANCE ALTERNATIVE IS NOT FEASIBLE

The current project is designed to minimize impacts to adjacent land as much as possible. The Avoidance Alternative would actually be no construction. The existing road cannot accommodate additional lanes within the existing footprint. The No Project Alternative would maintain the current configuration of Green River Road in the project area. Under this alternative, there would be no additional lanes. Though smaller, localized projects could be considered, approved, and implemented on their own merits, no major corridor improvements to Green River Road would be implemented. In its existing condition, Green River Road does not have the capacity to accommodate the increased traffic use caused by City residents and by commuters using the road as a bypass route around SR-91 congestion. Continuing congestion with degraded levels of service (LOS) would be expected under the No Project Alternative.

2.0 BIOLOGICAL SETTING

2.1 METHODS

A literature review was conducted to determine the existence or potential occurrence of sensitive plant and animal species on or in the vicinity of the project site. Database records for the *Corona North, California; Corona South, California, Prado Dam, California;* and *Black Star Canyon, California* USGS 7.5-minute quadrangles were searched on July 10, 2007, using the California Department of Fish and Game (CDFG) Natural Diversity Data Base application *Rarefind 3* (version 3.1.0, dated February 3, 2007) and the California Native Plant Society (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (online edition, v7-07d, 2007, http://www.cnps.org/inventory).

Aerial photographs (1952, 1962, 2006, and 2007) were reviewed and maps of U.S. Fish and Wildlife Service (USFWS) designated critical habitats were used to determine the locations of critical habitats relative to the project site. Volume 1 of the *Western Riverside County Multiple Species Habitat Conservation Plan* was also used to prepare the report. Soil information was taken from *Soil Survey of Western Riverside Area, California* (A.A. Knecht 1971).

2.1.1 Field Reconnaissance and Focused Surveys

General field surveys were conducted on June 28, 2007, by LSA biologist Stanley Spencer and on July 26, 2007, by LSA biologists Stanley Spencer and Paul Kielhold. Follow-up visits were made by Stanley Spencer on August 7, 2007, and February 13, 2008, to evaluate areas added to the study area due to project refinements. These surveys constituted 100 percent survey coverage of the project site. Notes were made on general site conditions, vegetation, potential jurisdictional waters of the U.S., and suitability of habitat for various sensitive elements. All plant and animal species observed during field surveys were noted. A burrowing owl (*Athene cunicularia*) burrow survey was conducted by Stanley Spencer on June 28, 2008. Dr. Spencer also conducted a Narrow Endemic Plant Species Survey for Brand's phacelia (*Phacelia stellaris*) on March 26, 2008. A delineation of potential jurisdictional waters and riparian areas was completed by LSA biologists Maria Lum and Sarah Barrera on June 23 and July 9, 2008. Riparian bird survey was conducted from April to July 2008 by LSA biologists Richard Erickson and Ingri Quon, and independent consultant James Pike. Table A summarizes the site visits. (Note: Appendix B contains all referenced tables.)

2.1.2 Vegetation Mapping

The extent of vegetation and land uses was mapped on a current aerial photograph during the field visits. The various areas were then digitized and converted into GIS shape files. Vegetation community classifications used in this report were *The Vegetation Classification and Mapping Program List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Data Base* (CDFG 2008) and Holland's (1986) vegetation community descriptions.

2.1.3 Species Associated with Riparian/Riverine/Vernal Pool Surveys

2.1.3.1: Riparian Birds. A habitat assessment for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) was conducted on March 19, 2008, by LSA biologists Richard Erickson and Stanley Spencer. All areas mapped as riparian forest and riparian scrub were evaluated for habitat suitability.

Surveys were conducted for riparian birds by LSA biologists Richard Erickson and Ingri Quon (LSA FWS Permit No. TE-777965-8), and independent consultant James Pike (FWS Permit No. TE-832946-3 and temporary CDFG authorization). The permitted biologists completed the surveys between April 15 and July 15, 2008.

2.1.3.2: Vernal Pools. There are no vernal pools or similar habitats present on the project site; therefore, no surveys for sensitive fairy shrimp species will be required. No suitable conditions (soil, topography, or drainage patterns) are present for the formation of vernal pools. The project is not located in an MSHCP species survey area for vernal pool endemic plants.

2.1.3.3: MSHCP Species Survey Areas. The project site is within MSHCP survey areas for three Narrow Endemic Plant Species Survey Area (NEPSSA) species (Area ID 7); however, suitable habitat does not exist on the site for two species, San Diego ambrosia (*Ambrosia pumila*) and San Miguel savory (*Satureja chandleri*). A focused survey for Brand's phacelia was conducted on March 26, 2008, by LSA biologist Stanley Spencer. This survey was limited to potentially suitable habitat within the Fresno Canyon drainage, consisting of 0.01 acre of riparian scrub. The species was determined to be absent. No mitigation is required.

2.1.3.4: Delineation of Waters of the U.S. and Streambeds of the State. A routine wetland delineation was conducted by Sarah Barrera and Maria Lum on June 23, 2008, and by Maria Lum on July 9, 2008. Areas of potential jurisdiction were evaluated using to the U.S. Army Corps of Engineers (ACOE) 1987 Manual, Arid West Regional Supplement, 1988 wetland indicator plant list, current hydric soils list and criteria, Federal Clean Water Act (CWA) Guidance for implementing *Rapanos* and *Carabell* Cases (ACOE 2007), and California Fish and Game Code. An ACOE Wetland Delineation Manual *Data Form 3: Atypical Situations* was also completed to summarize the altered state of hydrology, vegetation, and soils on the project site.

The entire study area was surveyed on foot for potential wetland and non-wetland jurisdictional waters as well as streambed and riparian resources. Representative photographs of potential jurisdictional waters were taken during each of the field surveys. An aerial photograph was used to assist in mapping field conditions and for taking field notes.

The limits of ACOE and CDFG jurisdictional areas (bed, banks, wetland, and riparian) were digitized using Geographic Information System (GIS) software based on the plotted locations of measured widths from global positioning system (GPS) data collected in the field. Streambed widths, bed-and-bank, and ordinary high water marks were measured with cloth field tape in the field. The field data were compiled using GIS software in the office. Wetland and riparian areas were mapped in the field using GPS. The canopy of plant species typically associated with riparian habitat is also subject to

CDFG jurisdiction. Such riparian vegetation was mapped by walking the perimeter of the habitat with a GPS unit. The data were corrected by post-processing and then areas and linear distances were calculated. Lastly, maps and figures were produced.

2.2 EXISTING CONDITIONS

2.2.1 Environmental Setting

The project is located in an urban and developed area in the southwestern section of the City of Corona. The road is located in the canyon pass between foothills of the Santa Ana Mountains, parallels the Santa Ana River, and is below Prado Dam. The project is located east of the Riverside County-Orange County boundary and west of SR-71/Green River Road intersection with SR-91.

2.2.2 On-Site Land Uses

The study area is centered on an approximately 3-mile segment of Green River Road. It includes the road segment itself, as well as adjacent commercial development, residential and commercial landscaping, and disturbed open space.

2.2.3 Soils

The soils within the study area, as mapped by the Natural Resources Conservation Service (NRCS), are Altamont clay, Arbuckle loam, Cortina cobbly loamy sand, Garretson very fine sandy loam, Garretson gravelly very fine sandy loam, Perkins gravelly loam, and Terrace escarpments (*Soil Survey for Western Riverside Area, California*, A.A. Knecht 1971). Refer to Figure 2, Sheets 1 and 2.

With the exception of some areas mapped as Garretson very fine sandy loam and a small area mapped as Cortina cobbly loamy sand within the Fresno Canyon drainage (Drainage 6), all areas of the site have been developed, graded, or otherwise altered and may not currently have the surface soils indicated in the mapping.

The soils within all of the streambeds to be developed and immediately upstream of the study area are non-hydric soils per the NRCS National Hydric Soils List. The one hydric soil mapped on site, Cortina cobbly loamy sand, occurs within the Fresno Canyon drainage, which will not be subject to impacts from the proposed project. Table B lists the soil types with descriptions that are mapped in the study area and the status of each from *Hydric Soils for Western Riverside Area,* 1992. The soils observed on the project site are similar to the soil types mapped by the NRCS. The soils in Drainages 1, 2, 3, 4, and 6 are coarse to fine sand with little organic matter accumulation.

2.2.4 Topography and Hydrology

The site elevation ranges from approximately 500 to 530 feet above mean sea level. The site is generally flat and level. It is traversed by a drainage out of Fresno Canyon and other smaller drainages. The study area is highly developed and the natural drainage pattern has been historically altered for several decades. Development within and adjacent to the project study area includes Green River Road commercial centers, a horse ranch, landscaping, and disturbed vacant lands. Several storm

drain structures that convey flows from the road directly into a subsurface storm drain system, including inlets and drop structures, occur in the median and on the sides of Green River Road.

