

California Environmental Quality Act  
Tiered Initial Study / Environmental Checklist

**Shaw Avenue Widening Between  
De Wolf and McCall Avenues Project**

Lead Agency and Project Sponsor  
City of Clovis, California

Initial Study Consultant  
Odell Planning & Research, Inc.  
Oakhurst, California

July 2016

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## **Executive Summary**

The City of Clovis contracted with Odell Planning & Research, Inc. to prepare this Tiered Initial Study for the Shaw Avenue Widening between De Wolf Avenue and McCall Avenue Project. The project involves widening a two-mile segment of Shaw Avenue east of the City of Clovis between De Wolf Avenue and McCall Avenue from a two-lane rural road to a five-to-six-lane urban arterial road. Most of the proposed street widening would occur on land that is within the City of Clovis' Sphere of Influence and that the City has planned for urban development.

Based on the California Environmental Quality Act Guidelines, the purposes of this Initial Study are to:

1. Provide the City of Clovis with information to use as the basis for deciding whether to prepare an EIR or a Negative Declaration for the project.
2. Assist the City in the preparation of an EIR, if one is required, by:
  - a. Focusing the EIR on environmental effects of the project determined to be significant,
  - b. Identifying the environmental effects of the project determined not to be significant,
  - c. Explaining the reasons for determining that potentially significant environmental effects would not be significant, and
  - d. Identifying whether the City can use a program EIR, tiering, or another appropriate process for analysis of the project's environmental effects.

The Initial Study concluded:

1. The street widening project may cause significant effects on the environment and, therefore, the City should prepare a focused EIR for the project. The environmental resources and conditions upon which the project may have a significant effect and the EIR should focus include the following:
  - a. The project may substantially degrade the existing visual character or quality of the project area and its surroundings.
  - b. The project would result in a substantial, permanent increase in ambient noise levels in the project vicinity.
2. The Initial Study identified several additional potentially significant environmental effects of the project but that the City can avoid or reduce to an insignificant level by incorporating in the project mitigation measures identified in the study.
3. The project would have a less than significant impact or no impact on most of the environmental resources and conditions evaluated in the Initial Study. Under CEQA, the City need not evaluate these resources and conditions in the EIR. Instead, the City can use this Initial Study to explain why various possible environmental effects of the project were determined not to be significant.
4. The City should use the tiering concept in preparing a focused EIR for the project. This means the City should use the analysis of general matters contained in the EIRs the City prepared for the Loma Vista Specific Plan and the Clovis General Plan Update with the project-specific focused EIR the City would prepare for the street widening project. The project-specific EIR would incorporate by reference general discussions from the specific plan and general plan EIRs and concentrate the street widening project focused EIR solely on the issues specific to the project.

## A. Project Background Information

### 1. Project Title, Lead Agency, and Lead Agency Contact Information

#### a. Project Title

Shaw Avenue Widening between De Wolf and McCall Avenues

#### b. Lead Agency and Project Sponsor

City of Clovis  
Planning and Development Services Department, Engineering Division  
1033 Fifth Street, Clovis, California 93612

#### c. Lead Agency Contact Person

Ryan Burnett, AICP, Management Analyst  
City of Clovis  
Planning and Development Services Department, Engineering Division  
Telephone: (559) 324-2336; Email: RyanB@ci.clovis.ca.us

### 2. Project Objectives

The City of Clovis' objectives for the Shaw Avenue Widening between De Wolf and McCall Avenues Project include the following:

- To develop Shaw Avenue between De Wolf and McCall Avenues as a five- to six-lane arterial street as called for in the 2014 Clovis General Plan Update and the Loma Vista Specific Plan.
- To implement the goals of the General Plan Update Circulation Element: (Page 2)  
Overarching Goal: A comprehensive and well-maintained multimodal circulation system that provides for the safe and efficient movement of people and goods.  
Goal 1: A context-sensitive and "complete streets" transportation network that prioritizes effective connectivity and accommodates a comprehensive range of mobility needs.  
Goal 2: A roadway network that is well planned, funded, and maintained.  
Goal 3: A multimodal transportation network that is safe and comfortable in the context of adjacent neighborhoods.  
Goal 4: A bicycle and transit system that serves as a functional alternative to commuting by car.  
Goal 5: A complete system of trails and pathways accessible to all residents.  
Goal 6: Safe and efficient goods movement with minimal impacts on local roads and neighborhoods.  
Goal 7: A regional transportation system that connects Clovis to the San Joaquin Valley region.
- To design the project in a manner that is considerate of existing rural residential development along Shaw Avenue.
- To minimize the effects of construction-related noise, dust, and other potential nuisance conditions on nearby residents.
- To minimize the disruption of traffic flow during project construction.

### 3. Project Location<sup>1</sup>

Figures A-1 and A-2 and the following table present the location of the proposed street widening project. Figure A-1 shows the location in relation to the City of Clovis, and Figure A- 2 shows the location in relation to the immediate environs. Table A-1 provides jurisdictional and other locational information for the project.

The proposed street widening project would encompass an approximately two-mile segment of Shaw Avenue between De Wolf and McCall Avenues (the “project area”). The project area is immediately east of the City of Clovis on unincorporated land in the County of Fresno. Most of the project area is in the City of Clovis’ Sphere of Influence and would be annexed to the City as urban development occurs according to the General Plan Update and Loma Vista Specific Plan.

The project area encompasses the existing right-of-way of Shaw Avenue and additional land adjoining the right-of-way. The City of Clovis would acquire or obtain by dedication the additional land at locations where the existing right-of-way is too narrow to accommodate the proposed street widening.

**TABLE A-1  
Project Location**

|   |   |
|---|---|
| City  | Adjoins City of Clovis  |
| County  | Fresno  |
| Zip Code  | 93619   |
| Location of Shaw Avenue Segment to be Widened           | Shaw Avenue, between De Wolf and McCall Avenues   |
| Length of Shaw Avenue Segment to be Widened             | Two miles   |
| Existing and Planned Major Cross Streets (west to east) | De Wolf Avenue and McCall Avenue  |
| Elevation   | Approximately 390 ft. MSL   |
| USGS Map  | Clovis, California and Round Mountain, California   |
| Section, Township & Range                               | Por. Sec. 12 & 13, T. 13S., R. 21E., M.D.B.&M.<br>Por. Sec. 7 & 16, T.13S., R. 22E., M.D.B.&M.  |
| Latitude/Longitude                                      | Shaw Avenue at De Wolf Avenue: 36°48’29.95”N 119°38’45.82”W<br>Shaw Avenue at McCall Avenue: 36°48’29.86”N 119°36’37.01”W   |
| Applicable General Plans and Specific Plan              | Land within the City of Clovis Sphere of Influence: <ul style="list-style-type: none"> <li>• Clovis 2014 General Plan Update</li> <li>• Loma Vista Area Specific Plan (adopted under the name “City of Clovis Southeast Urban Area Specific Plan”)</li> </ul> Unincorporated land in Fresno County outside the City of Clovis Sphere of Influence: <ul style="list-style-type: none"> <li>• Fresno County General Plan</li> </ul> |

<sup>1</sup> The figures cited in this Initial Study are located following the text of the study.

## 4. Project Description

### a. Introduction

The City of Clovis is proposing to widen Shaw Avenue between De Wolf and McCall Avenues from a two-lane rural road to a five- to six- lane arterial street. Most of Shaw Avenue west of De Wolf Avenue within the City of Clovis is a six-lane arterial street. The project encompasses the only segment of Shaw Avenue within the City's Sphere of Influence that the City has not developed to the arterial standard.

### b. Arterial Streets

The General Plan Update Circulation Element and the Loma Vista Specific Plan classify the two-mile segment of Shaw Avenue between De Wolf and McCall Avenues as an Arterial street. Arterial streets, according to the General Plan Update Draft Program Environmental Impact Report (Draft PEIR), are:

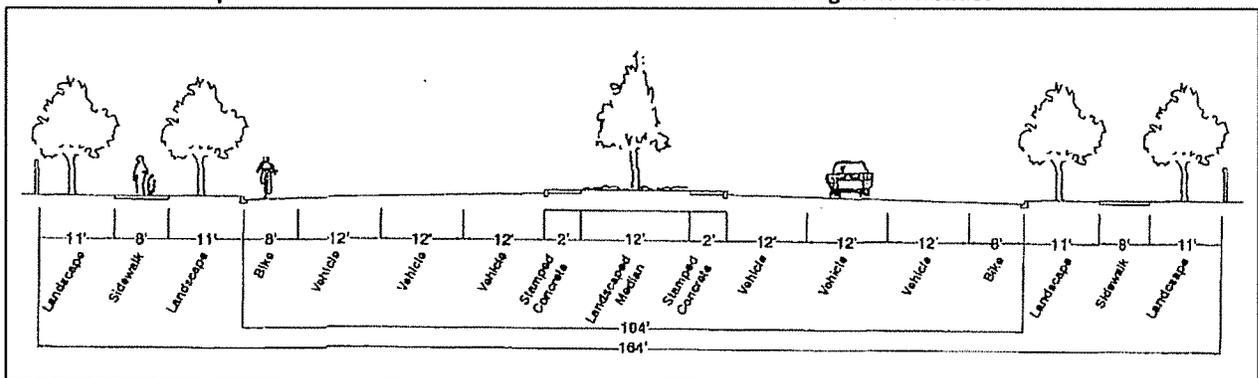
...designed to move large volumes of traffic and are intended to provide a high level of mobility between freeways, expressways, other arterials, and collector roadways. Arterials also provide non-freeway/highway connections between major residential, employment, and activity centers. Unlike freeways, they are intended not only for motor vehicle circulation, but also for bicycle and pedestrian circulation. Arterial streets typically have more right-of-way and a higher degree of access control than collector roadways. Most arterials in Clovis have four travel lanes, and opposing traffic may be separated by a median. (Page 5.16-4)

The City would develop Shaw Avenue within the project area using two arterial street design cross-sections. Subsections c and d describe the cross-sections, including the locations where each would apply, the design characteristics of each, and the reasons for proposing the two different cross-sections.

### c. Proposed Shaw Avenue Street Improvements: De Wolf Avenue to Highland Avenue

The City of Clovis would develop the approximately one-mile segment of Shaw Avenue between De Wolf Avenue and Highland Avenue using the arterial street design cross-section shown in Figure A-3. The City has used the same cross-section for Shaw Avenue west of De Wolf Avenue.

**FIGURE A-3**  
**Proposed Shaw Avenue Cross-Section between De Wolf and Highland Avenues**



Source: City of Clovis Engineering Division

Between De Wolf and Highland Avenues, Shaw Avenue would have a right-of-way width of 164 feet and a curb-to-curb width of 104 feet. Within the curb-to-curb width, Shaw Avenue would have:

- Six travel lanes, 3 in each direction, each lane 12 feet in width,

- A bike lane 8 feet in width adjacent to each curb,
- A median island 16 feet in width, and
- Within the median island, a landscaped area 12 feet in width.

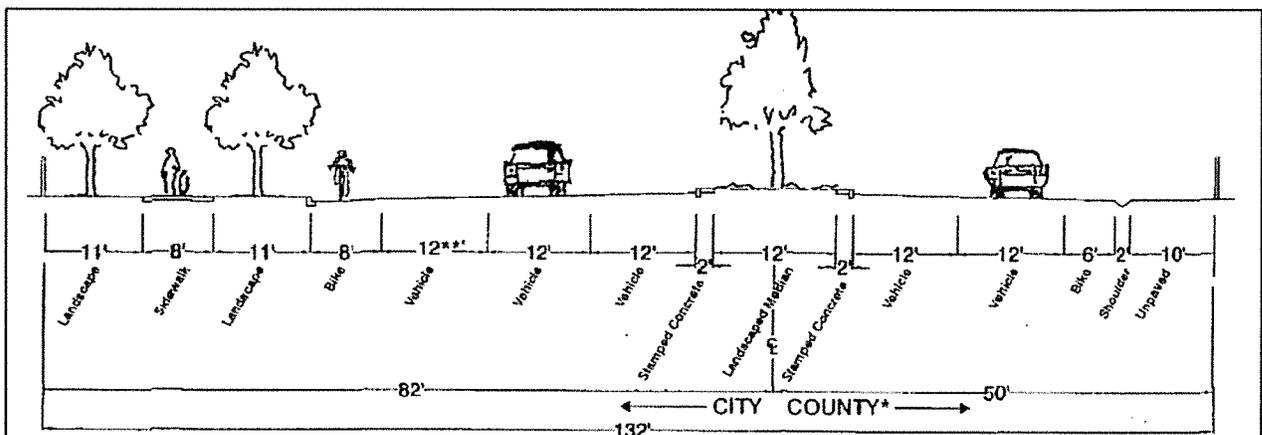
Between the curbs and outside edges of the right-of-way, Shaw Avenue would have:

- Two landscaped strips, each 11 feet in width,
- A sidewalk 8 feet in width between the two landscaped strips, and
- Street lights, fire hydrants, and other facilities normally found along a major street.

#### d. Proposed Shaw Avenue Street Improvements: Highland Avenue to McCall Avenue

The City of Clovis would develop the approximately one-mile segment of Shaw Avenue between Highland Avenue and McCall Avenue using the arterial street design cross-section shown in Figure A-4.

**FIGURE A-4**  
**Proposed Shaw Avenue Cross-Section between Highland and McCall Avenues**



Between De Wolf and Highland Avenues, Shaw Avenue would have a right-of-way width of 132 feet and a curb-to-shoulder width of 90 feet. The southerly 82 feet of the right-of-way would be within the City of Clovis and the northerly 50 feet would be within the County of Fresno.

Within the curb-to-shoulder width, Shaw Avenue would have:

- 3 west-bound travel lanes and 2 east-bound travel lanes, each lane 12 feet in width,
- A west-bound bike lane 8 feet in width and an east-bound bike lane 6 feet in width,
- A median island 16 feet in width,
- Within the median island, a landscaped area 12 feet in width.

Improvements on the south side of Shaw Avenue, between the curb and south edge of the right-of-way, would include:

- Two landscaped strips, each 11 feet in width,
- A sidewalk 8 feet in width between the two landscaped strips, and
- Street lights, fire hydrants, and other facilities normally found along a major street.

The north side of Shaw Avenue would have an unpaved area 10 feet in width between the road shoulder and north edge of the right-of-way.

East of Highland Avenue, the centerline of the Shaw Avenue right-of-way would shift slightly south to reduce the amount of land the City would need to obtain for the street widening project.

The reduced right-of-way width and the different improvements proposed for the Highland Avenue-to-McCall Avenue segment of Shaw Avenue reflect the fact that Fresno County has planned the land north of Shaw Avenue, east of Highland Avenue, for rural uses whereas the City of Clovis has planned the land to the south for urban development.

#### **e. Additional Right-of-Way Required**

The City of Clovis would have to obtain additional right-of-way from many of the parcels that have frontage on Shaw Avenue within the project area in order to widen Shaw Avenue to the arterial street standards. On the north side of Shaw, the depth of the required additional right-of-way would vary from none to over 40 feet. On the south side of Shaw, approximately 10 feet to 20 feet would be required.

Existing uses and facilities within the additional right-of-way area include open, undeveloped land; overhead electrical lines; residential and farm driveways; residential parking; residential and farm fences and walls; residential landscaping; orchards; pastures; and fallow farmland. Two or three farm structures may be within the required right-of-way area. No residences are within the area.

The City of Clovis would install driveway and other improvements necessary to provide access from the widened Shaw Avenue to each parcel.

#### **f. Proposed Traffic Signals**

Based on the General Plan Update and the Loma Vista Specific Plan, the City of Clovis would install traffic signals at the intersections of Shaw Avenue with the following streets:

- De Wolf Avenue: The General Plan Update and the Loma Vista Specific Plan classify De Wolf Avenue at Shaw Avenue as a collector street.
- Leonard Avenue: The General Plan Update and the Loma Vista Specific Plan classify Leonard Avenue at Shaw Avenue as an arterial street.
- Highland Avenue: The General Plan Update and the Loma Vista Specific Plan classify Highland Avenue as a Collector street south of Shaw Avenue.
- Thompson Avenue: The General Plan Update and the Loma Vista Specific Plan classify Thompson Avenue as a Collector street south of Shaw Avenue.
- McCall Avenue: The General Plan Update and the Loma Vista Specific Plan classify McCall Avenue at Shaw Avenue as an Arterial street.

#### **g. Proposed Underpass**

In accordance with the General Plan Update and the Loma Vista Specific Plan, the project would include the construction of an underpass under Shaw Avenue about midway between De Wolf and Leonard Avenues.

#### **h. Other Proposed Facilities and Improvements: Sewer, Water, Storm Water Drainage, Electricity, Natural Gas, and Communications**

The City of Clovis would provide water and sewer services to urban development planned for the area north and south of Shaw Avenue within its Sphere of Influence. The City may construct some or all of these facilities within Shaw Avenue as part of the proposed street widening project, or private developers

may construct the facilities when needed to serve development they propose for the area east of De Wolf Avenue.

The Fresno Metropolitan Flood Control District (FMFCD) provides storm water management services within the Fresno-Clovis metropolitan area, including within the City of Clovis. The project area is in FMFCD Drainage Areas DO and DP.

The City of Clovis would construct some or all of the storm water drainage facilities FMFCD may require for Shaw Avenue or developers may construct the facilities they need to serve projects the City may approve for the area east of De Wolf Avenue. The design and construction of storm water drainage facilities must comply with FMFCD standards.

Construction of electrical and natural gas facilities may occur within the proposed project area as part of the project or developers may construct the facilities when needed to serve development projects the City may approve the City may approve east of De Wolf Avenue

The project would not involve the addition or modification of facilities related to City of Clovis police, fire, solid waste collection, or parks and recreation facilities or services.

## **5. Actions Required to Implement Project**

The City of Clovis must undertake the following actions in order to implement the project:

- Complete the California Environmental Quality Act process for the project. Based on this Initial Study, the City should consider the preparation of an EIR for the project.
- Approve the project.
- Adopt and implement a Mitigation Monitoring and Reporting Program.
- Secure approvals, permits, and agreements, as necessary, from agencies and utilities that are responsible for facilities the project would construct, modify, or otherwise affect within or near the project area.
- Enter an agreement with the County of Fresno regarding the acquisition of right-of-way and the design and construction of improvements within the portions of the project area that the City of Clovis has not annexed.
- Acquire or obtain by dedication additional land along sections of Shaw Avenue where the existing public right-of-way would not accommodate the proposed arterial street.

## **6. Project Setting**

### **a. Existing Land Uses**

Rural residences are the primary land use along the north side of Shaw Avenue between De Wolf and McCall Avenues. Sixteen residences have direct access to Shaw Avenue and several more are near the street but have access from intersecting side streets. Small pastures, a 30-acre orchard, and fallow farmland are interspersed among the residences.

Most of the land along the south side of Shaw Avenue between De Wolf and McCall is fallow, in agricultural use or under development for an urban residential subdivision. Eleven rural residences have direct access to the south side of Shaw Avenue within the project area.

Urban residential subdivisions are the predominant land use west of the project area and De Wolf Avenue.

Agricultural uses and rural residences are the predominant land uses north, south, and east of the project area.

**b. Public Land Use Policy**

The Clovis General Plan Update and the Loma Vista Specific Plan are the adopted public land use plans for the portion of the project area within the City of Clovis Sphere of Influence. As shown on Figure A-2, the General Plan Update and the Loma Vista Specific Plan designate all of the land along Shaw Avenue within the City’s Sphere of Influence for urban development.

The Fresno County General Plan is the adopted land use plan for the area outside the sphere of influence. The Fresno County General Plan designates all of the land outside the Sphere of Influence for rural residential development.

**c. Streets and Highways**

Shaw Avenue is a major east-west street in the Fresno-Clovis metropolitan area. It extends from Zediker Avenue in rural Fresno County on the east through the cities of Clovis and Fresno to State Route 99 and beyond on the west.

Shaw Avenue is a six-lane arterial street from Locan Avenue in Clovis west to State Route 99 in Fresno. The one-half-mile segment of Shaw Avenue from Locan Avenue east to De Wolf Avenue is undergoing development as an arterial street. From De Wolf Avenue east to Zediker Avenue, including within the project area, Shaw Avenue is a two-lane county road.