All of the drainages within the study area have been modified to accommodate runoff from Green River Road, nearby railroad tracks, and commercial development. Modifications include culverts directing flows under Green River Road and the railroad tracks, storm drains, concrete support structures, rock riprap, and vegetation removal. Concrete culverts dated 1930 and 1931 were observed during the field survey, indicating that some of the drainages were modified at that time for either construction of Green River Road or railroad tracks. LSA biologists researched archival aerial photographs at Riverside County Flood Control and Water Conservation District office to determine past land uses in the area. The earliest aerial photograph available is from 1952. A paved road and the railroad tracks already existed in the study area at that time. Most of the adjacent property was undeveloped, although it appears that some of the land west of the Santa Ana River and along Green River Road was used for agriculture. Green River Road was realigned to accommodate SR-91 through Corona, which opened in 1963. Urban development in the City, including housing developments conveying runoff into the study area occurred in the 1980s and the commercial centers along Green River Road were developed during the 1990s.

Ground surface cover in the study area consists of developed land, ruderal, and landscaped vegetation, and small portions of exposed soil. Refer to Figure 2, Sheets 1 and 2, for an aerial photograph of the project site with site photograph key map.

2.3 RIPARIAN/RIVERINE RESOURCES

2.3.1 Riparian/Riverine Area Descriptions

The project intersects seven drainage courses. The drainage courses are then diverted into concrete-lined channels or culverts that outlet north of SR-91. The vegetation growing within the streambed in Drainages 1, 2, 4, and 6 consists of mainly upland plants similar to those in adjacent upland areas. The four areas of riparian scrub or isolated willow and elderberry trees would be disturbed by the proposed project. The plant species associated with riparian habitat are located in Drainages 2, 3, 4, and 5. Drainage 6 is Fresno Canyon and the storm drain in Drainage 7 empties into Wardlow Wash north of Palisades Drive. Refer to Figure 5. The total area of riparian/riverine vegetation in the project study area is 0.22 acre. Refer to Table B for summary of vegetation areas in the project study area. The total impact area within the project site (temporary and permanent impact areas) is 0.27 acre within ephemeral drainages with upland and transitional vegetation and also intermittent and perennial vegetation with riparian scrub and willows. Refer to Table C and Figure 6 for specific project impact areas.

2.3.1.1: Drainage 1. Drainage 1 is an ephemeral drainage with an earthen bottom diverted under Green River Road through a 4-foot CMP with a concrete headwall and riprap pad at the outlet at north side of Green River Road. Vegetation within Drainage 1 consists entirely of upland vegetation including short-pod mustard (*Hirschfeldia incana*) and tocalote (*Centaurea melitensis*). This drainage originates in the foothills of the Santa Ana Mountains south of the project site, and extends to the Santa Ana River less than one mile north of the project site. Drainage 1 is within the study area and a

small area (0.01 acre) previously disturbed by the interchange project will be improved by the proposed project.

2.3.1.2: Drainage 2. Drainage 2 is an ephemeral drainage with an earthen bottom that originates in the Santa Ana Mountains south of the project site. It is diverted under Green River Road through a 4-foot RCP and a concrete head wall. The pipe starts south of Green River Road and ends north of Green River Road with riprap pad at the outlet. The drainage has an earthen bottom with upland vegetation in the drainage course and adjacent riparian scrub to the west in the historic streambed. Drainage 2 has a portion of riparian scrub to the east of the culvert that is growing as a result of ponding from sheet flows running over the top of Green River Road. Riparian vegetation is 0.08 acre in the project study area. Dominant species include blue elderberry (*Sambucus mexicana*) and mule fat (*Baccharis salicifolia*) as well as several species common to disturbed areas including short-pod mustard, tocalote, and eucalyptus (*Eucalyptus* spp.). Runoff flows directly to the Santa Ana River. The project will result in temporary and permanent impacts to 0.04 acre of vegetation associated with the drainage course.

2.3.1.3: Drainage 3. Drainage 3 is a constructed roadside ditch with an undefined detention area located within the project site. It is directed under Green River Road through an 18-inch RCP. Drainage 3 terminates in a detention basin between the road and railroad right-of-way, which contains riparian scrub that is growing as a result of ponding from nuisance urban runoff. It has no outlet or connection to any traditional navigable water (TNW). Dominant vegetation within Drainage 3 north of Green River Road includes mule fat, blue elderberry, branching phacelia (*Phacelia ramosissima*) and mugwort (*Artemisia douglasiana*). The south side of the drainage is mostly devoid of vegetation. This drainage originates and ends within the project right-of-way. Riparian scrub covers 0.11 acre of the project study area. The project will result in temporary and permanent impacts to 0.16 acre of the drainage course and associated vegetation.

2.3.1.4: Drainage 4. The portion of Drainage 4 on the north side of Green River Road contains hydrophytic vegetation dominated by blue elderberry, mule fat, and scalebroom (*Lepidospartum squamatum*). Drainage 4 contains riparian scrub within the streambed, as flows may pond for a period of time between the road and railroad. A 4-foot by 5.5-foot concrete channel/box culvert reinforced originates south of Green River Road and extends north of Green River Road. The drainage has an earthen bottom with upland vegetation on south side of road and riparian scrub in streambed on north side of road. This drainage originates in the foothills of the Santa Ana Mountains south of the project site, and then extends to the Santa Ana River less than one mile north of the project site. Riparian vegetation is 0.02 acre in the project study area. The project will result in temporary and permanent impacts to 0.04 acre of the drainage course and associated vegetation.

2.3.1.5: Drainage 5. Drainage 5 is a perennial drainage with surface flows that occur as a result of urban runoff. It originates in the Santa Ana Mountains south of the project site, is diverted underground south of Green River Road to accommodate a commercial development, and emerges out of a 4-foot CMP with concrete headwall north of the road. Although Drainage 5 is a wetland and had surface water at the time of the survey, very little riparian vegetation grew within the streambed

due to the fabric-lined riprap pad. On the channel banks and in the adjacent upland areas, a small amount of riparian scrub is present consisting of a few Goodding's willows (*Salix gooddingii*) with mature eucalyptus trees intermixed. This drainage originates in the foothills of the Santa Ana Mountains south of the project site, and then extends to the Santa Ana River less than one mile north of the project site. The project will result in temporary and permanent impacts to 0.02 acre of the drainage course and associated vegetation. This is the total area within the project study area.

2.3.1.6: Drainage 6. Drainage 6 is a naturally occurring, modified, earthen-bottom drainage that conveys flows out of Fresno Canyon and eventually into the Santa Ana River. Fresno Canyon south of Green River Road is a braided wash with terraces, riparian scrub, woodland, and upland vegetation. Adjacent to the south side of Green River Road, Fresno Canyon wash supports alluvial and coastal sage scrub. The sparse clumps of mule fat adjacent to the channel structure are supported by water in a side drain from Nicolas Place Road. This small cluster of plants does not provide suitable habitat for sensitive riparian birds. On the north slope of Green River Road, eucalyptus trees were planted in the right-of-way. The 10-foot by 10-foot reinforced concrete box culvert is several feet lower than the road elevation north of Green River Road. Drainage 6 is within the study area but will not be affected by the proposed project. The existing storm drain that outlets into the Fresno Canyon concrete channel will not be modified or extended in the road right-of-way or in the wash. There was minimum of 0.004 acre of Fresno Canyon actually within the project study area.

2.3.1.7: Drainage 7. Drainage 7 is a naturally occurring drainage or swale that has been confined and diverted into a concrete v-ditch. It extends along Green River Road from south to north and eventually passes underneath the road via a storm drain. The ditch is 0.0013 acre within the project study area. This drainage will not be affected by the proposed project.

2.3.2 Wildlife Species Functions and Values Assessment

During the 2008 focused riparian bird survey, no willow flycatchers or Least Bell's vireos (LBV) were observed or otherwise detected within the Green River Road Widening project limits, but the LBV was observed in adjacent Wardlow Wash. The male LBV was observed 250 feet north of Green River Road in the confluence of Fresno Canyon with Wardlow Wash.

2.3.3 Ecological Processes Functions and Values Assessment

The project is located within the 1.82 million-acre Santa Ana River watershed (hydrologic unit 180.70.203). The drainage area of the project site drains from south to north, through a system of earthen-bottomed drainages, concrete and CMP culverts, and storm drains. Surface water in the study area is diverted into City of Corona storm drains and eventually discharges into the Santa Ana River via the Wardlow Wash Flood Control Channel. The Santa Ana River is a relatively permanent water (RPW) that is tributary to the Pacific Ocean, a navigable water of the U.S. Hydrology information for the project site was obtained from the City of Corona Drainage Master Plan (2003) and a hydrology study conducted by Armstrong & Brooks Consulting Engineers (2008). The entire drainage area of which the project site is a part is approximately 3,987 acres, calculated by adding up the drainage area west of Wardlow Wash and south of the Santa Ana River. The developed area south of the project site

contributes an estimated Q_{10} = 2,066 cubic feet per second (cfs) and Q_{100} = 3,468 cfs. All of the calculated flow rates are for a six-hour period.

The project site is an existing heavily used four-lane road within a developed area in the City of Corona. Bare ground, developed areas, and ornamental landscaping are present in the project site. Habitat value is present in the existing eucalyptus groves and ornamental landscaping as roosting and nesting sites for migratory birds and cover for wildlife movement between the city roads, state highways, railroads, and adjacent development sites. The project site also includes infiltration areas for surface runoff, retention of sediment, other water contaminants, and precipitation. The trees buffer dust and trash from entering the adjacent natural areas between the railroad and SR-91. The earthen drainage courses, road shoulders, and riparian vegetation at the project site trap and deposit sediment and organic matter from the horse ranch. The detention basin in Drainage 3 and the ponding area in Drainage 4 allow sediment and contaminants to remain in the developed right-of-way between the road and railroad. The larger reinforced concrete box culverts in Drainage 2, Drainage 4, and Drainage 6 provide an opportunity for wildlife species to move under the road, although the at-grade road can just as easily be crossed overland.

3.0 UNAVOIDABLE IMPACTS TO RIPARIAN/RIVERINE AND VERNAL POOL AREAS

3.1 DIRECT EFFECTS

3.1.1 Riparian/Riverine Areas

An estimated 0.19 acre of riparian vegetation will be subject to permanent impacts from construction activities and 0.08 acre will be temporarily disturbed due to equipment access across the drainages. A larger drainage out of Fresno Canyon will not be affected. Additional vegetation temporarily and permanently affected within the project site includes 2.83 acres of nonnative annual grassland and 18.11 acres of developed or other disturbed (no vegetation) land. Refer to Figure 3, Sheets 1 and 2: Impacts to Vegetation Communities and Land Covers.

The project intersects seven drainage courses. The drainage courses are then diverted into concrete-lined channels or culverts that outlet north of SR-91. The vegetation growing within the streambed in Drainages 1, 2, 4, and 6 consists of mainly upland plants similar to those in adjacent upland areas. The four areas of riparian scrub or isolated willow and elderberry trees would be disturbed by the proposed project. The plant species associated with riparian habitat are located in Drainages 2, 3, 4, and 5. Drainage 6 is Fresno Canyon and the storm drain in Drainage 7 empties into Wardlow Wash north of Palisades Drive. Refer to the Figure 5 for drainage locations.

The total impact area within the project site (temporary and permanent impact areas) is 0.27 acre. These areas are marginally suitable or low habitat quality for least Bell's vireo due to the limited extent of the riparian vegetation and its relative isolation from larger riparian areas.

Based on the draft grading plans available to date, the project will result in 0.08 acre of temporary and 0.19 acre of permanent impacts to drainage courses and associated vegetation (i.e., CDFG jurisdiction). Drainages 1 and 2 are ephemeral drainages with earthen bottoms.

Drainage 1 was previously cleared during the Green River Road/SR-91 interchange project. This project will not create any additional impacts to vegetation. There is the possibility of 0.01 acre of temporary impacts to a maintained drainage.

The project will result in temporary impacts to 0.03 acre of transitional riparian vegetation associated with Drainage 2. Permanent impacts will involve 0.01 acre for culvert extension and riprap pad. This vegetation was cleared in summer of 2009.

Drainage 3 is a constructed roadside ditch with an undefined detention area located within the project site. This drainage originates and ends within the project right-of-way. Impacts to Drainage 3 will permanently alter 0.15 acre and cause 0.02 acre of temporary impacts.

The portion of Drainage 4 on the north side of Green River Road contains riparian vegetation. The project will result in minimal temporary impacts (0.01 acre) and permanent impacts (0.02 acre) to Drainage 4 and associated vegetation.

The project will result in 0.01 acre of temporary or permanent impacts of Drainage 5 and the associated vegetation. A list of the temporary and permanent impacts along with brief description of the vegetation in each drainage is provided in Table C.

3.1.2 Vernal Pools

No suitable conditions (soil, topography, or drainage patterns) are present for the formation of vernal pools. The project is not located in an MSHCP species survey area for vernal pool endemic plants.

3.1.3 Listed Fairy Shrimp Habitat

No suitable habitat is present. No focused surveys are required.

3.2 INDIRECT EFFECTS

3.2.1 Effects on Riparian Linkages and Function of the MSHCP Conservation Area (Fresno Canyon)

The project will have minimal effect on the function of Fresno Canyon. Impacts will be temporary to adjacent ornamental landscaping, which will be replaced with native or drought-tolerant plants per MSHCP Guidelines. Trees will be replanted in the landscaping areas above Fresno Canyon to provide a buffer along the road corridor and a flight way for birds over the road. The wash itself will continue to function in its pre-construction capacity as a passageway for organic material, sediment, seeds, reptiles, amphibians, and mammals.

3.2.2 Effects on Function of Downstream Drainages

The increased impervious area of the road will increase runoff velocity and peak flows, but will reduce infiltration and duration. All street runoff will be directed to the City stormwater infrastructure and requires compliance with City Drainage Area Master Plan (DAMP) and Municipal Separate Storm Sewer System (MS4) permit. The project does not include any structures to slow or redirect storm water flow once it enters the natural drainage courses. The higher volume and flow rates could cause increased erosion of soil and riparian vegetation. Sedimentation of downstream wetland areas and streambeds could occur.

The Green River Road project has potential to temporarily affect the functions and values of the riparian habitat in downstream tributaries to and including the Santa Ana River. The downstream impacts will be negligible with implementation of construction BMPs, compliance with water quality regulations, and minimizing disturbance to soil and vegetation.

3.3 RATIONALE WHY AVOIDANCE ALTERNATIVE IS NOT POSSIBLE

The Green River Road Widening Project is designed to avoid direct impacts to existing MSHCP Conserved Land and to minimize impacts to riparian/riverine areas. The riparian/riverine area in Fresno Canyon will not be affected since the project will not need to extend culverts or fill slopes into the canyon below Green River Road.

The project is designed to comply with the currently planned road improvements approved covered under the MSHCP. The existing alignment of Green River Road is part of the City of Corona General Plan Roads and the County or Riverside Circulation Element were reviewed and accepted as covered projects during the development of the MSHCP. Road widening will be limited to the existing right-of-way with previously disturbed vegetation and modified topography.

An avoidance alternative or different alignment outside of the existing right-of-way would eliminate the project entirely, since greater impacts would be incurred with an alternative alignment next to Green River Road.

4.0 MITIGATION MEASURES

4.1 MITIGATION FOR DIRECT EFFECTS

Impacts are to four ephemeral drainages and one perennial drainage associated with a storm drain outlet. The project will cause a permanent to impact 0.19 acre of associated vegetation and cause a temporary impact to 0.08 acre of associated vegetation. Figure 3 shows map of the drainages and vegetation associated with the channels.

The preferred project has been contemplated and accounted for in the City's General Plan Circulation Element. The project is limited to smallest extent possible to meet the project need and purpose. The purpose of the proposed project is to alleviate existing and future traffic congestion along Green River Road. The impacts to the drainages and associated vegetation are limited to the smallest area feasible. The culvert extensions are restricted to the edge of fill necessary for the two additional lanes. Equipment access is limited to one track in front of the riprap pads.

Fifty elderberry trees, along with other native trees and shrubs, will be planted in the temporary impact areas and landscaping along Green River Road. Michael Flores, CDFG Streambed Alteration Team, requested 5:1 replacement ratio for elderberry trees. Ten mature elderberry trees will be removed for the road and culvert improvements. The replacement native landscape will total 0.51 acre to mitigate for the temporary and permanent impacts to CDFG jurisdictional area at a 2:1 ratio. Trees will be replanted in the landscaping areas above Fresno Canyon to provide a buffer along the road corridor and a flight way for birds over the road. The on-site mitigation measure is adequate for the existing conditions on the project site. The vegetation will be higher quality habitat due to regular irrigation. Refer to Figure 8 for illustration of the on-site mitigation.

If additional mitigation area is recommended by reviewing agencies, then a conceptual riparian habitat mitigation plan will be proposed to the City of Corona and the Regional Conservation Authority (RCA) for approval prior to proceeding with the preparation of a comprehensive mitigation and monitoring plan, which would describe the plan specifications, as well as the maintenance and monitoring requirements. The additional or alternative mitigation site is located at the south end of Fresno Canyon. There are level areas that can be planted with riparian trees and scrubs. There is a 0.55-acre area available. Perennial water is in the creek and irrigation is available from the adjacent landscaping infrastructure. The mitigation plan will be subject to final approvals from City of Corona, the RCA, and the ACOE under MSHCP Guidelines, Clean Water Act Section 404 permitting requirements, and California Fish and Game Code Section 1602 streambed alteration agreement terms and conditions. Figure 9 shows the location of the off-site mitigation alternative in the south end of Fresno Canyon.

4.2 MITIGATION FOR INDIRECT EFFECTS

4.2.1 Urban/Wildlands Interface Analysis

4.2.1.1: Drainage. All runoff from the new paved areas will be directed into storm drains. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared to satisfy National Pollutant Discharge Elimination System (NPDES) requirements. No alteration, modification, or expansion to the existing City-owned, operated and maintained MS4 is included as part of the Green River Road Widening Project.