Shaw Avenue has freeway interchanges at State Route 168 in Clovis and State Routes 41 and 99 in Fresno. Existing public streets other than Shaw Avenue in the project area include, from west to east, De Wolf Avenue, Leonard Avenue, Highland Avenue, Marjan Avenue, Rice Lane, Thompson Avenue, Gaynor Avenue, and McCall Avenue. All except a portion of De Wolf Avenue are two-lane Fresno County roads. The west side of De Wolf Avenue, south of Shaw Avenue, is within the City of Clovis is developed to the City’s arterial street standard

**d. Public Utilities and Services**

City of Clovis water and sewer services and Fresno Metropolitan Flood Control District storm water drainage services do not exist within the project area.

**7. Other Public Agencies Whose Approval is Required**

Implementation of the project would require approvals from the public agencies listed in Table A-2 in addition to the City of Clovis:

**TABLE A-2  
Responsible Agencies**

| Public Agency                                      | Approval(s)   |
|--|---|
| California Department of Fish and Wildlife         | Streambed Alteration Agreement  |
| County of Fresno                                   | Review and approve the location, design and construction of street improvements within Fresno County right-of-way   |
| Fresno Irrigation District (FID)                   | Review and approve the location, design, and construction of any FID facilities within the project area that may be modified or replaced because of the project |
| Fresno Metropolitan Flood Control District (FMFCD) | Review and approve the location, design, and construction of flood control facilities required because of the project.  |

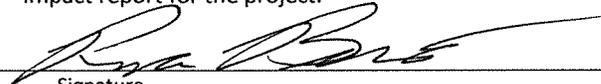
## B. Environmental Factors Potentially Affected

Based on the information in Section E, the project would have a *potentially significant impact* on the environmental factors marked “yes” in the following table.

| Environmental Factors Potentially Affected |                          |    |                                   |     |                                    |
|--|--------------------------|----|-----------------------------------|-----|------------------------------------|
| Yes  | Aesthetics               | No | Agricultural & Forestry Resources | No  | Air Quality                        |
| No   | Biological Resources     | No | Cultural Resources                | No  | Geology & Soils                    |
| No   | Greenhouse Gas Emissions | No | Hazards & Hazardous Materials     | No  | Hydrology & Water Quality          |
| No   | Land Use & Planning      | No | Mineral Resources                 | Yes | Noise                              |
| No   | Population & Housing     | No | Public Services                   | No  | Recreation                         |
| No   | Transportation & Traffic | No | Utilities & Service Systems       | Yes | Mandatory Findings of Significance |

## C. Determination

Based on this Initial Study, I find that the Shaw Avenue Widening between De Wolf and McCall Avenues Project could have a significant effect on the environment. The City of Clovis will prepare an environmental impact report for the project.


Date 7/12/19  
 Signature \_\_\_\_\_

## D. Evaluation of Environmental Impacts

### 1. Tiering

#### a. Tiering Concept

This Initial Study uses the tiering concept authorized State CEQA Guidelines section 15152 as part of the process used to determine if the proposed street widening project may have significant effects on the environment. As described in section 15152:

“Tiering” refers to using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy document) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broad EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project.

This [tiering] approach can eliminate repetitive discussions of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review.

The “City of Clovis General Plan and Development Code Update Program Environmental Impact Report” (PEIR) is the broader EIR this Initial Study uses to analyze general matters in relation to the proposed street widening project and to concentrate the evaluation in this Initial Study on issues specific to the

project. The PEIR consists of a Draft Program EIR (Draft PEIR) and a Final Program EIR (Final PEIR). The evaluation of environmental effects of the General Plan Update is mostly in the Draft PEIR. The Final PEIR consists of the Draft PEIR, a list of the agencies and interested persons that commented on the Draft PEIR, copies of the comment letters received during the public review period, the City's responses to the written comments, and appropriate revisions to the Draft PEIR text and figures.

The City of Clovis certified the Final PEIR on August 25, 2014. The public may review the PEIR at [www.ci.clovis.ca.us/](http://www.ci.clovis.ca.us/) or at the City of Clovis Planning Development Services Department, Engineering Division, 1033 Fifth Street, Clovis, California 93612. This Initial Study incorporates the PEIR by reference.

Shaw Avenue between De Wolf and McCall Avenues is within the Loma Vista Specific Plan area. The City of Clovis adopted the Loma Vista Specific Plan in 2003. The specific plan and the EIR prepared for the plan encompass approximately 3,000 acres within the area generally bounded on the north by Bullard Avenue, south by the Gould Canal, west by Locan Avenue, and east by McCall Avenue.

This Initial Study uses both the general plan update and the specific plan to implement the tiering concept. As described in the General Plan Update, "The Loma Vista Urban Center is implemented by the Loma Vista Specific Plan. This Specific Plan outlines guiding principles and a comprehensive land use plan to promote a high quality residential community focused around two community centers, a business campus, and the Reagan Education Center." (Page 14)

## **b. Consistency with General Plan and Zoning**

Under State CEQA Guidelines section 15152, use of the tiering concept "is limited to situations where the project is consistent with the general plan and zoning of the city or county in which the project is located, except that a project requiring a rezone to achieve or maintain conformity with a general plan may be subject to tiering."

Both the Clovis General Plan Update and the Loma Vista Specific Plan designate Shaw Avenue within the project area as an arterial street. Therefore, the proposed street widening project is consistent with the applicable adopted public land use plans.

## **2. Evaluation**

### **a. State CEQA Guidelines Appendix G: Environmental Checklist Form**

Section E in this Initial Study addresses all of the environmental issues that Appendix G in the State CEQA Guidelines suggests an Initial Study should address. (The "topic" column in each of the following tables includes an "Appendix G Reference" that identifies the section in which each issue is listed in the appendix.)

- Section E, 1 (Table E-1) describes *potentially significant impacts* that may result from the proposed street widening project. The City of Clovis must prepare an Environmental Impact Report for the project if the Initial Study identifies one or more potentially significant impacts.

Under the State CEQA Guidelines, significant effect, or impact, on the environment means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. (sec. 15382)

- Section E, 2 (Table E-2) describes impacts that would have *less than significant impacts with project level mitigation*. This determination applies where the incorporation of project-specific mitigation measures would reduce an impact from potentially significant to less than significant.

This Initial Study describes each mitigation measure the City of Clovis has incorporated in the project to reduce potentially significant impacts to a less than significant level.

- Section E-3 (Table E-3) describes the potential impacts of the project that would be *less than significant*. This determination applies when the project would not result in any significant effects on a resource or condition. The *less than significant* determination applies only in cases where no mitigation measures are required to reduce an impact to a less than significant level.
- Section E-4 (Table E-4) lists environmental resources and conditions upon which the proposed street widening project would have *no impacts*. The *no impact* determination applies only in cases where no mitigation measures are required to avoid or eliminate an impact.

This Initial Study provides an explanation for all of the determinations in Sections E, 1 – E-5 except the *no impact* determinations. *No impact* determinations are supported by the citing the sources upon which the determination is based. In cases where a citation would be inadequate or inappropriate, the Initial Study provides additional information to explain the *no impact* determination.

## **b. Existing Laws, Regulations, Policies, and Mitigation Measures**

In some cases, an impact that might appear to be significant is determined to be less than significant because it is subject to state, regional, or local laws, regulations, or policies, the application of which will reduce the impact to a less than significant level. In evaluating impacts, this Initial Study reviews the laws, regulations, and policies to determine the effect they would have on preventing or reducing potentially significant impacts. The Initial Study, however, does not cite them as mitigation measures because they would apply to the project regardless of the outcome of the Initial Study.

For the proposed street widening project, applicable laws, regulations, and policies include but are not limited to the following:

- City of Clovis General Plan Update: Policies for environmental conditions and resources affected by project  
<http://www.ci.clovis.ca.us/Departments-and-Services/Planning-and-Development/General-Plan>
- City of Clovis General Plan Update EIR: Mitigation Measures for environmental conditions and resources affected by project  
<http://www.ci.clovis.ca.us/Departments-and-Services/Planning-and-Development/General-Plan/General-Plan-EIR>
- City of Clovis Loma Vista Area Specific Plan: Policies for environmental conditions and resources affected by project  
<http://www.ci.clovis.ca.us/Departments-and-Services/Planning-and-Development/City-Planning/Specific-Plans/Loma-Vista>
- City of Clovis Loma Vista Area Specific Plan EIR: Mitigation Measures for environmental conditions and resources affected by project  
<http://www.ci.clovis.ca.us/Departments-and-Services/Planning-and-Development/City-Planning/Specific-Plans/Loma-Vista>
- City of Clovis Standard Specifications for Public Works Construction: Division 100-Materials, Division 200-Earthwork, and Division 300-Streets and Related Work  
<http://www.publicworks.cityofclovis.org/Construction%20Standards.pdf>
- City of Clovis Standard Drawings: Street Standards and Traffic Signal Standards  
<https://www.ci.clovis.ca.us/Portals/0/Documents/Engineering/Standards/MasterStandardDrawings>
- City of Clovis Municipal Code: Chapter 7.7-Major Street Development  
<http://www.codepublishing.com/CA/Clovis/>
- Fresno Metropolitan Flood Control District: Ordinances and Policies  
<http://www.fresnofloodcontrol.org/board/board%20policies%20table.html>  
<http://www.fresnofloodcontrol.org/board/board%20ordinances%20table.html>
- San Joaquin Valley Air Pollution Control District: Rules and Regulations

<http://www.valleyair.org/rules/1ruleslist.htm>

**c. Sources Consulted**

Section G lists the sources consulted in preparing this Initial Study, all of which are incorporated in this document by reference.

**E. Environmental Checklist**

**1. Potentially Significant Impacts**

Table E-1 describes the *potentially significant impacts* that may result from the proposed street widening project.

**TABLE E-1  
Potentially Significant Impacts**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue  |
|-----------|----------------------------------|--|
| 1.1       | Aesthetics<br>l, c) & d)         | <p><b>Impacts:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Substantially degrade the existing visual character or quality of the site and its surroundings?</li> <li>• Create a new source of light and glare that would adversely affect day or nighttime views in the area?</li> </ul> <p><b>Discussion:</b> The General Plan Update Final PEIR and the Loma Vista Specific Plan EIR determined that urban development “would alter the visual appearance or the City and its Plan Area, but would not substantially degrade its existing visual character or quality” (General Plan Update Final PEIR, Page 3-3; Loma Vista Specific Plan Draft EIR, Page 1-3).</p> <p>Both plans indicate that the determination of physical impacts of a project on the visual character or quality of an area is highly subjective or, as commonly stated, “beauty is in the eye of the beholder.”</p> <p>Figure E-1 contrasts the existing rural and agricultural visual character along Shaw Avenue within the project area with the urban residential character area west of Locan Avenue, where the City has developed the street to arterial street standards.</p> <p>This Initial Study has concluded that the proposed street widening project has the potential to degrade substantially the existing visual character or quality of the project area and its surroundings and to create new sources of light and glare that would adversely affect nighttime views in the area. The reasons for this conclusion are as follows:</p> <ul style="list-style-type: none"> <li>• The project would change the visual character of Shaw Avenue within the project area from a rural, two-lane road to a major urban five-to six-lane road. Residents may have moved into the project area because of its rural ambience and, therefore, may not appreciate the change in this ambience.</li> <li>• On some rural residential lots, the project would reduce the depth of landscaped yards that abut Shaw Avenue. A number of the parcels have mature trees and</li> </ul> |

**TABLE E-1  
Potentially Significant Impacts**

| Issue No. | Topic Appendix G Reference        | Environmental Issue  |
|-----------|-----------------------------------|--|
|           |                                   | <p>other landscaping within the portions of the parcels that would become public right-of-way. Residents may consider the loss of the trees and other landscaping and the scenic qualities they provide to constitute a significant adverse visual impact of the project.</p> <ul style="list-style-type: none"> <li>• The widened five- to six-lane Shaw Avenue roadway would be closer to rural residences than the existing two-lane Shaw Avenue. In some cases, the edge of the widened Shaw Avenue pavement (i.e., the curb and gutter) would be considerably closer to residences than the existing Shaw Avenue pavement. Residents may consider the closer proximity of the roadway to their residences and the consequent increase in traffic-related light and glare to constitute a significant adverse visual impact of the project.</li> <li>• The project would introduce street lighting into the project vicinity. Residents may consider the additional light an unwelcome intrusion in comparison to the darker night sky they currently enjoy.</li> </ul> <p>As evidenced by existing residential subdivisions on Shaw Avenue west of De Wolf Avenue, when urban residential subdivisions abut an arterial street, the City of Clovis usually requires the construction of a wall five to six feet in height along property lines abutting the arterial street. The wall serves as a visual and noise buffer between the residential development and the street.</p> <p>The City would require new residential subdivisions within the project area to have a wall abutting Shaw Avenue. However, in most cases, the construction of a wall on existing rural residential lots would not be feasible because of the number and width of breaks in the wall that would be necessary to accommodate driveways. Because the wall would not be continuous, it would not serve as an effective visual barrier.</p> <p><b>Mitigation Measures:</b> No feasible mitigation is available.</p> <p><b>Significance after Mitigation:</b> The impact would be <i>significant and unavoidable</i>.</p> |
| 1.2       | Noise <sup>2</sup><br>XII a) & c) | <p><b>Impact:</b> Would the proposed street widening project result in:</p> <ul style="list-style-type: none"> <li>• The exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</li> <li>• A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</li> </ul> <p><b>Discussion:</b></p> <p><i>Existing Exterior Traffic Noise Levels</i></p> <p>With project implementation, some vehicle traffic along Shaw Avenue would be closer</p>  |

<sup>2</sup> The discussions of noise-related issues in this Initial Study reflect information from the Noise and Groundborne Vibration Impact Analysis prepared for this Initial Study by Ambient Air Quality & Noise Consulting. Please see Appendix C for the complete text of the analysis.

**TABLE E-1  
Potentially Significant Impacts**

| Issue No. | Topic Appendix G Reference | Environmental Issue   |
|-----------|----------------------------|---|
|           |                            | <p>to adjacent residential land uses. As a result, traffic noise levels at the residences would increase. Predicted noise levels with project implementation would increase by approximately 2 to 4 dBA (A-Weighted Decibels) at the residences. Significant noise increases would occur at 8 residential receptors.</p> <p><i>Existing Interior Traffic Noise Levels</i></p> <p>Predicted interior traffic noise levels were calculated based on the predicted exterior noise levels at the residential structures and assuming an average exterior-to-interior noise reduction of 25 dB (decibels), which is typical for residential construction.</p> <p>Predicted interior noise levels at the nearest residences would not exceed the City's interior noise level standard of 45 dBA CNEL (Community Noise Equivalent Level).</p> <p><i>Future Traffic Noise Levels</i></p> <p>Under future cumulative conditions, projected vehicle traffic on Shaw Avenue between De Wolf and McCall Avenues is projected to increase substantially. Predicted future cumulative traffic noise levels at the nearest residences would range from approximately 65 to 71 dBA CNEL. Implementation of the proposed project would, as noted above, result in increases in traffic noise levels at these same residences of approximately 2 to 4 dBA.</p> <p>The level of noise increase deemed acceptable is dependent on the ambient noise level. For instance, where traffic noise levels do not exceed applicable standards, acceptable increases in noise levels can range from 3 to 5 dBA. However, if noise levels exceed the commonly acceptable noise standard, which is commonly defined as 65 dBA CNEL, a smaller noise-level increase of 1.5 dBA would typically be considered sufficient to result in increased levels of annoyance. Projected future cumulative traffic noise levels at the nearest residential land uses are projected to exceed the City's noise standard of 65 dBA CNEL. Implementation of the proposed project would result in increases of more than 1.5 dBA at these same residences.</p> <p><i>Future Interior Traffic Noise Levels</i></p> <p>Predicted interior traffic noise levels were calculated based on the predicted future cumulative exterior noise levels at the residential structures and assuming an average exterior-to-interior noise reduction of 25 dB, which is typical for residential construction. Predicted interior noise levels at the nearest residential land uses, under future cumulative conditions, would exceed the City's interior noise level of 45 dBA CNEL.</p> <p><i>Impact Summary</i></p> <p>Predicted exterior future cumulative noise levels at nearby land uses, with project implementation, would result in significant increases at the nearest residences that would also exceed the City's "normally acceptable" exterior noise standard of 65 dBA CNEL. Predicted interior noise levels at a majority of these residences would also exceed the City's interior noise standard of 45 dBA CNEL. As a result, this impact would be <i>potentially significant</i>.</p> |

**TABLE E-1  
Potentially Significant Impacts**

| Issue No. | Topic Appendix G Reference                 | Environmental Issue   |
|-----------|--|---|
|           |  | <p><b>Mitigation Measures</b></p> <p>Sound barriers would be needed along property lines abutting Shaw Avenue to reduce effectively exterior noise levels at the existing adjacent residences, The barriers generally would need to extend, uninterrupted, a distance of approximately 3 to 4 times the distance between the residences and the barrier. The concrete masonry fences that adjoin residential subdivisions along Shaw Avenue west of De Wolf Avenue are an example of the type of noise barrier needed.</p> <p>The construction of sound barriers, or walls, would be feasible for new residential subdivisions within the project area, but not for the existing rural residences. At least 27 of the residences have driveways on Shaw Avenue. The construction of a continuous, effective sound barrier would not be feasible, at minimum, because of the need to provide openings for these driveways.</p> <p><b>Significance after Mitigation:</b> The impact would be significant and unavoidable.</p> |
| 1.3       | Mandatory Finding of Significance XVIII c) | <p><b>Impact:</b> Does the proposed street widening project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?</p> <p><b>Discussion:</b> The noise impact described under Issue No. 1.2 would constitute a substantial adverse impact on human beings.</p>  |

## 2. Less than Significant Impacts with Project-Level Mitigation Incorporated

Table E-2 describes the impacts of the proposed street widening project that would be *less than significant with project-level mitigation incorporated*.

**TABLE E-2  
Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic Appendix G Reference       | Environmental Issue  |
|-----------|----------------------------------|--|
| 2.1       | Air Quality <sup>3</sup> III. d) | <p><b>Impact:</b> Would the proposed street widening project expose sensitive receptors<sup>4</sup> to substantial pollutant concentrations?</p> |

<sup>3</sup> The discussions of air quality- and greenhouse gas-relates issues in this Initial Study reflect information from a study prepared for this Initial Study by Ambient Air Quality & Noise Consulting. Please see Appendix A for the complete text of the study.

<sup>4</sup> One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term sensitive receptors refer to specific population groups, as well as the land uses where individuals would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses would include facilities that house or attract children, the elderly, people with illnesses, or others who are especially

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue   |
|-----------|----------------------------------|---|
|           |                                  | <p><b>Discussion:</b></p> <p><i>Sensitive Receptors</i></p> <p>The residents of existing and future residential development are the primary sensitive receptors near the project area.</p> <p><i>Carbon Monoxide</i></p> <p>Mobile-source emissions of Carbon Monoxide would be the primary criteria air pollutant of local concern associated with the proposed project. The impact of carbon monoxide on sensitive receptors near the project area would be less than significant.</p> <p><i>Toxic Air Contaminants (Diesel Exhaust Emissions and Naturally Occurring Asbestos)</i></p> <p>The proposed street widening project would not result in the long-term operation of any major on-site stationary sources of toxic air contaminants, nor would project implementation result in an increase in vehicle trips along area roadways. For these reasons, implementation of the proposed widening project would not result in long-term increases in exposure of sensitive receptors to toxic air contaminants.</p> <p>Short-term construction activities may result in temporary increases of toxic air contaminants, including naturally occurring asbestos and diesel exhaust emissions. Naturally occurring asbestos is located in many parts of California and is commonly associated with ultramafic rock. The project site is not near any areas that are likely to contain ultramafic rock. As a result, risk of exposure to asbestos during the construction process would be less than significant.</p> <p>The proposed project would result in emissions of diesel-exhaust particulate matter during construction from off-road diesel equipment for site grading and excavation, paving, and other construction activities. Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, the calculation of cancer risk associated with exposure of to toxic air contaminants are typically calculated based on a long-term (e.g., 70-year) period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Project-related construction activities would constitute less than one percent of the typical 70-year exposure period. As a result, exposure to construction-generated diesel particulate matter would not exceed applicable thresholds (i.e., incremental increase in cancer risk of 10 in one million).</p> <p>Although construction emissions would not result in long-term health impacts that would exceed applicable thresholds, short-term exposure to diesel particulate matter could still result in potential health effects. The type and severity of health effects depends upon several factors including the dose of the pollutant to which the individual is exposed and the duration of exposure. Short-term exposure to diesel</p> |

sensitive to the effects of air pollutants. Residential dwellings, schools, parks, playgrounds, childcare centers, convalescent homes, and hospitals are examples of sensitive land uses. Sensitive receptors in the project area consist predominantly of residential land uses along Shaw Avenue.