Construction erosion control best management practices (BMPs) to be implemented include preserving existing vegetation when feasible, temporary erosion control per California Stormwater BMPs Handbook, seeding inactive areas immediately, and application of permanent erosion construction upon completion of construction. More information can be obtained from the SWPPP prepared by Armstrong & Brooks Consulting Engineers (2009). Implementation tasks include hydroseeding, fiber rolls, gravel bag berms, street sweeping, vacuuming, sand bag barrier, tire wash, dust suppression (water truck), spill avoidance and containment, stockpile protection, concrete waste management, waste collection, and contractor education.

Post-construction measures include street maintenance, sidewalk cleaning, landscape maintenance, drainage/stormwater system maintenance, and annual replacement of drain inlet filter.

The SWPPP WDID No. is 8-33C355208. Project-related permits include RWQCB Order No. 99-08-DWQ and NPDES General Permit No. CAS000002. The California Department of Water Quality has adopted a new Construction General Permit 2009-0009-DWQ. It will be in effect on July 1, 2010. The project will require the new permit in 2010 to continue work for the remainder of the year. Projects under construction are exempt from Risk Determination until September 2, 2011.

4.2.1.2: Toxics. Expected and potential pollutants from landscaping are sediment, nutrients, oxygen-demanding substances, and herbicides/pesticides. Expected and potential pollutants from vehicles are organic compounds, metals, and oil/grease; and from pet waste are bacteria/virus pathogens.

The project-specific Water Quality Management Plan (WQMP) prepared by Armstrong & Brooks Consulting Engineers (2009) describes project BMPs to minimize impacts to water quality. The existing and relocated catch basins will have a drain insert (Flow Guard Plus) to treat the storm runoff for sediment, and partially treats nutrients, trash/debris, metals, organics, and oil/grease. Inspection and maintenance will occur quarterly by the City of Corona. Applicable site design BMPs are maximizing permeable area, landscaped buffer areas (parkways), preserving existing vegetation and planting additional native or drought-tolerant plants, and use of natural drainage systems. Landscaping will buffer drainage in the road median and between sidewalks and streets. Existing trees will be avoided and additional native plants will be planted. Natural or earthen drainage systems will be used. Inspections and maintenance will be conducted quarterly by the City of Corona. Application of chemicals will be consistent with labeling. Concrete washout stations will be at least 50 feet from storm drains, ditches, drainage courses, or streambeds.

4.2.1.3: Lighting. Shielding shall be incorporated in project designs to ensure that ambient lighting in the MSHCP Conservation Area is not increased. The project will not place additional lighting at Fresno Canyon overpass.

4.2.1.4: Noise. A noise study for the project has not been conducted as of this date. The Initial Study prepared by LSA Associates, Inc. (2009) states the widened Green River Road is not anticipated to increase traffic volume with the additional lane capacity, but is being built to accommodate traffic volumes already occurring at the SR-91 interchange. City noise standards require noise levels remain below 65 dBA CNEL. This standard is consistent with noise standards for projects located adjacent to MSHCP Conservation Areas. Noise levels may already exceed the residential noise level standard due to the existing traffic conditions on Green River Road and SR-91, however.

4.2.1.5: Invasive Species. MSHCP Table 6-2 contains a list of plants to be avoided adjacent to the MSHCP Conservation Area. For portions of the project that are adjacent to the Fresno Canyon, these species will not be part of the project design or landscape plans. Any of these undesirable plants in the existing landscaping will be removed, wherever possible, and replaced with native and drought-tolerant plants that are consistent with the MSHCP.

4.2.1.6: Barriers. The proposed project would not create new means of accessing adjacent natural areas and would reduce vehicular access to such areas by eastward extension of curb and gutter and an asphalt concrete berm. A temporary exclusionary fence will be installed between the work area and natural areas to be avoid prior to construction.

4.2.1.7: Grading/Land Development. Manufactured slopes associated with proposed site development will not to extend into the MSHCP Conservation Area in Fresno Canyon. All grading will be limited to the impact area depicted in Figure 4.

Erosion-control measures include leaving existing vegetation in place where feasible, use of temporary erosion control measures at regular intervals throughout the rainy season, stabilizing non-active areas, and use of designated entry points, tire wash stations, street vacuuming, dust suppression, silt fencing, sandbags, gravel bag berms, erosion-control blankets, hydroseeding using native plant species, and swales in concentrated flow areas. Permanent erosion-control measures will be installed as part of completion of construction.

Vehicle repair will occur off site or in designated separate maintenance areas located away from drainage courses. Drip pans and spill kits will be used in the construction site and staging areas.

4.2.2 Construction Guidelines and Best Management Practices

The MSHCP (Volume I, Section 7.5.1) provides construction guidelines and BMPs (MSHCP Appendix C) applicable to planned roads, including the proposed project, within the Criteria Area. These include the following:

- Water pollution and erosion control plans will be prepared in accordance with Santa Ana Regional Water Quality Control Board (RWQCB) requirements. The plans will include sediment and hazardous material control measures, and describe dewatering process and diversion structures, fueling and equipment management practices, and plant materials used for erosion control.
- The project footprint and access routes will be minimized. Limits of ground disturbance will be clearly defined in the field and verified by project biologist prior to start of work. Construction limits shall be fenced with orange snow screen and maintained until completion of the project.
- Water will be used in construction areas to control dust.
- Short-term diversion of drainages associated with road culverts will be accomplished by the use of sandbags and other minimal impact methods.
- Silt fencing and other sediment trapping materials will be used down-slope of construction activities.
- Precautions shall be taken to prevent the release of cement and other toxic substances into sensitive habitat.
- Settling ponds will be constructed and regularly maintained to prevent any sediment from entering drainage culverts and Murrieta Creek.
- No material will be deposited into water courses.
- No trash or debris or stockpiling shall be deposited outside the Area of Direct Effects (ADE).
- Equipment storage, fueling, and staging will be sited in non-sensitive upland areas which have minimal risk to discharge to sensitive habitat areas and streams.
- Fueling and equipment maintenance and storage of hazardous materials will occur only in a designated area within the grading limits that contains runoff, all spills must be cleaned up and disposed of properly and reported to City of Corona.
- No equipment is to be placed in stream bed or bank.
- Exotic species removed during construction will be properly disposed of to prevent regrowth and spreading.
- Temporary impact areas will be returned to pre-existing contours and planted with locally adapted native species.
- Avoid attracting predators or species (e.g., starlings, cowbirds, crows, ravens, raccoons; and exotic species, such as domestic pets) that displace species of concern to project site and the natural habitat areas.
- Construction personnel will receive environmental awareness training from a qualified biologist.
- Monitoring and reporting on compliance with avoidance and minimization measures and other BMPs will occur over the duration of the construction activity.
- Firefighting equipment will be available on site.
- The Permittee (City of Corona) shall have the right to access and inspect the project for compliance with project approval conditions.

- Night lighting shall be directed away from habitat areas.
- A qualified biologist will lead tailgate meetings to train construction personnel to recognize species and habitats of concern and familiarize them with applicable environmental regulations.
- Water pollution and erosion control plans will be followed per RWQCB requirements.
- Project footprint and access routes will be minimized to greatest extent possible.
- Project limits marked in the field by an exclusionary fence and the placement will be reviewed by the project biologist.
- Avoid placing of equipment, materials, and personnel in streambeds and adjacent upland habitats.
- Avoid work in riparian areas during active breeding season; typically designated as February 1 through August 31 by the CDFG. Disturbance is restricted to a minimum of 300 feet away from any active least Bell's vireo nest.
- If vegetation removal must occur during this avoidance period, then a nest survey by a qualified biologist is required. The nest survey shall be conducted for five consecutive days and no more than three days prior to clearing. If an active nest is observed, then the nest location shall be fenced off surrounding a minimum 300-foot (500 feet for raptors) radius buffer zone. The buffer zone shall not be disturbed until the nest is inactive.
- Stream diversions will be conducted using standard construction protocol acceptable to RWQCB.
- Hazardous materials, equipment repair, and fueling will occur in designated safe areas and all spills must be cleaned up and disposed of properly and reported to City of Corona.
- There is to be no erodible fill or stockpiling of debris in streambeds or banks.
- Biological monitoring will occur during vegetation removal activities.
- Temporary impacts are to be minimized to the greatest extent practicable and all temporary impact areas are to be returned to pre-existing contours and revegetated with native plants.
- Exotic plants are to be removed from the project site.
- The project site will be kept clean of food-related items.

4.3 MAINTENANCE AND MONITORING PROGRAM

The on-site and off-site mitigation plan/landscaping plan will be implemented and maintained by the City of Corona Department of Parks and Community Services. The landscaping crews will inspect the irrigation system, remove trash, check plant health, and replace plants as needed. The landscaping areas are inspected twice a week.

5.0 DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

The Green River Road Widening project will be consistent with MSHCP Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*. Plant species typically found in riparian/riverine habitat areas are present in roadside drainage courses. The riparian plants are found in the 50-foot to 200-foot wide easement area between the road and elevated railroad tracks. Project construction will disturb 0.27 acre of riparian vegetation.

Fifty elderberry trees, along with other native trees and shrubs, will be planted in the temporary impact areas and landscaping along Green River Road. Michael Flores, CDFG Streambed Alteration Team, requested 5:1 replacement ratio for elderberry trees. Ten mature elderberry trees will be removed for the road and culvert improvements. The replacement native landscape will total 0.51 acre to mitigate for the temporary and permanent impacts to CDFG jurisdictional area at a 2:1 ratio. Trees will be replanted in the landscaping areas above Fresno Canyon to provide a buffer along the road corridor and a flight way for birds over the road. Planting locations will be temporarily disturbed areas, landscaping areas on slopes, swales, and parkways. Existing non-native and ornamental plants will be removed if identified on the MSHCP *Plants Recommended to Avoid List*. The on-site mitigation measure is adequate for the existing conditions on the project site. The vegetation will be higher quality habitat due to regular irrigation. Refer to Figure 8 for illustration of the on-site mitigation.

<u>If additional mitigation area is recommended by reviewing agencies, then a conceptual riparian habitat mitigation plan will be proposed to the City of Corona and the RCA for approval prior to proceeding with the preparation of a comprehensive mitigation and monitoring plan, which would describe the plan specifications, as well as the maintenance and monitoring requirements. The additional or alternative mitigation site is located at the south end of Fresno Canyon. There are level areas that can be planted with riparian trees and scrubs. There is a 0.55-acre area available. Perennial water is in the creek and irrigation is available from the adjacent landscaping infrastructure. The mitigation plan will be subject to final approvals from City of Corona, RCA, the ACOE under MSHCP Guidelines, Clean Water Act Section 404 permitting requirements, and California Fish and Game Code Section 1602 streambed alteration agreement terms and conditions.</u>

The project landscape plan, planting specifications, and maintenance plan will be completed by the City of Corona Department of Parks and Community Services Department. The maintenance and monitoring plan will be prepared to comply with RCA, ACOE, CWA, and CDFG streambed alternation permit requirements.

Edge effects and other indirect effects to the Conserved Habitat upstream and occupied LBV habitat downstream will be mitigated by limiting the work area to within the right-of-way, minimizing intrusion into drainages, installing temporary exclusionary fencing, implementing project construction and post-construction BMPS and safe construction practices, complying with the terms and conditions of water quality control permits, installing landscaping that is compatible to native wildlife and habitats, and conducting timely inspections/maintenance of storm drain catch basins and irrigation systems.

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APPENDIX A

FIGURES

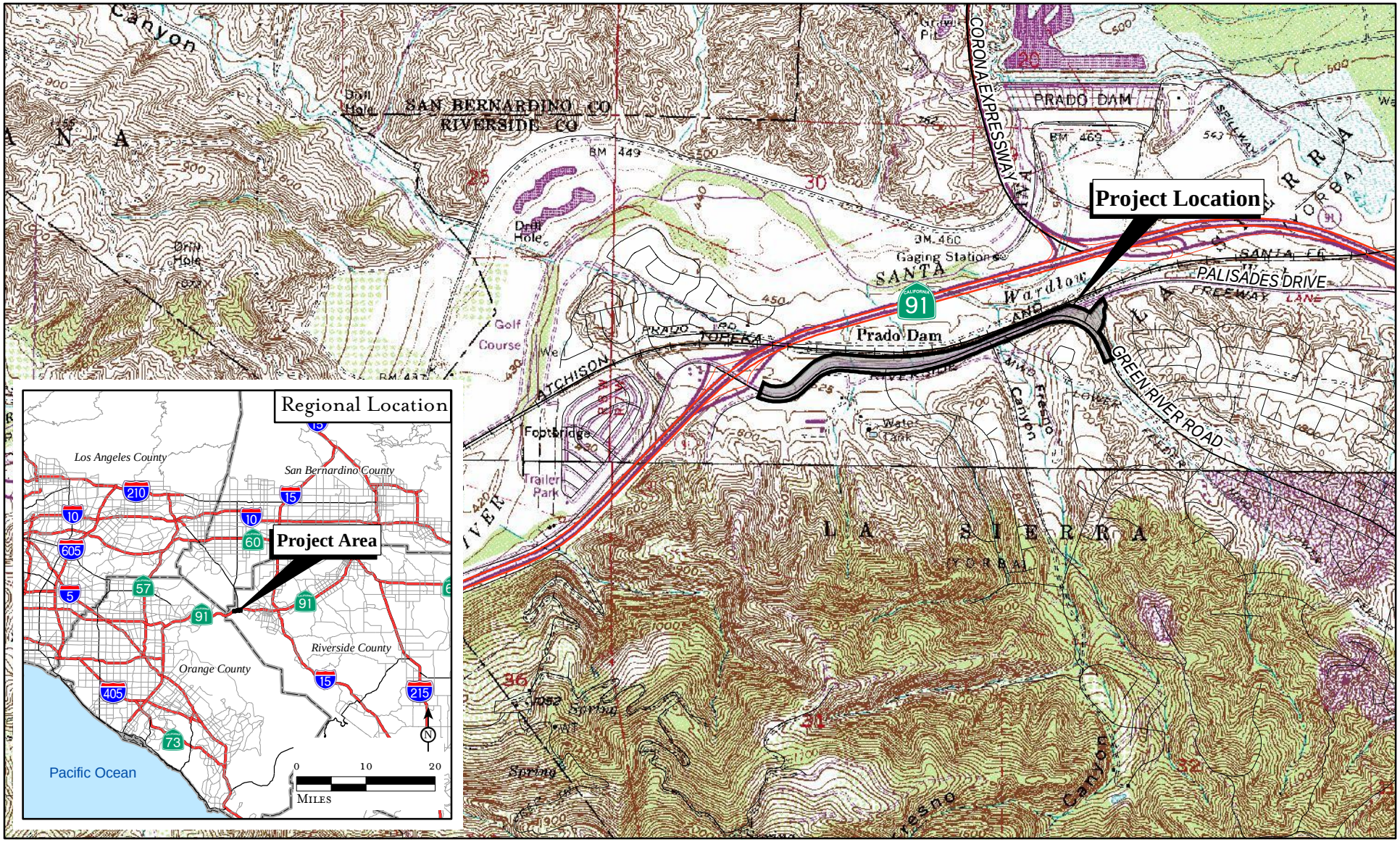

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FIGURE 1

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Regional and Project Location

SOURCE: USGS 7.5' Quads: Prado Dam (1981), Corona North (1981), Black Star Canyon (1988), Corona South (1988), CA; Thomas Bros. (2006); County of Riverside (2006).

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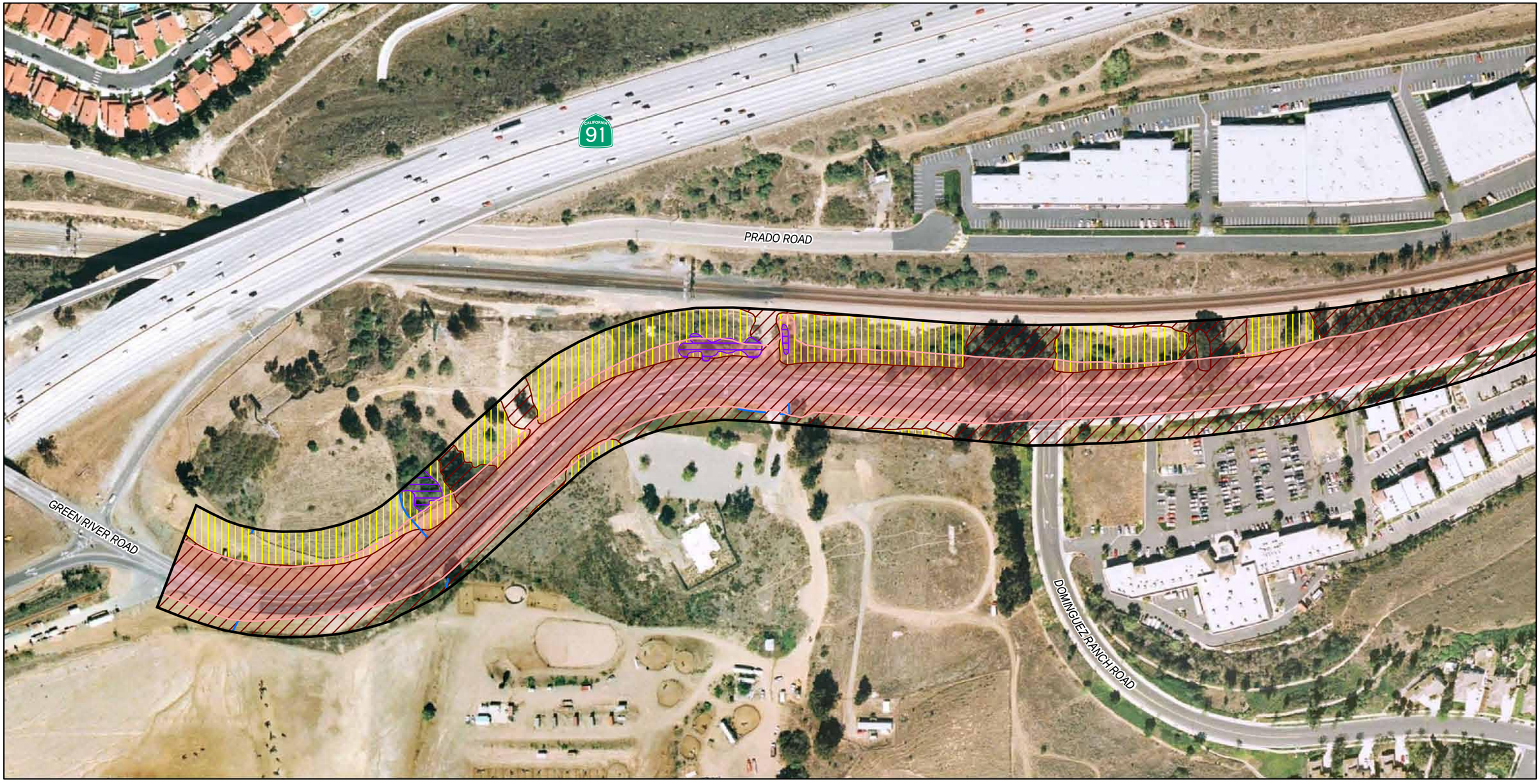