**TABLE E-2  
Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference           | Environmental Issue  |
|-----------|--|--|
|           |  | <p>particulate matter may cause irritation to the eyes, nose, throat, and lungs, as well as, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. These potential health effects are of particular concern among the more sensitive members of the population, such as children, the elderly, and individuals suffering from lung ailments (e.g., asthma).</p> <p><b>Standard Requirement:</b> The City of Clovis Standard Specifications, Section 7-6 Air Pollution Control, specifies "The Contractor shall comply with State air pollution control rules, regulations, ordinances, and statutes that apply to any work performed pursuant to the contract, including any air pollution control rules, regulations, ordinances, and statutes, specified in Section 11017 of the Government Code. The Contractor shall also comply with all of the requirements of Regulation VIII of the San Joaquin Valley Air Pollution Control District." (Page 45)</p> <p><b>Mitigation Measure AQ-1:</b> The City of Clovis shall incorporate in project-related construction contracts the following measures from the General Plan Update Final PEIR, Mitigation Measure 3-1 (Page 3-9):</p> <ul style="list-style-type: none"> <li>• Contractors shall use construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower.</li> <li>• Contractors shall service and maintain construction equipment to the standards of the manufacturer.</li> <li>• Contractors shall use alternative-fueled or catalyst-equipped diesel construction equipment, if available and feasible.</li> <li>• Contractors shall maintain on the construction site a list of construction equipment by type and model year, which shall be available for City review upon request.</li> <li>• Contractors shall require that operators of trucks and construction equipment minimize idling time (e.g., 5-minute maximum). Contractors shall post signs that specify this requirement.</li> </ul> <p><b>Significance after Mitigation:</b> Based on the City's standard condition and Mitigation Measure AQ-1, the potential for short-term exposure to construction-related diesel particulate matter to result in potential health effects would be <i>less than significant with project-level mitigation incorporated</i>.</p> |
| 2.2       | Biological Resources <sup>5</sup><br>IV a) | <p><b>Impact:</b> Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service?</p> <p><b>Discussion:</b></p>   |

<sup>5</sup> Please see Appendix B for the complete text of the biological resources study prepared for this Initial Study.

**TABLE E-2  
Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue  |
|-----------|----------------------------------|--|
|           |                                  | <p>General</p> <p>The project area has been disturbed from its natural state for many years. It now consists mainly of existing street paving, graveled road shoulder, rural residential yards, and agricultural land (irrigated pastures, disked fields, row crops, orchards, and fallow land). The project area also encompasses man made roadside drainage ditches, a portion of Dog Creek, and possibly two small wet areas (which appear to be the result of roadside drainage and an ornamental pond in a front yard).</p> <p>In its current state, the project area provides little habitat of value for sensitive plant and wildlife species, primarily due to the amount of disturbance from humans, vehicles, and domestic animals on a regular basis.</p> <p>Direct impacts of the proposed road widening project would be a loss of marginal habitat and, possibly, direct mortality for any animals in the path of construction equipment. Direct mortality could occur to common fossorial or slow-moving mammals and reptiles within the project area. Direct mortality take could also occur for bird eggs and nestlings within the project area if vegetation removal or ground disturbance occur during the nesting season, generally February 1 through August 31.</p> <p>Indirect impacts to wildlife species that may still use the area after construction could include decreased dispersal, increased mortality and injury, and increased debris that through ingestion or physical contact can be harmful to wildlife. Increased human disturbance (vehicles, people, and pets) would cause all of these impacts.</p> <p>Special Status Species Impacts and Avoidance Measures</p> <p>Database queries indicated 30 animals and 14 plant species with special status occur or have historically occurred within the 9-quad search area. Many of the species from the generated list either were historic, extirpated occurrences, or were species with very specialized habitat requirements that were not present within the project area. Therefore, the majority of the species were "ruled out." Based on the habitat types present within the project area, only 4 animal and 3 plant special status species have the potential to occur on the area.</p> <p>Special Status Birds</p> <p>Special status bird species that could nest and/or forage occur in the project vicinity include Swainson's hawk (<i>Buteo swainsoni</i>), white-tailed kite (<i>Elanus leucurus</i>), Loggerhead shrike (<i>Lanius ludovicianus</i>), and burrowing owl (<i>Athene cunicularia</i>). Bird species covered by the Migratory Bird Treaty Act also could occur in the project vicinity</p> <p>Swainson's hawk and white-tailed kite could nest in the large trees within and adjacent to the project area. Loggerhead shrike could nest in shrubs within and adjacent to the project area and forage in the open fields.</p> <p>Although none were detected during a reconnaissance survey, burrowing owls could move into the area prior to construction and occupy any large burrows during the nesting and wintering seasons. Since the California Department of Fish and Wildlife (CDFW) usually requires various sized "no disturbance" buffers around nesting sites for these species, construction-related disturbance could be considered take under the</p> |

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue   |
|-----------|----------------------------------|---|
|           |                                  | <p>California Endangered Species Act (CESA) and the Migratory Bird Treaty Act ( MBTA).</p> <p>According to the <i>Staff Report on Burrowing Owl Mitigation</i> (CDFW 1995), specific impacts to burrowing owl include any “disturbance within 50 meters (approx. 160 ft.) [75 m (250 ft.) during breeding season] which may result in harassment of owls at occupied burrows; destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow(s)”.</p> <p>Other migratory birds could nest in the project area and vicinity, most of which are protected by the Migratory Bird Treaty Act (USCA 1918). For example, a pair of killdeer were observed copulating in a plowed field within the study area during the reconnaissance survey. These ground nesting birds can nest anywhere bare ground is available within the project area. Both construction related disturbance and the removal of vegetation within the project area could result in nest abandonment or direct mortality of eggs, chicks, and/or fledglings.</p> <p>This type of impact to migratory birds, including special status bird species, would constitute take under the Migratory Bird Treaty Act and the California Endangered Species Act, and therefore, is a <i>potentially significant impact</i>.</p> <p><b>Special Status Plants</b></p> <p>The project could also result in direct take of three species of special status plants, Sanford's arrowhead (<i>Sagittaria sanfordii</i>), forked hare-leaf (<i>Lagophylla dichotoma</i>), and California jewel-flower (<i>Caulanthus californicus</i>), if present. If these or other special plant populations are present, the project may result in direct mortality of individual plants, loss of portions of the population, and reduction of the seed bank.</p> <p>No special status plant species were present during the time of the reconnaissance survey. However, the site survey was not conducted at the peak blooming period for some potentially occurring plants. The majority of the species resulting from the 9-quadrant query could be ruled out based on their elevation range, required habitat, and/or soil type. Still, the site provides the correct elevation, soil, and habitat types for three special status plants for Sanford's arrowhead, forked hare-leaf, and California jewel-flower. Because the project could affect the special status plants, this impact is <i>potentially significant</i>.</p> <p><b>Mitigation Measure BR-1:</b></p> <ol style="list-style-type: none"> <li>1. Avoidance: Any vegetation removal within or adjoining the project area shall take place between September 1 and February 1 to avoid impacts to nesting birds in compliance with the Migratory Bird Treaty Act (MBTA).</li> <li>2. Pre-construction Surveys             <ol style="list-style-type: none"> <li>a. Within 14 days prior to project construction, a qualified biologist shall conduct pre-construction surveys for:                 <ol style="list-style-type: none"> <li>i. Active nest sites in trees, bushes, or grass within species/taxonomic group specific buffers of the project area: Swainson's hawk – 0.5 mile;</li> </ol> </li> </ol> </li> </ol> |

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue  |
|-----------|----------------------------------|--|
|           |                                  | <p>other raptor species such as white-tailed kite – 500 ft.; non-raptor species (loggerhead shrike, etc.) – 250 ft. Survey protocol shall be as developed by the Swainson’s hawk Technical Advisory Committee (TAC) (CDFW 2000).</p> <p>ii. Active western burrowing owl burrows in the project area and suitable habitat within 150 m (500 ft.). Use of the burrows and habitat shall be evaluated in accordance with the California Department of Fish and Wildlife’s survey guidelines (CBOC 1993, CDFW 1995, CDFW 2012). Surveys shall document if burrowing owls are nesting or using habitat in or directly adjacent to the project area. Survey results shall be valid only for the season the survey is conducted: breeding (Feb 1-Aug 31); non-breeding (Sept 1-Jan 31).</p> <p>b. If the pre-construction survey does not detect any active nests or burrows, then no further action is required. If the survey does detect an active nest or burrow, then the City shall implement the following mitigation measures.</p> <p>3. Minimization/Establish Buffers</p> <p>a. Swainson’s hawk, white-tailed kite, loggerhead shrike, and Migratory Bird Protection Act-protected species:</p> <p style="padding-left: 40px;">If any active nests are discovered (and if construction will occur during bird breeding season), the City shall contact the United States Fish and Wildlife Service and/or California Department of Fish and Wildlife to determine protective measures required to avoid take. These measures could include fencing an area where a nest occurs or shifting construction work temporally or spatially away from the nesting birds. Biologists would be required on site to monitor construction activity while protected migratory birds are nesting in the project area. If an active nest is found after the completion of the pre-construction surveys and after construction begins, all construction activities shall stop until a qualified biologist has evaluated the nest and erected the appropriate buffer around the nest.</p> <p>b. Burrowing owl</p> <p style="padding-left: 40px;">If the survey detects burrowing owls, the City shall consult with California Department of Fish and Wildlife to determine suitable buffers. These buffers shall take into account the level of disturbance of the project activity, existing disturbance of the site (vehicle traffic, humans, pets, etc.), and time of year (nesting vs. wintering).</p> <p>4. Compensatory Mitigation</p> |

**TABLE E-2  
Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference   | Environmental Issue  |
|-----------|------------------------------------|--|
|           |                                    | <p>If implementation of the mitigation measures presented above would not avoid or reduce the impacts to a less than significant level, the City shall comply with Mitigation Measure 4-3 in the General Plan Update PEIR: (Page 3-20)</p> <p>If project level impacts cannot be avoided or mitigated to less than significance, compensatory mitigation shall be developed by a qualified biologist and implemented to reduce impacts to sensitive or protected biological resources. Mitigation may include, but is not limited to:</p> <ol style="list-style-type: none"> <li>1. Compensation for lost habitat or waters in the form of preservation or creation of in-kind habitat or waters, either on-site or offsite, protected by conservation easement;</li> <li>2. Purchase of appropriate credits from an approved mitigation bank servicing the Clovis General Plan Update Area;</li> <li>3. Payment of in-lieu fees.</li> </ol> <p><b>Mitigation Measure BR-2</b></p> <ol style="list-style-type: none"> <li>1. Focused Surveys: In order to assess the potential for impacts to special status plants, a qualified biologist shall conduct focused botanical surveys for the three species that may potentially occur within the project area (Sanford's arrowhead (<i>Sagittaria sanfordii</i>), forked hare-leaf (<i>Lagophylla dichotoma</i>), and California jewel-flower (<i>Caulanthus californicus</i>)). The biologist shall conduct the survey prior to project construction, during the appropriate blooming period: California jewel-flower – February-May; Forked hare-leaf – April-September; Sanford's arrowhead – May-October.</li> <li>2. Avoidance: If the survey detects special status plant species, populations shall be avoided by installing ESA fencing around the portion of the population within the project area.</li> <li>3. Compensatory Mitigation: If implementation of the mitigation measures presented above would not avoid or reduce the impacts to a less than significant level, the City shall comply with Mitigation Measure 4-3 in the General Plan Update PEIR: (Page 3-20)</li> </ol> <p><b>Significance after Mitigation:</b> Based on the City incorporating Mitigation Measures BR-1 and BR-2 in the project, the impacts would be <i>less than significant with project-level mitigation incorporated</i>.</p> |
| 2.3       | Biological Resources<br>IV b) & c) | <p><b>Impacts:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U. S. Wildlife Service?</li> <li>• Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal, etc.) through direct removal, filling, hydrological interruption, or</li> </ul>  |

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference             | Environmental Issue   |
|-----------|--|---|
|           |  | <p>other means?</p> <p><b>Discussion:</b> The proposed street widening project would encroach into portions of Dog Creek, as well as irrigation ditches, roadside drainage ditches, an agricultural water-holding pond, and an ephemeral ponded area within a plowed field. Therefore, a formal wetland delineation is necessary for determining impacts and mitigation measures for these potential wetlands and waters.</p> <p><b>Mitigation Measure BR-3:</b> The City of Clovis shall incorporate in the project the following mitigation measures from the General Plan Update Final PEIR, Mitigation Measure 4-4 (Page 3-20):</p> <p>The City shall contract with a qualified biologist to conduct a jurisdictional delineation following the methods outlined in the US Army Corps of Engineers Wetland Delineation Manual to map the extent of wetlands and non-wetland waters, determine jurisdiction, and assess potential impacts. The biologist shall present the results of the delineation in a wetland delineation letter report, which shall be incorporated into the EIR the City will prepare for the project.</p> <p>If the project has the potential to impact jurisdictional features, the City shall obtain permits and authorizations from the US Army Corps of Engineers, California Department of Fish and Wildlife, and/or Central Valley Regional Water Quality Control Board. The agency authorization would include impact avoidance and minimization measures as well as mitigation measures for unavoidable impacts. Specific avoidance, minimization, and mitigation measures for impacts to jurisdictional resources shall be determined through discussions with the regulatory agencies during the proposed project permitting process and may include monetary contributions to a mitigation bank or habitat creation, restoration, or enhancement.</p> <p><b>Significance after Mitigation:</b> Based on the City incorporating Mitigation Measure BR-3 in the project, which includes the requirement that measures would be identified and incorporated in the project that would avoid or reduce impacts to an insignificant level, this impact would be <i>less than significant with project-level mitigation incorporated</i>.</p> |
| 2.4       | <b>Cultural Resources</b><br>v. a), b), & c) | <p><b>Impact:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines Section 15064.5, cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines Section 15064.5, or directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</li> <li>• Disturb any human remains, including those interred outside of formal cemeteries?</li> </ul> <p><b>Discussion:</b> Based on information in the General Plan Update PEIR, the Loma Vista Specific Plan EIR, and surveys of the project area, no historical, archaeological, or paleontological resources or human remains exist on the surface of the project area.</p>   |

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic<br>Appendix G<br>Reference | Environmental Issue  |
|-----------|----------------------------------|--|
|           |                                  | <p>However, subsurface resources or remains may be uncovered during project construction activities. To address this possibility, the City of Clovis has incorporated the following mitigation measures in the project:</p> <p><b>Mitigation Measure CR-1:</b></p> <ul style="list-style-type: none"> <li>• Subsurface historic, archaeological, or paleontological may be uncovered during project construction activities. Should this occur, the City shall immediately halt construction in the area of the potential resource and retain a qualified consultant to determine the significance of the resource and the measures the City should undertake to protect the resource. Protection measures shall comply with State CEQA Guidelines Section 15126.4 and any other applicable state and federal laws.</li> <li>• In the event of the accidental discovery or recognition of any human remains in the area, the City shall comply with State CEQA Guidelines section 15064.5, (e), which prescribes steps that the City must undertake to protect the remains.</li> </ul> <p><b>Significance after Mitigation:</b> Based on the City's incorporation of Mitigation Measure CR-1 in the project, the potential for the project to cause a substantial adverse change in an historical resource, archaeological, or paleontological resource or human remains would be <i>less than significant with project-level mitigation incorporated</i>.</p>   |
| 2.5       | Noise<br>XII. d)                 | <p><b>Impact:</b> Would the proposed street widening project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</p> <p><b>Discussion:</b> Construction activity associated with the project would result in a substantial temporary increase in ambient noise levels. For nearby residential land uses, noise-generating construction activities occurring during the more noise-sensitive nighttime hours would be of particular concern given the potential for increased levels of sleep disruption to occupants of nearby residential dwellings. The proposed project does not identify hourly restrictions for construction activities. As a result, this impact would have a potentially significant short-term noise impact to occupants of nearby residential land uses.</p> <p>The City of Clovis has incorporated into the project the following mitigation measures in order to reduce to a less than significant level the temporary exposure of nearby noise-sensitive receptors to uncontrolled construction-generated noise:</p> <p><b>Mitigation Measure N-1:</b></p> <ul style="list-style-type: none"> <li>• Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 5:00 p.m. on Saturday and Sunday. From June 1st through September 15th, permitted construction activity may commence after 6:00 a.m., Monday through Friday.</li> <li>• Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed</li> </ul> |

**TABLE E-2**  
**Less than Significant Impacts with Project-Level Mitigation Incorporated**

| Issue No. | Topic Appendix G Reference | Environmental Issue   |
|-----------|----------------------------|---|
|           |                            | <p>during equipment operation.</p> <p><b>Significance After Mitigation</b></p> <p>Implementation of Mitigation Measure N-1 would limit construction activities to the less noise-sensitive periods of the day, consistent with requirements typically imposed for noise-generating construction activities by the City of Clovis. In addition, the use of mufflers would reduce individual equipment noise levels by approximately 10 dBA. With implementation of the above mitigation measure, this impact would be <i>less than significant with project-level mitigation incorporated</i>.</p> |

### 3. Less than Significant Impacts

Table E-3 describes impacts of the proposed street widening project that would be *less than significant*.

**TABLE E-3**  
**Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference | Resource or Condition  |
|-----------|----------------------------|--|
| 3.1       | Aesthetics<br>I. a)        | <p><b>Impact:</b> Would the proposed street widening project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?</p> <p><b>Discussion:</b> The impact of the project on scenic resources would be less than significant. The reasons for this conclusion are as follows:</p> <ul style="list-style-type: none"> <li>• Shaw Avenue within the project area is not a state scenic highway.</li> <li>• The General Plan Update PEIR did not identify any scenic resources within or near the project area.</li> <li>• The Loma Vista Specific Plan Draft EIR states, “scenic vistas are generally considered to be “horizon line” views greater than 1 mile from a receptor. While the [specific plan] project area is primarily undeveloped, and presently offers visual open space, it has no unique physical features, scenery, or scenic qualities characteristic of “visual or aesthetic resources. Urbanization would not block distant scenic vistas of mountain ranges that exist in the background of all regional views in the area, although the character of more proximate views would be substantially altered.” (Loma Vista Draft EIR, page 5-20)</li> <li>• The proposed widening of Shaw Avenue would have no design or operational characteristics that would alter or substantially change the conclusions of the General Plan Update PEIR or the Loma Vista Specific Plan EIR regarding scenic vistas. The existing Shaw Avenue roadway and the adjoining land within the project</li> </ul> |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference | Resource or Condition   |
|-----------|----------------------------|---|
|           |                            | area do not constitute a scenic vista, and the generally flat surface of the proposed widened roadway would not block any vistas in the area, scenic or otherwise.  |
| 3.2       | Aesthetics<br>I. c)        | <p><b>Impact:</b> Would construction activities associated with the proposed street widening project substantially degrade the existing visual character or quality of the site and its surroundings?</p> <p><b>Discussion:</b> Project construction activities would temporarily diminish the visual quality of the project area. This impact would be <i>less than significant</i> for the following reasons:</p> <ul style="list-style-type: none"> <li>• The impact would be temporary.</li> <li>• The project contractor must comply with the City’s Standard Specifications 4-13 and 5-21. Standard Specification 4-13, Interim Cleanup, in general, requires daily cleanup of the work site. Standard Specification 5-21, Final Cleanup, requires that the project contractor, upon completion of the project, clean all work areas of all debris, excess materials, temporary structures, and equipment.</li> </ul>   |
| 3.3       | Agriculture<br>II. a)      | <p><b>Impact:</b> Would the proposed street widening project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use?</p> <p><b>Discussion:</b> This impact would be <i>less than significant</i> for the following reasons:</p> <ul style="list-style-type: none"> <li>• The amount of farmland the proposed project would convert to non-agricultural use, about seven acres, is minimal. According to the California Department of Conservation’s Important Farmland Map, only two of the seven acres are Prime Farmland or Farmland of Statewide Importance.</li> <li>• The General Plan PEIR determined that all properties within the Loma Vista Specific Plan are “...not economically viable for future agricultural use.” (Final PEIR, Page 3-6)</li> </ul>   |
| 3.4       | Agriculture<br>II, b)      | <p><b>Impact:</b> Would the proposed street widening project conflict with existing zoning for agricultural use, or a Williamson Act contract?</p> <p><b>Discussion:</b> This impact would be <i>less than significant</i> for the following reasons:</p> <ul style="list-style-type: none"> <li>• The City of Clovis does not apply zoning to streets.</li> <li>• Fresno County has zoned some of the land adjoining the existing Shaw Avenue right-of-way for agricultural use. The project would not conflict with the existing agricultural zoning because the zoning would not exist after City has obtained the land for street right-of-way.</li> </ul> <p>Fresno County has zoned for agricultural use land that adjoins (but is not within) the proposed street right-of-way. For the land within the City of Clovis’ Sphere of Influence, the project would not conflict with this zoning because the Clovis General Plan Update and the Loma Vista Specific Plan designate the land for urban uses and not a continuation of the existing agricultural uses.</p> |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic<br>Appendix G<br>Reference | Resource or Condition  |
|-----------|----------------------------------|--|
| 3.5       | Agriculture<br>III. e)           | <p><b>Impact:</b> Would the proposed street widening project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forestland to non-forest use?</p> <p><b>Discussion:</b> This impact would be <i>less than significant</i>. The land within and adjoining the project area within the City's Sphere of Influence is designated by the Clovis General Plan Update and the Loma Vista Specific Plan for conversion to urban uses. Likewise, the Fresno County General Plan designates the land within the project area outside the City's Sphere of Influence for rural residential uses.</p>  |
| 3.6       | Air Quality<br>III. b)           | <p><b>Impact:</b> Would the proposed street widening project violate any air quality standard or contribute substantially to an existing or projected air quality violation?</p> <p><b>Discussion:</b> Implementation of the project would not result in long-term increases of mobile-source emissions, and projected short-term construction-generated emissions would not exceed applicable thresholds of significance.</p> <p>The proposed project is included in the regional emissions analysis conducted by the Fresno Council of Governments for the conforming <i>2014 Regional Transportation Plan</i> and the <i>2015 Federal Transportation Improvement Program</i>. The conformity determination found that the 2014 Regional Plan/2015 Federal Program, and, therefore, the individual projects contained in the plan/program are conforming projects, and would not interfere with air quality planning efforts, including implementation of the State Implementation Plan.</p> <p>For the above reasons, implementation of the proposed project would not conflict with nor obstruct implementation of applicable air quality plans. The impact, therefore, would be <i>less than significant</i>.</p> |
| 3.7       | Air Quality<br>III. c) & d)      | <p><b>Impacts:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?</li> <li>• Expose sensitive receptors to substantial pollutant concentrations?</li> </ul> <p><b>Discussion:</b></p> <p><i>Air Quality Standards</i></p> <p>Implementation of the proposed street widening project would not result in or contribute substantially to an existing or projected air quality violation for which the project area or the San Joaquin Valley Air Basin (SJVAB) is designated non-attainment. This impact, therefore, would be <i>less than significant</i>.</p> <p><i>Short-Term Increases of Construction-Generated Emissions</i></p> <p>The levels of construction-generated emissions of ozone-precursor pollutants (i.e., reactive organic gasses and oxides of nitrogen) and of particulate matter for the</p>   |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference  | Resource or Condition  |
|-----------|-----------------------------|--|
|           |                             | <p>following reasons would be <i>less than significant</i>.</p> <ul style="list-style-type: none"> <li>• The project must comply with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII and,</li> <li>• The Air Quality &amp; Greenhouse Gas Impact Analysis performed for this Initial Study determined that project-generated emissions would not exceed applicable SJVAPCD significance thresholds.</li> </ul> <p><i>Long-Term Increases of Operational Emissions</i></p> <p>The purpose of the proposed street widening project is to provide improved traffic capacity and increased safety for motorists and pedestrians along the Shaw Avenue corridor. Implementation of the project would not result in an increase in vehicle traffic volumes along Shaw Avenue, nor would the project result in significant changes in vehicle traffic speeds. As a result, implementation of the proposed project would not result in long-term increases of mobile-source emissions. This impact would be <i>less than significant</i>.</p> |
| 3.8       | Air Quality III. e)         | <p><b>Impact:</b> Would the proposed street widening project create objectionable odors affecting a substantial number of people?</p> <p><b>Discussion:</b> Implementation of the proposed street widening project would not result in long-term emissions of odors. However, construction of the proposed project would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Some people may consider exhaust fumes, particularly diesel-exhaust, objectionable. In addition, pavement coatings used during project construction would emit temporary odors.</p> <p>Construction-generated emissions would occur intermittently throughout the workday and would dissipate rapidly with increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. For these reasons, potential short-term exposure of sensitive receptors to odorous emissions would be <i>less than significant</i>.</p>                |
| 3.9       | Biological Resources IV. d) | <p><b>Impact:</b> Would the proposed street widening project Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?</p> <p><b>Discussion:</b> The project area does not appear to constitute a “movement corridor” for native wildlife that would attract wildlife to move through the area any more than the surrounding agricultural lands. Rural residential development occurs throughout the general area and includes many fenced yards, which restrict access for wildlife.</p> <p>Although Dog Creek is within the project area, this section of the creek is degraded from heavy goat grazing and woven wire fencing needed to contain livestock, so movement through the area, especially for any mid-large sized wildlife, is inhibited. As long as the creek passage/flow under the road is not blocked, the proposed road</p>  |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference                   | Resource or Condition  |
|-----------|--|--|
|           |  | widening should not inhibit the movement of smaller wildlife species and birds. Therefore, the project would have a <i>less than significant effect</i> on regional wildlife movements.  |
| 3.10      | <b>Geology &amp; Soils</b><br>VI. a), c), d) | <p><b>Impact:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?</li> <li>• Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?</li> <li>• Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?</li> <li>• Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?</li> <li>• Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</li> </ul> <p><b>Discussion:</b> The proposed street widening project would not expose people or structure to the adverse effects listed above for the following reasons:</p> <ul style="list-style-type: none"> <li>• The information in the General Plan Update Draft PEIR, Section 5.6, Geology and Soils (Page 5.6-1) and Appendix A, Page A-43, do not indicate that the seismic, geologic, and soils conditions in the project vicinity would result in the exposure of people or structures to the potential substantial adverse effects.</li> <li>• The City of Clovis would require as a standard condition of development the preparation of a site-specific geotechnical investigation. The recommendations that result from investigation and the requirements of the City's Building Code and Development Standards would ensure that any impacts from seismic, geologic, and soils conditions would be <i>less than significant</i>. (General Plan Update Draft PEIR, Page 5.6-11)</li> </ul> |
| 3.11      | <b>Geology &amp; Soils</b><br>VI. b)         | <p><b>Impact:</b> Would the proposed street widening project result in substantial soil erosion or the loss of topsoil?</p> <p><b>Discussion:</b> The potential for the project to result in substantial soil erosion or loss of topsoil would be <i>less than significant</i>. This conclusion reflects the following information from the General Plan Update Draft PEIR.</p> <p>The project would be subject to General Construction Permit, Order No. 2012-0006-DWQ, issued by the State Water Quality Control Board in 2012, which regulates</p>  |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference                     | Resource or Condition   |
|-----------|--|---|
|           |  | construction projects of one acre or more, including the proposed street widening project. Projects obtain coverage under the permit by developing and implementing the Storm Water Pollution Prevention Plans, which must specify best management practices that a project would employ to minimize pollution of storm water. Best management practices include erosion controls, sediment controls, wind erosion controls, non-storm water management controls, and waste management and controls (i.e. good housekeeping practices. ( Impact 5.6-4, Page 5.6-12)   |
| 3.12      | <b>Greenhouse Gas</b><br>VII. a) & b)          | <p><b>Impact:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</li> <li>• Conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of greenhouse gases?</li> </ul> <p><b>Discussion:</b></p> <p>Construction of the proposed street widening project would result in short-term increases of greenhouse gas emissions. Given the relatively low level of greenhouse gas emissions that construction activities would generate and given that the emissions would be short-term, increases in greenhouse gas emissions attributable to project construction activities would be <i>less than significant</i>.</p> <p>The proposed project in itself would not result in a change in average-daily traffic volumes or average vehicle travel speeds within the project area. As a result, the proposed project would not result in long-term increases of greenhouse gas emissions.</p> |
| 3.13      | <b>Hazards</b><br>VIII. a) & b)                | <p><b>Impact:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</li> <li>• Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?</li> </ul> <p><b>Discussion:</b> The evaluation of these impacts in the General Plan Update PEIR is adequate for the proposed street widening project. The Draft PEIR concludes that upon implementation of existing regulatory requirement and standard conditions of approval, the impacts would be <i>less than significant</i>. (Section 5.8.3 Environmental Impact, Page 5.8-23)</p>  |
| 3.14      | <b>Hydrology &amp; Water Quality</b><br>IX. b) | <p><b>Impact:</b> Would the proposed street widening project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.</p> <p><b>Discussion:</b> The proposed street widening project would require the use of groundwater for construction purposes, landscaping irrigation, and street cleaning. According to the City of Clovis, the volume of water required for the project would have</p>  |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference                      | Resource or Condition  |
|-----------|---|--|
|           |   | <p>a <i>less than significant</i> impact on groundwater supplies.</p> <p>The proposed project would reduce the amount of land available for groundwater recharge by covering existing bare land with impermeable road and sidewalk surfaces. The existing paved section of Shaw Avenue within the project area covers an estimated 6 acres. The proposed project would increase the amount of impervious surface to 24 acres, an increase of 18 acres.</p> <p>The 18-acre increase is <i>less than significant</i> when considering that under the General Plan Update, the amount of land within the Clovis Plan Area devoted to impervious road surfaces would increase by 869 acres, from 4,035 acres to 4,094 acres, at full buildout of the plan (Table 5.9-2, Page 5.9-23).</p>  |
| 3.15      | Hydrology & Water Quality<br>IX. c), d), e), f) | <p><b>Impacts:</b> Would the proposed street widening project:</p> <ul style="list-style-type: none"> <li>• Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</li> <li>• Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?</li> <li>• Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?</li> <li>• Otherwise substantially degrade water quality?</li> </ul> <p><b>Discussion:</b></p> <p>Dog Creek, a small, intermittent stream flows under Shaw Avenue about 1,000 feet east of Leonard Avenue. The proposed street widening project would have no design or operational characteristics that would substantially alter the course of the stream or substantially increase the volume of water in the stream.</p> <p>Grading required for the proposed project would result in changes to the existing drainage pattern within the project area, and the additional paved surfaces that would result from the project would increase the rate and amount of surface runoff and the potential to degrade surface water quality. As the General Plan Update Draft PEIR indicates, any impacts associated with changes in drainage patterns, the rate and volume of runoff, or surface water quality would be <i>less than significant</i> because the project must comply with existing standard conditions of approval and regulatory requirements, including the previously described requirement for a Storm Water Pollution Prevention Plans. (Page 5.9-2)</p> |
| 3.16      | Noise<br>XII b)                                 | <p><b>Impact:</b> Would the proposed street widening project have result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise</p>   |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference           | Resource or Condition   |
|-----------|--------------------------------------|---|
|           |                                      | <p>levels?</p> <p><b>Discussion:</b></p> <p>Based on data obtained from Caltrans, the highest measured traffic vibrations measured at the shoulder of major roadways have never exceeded 2.0 mm/s (Caltrans 2002(b)). Roadway vehicle traffic along area roadways would not be a major source of groundborne vibration. As a result, traffic vibration levels associated with implementation of the proposed project would not exceed applicable thresholds at nearby land uses.</p> <p>Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed improvements would likely require the use of off-road equipment, such as tractors, concrete mixers, and haul trucks. The use of major groundborne vibration-generating construction equipment, such as pile drivers, would not be required for this project.</p> <p>Predicted vibration levels at the nearest on-site and offsite structures would not exceed the minimum recommended criteria for structural damage and human annoyance (0.2 in/sec ppv). As a result, this impact would be <i>less than significant</i>.</p> |
| 3.17      | Population & Housing XIII a)         | <p><b>Impact:</b> Would the proposed street widening project induce substantial population growth either in an area, directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?</p> <p><b>Discussion:</b> The proposed street widening project does not propose the construction of new homes or business.</p> <p>The project would replace an existing two-lane rural road with a major five- to six-lane urban arterial road. The City's adopted General Plan Update and Loma Vista Specific Plan designate the portion of the project area within the City's Sphere of Influence for urban development and the Fresno County General Plan designates the portion outside the Sphere of Influence for rural residential development. While the proposed project would facilitate the planned urban and rural development by providing adequate road access within the project area, it would not induce the development. The City of Clovis created the inducement for the urban development when it adopted the General Plan Update and the Loma Vista Specific Plan. Therefore, the impact would be <i>less than significant</i>.</p>             |
| 3.18      | Utilities & Service Systems XVIII b) | <p><b>Impact:</b> Would the proposed street widening project result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects?</p> <p><b>Discussion:</b> Based on the project description, the proposed street widening project would not result in the construction or expansion of water or wastewater treatment facilities.</p>   |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference                 | Resource or Condition  |
|-----------|--|--|
|           |  | The project may involve the extension of water and sewer lines within the proposed street right-of-way. Impacts associated with constructing these facilities would be <i>less than significant</i> because the City would design and construct the facilities following its standard specifications and the mitigation measures listed in Section E-2 of this Initial Study.  |
| 3.19      | Utilities & Services XVII c)               | <p><b>Impact:</b> Would the proposed street widening project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</p> <p><b>Discussion:</b> The proposed street widening project would require and result in the construction of new storm water drainage facilities and the expansion of existing facilities. Impacts associated with constructing new facilities and modifying existing facilities would be <i>less than significant</i> because the City must design, construct, and operate the facilities following the requirements of the Fresno Metropolitan Flood Control District and the mitigation measures listed in Section E-2 of this Initial Study.</p>   |
| 3.20      | Utilities & Services XVII g)               | <p><b>Impact:</b> Would the proposed street widening project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</p> <p><b>Discussion:</b> According to the City of Clovis, sufficient water supplies are available to serve the short-term construction needs and long-term landscaping irrigation needs of the project.</p>  |
| 3.21      | Utilities & Services xvii i) & g)          | <p><b>Impact:</b> Would the proposed street widening project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?</p> <p><b>Discussion:</b> According to the City of Clovis, the landfill that would serve the project has sufficient permitted capacity to accommodate the project's solid waste disposal needs and complies with federal, state, and local statutes and regulations related to solid waste.</p>   |
| 3.22      | Mandatory Finding of Significance XVIII a) | <p><b>Impact:</b> Does the proposed street widening project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?</p> <p><b>Discussion:</b> Based on the information in this Initial Study, the General Plan Update PEIR, and the Loma Vista Specific Plan EIR, the potential for the project to result in significant impacts to the quality of the environment, fish or wildlife species or populations, plant or animal communities, the range of rare or endangered plants or animal, or major cultural resources would be <i>less than significant</i>.</p> |

**TABLE E-3  
Less than Significant Impacts**

| Issue No. | Topic Appendix G Reference                           | Resource or Condition  |
|-----------|--|--|
| 3.23      | <b>Mandatory Finding of Significance</b><br>XVIII b) | <p><b>Impact:</b> Does the proposed street widening project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)</p> <p><b>Discussion:</b> Based on the information in this Initial Study, the General Plan Update PEIR, and the Loma Vista Specific Plan EIR, the potential for the project to have impacts that are individually limited but cumulatively considerable is <i>less than significant</i>.</p> |

#### 4. No Impacts

Table E-4 lists the resources and conditions upon which the proposed street widening project would have *no impacts*.

**TABLE E-4  
No Impacts**

| Issue No. | Topic Appendix G Reference                | Environmental Issue  |
|-----------|---|--|
| 4.1       | <b>Agriculture</b><br>II. d)              | The proposed street widening project would have no impacts on forestland, timberland, or timberland zoned for timberland production. These resources do not exist within or near the project area.   |
| 4.2       | <b>Biological Resources</b><br>IV. e & f) | The Biological Resources Study conducted for this Initial Study determined that proposed street widening project would not conflict with local policies or ordinances protecting biological resources or with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan. (See Appendix B) |
| 4.3       | <b>Energy</b><br>NA                       | Based on consultation with City of Clovis staff, the proposed street widening project would not result in inefficient, wasteful, or unnecessary consumption of energy.   |
| 4.4       | <b>Geology &amp; Soils</b><br>VI. e)      | The proposed street widening project description does not include the use of septic tanks or alternative wastewater disposal systems.  |
| 4.5       | <b>Hazards</b><br>VIII. c)                | The proposed street widening project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school because the project area is not within one-quarter mile of an existing or proposed school.  |

**TABLE E-4  
No Impacts**

| Issue No. | Topic Appendix G Reference                   | Environmental Issue   |
|-----------|--|---|
| 4.6       | Hazards VIII. d)                             | A review of the California Department of Toxic Substances Control's EnviroStor web site did not result in the identification of any hazardous materials sites within the project area.  |
| 4.7       | Hazards VIII. e)                             | Fresno Yosemite International is the airport nearest the project area. The project area is 4.5 miles northeast of the airport and is not within the adopted land use plan for the airport.<br><br>As shown on Figures 5.8-2 and 5.8-3 in the General Plan Update Draft PEIR, the project area is not within an adopted Safety Compatibility Zone or Airport Protection Surface for Fresno Yosemite International. (Pages 5.8-18 & 20) Therefore, the proposed project would not result in an airport-related safety hazard for people working within or near the project area and would not result in a change in airport traffic patterns, including an increase in traffic or change that results in substantial safety risks.  |
| 4.8       | Hazards VIII. f)                             | Based on a review of the Federal Aviation Administration <i>San Francisco Sectional Aeronautical Chart, 91<sup>st</sup> Edition</i> , the proposed street widening project is not in the vicinity of a private airstrip.  |
| 4.9       | Hazards VIII. g)                             | Widening Shaw Avenue from a two-lane rural road to a five-to six-lane arterial road would facilitate emergency vehicular response and evacuation within the Loma Vista Specific Plan area and beyond. For more information on emergency preparedness, see the General Plan Update PEIR, Page 5.8-8.   |
| 4.10      | Hazards VIII. h)                             | The proposed street widening project is not within an area subject to wildland fires, and Figure 5.8-1 in the General Plan Update Draft PEIR shows that the project area is not within a Moderate to Very High Fire Hazard Severity Zone. (Page 5.8-16)   |
| 4.11      | Hydrology & Water Quality IX. a)             | The proposed street widening project would not violate any water quality standards or waste discharge requirements. This conclusion reflects information provided in this Initial Study under Issues Nos. 3.11, 3.15, 3.18, 3.19, and 4.7.  |
| 4.12      | Hydrology & Water Quality IX. g), h), i), j) | Based on Figure 5.9-5 in the General Plan Update Draft PEIR, most of the project area is not within a 100-year flood zone. The figure shows that only a small area on the north side of Shaw Avenue at about the Thompson Avenue alignment adjoins or is within a 100-year flood zone. The proposed project would construct street widening improvements in this area but would not place housing in this area. The City would design the street widening improvements following the requirements of the Fresno Metropolitan Flood Control District. The requirement improvements would alleviate the existing flooding and not impede or redirect floodwaters in a manner that would result in flooding elsewhere.<br><br>Based on Figure 5.9-5 in the General Plan Update Draft PEIR, the project area would not be subject flooding because of the failure of a dam or levee (Page 5.9-19) |