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FIGURE 2
Sheet 1 of 2

STUDY AREA
PROJECT IMPACT AREA
DRAINAGE WITH UPLAND VEGETATION

LAND COVER
DEVELOPED/RUDERAL
NON-NATIVE GRASSLAND
RIPARIAN FOREST
RIPARIAN SCRUB

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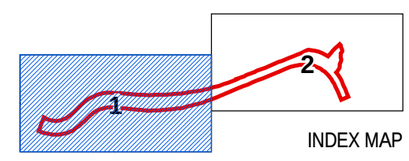

INDEX MAP

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)
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STUDY AREA

PROJECT IMPACT AREA

DRAINAGE WITH UPLAND VEGETATION

LAND COVER

DEVELOPED/RUDERAL

NON-NATIVE GRASSLAND

RIPARIAN FOREST

RIPARIAN SCRUB

N

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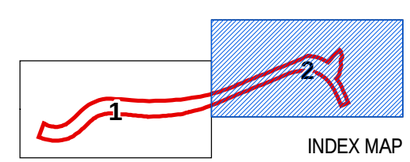

FIGURE 2

Sheet 2 of 2

Green River Road Widening

Determination of Biological Equivalent or Superior Preservation

Project Impact Area

SOURCE: AirPhoto USA (2007); Armstrong & Brooks Consulting Engineers (2007)

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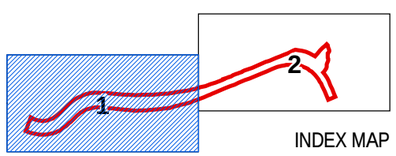
STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
- GaC, Garretson very fine sandy loam, 2 - 8 % slopes
- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
- GdD2, Garretson gravelly very fine sandy loam, 8 - 15 % slopes, eroded
- PgC, Perkins gravelly loam, 5 - 8 % slopes
- PgD2, Perkins gravelly loam, 8 - 15 % slopes, eroded
- TeG, Terrace escarpments



INDEX MAP

FIGURE 3
Sheet 1 of 2

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)

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FIGURE 3
Sheet 2 of 2

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FEET

STUDY AREA

SOIL TYPES

- AaF, Altamont clay, 25 - 50 % slopes
- AkD, Arbuckle loam, 8 to 15 percent slopes
- CmC, Cortina cobbly loamy sand, 2 - 8 % slopes
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- GaD2, Garretson very fine sandy loam, 8 - 15 % slopes, eroded
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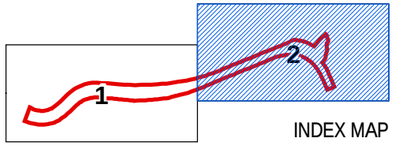


INDEX MAP

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Soils

SOURCE: AirPhoto USA (2007); Soil Data Mart (1999)
I:\ABE0701\G\Reports\DBESP\fig3_Soils.mxd (11/20/09)

LSA

PERMANENT EXTENTS OF CUT/FILL

SAMPLE POINT

TEMPORARY WORK AREA

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES (0.02 Ac*)

RIPARIAN SCRUB (0.25 Ac*)

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

PROPOSED STORM DRAIN

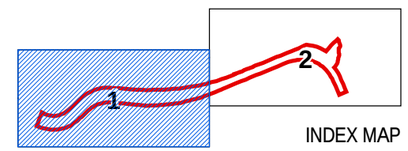
*Acreage shown is total for both sheets, and includes both temporary and permanent impacts

N

0 100 200

FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.



INDEX MAP

FIGURE 4
Sheet 1 of 2

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Vegetation Communities and Land Cover

SOURCE: Air Photo USA (2008)

I:\ABE0701\G\Reports\DBESP\fig4_Veg.mxd (11/25/09)

LSA

PERMANENT EXTENTS OF CUT/FILL

SAMPLE POINT

TEMPORARY WORK AREA

1 DRAINAGE NUMBER

ARROYO WILLOWS WITH EUCALYPTUS TREES (0.02 Ac*)

RIPARIAN SCRUB (0.25 Ac*)

ISOLATED STREAMBED

CDFG STREAMBED

4' CDFG WIDTHS (FT)

PROPOSED STORM DRAIN

Acreage shown is total for both sheets, and includes both temporary and permanent impacts

N

0 100 200

FEET

Note: S.P. NUMBERS CORRESPOND TO DRAINAGE NUMBERS.

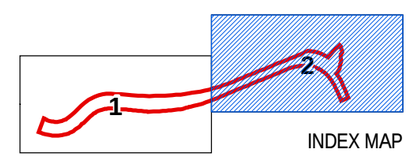


FIGURE 4
Sheet 2 of 2

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

Vegetation Communities and Land Cover

SOURCE: Air Photo USA (2008)

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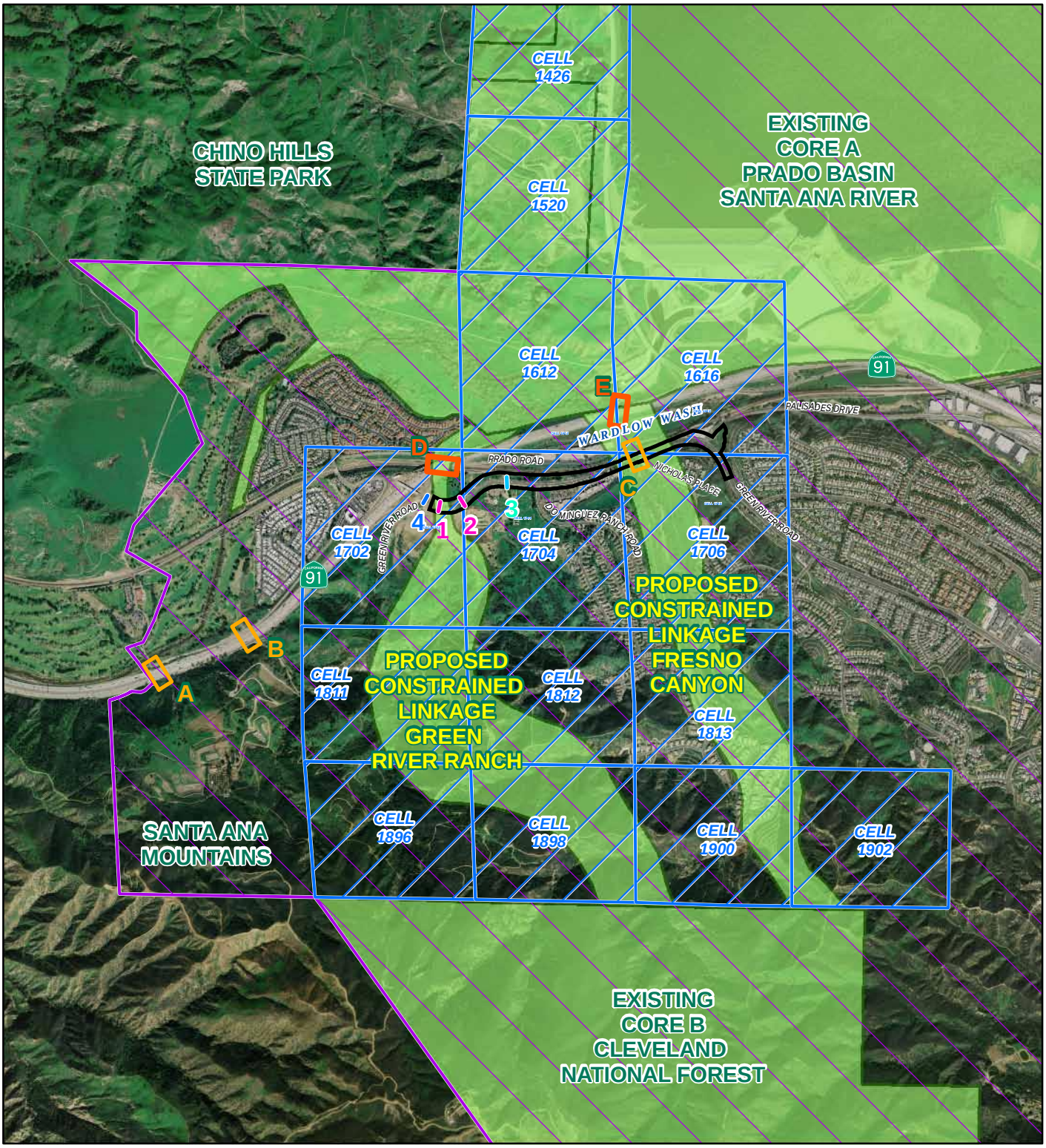