**TABLE E-4  
No Impacts**

| Issue No. | Topic<br>Appendix G<br>Reference      | Environmental Issue  |
|-----------|---------------------------------------|--|
|           |                                       | Based on information under Impact 5.9-6 in the General Plan Update Draft PEIR, the project area would not be subject to seiches, mudflows, or tsunamis. (Page 5.9-31 & 32)   |
| 4.13      | Land Use & Planning<br>X. a)          | The location, design, and operation of the proposed street widening project would not physically divide an established community. Instead, the widened Shaw Avenue would serve as a major access corridor for the urban development the City of Clovis has planned for the Loma Vista Specific Plan Area.                                |
| 4.14      | Land Use & Planning<br>X. b)          | The proposed street widening project is consistent with the land use plans, policies, and regulation of the City of Clovis and the County of Fresno. The Clovis General Plan Update and the Loma Vista Specific Plan specifically call for the development of Shaw Avenue within the project area as an arterial street.                 |
| 4.15      | Land Use & Planning<br>X. c)          | Research conducted for this Initial Study did not identify any habitat conservation plans or natural community conservation plans to which the project area would be subject.  |
| 4.16      | Mineral Resources<br>XI. a) & b)      | Based on Figure 5.11-1 in the General Plan Update Draft PEIR, no mineral resources or mineral resources recovery sites exist within or near the project area. (Page 5.11-3)  |
| 4.17      | Noise<br>XII. e) & f)                 | Based on Figure 5.12-6 in the General Plan Update Draft PEIR, the proposed street widening project would not be in an area subject to excessive airport or aircraft related noise. (Page 5.12-45)  |
| 4.18      | Population & Housing<br>XIII. b) & c) | The proposed street widening project would not displace housing or population because neither exists within the project area.  |
| 4.19      | Public Services<br>XIV. a)            | Based on consultations with City of Clovis staff, widening Shaw Avenue would not result in the need for new or physically altered fire protection, police protection, school, park, or recreation facilities or services.  |
| 4.20      | Recreation<br>XV. a) & b)             | Based on consultations with City of Clovis staff, widening Shaw Avenue would not increase the use of existing neighborhood or regional parks or other recreation facilities.<br><br>The project description does not include or require the construction of recreation facilities.   |
| 4.21      | Transport. & Traffic<br>XVI. a)       | The Clovis General Plan Update and the Loma Vista Specific Plan are the plans that establish measures of effectiveness for the performance of the circulation system in the project vicinity. The project is consistent with both plans and is necessary to ensure that the circulation system works effectively in the Loma Vista area. |
| 4.22      | Transport. & Traffic<br>XVI. b)       | As described in the General Plan Update Draft PEIR, Shaw Avenue within the project area is not subject to a congestion management plan. (Page 5.16-25)   |

**TABLE E-4  
No Impacts**

| Issue No. | Topic<br>Appendix G<br>Reference                        | Environmental Issue  |
|-----------|---|--|
| 4.23      | <b>Transport. &amp; Traffic</b><br>XVI. c)              | As described in issue 4.7 and is evident from the project description, the proposed street widening project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.   |
| 4.24      | <b>Transport. &amp; Traffic</b><br>XVI. d)              | The proposed street widening would not result in hazards due to design features or incompatible use. The City of Clovis used the same arterial street design standards proposed for the project to widen Shaw Avenue west of De Wolf Avenue without creating any hazards due to design features or incompatible uses.  |
| 4.25      | <b>Transport. &amp; Traffic</b><br>XVI. e)              | Widening Shaw Avenue from a two-lane rural street to a five- to six-lane urban arterial street would improve emergency access in the Loma Vista area.  |
| 4.26      | <b>Transport. &amp; Traffic</b><br>XVI. f)              | The proposed street widening project would continue the implementation of the City of Clovis' adopted policies and plans for pedestrian and bicycle facilities along Shaw Avenue and would facilitate the eventual implementation of public transit on the street. The proposed design of the includes sidewalks and bike lanes on both sides of the street within the City's Sphere of Influence and has sufficient width to accommodate future transit facilities. |
| 4.27      | <b>Utilities &amp; Service Systems</b><br>XVII. a) & e) | The proposed street widening project would have no design or operational characteristics that would require the use of existing wastewater treatment facilities. Therefore, the project could not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in a determination by the wastewater treatment provider that it does not have sufficient capacity to serve the project.                                  |
| 4.28      | <b>Mandatory Findings of Significance</b><br>XVIII      | The research conducted for this Initial Study, including examinations of the General Plan Update PEIR and the Loma Vista Specific Plan EIR, determined that the project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.   |

## G. Names of Persons Who Prepared or Participated in the Initial Study / Environmental Checklist

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## H. Sources Consulted

Following are the documents and other sources consulted in preparing this Initial Study:

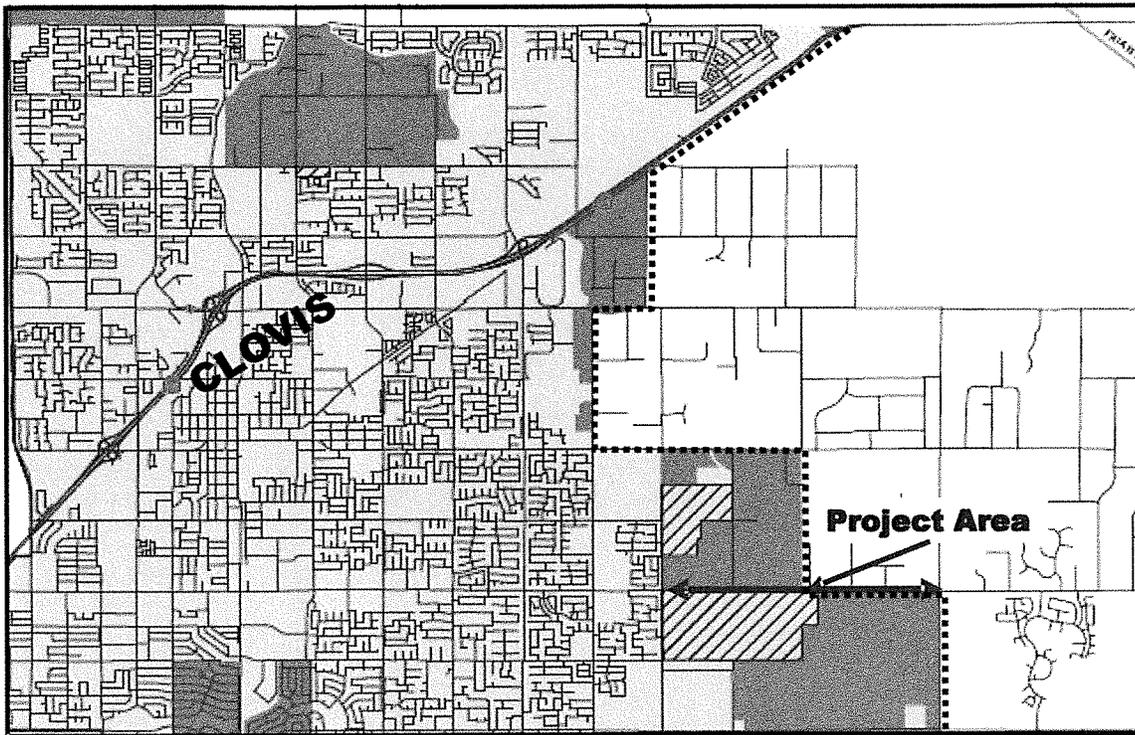
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www



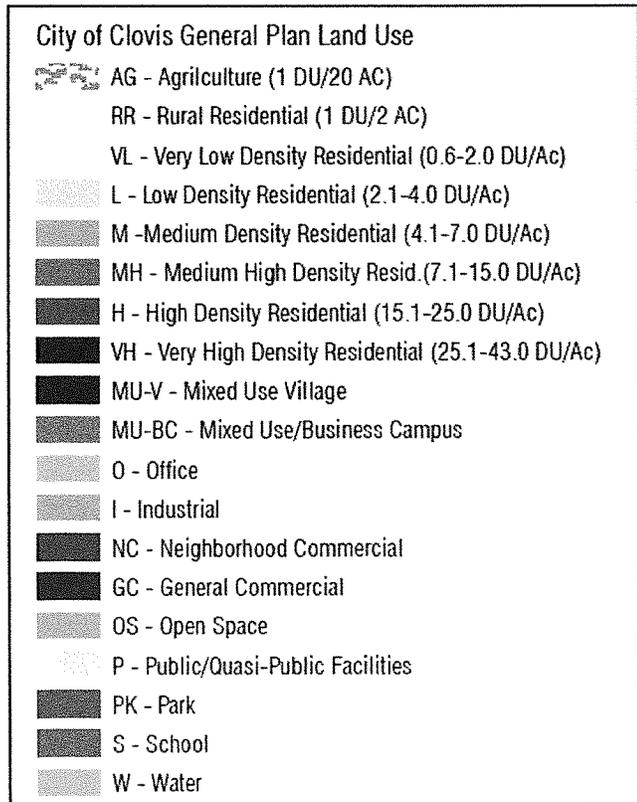
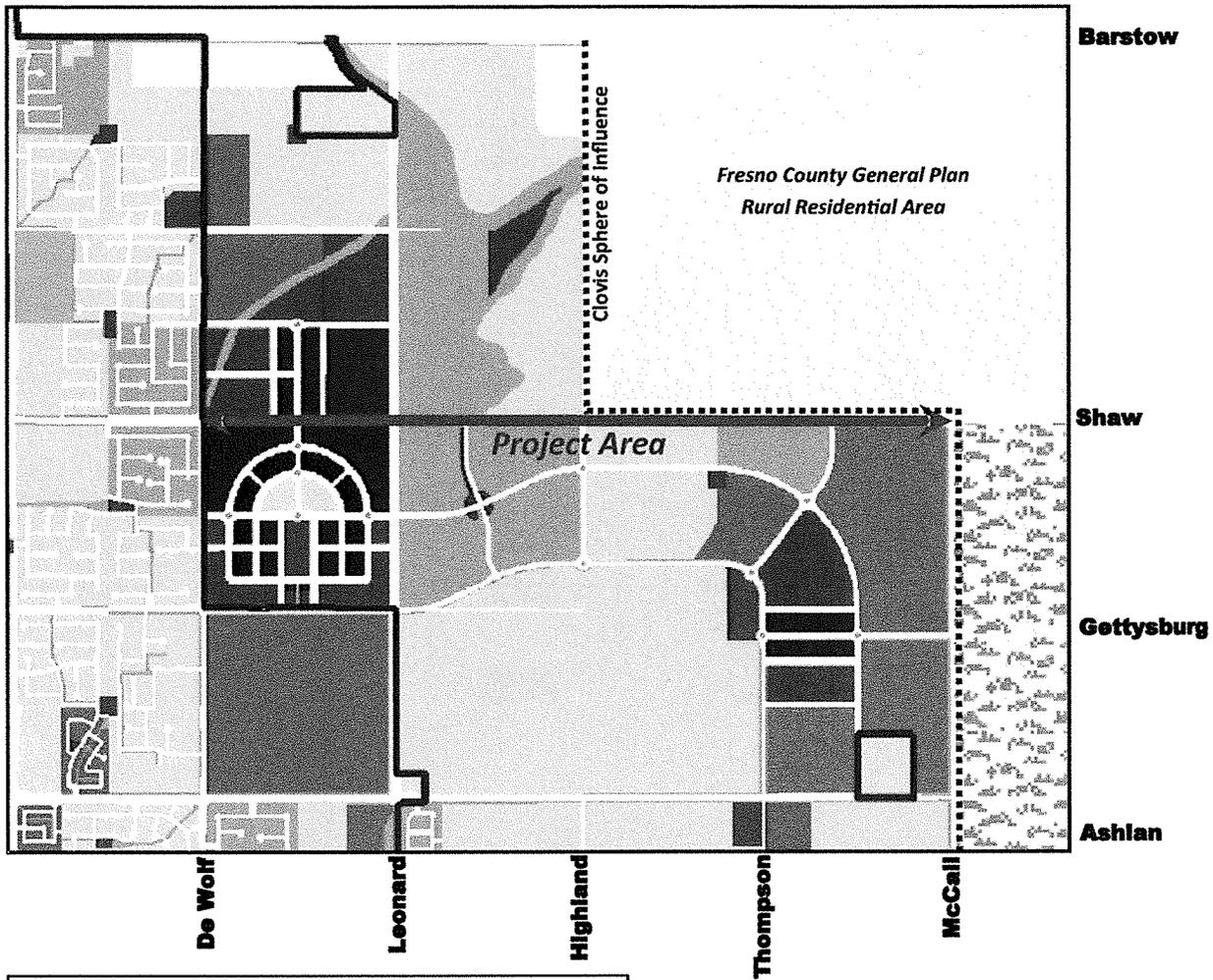
-  City Boundary
-  Pending Annexation
-  Sphere of Influence Boundary



Scale: Approx. 1 inch = 1/2 mile

**FIGURE A-1**  
**Project Location,**  
**City Boundary &**  
**Sphere of Influence Boundary**

Source: City of Clovis General Plan, adapted by Odell  
 Planning & Research



## FIGURE A-2

### Project Location and City of Clovis General Plan Land Use

Source: City of Clovis General Plan, adapted by Odell Planning & Research



Scale: Approx. 1 inch = 1/2 mile



Existing Shaw Avenue between De Wolf and McCall Avenues (typical)



Potential future Shaw Avenue between De Wolf and McCall Avenues (typical)

## **FIGURE E-1**

### **Existing and Potential Future Views of Project Area**

Appendix A  
Air Quality & Greenhouse Gas Impact Analysis

Prepared by  
**Ambient Air Quality & Noise Consulting**

**February 2015**

# **AIR QUALITY & GREENHOUSE GAS IMPACT ANALYSIS**

**FOR**

**SHAW AVENUE WIDENING  
BETWEEN N. DEWOLF AVE.  
AND N. MCCALL AVE.  
CLOVIS, CA**

**FEBRUARY 2015**

**PREPARED FOR:**  
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### APPENDICES

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| Appendix A: 2011 Regional Transportation Plan Project Listing |
| Appendix B: Emissions Modeling                                |

## LIST OF COMMON TERMS & ACRONYMS

|                   |  |
|-------------------|--|
| AAM               | Annual Arithmetic Mean                                   |
| APCD              | Air Pollution Control District                           |
| AQAP              | Air Quality Attainment Plan                              |
| CAAQS             | California Ambient Air Quality Standards                 |
| ARB               | California Air Resources Board                           |
| CCAA              | California Clean Air Act                                 |
| CCAR              | California Climate Action Registry                       |
| CEQA              | California Environmental Quality Act                     |
| CH <sub>4</sub>   | Methane  |
| CO                | Carbon Monoxide  |
| CO <sub>2</sub>   | Carbon Dioxide   |
| CO <sub>2e</sub>  | Carbon Dioxide Equivalent                                |
| DPM               | Diesel-Exhaust Particulate Matter or Diesel-Exhaust PM   |
| DRRP              | Diesel Risk Reduction Plan                               |
| FCAA              | Federal Clean Air Act                                    |
| GHG               | Greenhouse Gases   |
| HAP               | Hazardous Air Pollutant                                  |
| IPCC              | Intergovernmental Panel on Climate Change                |
| LOS               | Level of Service   |
| N <sub>2</sub> O  | Nitrous Oxide  |
| NAAQS             | National Ambient Air Quality Standards or National AAQS  |
| NESHAPs           | National Emission Standards for Hazardous Air Pollutants |
| NO <sub>x</sub>   | Oxides of Nitrogen                                       |
| O <sub>3</sub>    | Ozone  |
| Pb                | Lead   |
| PM                | Particulate Matter                                       |
| PM <sub>10</sub>  | Particulate Matter (less than 10 µm)                     |
| PM <sub>2.5</sub> | Particulate Matter (less than 2.5 µm)                    |
| ppb               | Parts per Billion  |
| ppm               | Parts per Million  |
| ROG               | Reactive Organic Gases                                   |
| RTP               | Regional Transportation Plan                             |
| SIP               | State Implementation Plan                                |
| SJVAPCD           | San Joaquin Valley Air Pollution Control District        |
| SO <sub>2</sub>   | Sulfur Dioxide   |
| SJVAB             | San Joaquin Valley Air Basin                             |
| TAC               | Toxic Air Contaminant                                    |
| TSCA              | Toxic Substances Control Act                             |
| µg/m <sup>3</sup> | Micrograms per cubic meter                               |
| U.S. EPA          | United State Environmental Protection Agency             |

## INTRODUCTION

This report describes the existing environment in the project area, the applicable regulatory framework applicable to air quality and greenhouse gas (GHG) emissions, and identifies potential impacts associated with the proposed project. Project impacts are evaluated relative to applicable ambient air quality standards and thresholds of significance. Mitigation measures have been identified for significant air quality impacts.

## PROPOSED PROJECT SUMMARY

The proposed project includes the widening of Shaw Avenue, between N. DeWolf Avenue and McCall Avenue, and installation of various related improvements. At buildout, the project will widen Shaw Avenue to a total of six travel lanes between N. DeWolf Avenue and Highland Avenue, and to a total of five travel lanes between Highland Avenue and McCall Avenue. The intent of the proposed improvements is to provide improved traffic capacity and safety for motorists and pedestrians. The project location is depicted in **Figure 1**. The project site plan is depicted in **Figure 2**.

## AIR QUALITY

### EXISTING SETTING

The project is located within the City of Clovis, which is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB is within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Air quality in the SJVAB is influenced by a variety of factors, including topography, local and regional meteorology. Factors affecting regional and local air quality are discussed below.

### TOPOGRAPHY, METEOROLOGY, AND POLLUTANT DISPERSION

The dispersion of air pollution in an area is determined by such natural factors as topography, meteorology, and climate, coupled with atmospheric stability conditions and the presence of inversions. The factors affecting the dispersion of air pollution with respect to the SJVAB are discussed below.

#### Topography

The SJVAB occupies the southern half of the Central Valley. The SJVAB is open to the north, and is surrounded by mountain ranges on all other sides. The Coast Ranges, which have an average elevation of 3,000 feet, are along on the western boundary of the SJVAB, while the Sierra Nevada Mountains (8,000 to 14,000 feet in elevation) are along the eastern border. The San Emigdio Mountains, which are part of the Coast Ranges, and the Tehachapi Mountains, which are part of the Sierra Nevada, form the southern boundary, and have an elevation of 6,000 to 8,000 feet. The SJVAB is mostly flat with a downward gradient in terrain to the northwest.



**FIGURE 2**  
**Project Site Plan & Nearby Residential Land Uses (1 of 3)**

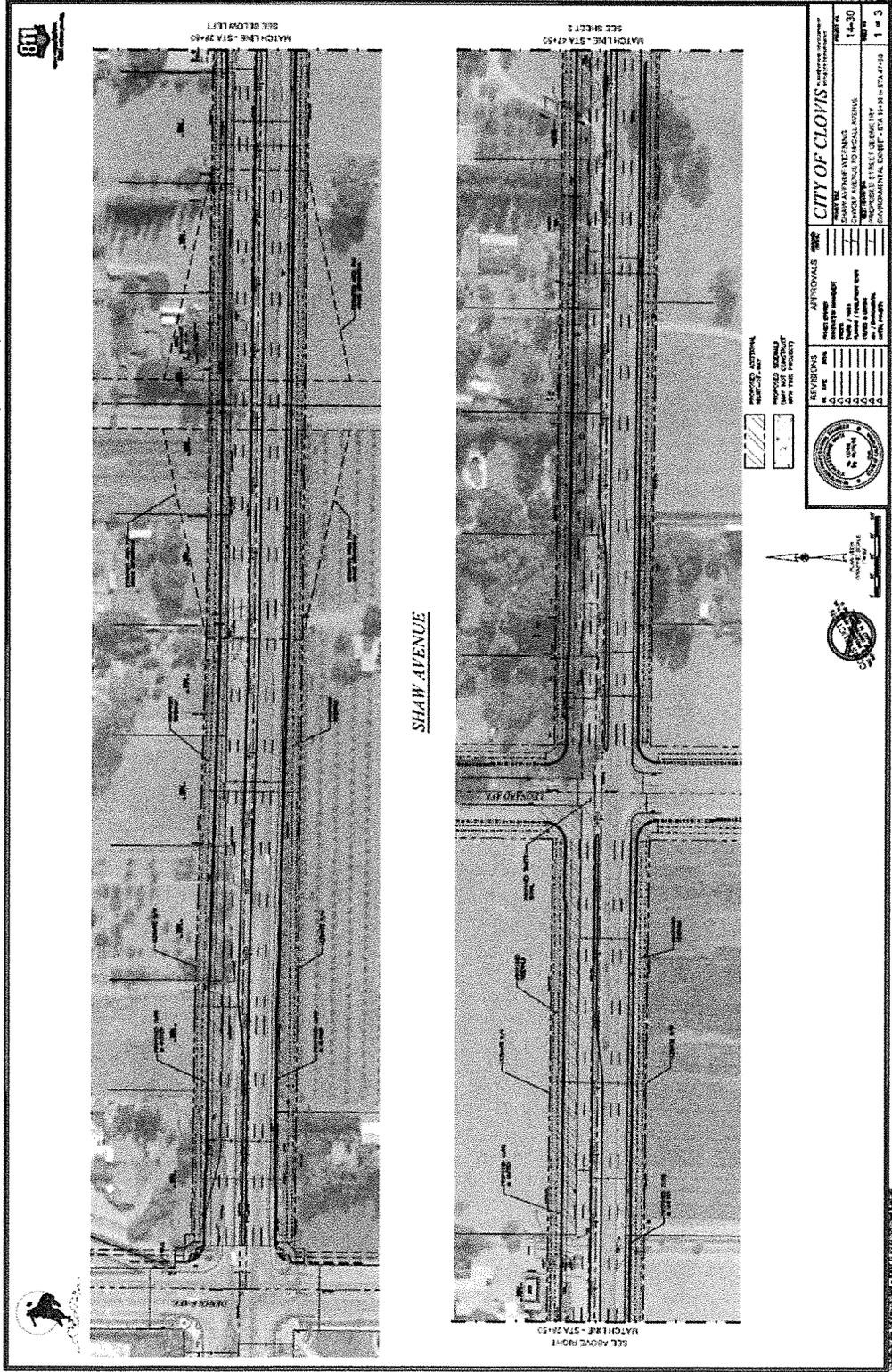


Image Source: City of Clovis 2015

**FIGURE 2**  
**Project Site Plan & Nearby Residential Land Uses (2 of 3)**

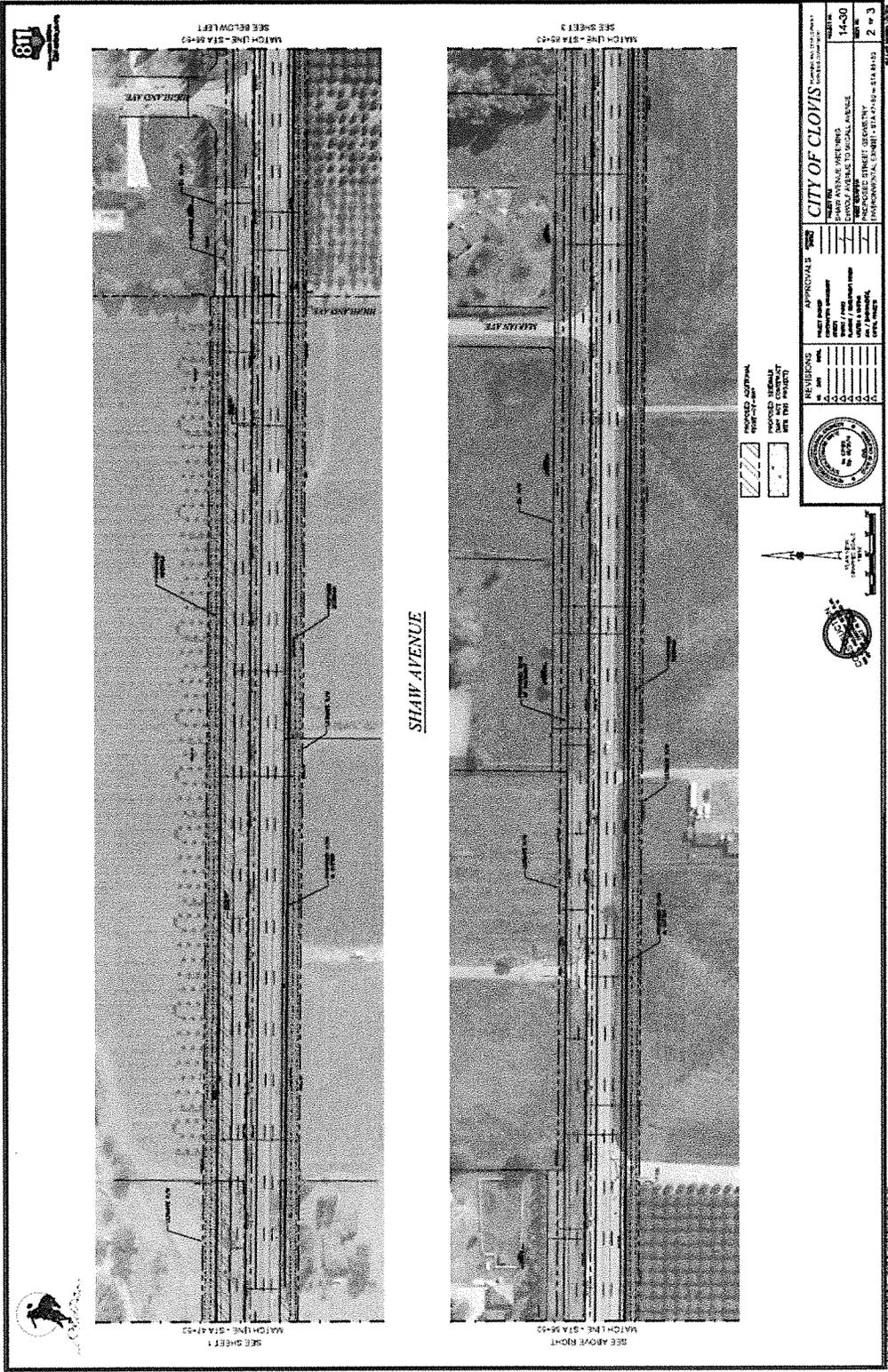


Image Source: City of Clovis 2015



### Meteorology and Climate

The SJVAB has an inland Mediterranean climate that is strongly influenced by the presence of mountain ranges. The mountain ranges to the west and south induce winter storms from the Pacific Ocean to release precipitation on the western slopes producing a partial rain shadow over the valley. In addition, the mountain ranges block the free circulation of air to the east, trapping stable air in the valley for extended periods during the cooler half of the year.

Winter in the SJVAB is characterized as mild and fairly humid, while the summer is typically hot, dry, and cloudless. The climate is a result of the topography and the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer months, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface as a result of the northwesterly flow produces a band of cold water off the California coast. In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms.

The annual temperature, humidity, precipitation, and wind patterns reflect the topography of the SJVAB and the strength and location of the semi-permanent, subtropical high-pressure cell. Summer temperatures that often exceed 100 degrees Fahrenheit (°F) and clear sky conditions are favorable to ozone formation. Most of the precipitation in the valley occurs as rainfall during winter storms. The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions, which can result in higher pollutant concentrations. The orientation of the wind flow pattern in the SJVAB is parallel to the valley and mountain ranges. Summer wind conditions promote the transport of ozone and precursors from the San Francisco Bay Area through the Carquinez Strait, a gap in the Coast Ranges, and low mountain passes such as Altamont Pass and Pacheco Pass. During the summer, predominant wind direction is from the northwest. During the winter, the predominant wind direction is from the southeast. Calm conditions are also predominant during the winter (ARB 1992).

The climate is semi-arid, with an annual normal precipitation of approximately 12 inches. Temperatures in the project area range from a normal minimum of 46°F, in January, to a normal maximum of 82°F, in July (NOAA 1992).

### Atmospheric Stability and Inversions

Stability describes the resistance of the atmosphere to vertical motion. The stability of the atmosphere is dependent on the vertical distribution of temperature with height. Stability categories range from "Extremely Unstable" (Class A), through Neutral (Class D), to "Stable" (Class F). Unstable conditions often occur during daytime hours when solar heating warms the lower atmospheric layers sufficiently. Under Class A stability conditions, large fluctuations in horizontal wind direction occur coupled with large vertical mixing depths. Under Class B stability conditions, wind direction fluctuations and the vertical mixing depth are less pronounced because of a decrease in the amount of solar heating. Under Class C stability conditions, solar heating is weak along with horizontal and vertical fluctuations because of a combination of thermal and mechanical turbulence. Under Class D stability conditions, vertical motions are primarily generated by mechanical turbulence. Under Class E and Class F stability conditions, air

pollution emitted into the atmosphere travels downwind with poor dispersion. The dispersive power of the atmosphere decreases with progression through the categories from A to F.

With respect to the SJVAB, Classes D through F are predominant during the late fall and winter because of cool temperatures and entrapment of cold air near the surface. March and August are transition months with equally occurring percentages of Class F and Class A. During the spring months of April and May and the summer months of June and July, Class A is predominant. The fall months of September, October, and November have comparable percentages of Class A and Class F.

An inversion is a layer of warmer air over a layer of cooler air. Inversions influence the mixing depth of the atmosphere, which is the vertical depth available for diluting air pollution near the ground, thus significantly affecting air quality conditions. The SJVAB experiences both surface-based and elevated inversions. The shallow surface-based inversions are present in the morning but are often broken by daytime heating of the air layers near the ground. The deep elevated inversions occur less frequently than the surface-based inversions but generally result in more severe stagnation. The surface-based inversions occur more frequently in the fall, and the stronger elevated inversions usually occur during December and January.

#### CRITERIA AIR POLLUTANTS

For the protection of public health and welfare, the Federal Clean Air Act (FCAA) required that the United States Environmental Protection Agency (U.S. EPA) establish National Ambient Air Quality Standards (NAAQS) for various pollutants. These pollutants are referred to as "criteria" pollutants because the U.S. EPA publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air without harm to the public's health. An ambient air quality standard is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. The FCAA allows states to adopt additional or more health-protective standards. The air quality regulatory framework and ambient air quality standards are discussed in greater detail later in this report.

#### Human Health & Welfare Effects

Common air pollutants and associated adverse health and welfare effects are summarized in **Table 1**. Within the SJVAB, the air pollutants of primary concern, with regard to human health, include ozone, particulate matter (PM) and carbon monoxide (CO). As depicted in **Table 1**, exposure to increased pollutant concentrations of ozone, PM and CO can result in various heart and lung ailments, cardiovascular and nervous system impairment, and death.

#### ODORS

Typically odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e. irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache.

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other

substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

**Table 1  
Common Pollutants & Adverse Effects**

| Pollutant  | Human Health & Welfare Effects  |
|--|---|
| Particulate Matter (PM <sub>10</sub> & PM <sub>2.5</sub> ) | Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze). |
| Ozone (O <sub>3</sub> )                                    | Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles and dyes.                 |
| Sulfur Dioxide (SO <sub>2</sub> )                          | Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel; damage crops and natural vegetation. Impairs visibility. Precursor to acid rain.                          |
| Carbon Monoxide (CO)                                       | Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.   |
| Nitrogen Dioxide (NO <sub>2</sub> )                        | Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming, and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.   |
| Lead   | Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.  |

Source: CAPCOA 2010

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources. The SJVAPCD does not have an individual rule or regulation that specifically addresses odors; however, odors would be applicable to SJVAPCD's *Rule 4102, Nuisance*. Any actions related to odors would be based on citizen complaints to local governments and the SJVAPCD. The SJVAPCD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine if the Project results in excessive nuisance odors, as defined

under the California Code of Regulations, Health & Safety Code Section 41700, air quality public nuisance.

#### TOXIC AIR CONTAMINANTS

Toxic air contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air, but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered "criteria pollutants" under either the FCAA or the California Clean Air Act (CCAA), and are thus not subject to National or California ambient air quality standards (NAAQS and CAAQS, respectively). TACs are not considered criteria pollutants in that the federal and California Clean Air Acts do not address them specifically through the setting of NAAQS or CAAQS. Instead, the U.S. EPA and the California Air Resources Board (ARB) regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with District rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national levels, the U.S. EPA has established National Emission Standards for HAPs (NESHAPs), in accordance with the requirements of the FCAA and subsequent amendments. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

At the state level, the ARB has authority for the regulation of emissions from motor vehicles, fuels, and consumer products. Most recently, Diesel-exhaust particulate matter (DPM) was added to the ARB list of TACs. DPM is the primary TACs of concern for mobile sources. Of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk. The ARB has made the reduction of the public's exposure to DPM one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles (ARB 2005).

At the local level, air districts have the authority over stationary or industrial sources. All projects that require air quality permits from the SJVAPCD are evaluated for TAC emissions. The SJVAPCD limits emissions and public exposure to TACs through a number of programs. The SJVAPCD prioritizes TAC-emitting stationary sources, based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. The SJVAPCD requires a comprehensive health risk assessment for facilities that are classified in the significant-risk category, pursuant to AB 2588. No major existing sources of TACs have been identified in the project area.

## ASBESTOS

The term "asbestos" describes naturally occurring fibrous minerals found in certain types of rock formations. It is a mineral compound of silicon, oxygen, hydrogen, and various metal cations. When mined and processed, asbestos is typically separated into very thin fibers. When these fibers are present in the air, they are normally invisible to the naked eye. Once airborne, asbestos fibers can cause serious health problems. If inhaled, asbestos fibers can impair normal lung functions, and increase the risk of developing lung cancer, mesothelioma, or asbestosis.

Naturally-occurring asbestos, which was identified as a TAC in 1986 by ARB, is located in many parts of California and is commonly associated with ultramafic rock. The project site is not located in an area of known or suspected naturally-occurring asbestos.

## AMBIENT AIR QUALITY

Air pollutant concentrations are measured at several monitoring stations in Fresno County. The "Clovis-N. Villa Avenue Monitoring Station" is the closest representative monitoring site to the proposed project site with sufficient data to meet U.S. EPA and/or ARB criteria for quality assurance. This monitoring station monitors ambient concentrations of ozone, nitrogen dioxide, carbon monoxide, nitrogen dioxide, and airborne particulates. Ambient monitoring data were obtained for the last three years of available measurement data (i.e., 2011 through 2013) and are summarized in **Table 2**. As depicted, the state (1-hour) and federal (1-hour/8-hour) ozone standards were exceeded on numerous occasions during the past 3 years. The state standards for PM<sub>10</sub> and national PM<sub>2.5</sub> standards have also been exceeded on various occasions during the past 3 years.

## SENSITIVE RECEPTORS

One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term sensitive receptors refer to specific population groups, as well as the land uses where individuals would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses would include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Residential dwellings, schools, parks, playgrounds, childcare centers, convalescent homes, and hospitals are examples of sensitive land uses.

Sensitive receptors located in the project area consist predominantly of residential land uses. The nearest residential land uses are located adjacent to Shaw Avenue, between N. DeWolf Avenue and N. McCall Avenue.

## REGULATORY FRAMEWORK

Air quality within the SJVAB is regulated by several jurisdictions including the U.S. EPA, ARB, and the SJVAPCD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent.

**Table 2  
Summary of Ambient Air Quality Monitoring Data<sup>1</sup>**

|   | 2011        | 2012        | 2013        |
|---|-------------|-------------|-------------|
| <b>Ozone</b>  |             |             |             |
| Maximum concentration (1-hour/8-hour average)   | 0.120/0.103 | 0.116/0.109 | 0.123/0.104 |
| Number of days state/national 1-hour standard exceeded  | 32/2        | 37/0        | 13/0        |
| Number of days state/national 8-hour standard exceeded  | 72/49       | 93/57       | 66/38       |
| <b>Carbon Monoxide (CO)</b>   |             |             |             |
| Maximum concentration (1-hour/8-hour average)   | 2.1/1.42    | 2.0/1.5     | NA          |
| Number of days state 1-hour/8-hour standard exceeded  | 0/0         | 0/0         | NA          |
| Number of days national 1-hour/8-hour standard exceeded   | 0/0         | 0/0         | NA          |
| <b>Nitrogen Dioxide (NO<sub>2</sub>)</b>  |             |             |             |
| Maximum concentration (1-hour average)  | 50          | 55          | 54          |
| Annual average  | NA          | 10          | 10          |
| Number of days state standard exceeded  | 0           | 0           | 0           |
| <b>Suspended Particulate Matter (PM<sub>10</sub>)</b>   |             |             |             |
| Maximum concentration (state/national)  | 77.0/71.6   | 78.3/74.2   | 121.9/119.0 |
| Number of days state standard exceeded (measured/calculated <sup>2</sup> )  | 9/53.0      | 9/55.8      | 11/NA       |
| Number of days national standard exceeded (measured/calculated <sup>2</sup> )   | 0/0         | 0/0         | 0/0         |
| <b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>   |             |             |             |
| Maximum concentration (state/national)  | 76.4/76.4   | 74.1/80.8   | 103.4/103.4 |
| Number of days national standard exceeded (measured/calculated <sup>2</sup> )   | 38/38.3     | 24/24.1     | 23/25.1     |
| ppm = parts per million by volume, µg/m <sup>3</sup> = micrograms per cubic meter, NA=Not Available   |             |             |             |
| <sup>1</sup> Based on ambient concentrations obtained from the Clovis-N. Villa Avenue Monitoring Station.   |             |             |             |
| <sup>2</sup> Measured days are those days that an actual measurement was greater than the standard. Calculated days are the estimated number of days that a measurement would have exceeded the standard had measurements been collected every day. |             |             |             |
| NA = Not Available  |             |             |             |
| Source: ARB 2015  |             |             |             |

FEDERAL

U.S. Environmental Protection Agency

At the federal level, the U.S. EPA has been charged with implementing national air quality programs. The U.S. EPA's air quality mandates are drawn primarily from the FCAA, which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required the U.S. EPA to establish NAAQS, and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS are summarized in **Table 3**.

**Table 3  
Summary of Ambient Air Quality Standards & Attainment Designations**

| Pollutant                                    | Averaging Time          | California Standards*  |                             | National Standards*    |                                   |
|--|-------------------------|--|-----------------------------|------------------------|-----------------------------------|
|  |                         | Concentration*   | Attainment Status           | Primary                | Attainment Status                 |
| Ozone (O <sub>3</sub> )                      | 1-hour                  | 0.09 ppm   | Non-Attainment              | –                      | Non-Attainment (Extreme)**        |
|  | 8-hour                  | 0.070 ppm  |                             | 0.075 ppm              |                                   |
| Particulate Matter (PM <sub>10</sub> )       | AAM                     | 20 µg/m <sup>3</sup>   | Non-Attainment              | –                      | Attainment                        |
|  | 24-hour                 | 50 µg/m <sup>3</sup>   |                             | 150 µg/m <sup>3</sup>  |                                   |
| Fine Particulate Matter (PM <sub>2.5</sub> ) | AAM                     | 12 µg/m <sup>3</sup>   | Non-Attainment              | 15 µg/m <sup>3</sup>   | Non-Attainment                    |
|  | 24-hour                 | No Standard  |                             | 35 µg/m <sup>3</sup>   |                                   |
| Carbon Monoxide (CO)                         | 1-hour                  | 20 ppm   | Attainment/<br>Unclassified | 35 ppm                 | Attainment/<br>Maintenance        |
|  | 8-hour                  | 9 ppm  |                             | 9 ppm                  |                                   |
|  | 8-hour (Lake Tahoe)     | 6 ppm  |                             | –                      |                                   |
| Nitrogen Dioxide (NO <sub>2</sub> )          | AAM                     | 0.030 ppm  | Attainment                  | 0.053 ppm              | Attainment/<br>Unclassified       |
|  | 1-hour                  | 0.18 ppm   |                             | 0.100 ppb              |                                   |
| Sulfur Dioxide (SO <sub>2</sub> )            | AAM                     | –  | Attainment                  | 0.03 ppm               | Attainment/<br>Unclassified       |
|  | 24-hour                 | 0.04 ppm   |                             | 0.14 ppm               |                                   |
|  | 3-hour                  | –  |                             | --                     |                                   |
|  | 1-hour                  | 0.25 ppm   |                             | 75 ppb                 |                                   |
| Lead   | 30-day Average          | 1.5 µg/m <sup>3</sup>  | Attainment                  | –                      | No Designation/<br>Classification |
|  | Calendar Quarter        | –  |                             | 1.5 µg/m <sup>3</sup>  |                                   |
|  | Rolling 3-Month Average | –  |                             | 0.15 µg/m <sup>3</sup> |                                   |
| Sulfates                                     | 24-hour                 | 25 µg/m <sup>3</sup>   | Attainment                  | No Federal Standards   |                                   |
| Hydrogen Sulfide                             | 1-hour                  | 0.03 ppm (42 µg/m <sup>3</sup> )   | Unclassified                |                        |                                   |
| Vinyl Chloride                               | 24-hour                 | 0.01 ppm (26 µg/m <sup>3</sup> )   | Attainment                  |                        |                                   |
| Visibility-Reducing Particle Matter          | 8-hour                  | Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%. | Unclassified                |                        |                                   |
|  |                         |  |                             |                        |                                   |

\* For more information on standards visit :<http://ww.arb.ca.gov/research/aaqs/aaqs2.pdf>

\*\* No federal 1-hour standard. Reclassified extreme nonattainment for the federal 8-hour standard May 5, 2010.

\*\*\*Secondary Standard

Source: CARB 2015; SJVAPCD 2015

The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The U.S. EPA has responsibility to review all state SIPs to determine conformance with the mandates of the FCAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the U.S. EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures.

## STATE

### California Air Resources Board

The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act of 1988. Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing the CAAQS, which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The CAAQS are summarized in **Table 3**. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used.