LSA

FIGURE 5

Project Site

Proposed Constrained Linkage*

Criteria Cells

Area Plan Boundary

Underpasses

A. Corona 850 Property

B. Star Ranch to Green River Golf Course

C. Fresno Canyon

SR-91 Overcrossings

D. Railroad

E. Wardlow Wash

Green River Road

1 & 2. Pipe Culvert (Line A)

3. Box Culvert (Line D)

4. Box Culvert (Line E)

N

0 1,200 2,400

FEET

Green River Road Widening

Determination of Biological Equivalent or Superior Preservation

**Note: Proposed Linkages are conceptual only. Locations are not predetermined as shown in the Final MSHCP.*

WRC MSHCP Regional Map

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\DBESP\fig5_WRC_MSHCP_Regional.mxd (11/20/09)

LSA

FIGURE 6
Sheet 1 of 4

ISOLATED STREAMBED

1 DRAINAGE NUMBER

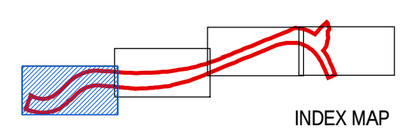
PROPOSED STORM DRAIN

"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

N

0 50 100
FEET



Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\DBESP\fig6_On-Site_Mitig.mxd (11/20/09)

On-Site Mitigation Alternative

LSA

FIGURE 6
Sheet 2 of 4

ISOLATED STREAMBED

PROPOSED STORM DRAIN

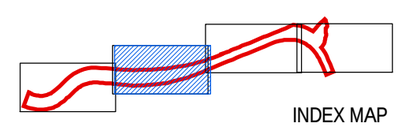
"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

1 DRAINAGE NUMBER

N

0 50 100
FEET



Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

On-Site Mitigation Alternative

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\DBESP\fig6_On-Site_Mitig.mxd (11/20/09)

LSA

FIGURE 6
Sheet 3 of 4

ISOLATED STREAMBED

PROPOSED STORM DRAIN

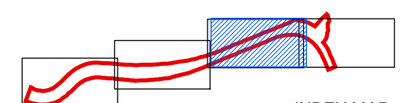
"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

1 DRAINAGE NUMBER

N

0 50 100
FEET



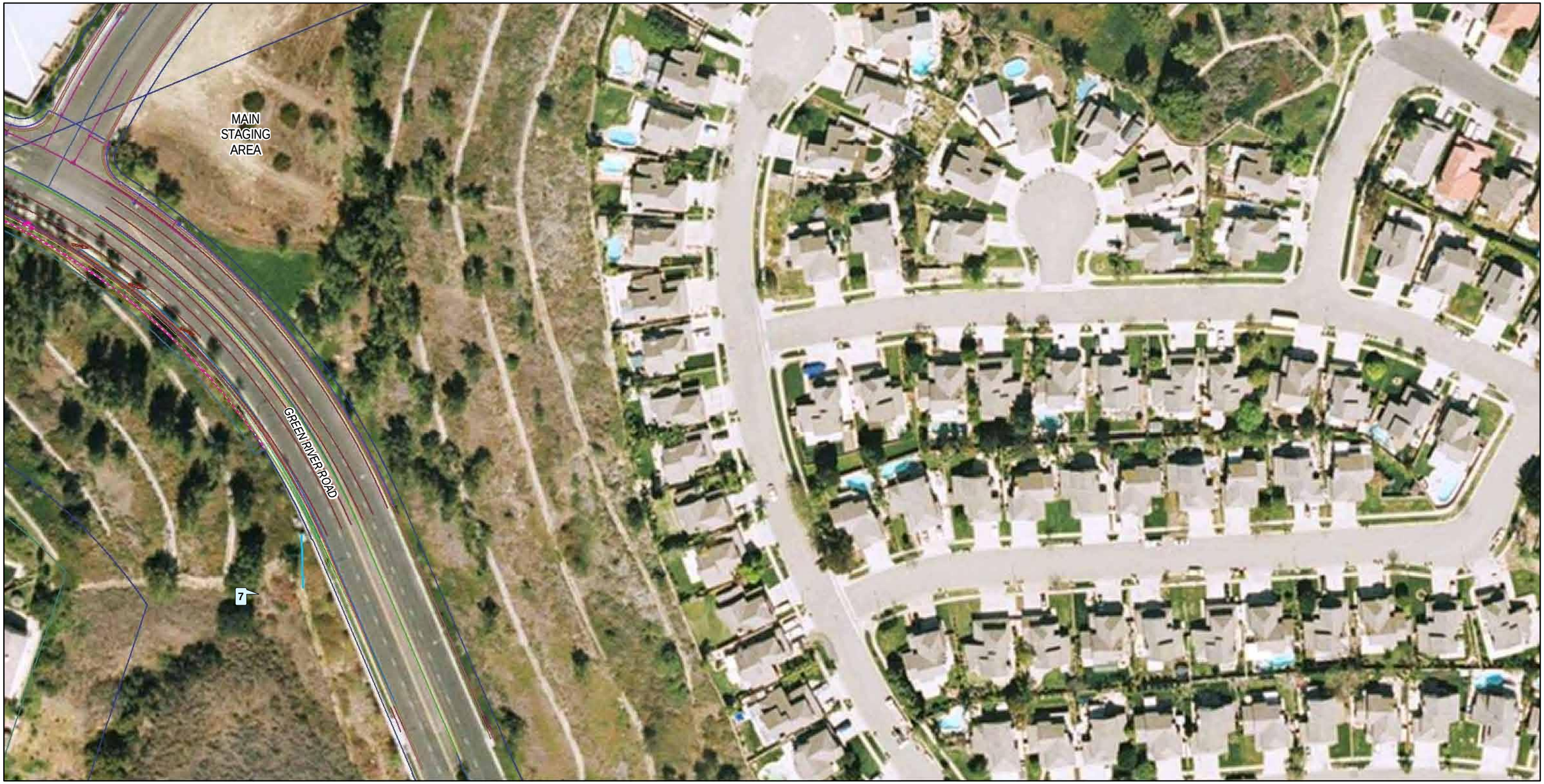
INDEX MAP

Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

On-Site Mitigation Alternative

SOURCE: Air Photo USA (2007)

I:\ABE0701\G\Reports\DBESP\fig6_On-Site_Mitig.mxd (11/20/09)



LSA

FIGURE 6
Sheet 4 of 4

ISOLATED STREAMBED

PROPOSED STORM DRAIN

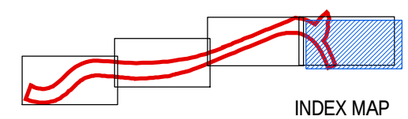
"AVOID" NATIVE TREES

PROPOSED PLANTING SITES
(0.51 ACRES) FOR BLUE ELDERBERRY (SAMBUCUS MEXICANA)

1 DRAINAGE NUMBER

N

0 50 100
FEET



Green River Road Widening
Determination of Biological Equivalent or Superior Preservation

On-Site Mitigation Alternative

SOURCE: Air Photo USA (2007)