### California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for Ozone, CO, SO<sub>2</sub>, and NO<sub>2</sub> by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a five percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

### California Assembly Bill 170

Assembly Bill 170, Reyes (AB 170), was adopted by state lawmakers in 2003 creating Government Code Section 65302.1 which requires cities and counties in the San Joaquin Valley to amend their general plans to include data and analysis, comprehensive goals, policies and feasible implementation strategies designed to improve air quality.

### Assembly Bills 1807 & 2588 - Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are

significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

#### SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

The SJVAPCD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the SJVAB, within which the proposed project is located. Responsibilities of the SJVAPCD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the FCAA and the CCAA.

The SJVAPCD Rules and Regulations that are applicable to the proposed project include, but are not limited to, the following:

- *Regulation VIII (Fugitive Dust Prohibitions). Regulation VIII (Rules 8011-8081).* This regulation is a series of rules designed to reduce particulate emissions generated by human activity, including construction and demolition activities, carryout and trackout, paved and unpaved roads, bulk material handling and storage, unpaved vehicle/traffic areas, open space areas, etc. If a non-residential area is 5.0 or more acres in area, a Dust Control Plan must be submitted as specified in Section 6.3.1 of Rule 8021. Additional requirements may apply, depending on total area of disturbance.
- *Rule 4601 (Architectural Coatings).* Limits volatile organic compounds from architectural coatings.
- *Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).* This rule applies to the manufacture and use of cutback, slow cure, and emulsified asphalt during paving and maintenance operations.

#### REGULATORY ATTAINMENT DESIGNATIONS

Under the CCAA, the ARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO<sub>2</sub> as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO<sub>2</sub>, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the ARB

terminology of attainment, nonattainment, and unclassified is more frequently used. The U.S. EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, U.S. EPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM<sub>10</sub> based on the likelihood that they would violate national PM<sub>10</sub> standards. All other areas are designated "unclassified."

The state and national attainment status designations pertaining to the SJVAB are summarized in **Table 3**. The SJVAB is currently designated as a nonattainment area with respect to the state PM<sub>10</sub> standard, ozone, and PM<sub>2.5</sub> standards. The SJVAB is designated nonattainment for the national 8-hour ozone and PM<sub>2.5</sub> standards. On September 25, 2008, the U.S. EPA redesignated the San Joaquin Valley to attainment for the PM<sub>10</sub> NAAQS and approved the PM<sub>10</sub> Maintenance Plan.

## **IMPACTS & MITIGATION MEASURES**

### METHODOLOGY

#### Short-term Impacts

Short-term construction emissions associated with the proposed project were calculated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Road Construction Emissions Model, version 7.1.5.1. While the model was developed for Sacramento conditions in terms of fleet emission factors and other modeling assumptions it is considered adequate for estimating road construction emissions by the SJVAPCD and is used for that purpose in this project analysis. Modeling includes emissions generated during site preparation/grading; the installation of drainage and utility improvements; and asphalt paving. Emissions modeling was based on an overall project area of approximately 2.0 miles totaling approximately 13 acres. Additional construction information, including construction schedules and equipment requirements, have not yet been identified for the proposed project. All remaining assumptions were, therefore, based on the default assumptions contained in the model. Modeling assumptions and output files are included in **Appendix B** of this report.

#### Long-term Impacts

Implementation of the proposed project is not projected to result in a change in average-daily traffic volumes or average vehicle travel speeds within the project area. As a result, the proposed project is not anticipated to result in a significant change in long-term regional mobile-source emissions. Long-term regional air quality impacts were, therefore, qualitatively assessed.

Localized air quality impacts associated with the proposed project would be primarily associated with mobile-source emissions of CO. Localized concentrations of CO were qualitatively assessed utilizing SJVAPCD screening criteria. According, the proposed project's contribution to localized CO concentrations would be considered less-than-significant impact if: (1) the proposed project would not result in a deterioration of one or more streets or intersections to a level of service (LOS) of E or F; or (2) the project would not contribute additional traffic to one or more streets or intersections that would substantially worsen an already existing LOS E or F (SJVAPCD 2002). Localized concentrations of TACs and odors were also qualitatively assessed.

## THRESHOLDS OF SIGNIFICANCE

CEQA Guidelines Amendments became effective March 18, 2010. In accordance with these guidelines, a project would be considered to have a significant impact to air quality if it would:

- 1) Conflict with or obstruct implementation of the applicable air quality plan?
- 2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- 3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
- 4) Expose sensitive receptors to substantial pollutant concentrations?
- 5) Create objectionable odors affecting a substantial number of people?

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2002). This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the proposed project would result in a significant air quality impact. The thresholds of significance applicable to the proposed project are summarized, as follows:

- Short-term Emissions of Particulate Matter (PM<sub>10</sub>)—Construction impacts associated with the proposed project would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented, or if project-generated emissions would exceed 15 tons per year (TPY).
- Short-term Emissions of Ozone Precursors (ROG and NO<sub>x</sub>)—Construction impacts associated with the proposed project would be considered significant if the project generates emissions of ROG or NO<sub>x</sub> that exceeds 10 TPY.
- Conflict with or Obstruct Implementation of Applicable Air Quality Plan—Due to the region's non-attainment status for ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, if the project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NO<sub>x</sub>) or PM<sub>10</sub> would exceed the SJVAPCD's significance thresholds, then the project would be considered to conflict with the attainment plans. In addition, if the project would result in a change in land use and corresponding increases in vehicle miles traveled, the project may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.
- Local Mobile-Source CO Concentrations—Local mobile source impacts associated with the proposed project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the CAAQS (i.e., 9.0 ppm for 8 hours or 20 ppm for 1 hour).
- Exposure to toxic air contaminants (TAC) would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (i.e., maximum individual risk) would exceed 10 in 1 million or would result in a Hazard Index greater than 1.

- Odor impacts associated with the proposed project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, the SJVAPCD requires the determination of potential conflict to be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility. For existing odor sources, a significant impact to nearby receptors would occur if the existing facility has: (1) more than one confirmed complaint per year averaged over a three-year period; or (2) three unconfirmed complaints averaged over a three-year period.

## PROJECT IMPACTS

### **Impact AQ-1:** *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

As noted in Impact AQ-2, implementation of the proposed project would not be anticipated to result in long-term increases of mobile-source emissions, nor would short-term construction-generated emissions be projected to exceed applicable thresholds of significance. Furthermore, it is important to note that the proposed project is included in the regional emissions analysis conducted by the Fresno Council of Governments (FCOG) for the conforming *2014 Regional Transportation Plan (RTP)* and the *2015 Federal Transportation Improvement Program (FTIP)* (refer to **Appendix A**). The proposed project is listed in the RTP and FTIP as project identification numbers FRE111326 and FRE111339. The proposed project's design concept and scope have not changed significantly from what was analyzed in the RTP/FTIP. FCOG adopted the corresponding RTP/FTIP conformity determination in June 2014. The conformity determination found that the RTP/FTIP and, therefore, the individual projects contained in the RTP/FTIP, are conforming projects, and would not interfere with air quality planning efforts, including implementation of the State Implementation Plan. For these reasons, implementation of the proposed project would not conflict with nor obstruct implementation of applicable air quality plans. This impact would be considered **less than significant**.

### **Impact AQ-2:** *Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? and,*

*Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

### **Short-term Increases of Construction-Generated Emissions**

Short-term increases in emissions would occur during the construction process. Construction-generated emissions are of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact. The construction of the proposed project would result in the temporary generation of emissions associated with site grading and excavation, paving, motor vehicle exhaust associated with construction equipment and worker trips, as well as the movement of construction equipment on unpaved surfaces. Short-term construction emissions would result in increased emissions of ozone-

precursor pollutants (i.e., ROG and NO<sub>x</sub>) and emissions of PM. Emissions of ozone-precursors would result from the operation of on-road and off-road motorized vehicles and equipment. Emissions of airborne PM are largely dependent on the amount of ground disturbance associated with site preparation activities and can result in increased concentrations of PM that can adversely affect nearby sensitive land uses. Construction-generated emissions of ozone-precursor pollutants and PM are discussed in more detail, as follows:

Short-term construction emissions of criteria air pollutants attributable to the proposed project were estimated using SMAQMD's Road Construction Emissions Model, version 7.1.5.1. Emissions modeling included estimated daily emissions associated with major construction activities, as well as, annual emissions for both uncontrolled and controlled conditions. Estimated construction-generated emissions are summarized in **Table 4**.

**Table 4  
Short-term Construction-Generated Emissions**

| Construction Year  | Emissions <sup>1</sup> |      |                 |                  |                   |
|--|------------------------|------|-----------------|------------------|-------------------|
|  | ROG                    | CO   | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
| <b>Daily Emissions</b>   |                        |      |                 |                  |                   |
| Grubbing/Land Clearing   | 3.4                    | 17.5 | 26.0            | 61.3             | 13.7              |
| Grading/Excavation   | 12.2                   | 57.1 | 117.6           | 66.2             | 18.1              |
| Drainage/Utilities/Sub-Grade   | 7.8                    | 35.7 | 62.0            | 63.8             | 15.9              |
| Paving   | 4.6                    | 21.5 | 31.9            | 2.2              | 2.0               |
| <i>Highest Uncontrolled Emissions:</i>   | 12.2                   | 57.1 | 117.6           | 66.2             | 18.1              |
| <i>Total Controlled Emissions<sup>1</sup>:</i>   | 12.2                   | 57.1 | 117.6           | 36.2             | 11.9              |
| <b>Annual Emissions</b>  |                        |      |                 |                  |                   |
| <i>Total Uncontrolled Emissions:</i>   | 0.6                    | 2.7  | 5.2             | 3.7              | 1.0               |
| <i>Total Controlled Emissions<sup>1</sup>:</i>   | 0.6                    | 2.7  | 5.2             | 2.0              | 0.6               |
| <i>SJVAPCD Significance Thresholds:</i>  | 10                     | None | 10              | 15               | None              |
| <i>Annual Emissions Exceed SJVAPCD Thresholds/Significant Impact?:</i>   | No                     | NA   | No              | No               | NA                |
| <i>Emissions were quantified using SMAQMD's Road Construction Emissions Model, version 7.1.5.1. Refer to <b>Appendix B</b> for modeling results and assumptions. Totals may not sum due to rounding.</i> |                        |      |                 |                  |                   |
| <i>1. Controlled emissions assume watering to reduce fugitive dust emissions.</i>  |                        |      |                 |                  |                   |

Based on the modeling conducted, the proposed project would generate maximum uncontrolled annual emissions of approximately 0.6 tons/year of ROG, 5.2 tons/year of NO<sub>x</sub>, 2.7 tons/year of CO, 3.7 tons/year of PM<sub>10</sub>, and 1.0 tons/year of PM<sub>2.5</sub>. Estimated construction-generated emissions would not exceed the SJVAPCD's significance thresholds of 10 tons/year of ROG, 10 tons/year of NO<sub>x</sub>, or 15 tons/year PM<sub>10</sub>.

It is important to note that the proposed project would be required to comply with SJVAPCD Regulation VIII (Fugitive PM<sub>10</sub> Prohibitions). Mandatory compliance with SJVAPCD Regulation VIII would further reduce emissions of fugitive dust from the project site, and adequately minimize the project's potential to adversely affect nearby sensitive receptors to localized PM impacts.

With compliance with SJVAPCD Regulation VIII, maximum annual emissions of PM would be reduced to approximately 2.0 tons/year of PM<sub>10</sub> and 0.6 tons/year of PM<sub>2.5</sub>.

Given that the proposed project would be required to comply with SJVAPCD Regulation VIII and that project generated emissions would not exceed applicable SJVAPCD significance thresholds, construction-generated emissions of ozone-precursor pollutants (i.e., ROG and NO<sub>x</sub>) and PM would be considered **less than significant**.

#### **Long-term Increases of Operational Emissions**

The purpose of the proposed widening project is to provide improved traffic capacity and increased safety for motorists and pedestrians along the Shaw Avenue corridor. Implementation of the proposed project would not result in an increase in vehicle traffic volumes along Shaw Avenue, nor would the project result in significant changes in vehicle traffic speeds. As a result, implementation of the proposed project would not be anticipated to result in long-term increases of mobile-source emissions.

In addition, it is important to note that the proposed project is identified as Project ID #FRE111326 and #FRE111339 and was included in the regional emissions analysis conducted by FCOG for the conforming 2014 RTP and the 2015 FTIP (refer to **Appendix A**). The proposed project's design concept and scope have not changed significantly from what was analyzed in the RTP and FTIP. FCOG adopted the corresponding RTP/FTIP conformity determination in June 2014. The conformity determination found that the RTP/FTIP and, therefore, the individual projects contained in the RTP/FTIP, are conforming projects, and would not interfere with air quality planning efforts, including implementation of the State Implementation Plan. For these reasons, implementation of the proposed project would not be projected to result in or contribute substantially to an existing or projected air quality violation for which the project area or the SJVAB is designated non-attainment. This impact would be considered **less than significant**.

#### **Impact AQ-3: Would the project expose sensitive receptors to substantial pollutant concentrations?**

Potential increases in localized pollutant concentrations attributable to the proposed project would be primarily associated with emissions of mobile-source CO; as well as, emissions of TACs emitted during construction. Localized air quality impacts are discussed, as follows:

#### **Carbon Monoxide**

Carbon monoxide is the primary criteria air pollutant of local concern associated with the proposed project. Under specific meteorological and operational conditions, such as near areas of heavily congested vehicle traffic, CO concentrations may reach unhealthy levels. If inhaled, CO can be adsorbed easily by the blood stream and can inhibit oxygen delivery to the body, which can cause significant health effects ranging from slight headaches to death. The most serious effects are felt by individuals susceptible to oxygen deficiencies, including people with anemia and those suffering from chronic lung or heart disease.

Mobile-source emissions of CO are a direct function of traffic volume, speed, and delay. As noted above, the purpose of the proposed project is to provide improved traffic capacity, which would be anticipated to result in decreased vehicle delay at nearby roadway

intersections. As a result, implementation of the proposed project is not projected to result in a deterioration of LOS along Shaw Avenue, nor would the proposed project be projected to contribute to increased traffic volumes along area roadways. For these reasons, this impact would be considered **less than significant**.

### **Toxic Air Contaminants**

Implementation of the proposed project would not result in the long-term operation of any major onsite stationary sources of TACs, nor would project implementation result in an increase in vehicle trips along area roadways. For these reasons, implementation of the proposed widening project would not be anticipated to result in long-term increases in exposure of sensitive receptors to TACs. However, short-term construction activities may result in temporary increases of TACs. Short-term increases of TACs potentially associated with construction activities are discussed, as follows:

#### Naturally Occurring Asbestos

Naturally-occurring asbestos, which was identified by ARB as a TAC in 1986, is located in many parts of California and is commonly associated with ultramafic rock. The project site is not located near any areas that are likely to contain ultramafic rock (DOC 2000). As a result, risk of exposure to asbestos during the construction process would be considered **less than significant**.

#### Diesel-Exhaust Emissions

Implementation of the proposed project would result in emissions of diesel-exhaust particulate matter (DPM) during construction associated with the use of off-road diesel equipment for site grading and excavation, paving and other construction activities. Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, the calculation of cancer risk associated with exposure of to TACs are typically calculated based on a long-term (e.g., 70-year) period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Project-related construction activities would constitute less than one percent of the typical 70-year exposure period. As a result, exposure to construction-generated DPM would not be anticipated to exceed applicable thresholds (i.e., incremental increase in cancer risk of 10 in one million).

Although construction emissions would not be anticipated to result in long-term health impacts that would exceed applicable thresholds, short-term exposure to DPM could still result in potential health effects. The type and severity of health effects depends upon several factors including the dose of the pollutant the individual is exposed to and the duration of exposure. Short-term exposure to DPM may cause irritation to the eyes, nose, throat and lungs, as well as, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. These potential health effects are of particular concern among the more sensitive members of the population, such as children, the elderly, and individuals suffering from lung ailments (e.g., asthma). As a result, short-term exposure of nearby receptors to uncontrolled construction-generated emissions DPM would be considered **potentially significant**.

## **Mitigation Measures**

**MM AQ-1:** The following measures shall be implemented to reduce mobile-source emissions associated with the use of off-road construction equipment:

- a. When not in use, construction equipment shall be turned off and shall not be allowed to idle.
- b. Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.
- c. Low-emission off-road construction equipment shall be used. At a minimum, construction equipment, 50 hp and greater, shall meet U.S. EPA Tier II emission standards.

## **Significance After Mitigation**

Implementation of the above mitigation measures would limit unnecessary idling of diesel-fueled construction equipment and would require the use of newer, cleaner-burning equipment. With mitigation and given that construction activities would be short-term, this impact would be considered **less than significant**.

**Impact AQ-4:** *Would the project create objectionable odors affecting a substantial number of people?*

Implementation of the proposed project would not result in long-term emissions of odors. However, construction of the proposed project would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Exhaust fumes, particularly diesel-exhaust, may be considered objectionable by some people. In addition pavement coatings used during project construction would also emit temporary odors. However, construction-generated emissions would occur intermittently throughout the workday and would dissipate rapidly within increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. For these reasons, potential short-term exposure of sensitive receptors to odorous emissions would be considered **less than significant**.

## GREENHOUSE GASES AND CLIMATE CHANGE

### EXISTING SETTING

The earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. Greenhouse gases (GHG) absorb infrared energy that would otherwise escape from the earth. As the infrared energy is absorbed, the air surrounding the earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history [NOAA 2010]. Human activities have been attributed to an increase in the atmospheric abundance of greenhouse gases. The following is a brief description of the most commonly recognized GHGs.

### GREENHOUSE GASES

Commonly identified GHG emissions and sources include the following:

- *Carbon dioxide (CO<sub>2</sub>)* is an odorless, colorless natural greenhouse gas. CO<sub>2</sub> is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
- *Methane (CH<sub>4</sub>)* is a flammable greenhouse gas. A natural source of methane is from the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.
- *Nitrous oxide (N<sub>2</sub>O)*, also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.
- *Water vapor* is the most abundant, important, and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.
- *Ozone* is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.
- *Aerosols* are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.
- *Hydrofluorocarbons (HFCs)* are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. The global warming potential is the potential of a gas to contribute to global warming; it is

based on a reference scale with carbon dioxide at one. HFCs are human-made for applications such as air conditioners and refrigerants.

- *Chlorofluorocarbons (CFCs)* are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987. The project would not emit CFCs.
- *Perfluorocarbons (PFCs)* have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. The project would not emit PFCs.
- *Sulfur hexafluoride (SF<sub>6</sub>)* is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection. The project would not emit SF<sub>6</sub>.

## EFFECTS OF CLIMATE CHANGE

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO<sub>2</sub> to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O have increased 31 percent, 151 percent, and 17 percent respectively since the year 1750 (CEC 2008). GHG emissions are typically expressed in carbon dioxide-equivalents (CO<sub>2</sub>e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH<sub>4</sub> has the same contribution to the greenhouse effect as approximately 21 tons of CO<sub>2</sub>. Therefore, CH<sub>4</sub> is a much more potent GHG than CO<sub>2</sub>.

## REGULATORY FRAMEWORK

### FEDERAL

Although climate change and GHG reduction is a concern at the federal level; currently there are no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the U.S. EPA nor the Federal Highway Administration (FHWA) has promulgated explicit guidance or methodology to conduct project-level GHG analysis. However, the FHWA recommends that climate change impacts and strategies to reduce GHG emissions should be considered and integrated throughout the

transportation decision-making process. Such strategies include implementation of improved transportation system efficiency, use of cleaner fuels and cleaner vehicles, and a reduction in the growth of vehicle hours travelled. Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the “National Clean Car Program” and EO 13514 - Federal Leadership in Environmental, Energy and Economic Performance (Caltrans 2013).

#### Executive Order 13514

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change (Caltrans 2013).

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision (Caltrans 2013).

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act (Caltrans 2013):

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009. On May 7, 2010 the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a Presidential Memorandum on May 21, 2010.

The final combined U.S. EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, (the equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements). Together, these standards will cut GHG emissions by an estimated 960

million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). On November 16, 2011, U.S. EPA and NHTSA issued their joint proposal to extend this national program of coordinated greenhouse gas and fuel economy standards to model years 2017 through 2025 passenger vehicles (Caltrans 2013).