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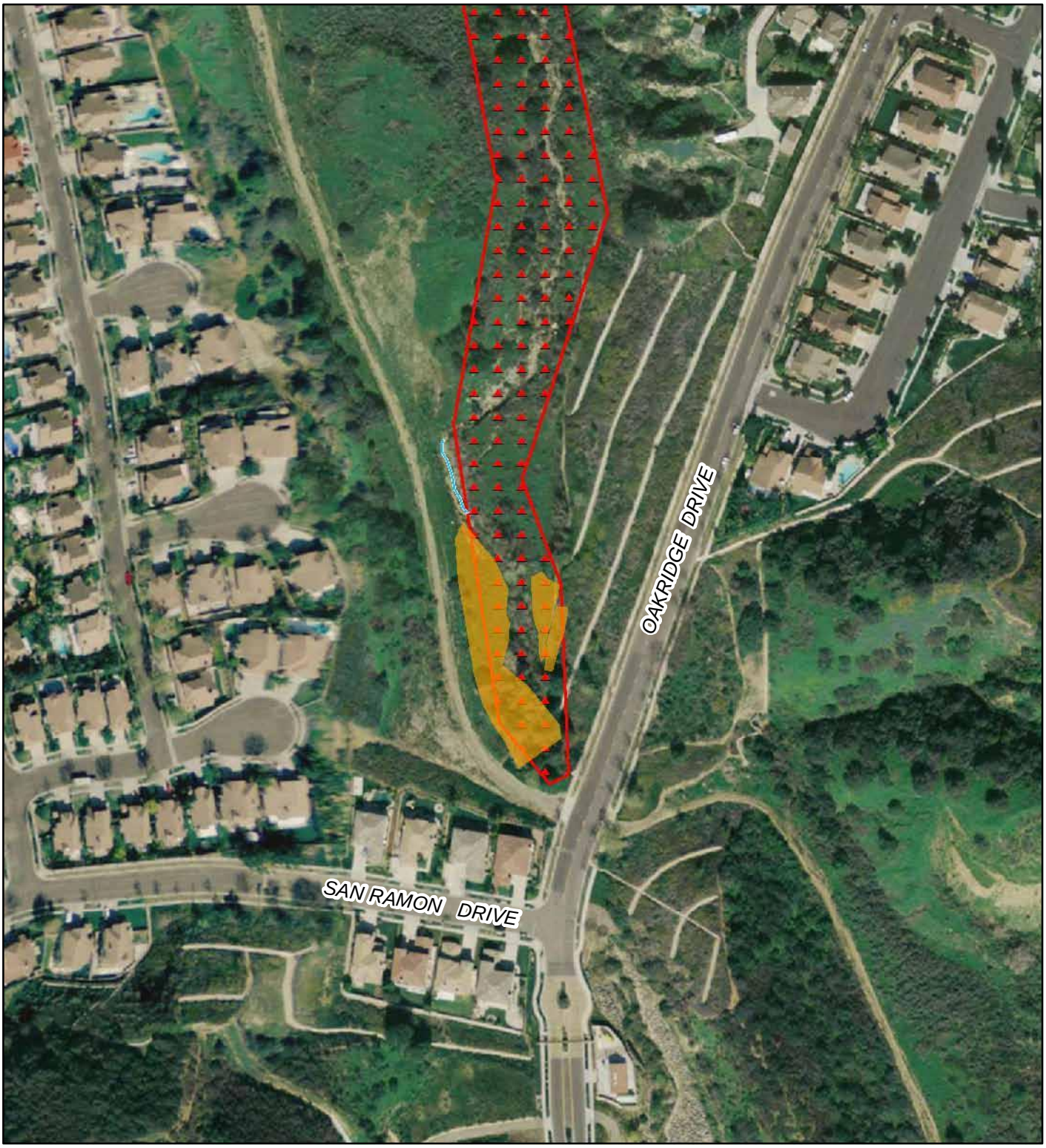

LSA

FIGURE 7

N

MSHCP CONSERVED LAND

SIDE DRAINAGE

RIPARIAN ENHANCEMENT (0.55 ACRES)

0 100 200

FEET

Green River Road Widening
Determination of Biological Equivalent
or Superior Preservation

Off-Site Mitigation Alternative

SOURCE: Air Photo USA (2007)

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APPENDIX B

TABLES

Table A: List of Biological Surveys and Site Visits for Green River Road Widening Project

Date	Weather	Surveyor	Survey Type	Results
June 28, 2007		S. Spencer	Biological Resources	
June 28, 2007		S. Spencer	Burrowing Owl HSA and burrow survey	No owl sign observed
July 26, 2007		S. Spencer, P. Kielhold	Biological Resources	
August 7, 2007		S. Spencer	Biological Resources, additional survey area	
February 13, 2008		S. Spencer	Biological Resources, additional survey area	
March 19, 2008		R. Erikson, S. Spencer	Riparian Bird HSA	Focus survey recommended
April 15 through July 15, 2008	Refer to report	R. Erikson and others	Riparian Bird Focused Survey	LBV observed adjacent to/outside of study area
May 26, 2008		S. Spencer	Brand's phacelia focus survey	Suitable habitat in Fresno Canyon. None observed.
June 23, 2008	Warm, calm	M. Lum, S. Barrera	Jurisdictional Waters Delineation	
March 26, 2009	Warm, calm	M. Lum	Delineation additional fieldwork	

Table B: Drainages in Study Area

Drainage	Description	Sample Points
1	4' Corrugated Metal Pipe (CMP) and concrete box culvert emerging at north side of Green River Road. Earthen bottom, upland vegetation, with OHWM. Outside of project site.	1
2	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed with adjacent riparian scrub. A swale occurs adjacent to the streambed on the south side of the road.	2a, 2b, 2c
3	Detention basin with earthen bottom, riparian scrub vegetation, and OHWM. Water does not drain to TNW.	3
4	4' CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed on south side of road and riparian scrub in streambed on south side of road.	4a, 4b
5	4' CMP and concrete box culvert originating south of Green River Road with surface flows and OHWM. Saturated soils and small amount of hydrophytic/riparian vegetation.	5
6	Fresno Canyon Drainage. Large braiding streambed with OHWM and upland vegetation. Flows under Green River Road via a large concrete box culvert. Water from a municipal storm drain flows into this drainage at the box culvert. Outside of project site.	6
7	Concrete v-ditch leading to CMP culvert that flows under Green River Road and Palisades Drive. Some riparian scrub adjacent to v-ditch. Outside of project site.	7

Table C: Potential ACOE & CDFG Jurisdictional Areas within the Green River Road Widening Study Area

Drainage	Sample Point	Water Type	Drainage Area (acres)	Q_{10} 6 hr (cfs)	Q_{100} 6 hr (cfs)	Nexus?	Length (ft)	ACOE OHWM Width (ft)	ACOE Jurisdiction (acres)	CDFG Streambed Width (ft)	CDFG Jurisdiction Streambed (acres)	CDFG Jurisdiction Riparian (acres)
1	1	Ephemeral	Not Available	—	—	Yes	74.2	2	0.0034	14	0.0238	0.01
2	2a	Ephemeral	—	90.7	155.0	Yes	55.8	3	0.0038	3	0.0038	0
	2b	Sample point only	69			No	0	0	0	0	0	0
	2c	Ephemeral	—			Yes	111.9	3	0.0077	7	0.0180	0.0839
3	3	Intermittent	Not Available	—	—	No	201.9	2	0.0093	20	0.0927	0.1157
4	4a	Ephemeral	149.2	191.7	328.3	Yes	50.3	2.5	0.0029	4	0.0046	0
	4b	Intermittent				Yes	108.3	2	0.0050	5	0.0124	0.0154
5	5	Perennial	662	205.8	312.4	Yes	104.9	7.5 (wet)	0.0181	15	0.0361	0.02
6	6	Intermittent	1,106	1,020.3	1,751.6	Yes	22.5	4	0.0041	36	0.0367	0.0043
7	None	Concrete v-ditch	600	557.8	921.0	Yes	55.2	1	0.0013	1	0	0.0013
TOTAL	—	—	—	—	—	—	—	—	**0.0556**	—	**0.229**	**0.249**

Table D: Impacts to Riparian/Riverine and other Vegetation Associated with Drainages

Drainage Feature	Vegetation Description	Temporary Impacts (acre)	Permanent Impacts (acre)
1	Ephemeral drainage with non-native **upland** vegetation.	0.01	0
2	Four-foot CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, upland vegetation in streambed with adjacent **riparian scrub**. A swale occurs adjacent to the streambed on the south side of the road.	0.03	0.01
3	Detention basin with earthen bottom, **riparian scrub** vegetation, and OHWM. Water does not drain to TNW. Vegetation is willow, mule fat, elderberry, and branching phacelia.	0.02	0.15
4	Four-foot CMP and concrete box culvert originating south of Green River Road and emerging north of Green River Road with OHWM. Earthen bottom, **upland** vegetation in streambed on south side of road and riparian scrub in streambed on south side of road. Species include elderberry and mule fat including non-native **upland** vegetation.	0.01	0.02
5	Four-foot CMP and concrete box culvert originating south of Green River Road with perennial surface flows and OHWM. Saturated soils and small amount of hydrophytic/riparian vegetation. Perennial drainage/rock and fabric-lined channel with **adjacent willows** and eucalyptus trees.	0.01	0.01
6	Fresno Canyon Drainage. Large braiding streambed with OHWM and **upland and riparian** vegetation. Flows under Green River Road via a large concrete box culvert. Water from a municipal storm drain flows into this drainage at the box culvert. Outside of project site.	0	0
7	Concrete v-ditch	0	0
Total		**0.08**	**0.19**

Table E: Proposed Mitigation for Direct Impacts to Riparian/Riverine Areas

Riparian/Riverine Areas	Proposed Impacts	Mitigation Ratio	Minimum Mitigation Requirement
Upland	0.04	1:1	0.04
Riparian Scrub	0.21	2:1	0.42 (includes 50 elderberry trees)
Riparian Trees	0.02	3:1	0.06
Total	**0.27**		**0.52**