STATE

Senate Bill 1771 - Greenhouse Gas Emission Reductions: Climate Change

Senate Bill 1771, chaptered in September of 2000, specified the creation of the non-profit organization, the California Climate Action Registry. The Registry helps various California entities establish greenhouse gas (GHG) emissions baselines. Also, the Registry enables participating entities to voluntarily record their annual GHG emissions inventories.

A.B. 1493 – Reduction of GHGs from Passenger Vehicles/Light Duty Trucks

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light-duty trucks. Regulations adopted by the ARB would apply to 2009 and later model year vehicles. The ARB estimates that the regulation would reduce climate change emissions from the light-duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

Executive Order No. S-3-05

Executive Order No. S-3-05 was signed on June 1, 2005, by former Governor Arnold Schwarzenegger. The goal of this EO is to reduce California's GHG emissions to: 1) year 2000 levels by 2010, 2) year 1990 levels by the 2020, and 3) 80 percent below the year 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 - California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes a cap on statewide greenhouse gas emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emissions levels. AB 32 charges the ARB, the state agency charged with regulating statewide air quality, with implementation of the act. The regulatory steps laid out in AB 32 require ARB to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.

The Board identified nine discrete early action measures including regulations affecting landfills, motor vehicle fuels, refrigerants in cars, tire pressure, port operations and other sources in 2007 that included ship electrification at ports and reduction of high global warming potential (GWP) gases in consumer products. Regulatory development for the remaining measures is ongoing. In December 2007, the Board adopted a regulation requiring the largest industrial sources to report and verify their greenhouse gas emissions. The reporting regulation serves as a solid foundation to determine greenhouse gas emissions and track future changes in emission levels. In February 2008, the Board approved a policy statement encouraging voluntary early actions and establishing a procedure for project proponents to submit quantification methods to be evaluated by ARB. ARB, along with California's local air districts and the California Climate Action Registry, is working to implement this program. In December 2008, a Scoping Plan was

approved by ARB, which provides the outline for actions to reduce greenhouse gases in California (CAPCOA 2008).

#### Senate Bill 97 - CEQA: Greenhouse Gas Emissions

Senate Bill 97, signed in August 2007, acknowledges that climate change is an important environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. Amendments to the CEQA guidelines took effect March 18, 2010. The revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). However, the guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

This bill also protected projects until January 1, 2010 that were funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) from claims of inadequate analysis of GHG as a legitimate cause of action. Thus, this "protection" is highly limited to a handful of projects and for a short time period (CAPCOA 2008).

#### Executive Order S-01-07

Executive Order S-01-07 was enacted by the former Governor Arnold Schwarzenegger on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It also requires that a Low Carbon Fuel Standard for transportation fuels be established for California.

#### Executive Order S-20-06

Executive Order S-20-06 (signed on October 18, 2006 by former Governor Arnold Schwarzenegger) further directs state agencies to begin implementing AB 32, including the recommendations made by California's Climate Action Team.

#### Senate Bill 375

SB 375 became effective January 1, 2009. SB 375 requires ARB to develop regional reduction targets for GHG emissions, and prompts the creation of regional plans to reduce emissions from vehicle use throughout the state. California's Metropolitan Planning Organizations (MPOs) have been tasked with creating "Sustainable Community Strategies" (SCS). The MPOs are required to develop the SCS through integrated land use and transportation planning and demonstrate an ability to attain the proposed reduction targets by 2020 and 2035.

## SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

### SJVAPCD Climate Change Action Plan

On August 21, 2008, the SJVAPCD Governing Board approved the District's Climate Change Action Plan with the following goals and actions:

#### Goals:

- Assist local land-use agencies with California Environmental Quality Act (CEQA) issues relative to projects with GHG emissions increases.
- Assist Valley businesses in complying with mandates of AB 32.
- Ensure that climate protection measures do not cause increase in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

#### Actions:

- Authorize the Air Pollution Control Officer to develop GHG significance threshold(s) or other mechanisms to address CEQA projects with GHG emissions increases. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in the spring of 2009.
- Authorize the Air Pollution Control Officer to develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary GHG reductions created in the Valley. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in spring 2009.
- Authorize the Air Pollution Control Officer to enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB32 emission reporting requirements to submit simultaneous streamlined reports to the District and the state of California with minimal duplication.
- Authorize the Air Pollution Control Officer to develop and administer voluntary GHG emission reduction agreements to mitigate proposed GHG increases from new projects.
- Direct the Air Pollution Control Officer to support climate protection measures that reduce GHG emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted area.

### SJVAPCD CEQA Greenhouse Gas Guidance.

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the policy, "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project specific greenhouse gas emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, that their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified final CEQA document.

Best performance standards (BPS) to address operational emissions of a project would be established according to performance-based determinations. Projects complying with BPS would not require specific quantification of GHG emissions and would be determined to have a less than significant cumulative impact for GHG emissions. Projects not complying with BPS would require quantification of GHG emissions and demonstration that operational greenhouse gas emissions have been reduced or mitigated by 29 percent, as targeted by ARB's AB 32 Scoping Plan. Furthermore, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an Environmental Impact Report is required, regardless of whether the project incorporates BPS.

## **IMPACTS & MITIGATION MEASURES**

### METHODOLOGY

Implementation of the proposed project is not projected to result in a change in traffic volumes or vehicle travel speeds within the project area. As a result, the proposed project is not anticipated to result in significant changes in long-term GHG emissions. Construction of the proposed project would, however, result in short-term increases of GHG emissions. Short-term construction GHG emissions associated with the proposed project were calculated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) *Road Construction Emissions Model*, version 7.1.5.1. While the model was developed for Sacramento conditions in terms of fleet emission factors and other modeling assumptions it is considered adequate for estimating road construction emissions by the SJVAPCD and is used for that purpose in this project analysis. Modeling includes emissions generated during site preparation/grading; the installation of drainage and utility improvements; and asphalt paving. Modeling assumptions and output files are included in **Appendix B** of this report.

### THRESHOLDS OF SIGNIFICANCE

CEQA Guidelines Amendments became effective March 18, 2010. Included in the Amendments are revisions to the Appendix G Initial Study Checklist. In accordance with these Amendments, a project would be considered to have a significant impact to climate change if it would:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or,
- b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

PROJECT IMPACTS

**Impact GHG-1:** *Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? and*  
*Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?*

Implementation of the proposed project is not projected to result in a change in average-daily traffic volumes or average vehicle travel speeds within the project area. As a result, the proposed project is not anticipated to result in long-term increases of GHG emissions. Construction of the proposed project would, however, result in short-term increases of GHG emissions. Construction-generated GHG emissions are summarized in **Table 5**.

**Table 5**  
**Short-term Construction-Generated GHG Emissions**

| Construction Year  | Daily CO <sub>2</sub> Emissions <sup>1</sup> |
|--|--|
| <b>Daily Emissions</b>   |  |
| Grubbing/Land Clearing   | 3,095.6                                      |
| Grading/Excavation   | 11,390.4                                     |
| Drainage/Utilities/Sub-Grade   | 6,558.7                                      |
| Paving   | 3,648.8                                      |
| <i>Maximum Daily Emissions (lbs):</i>  | 11,390.4                                     |
| <b>Annual Emissions (MTCO<sub>2</sub>e):</b>   | <b>525</b>                                   |
| <i>Emissions were quantified using SMAQMD's Road Construction Emissions Model, version 7.1.5.1. Includes emission associated with the use of a water truck.<br/>Refer to <b>Appendix B</b> for modeling assumptions and results.</i> |  |

Based on the modeling conducted, annual emissions of greenhouse gases associated with construction of the proposed project would total approximately 525 MTCO<sub>2</sub>e. A majority of the emission generated during the construction process would occur during initial grading and excavation of the project area, associated primarily with the use of off-road equipment. There would also be a small amount of GHG emissions from waste generated during construction; however, this amount is speculative. Actual emissions will likely vary, depending on the final construction schedules, equipment required, and activities conducted. It is also important to note that implementation of recommended air quality mitigation measures would require the use of newer, cleaner burning off-road equipment.

Given the relatively low GHG emissions generated during construction of the proposed project and given that emissions would be short-term, increases in GHG emissions attributable to the proposed project would not result in a significant impact on the environment. Furthermore, it is important to note that the proposed project is consistent with regional transportation plans and, as such, would not conflict with regional air quality planning efforts. For these reasons, implementation of the proposed project would not conflict with regional air quality planning efforts, including efforts to reduce GHG emissions. This impact would be considered **less than significant**.

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**APPENDIX A**

**2014 REGIONAL TRANSPORTATION PLAN /  
2015 FEDERAL TRANSPORTATION IMPROVEMENT PLAN  
PROJECT LISTING**

**FRESNO COUNCIL OF GOVERNMENTS**

**CONFORMITY ANALYSIS FOR  
THE 2015 FEDERAL TRANSPORTATION  
IMPROVEMENT PROGRAM  
AND  
2014 REGIONAL TRANSPORTATION PLAN**

JUNE 26, 2014

Fresno Council of Governments  
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*This report was funded in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U. S. Department of Transportation. The views and opinions of the Fresno Council of Governments expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation*

| Jurisdiction/Agency | TIP/RTP    | CIP's Project ID (if available) | Description  | Conformity Analysis Year (project open to traffic) |                         |                |      |      |      |      |      |      |      |
|---------------------|------------|---------------------------------|--|--|-------------------------|----------------|------|------|------|------|------|------|------|
|                     |            |                                 |  | Facility Name/Route                                | Project Limits          | Estimated Cost |      |      |      |      |      |      |      |
|                     | Project ID |                                 | Type of Improvement  |  | 2014                    | 2017           | 2020 | 2023 | 2025 | 2032 | 2035 | 2055 | 2060 |
| Cowis               | FRE111374  | 20300000775                     | Needs Avenue from Willow Avenue to Peach Avenue; Complete 12 foot westbound outside travel lane, add street lights, and AC Overlay.  | Needs Ave  | Willow Ave to Peach Ave | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE080503  | 20300000491                     | Center travel lane improvements, 2LU to 2LU with 2MLTL on Nees Avenue from Sunnyside to Armstrong Avenues.   | Nees Ave   | Sunnyside to Armstrong  | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE082508  | 20300000659                     | Shaw Ave.: Between Clovis Ave. and Temperance Ave.; widen from 4 LD to 6 LD.   | Shaw   | Clovis to Temperance    | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500444  |                                 | 4LU to 6 LD  | Shaw   | Carson to Locan         | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE111325  | 20300000732                     | Widen from 2 LU to 6 LD; curb & gutter; street lights; sidewalk; traffic signal (Measure C Project L in the Urban Regional Program).   | Shaw   | Locan to Maine          | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE111326  | 20300000733                     | 6 LN Divided expressway, outside travel lane; curb & gutter; street lights; median; landscaping; under crossing /part of Measure C Project L2 in the Urban Regional Program-split between FRE's 111326 and 111339) | Shaw   | Highland to McCal Ave   | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE111339  | 20300000755                     | 6 LN Divided expressway, travel lane; curb & gutter; street lights; median; landscaping; under crossing /part of Measure C L2 in the Urban Regional Program-split between FRE's 111326 and 111339)                 | Shaw Ave   | DeWolf to Highland      | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500500  |                                 | 3LU to 4LD Sidewalks, Bike Lanes, Street Lights, Curb and Gutter, Fiber Optics   | Shepherd   | Armstrong to Temperance |                |      | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500492  |                                 | 2LU to 3LD Sidewalks, Bike Lanes, Street Lights, Curb and Gutter, Fiber Optics   | Shepherd   | Clovis to Fowler        | X              | X    | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500499  |                                 | 3LU to 4LD Sidewalks, Bike Lanes, Street Lights, Curb and Gutter, Fiber Optics, Traffic Signal at Shepherd and Armstrong   | Shepherd   | Fowler to Armstrong     |                |      | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500498  |                                 | 3LU to 4LD Sidewalks, Bike Lanes, Street Lights, Curb and Gutter, Fiber Optics, Traffic Signal at Shepherd and Locan   | Shepherd   | Temperance to Dewolf    |                |      | X    | X    | X    | X    | X    | X    |
| Cowis               | FRE500494  |                                 | 3LU to 4LD Sidewalks, Bike Lanes, Street Lights, Curb and Gutter, Fiber Optics, Traffic Signal at Shepherd and Peach   | Shepherd   | Willow to Clovis        | X              | X    | X    | X    | X    | X    | X    | X    |

Source: Fresno County Council of Governments. 2013. Website url: [http://www.fresnocog.org/sites/default/files/publications/RTP/RTP\\_Amendment\\_No\\_2.pdf](http://www.fresnocog.org/sites/default/files/publications/RTP/RTP_Amendment_No_2.pdf)

**APPENDIX B**  
**EMISSIONS MODELING**

# CONSTRUCTION EMISSIONS MODELING

## Road Construction Emissions Model Data Entry Worksheet

Version 7.1.5.1



Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells C10 through C25.

|  |                   |  |  |
|--|-------------------|--|--|
| Input Type                                   | Shaw Ave Widening |  |  |
| Project Name                                 | 2015              |  |  |
| Construction Start Year                      | 2                 | Enter a Year between 2009 and 2025 (inclusive)                               |  |
| Project Type                                 | 6.00              | 1 New Road Construction<br>2 Road Widening<br>3 Bridge/Overpass Construction |  |
| Project Construction Time                    | 2                 | months   |  |
| Predominant Soil/Site Type: Enter 1, 2, or 3 | 2.00              | 1. Sand Gravel<br>2. Weathered Rock-Earth<br>3. Blasted Rock                 |  |
| Project Length                               | 13.00             | miles  |  |
| Total Project Area                           | 3.00              | acres  |  |
| Maximum Area Disturbed/Day                   | 2                 | acres  |  |
| Water Trucks Used?                           | 0.00              | 1. Yes<br>2. No  |  |
| Soil Imported                                | 0.00              | yo <sup>3</sup> /day   |  |
| Soil Exported                                | 0.00              | yo <sup>3</sup> /day   |  |
| Average Truck Capacity                       | 20                | yo <sup>3</sup> (assume 20 if unknown)                                       |  |

Clear Data Input & User Overrides

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

**WITHOUT WATER TRUCK EMISSIONS – PM UNCONTROLLED**  
**Road Construction Emissions Model, Version 7.1.5.1**

| Emission Estimates for -> Shaw Ave Widening  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
|--|---------------|--------------|---------------|----------------|-----------------|----------------------|-----------------------|------------------------|-------------------------|------------------------------|-------------------------------|---------------|
| Project Phases (English Units)   | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | PM10 (lbs/day) | PM2.5 (lbs/day) | Total PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM10 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | CO2 (lbs/day) |
| Grubbing/Land Clearing   | 3.4           | 17.4         | 25.1          | 61.3           | 1.3             | 60.0                 | 13.7                  | 1.2                    | 12.5                    | 2,946.3                      |                               |               |
| Grading/Excavation   | 12.2          | 57.0         | 116.8         | 66.2           | 6.2             | 60.0                 | 18.1                  | 5.6                    | 12.5                    | 11,241.1                     |                               |               |
| Drainage/Utilities/Sub-Grade   | 7.7           | 35.6         | 61.1          | 63.8           | 3.8             | 60.0                 | 15.9                  | 3.5                    | 12.5                    | 6,409.4                      |                               |               |
| Paving   | 4.6           | 21.5         | 31.9          | 2.2            | 2.2             | -                    | 2.0                   | 2.0                    | -                       | 3,648.8                      |                               |               |
| Maximum (pounds/day)   | 12.2          | 57.0         | 116.8         | 66.2           | 6.2             | 60.0                 | 18.1                  | 5.6                    | 12.5                    | 11,241.1                     |                               |               |
| Total (tons/construction project)  | 0.6           | 2.7          | 5.2           | 3.7            | 0.3             | 3.4                  | 1.0                   | 0.3                    | 0.7                     | 516.3                        |                               |               |
| Notes:   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Project Start Year -> 2015   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Project Length (months) -> 6   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total Project Area (acres) -> 13   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Maximum Area Disturbed/Day (acres) -> 3  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total Soil Imported/Exported (yd <sup>3</sup> /day)-> 0  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L. |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |

**WITH WATER TRUCK EMISSIONS – PM CONTROLLED**  
**Road Construction Emissions Model, Version 7.1.5.1**

| Emission Estimates for -> Shaw Ave Widening  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
|--|---------------|--------------|---------------|----------------|-----------------|----------------------|-----------------------|------------------------|-------------------------|------------------------------|-------------------------------|---------------|
| Project Phases (English Units)   | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | PM10 (lbs/day) | PM2.5 (lbs/day) | Total PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM10 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | CO2 (lbs/day) |
| Grubbing/Land Clearing   | 3.4           | 17.5         | 26.0          | 31.3           | 1.3             | 30.0                 | 7.4                   | 1.2                    | 6.2                     | 3,095.6                      |                               |               |
| Grading/Excavation   | 12.2          | 57.1         | 117.6         | 36.2           | 6.2             | 30.0                 | 11.9                  | 5.6                    | 6.2                     | 11,390.4                     |                               |               |
| Drainage/Utilities/Sub-Grade   | 7.8           | 35.7         | 62.0          | 33.8           | 3.8             | 30.0                 | 9.7                   | 3.5                    | 6.2                     | 6,558.7                      |                               |               |
| Paving   | 4.6           | 21.5         | 31.9          | 2.2            | 2.2             | -                    | 2.0                   | 2.0                    | -                       | 3,648.8                      |                               |               |
| Maximum (pounds/day)   | 12.2          | 57.1         | 117.6         | 36.2           | 6.2             | 30.0                 | 11.9                  | 5.6                    | 6.2                     | 11,390.4                     |                               |               |
| Total (tons/construction project)  | 0.6           | 2.7          | 5.2           | 2.0            | 0.3             | 1.7                  | 0.6                   | 0.3                    | 0.4                     | 524.7                        |                               |               |
| Notes:   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Project Start Year -> 2015   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Project Length (months) -> 6   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total Project Area (acres) -> 13   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Maximum Area Disturbed/Day (acres) -> 3  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total Soil Imported/Exported (yd <sup>3</sup> /day)-> 0  |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.   |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |
| Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L. |               |              |               |                |                 |                      |                       |                        |                         |                              |                               |               |

Appendix B  
Biological Resources Assessment

Prepared by

**Melissa C. Odell, MS**  
**Senior Biologist/Planner**  
**Odell Planning & Research, Inc.**

**March 2015**

## Appendix B

### **Shaw Avenue Widening Project – De Wolf Avenue to McCall Avenue Biological Resources Assessment For the City of Clovis**

**Prepared by Melissa Odell, Senior Planner/Wildlife Biologist  
March 18, 2015**

The project entails the widening of 2 miles of Shaw Avenue between De Wolf and McCall Avenues to a six lane arterial. This would include acquisition of additional right-of-way, the reconstruction of Shaw Avenue between De Wolf and McCall Avenues, including the construction of the inside and outside travel lanes, earthwork and grading, installation of aggregate base and asphalt concrete, median curb, median landscape and irrigation, median concrete cap, concrete curb and gutter, sidewalk, drive approaches, valley gutters and curb return ramps, landscaping and irrigation, utility work consisting of a water main, recycled water main, sewer main, storm drain and FID facilities, construction of PG&E facilities, installation of traffic signals and street lights, reconstruction of a concrete box culvert, construction of an undercrossing, adjustment of existing facilities and striping and signage. The purpose of this assessment is to determine if the project may have a significant impact on the biological resources in the vicinity and to identify design, operational, or other measures that may be available to reduce or avoid the impacts. The following biological resources report consists of a description of the results of the assessment, including habitat types present, species descriptions for special status species that have the potential to occur, potential significant impacts the project could have on these species and their habitats, recommendations for further focused species surveys, if necessary, and avoidance or minimization measures that would reduce or eliminate any project impacts on these species.

A background search and literature review of all existing data pertaining to biological resources within the area was conducted. This included searching *California Natural Diversity Data Base* (CDFW 2014), the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2014), the U.S. Fish and Wildlife Service Official List (see Appendices), other available CEQA/NEPA documents (City of Clovis 2002), herbaria records, maps, and photographs. To ensure completeness of the search, a nine-quad radius was used for database queries, centered on the Clovis 7.5" USGS Quadrangle. From this review, a list of potentially occurring special status species was compiled for the project (see Appendices). Special status biological resources include special-status plant and wildlife species (including State or Federally designated, rare, threatened, endangered, Migratory Bird Treaty Act species, species of concern, or unique species); potential wetland/riparian habitats; sensitive plant communities; and other environmentally sensitive habitat areas.

On March 8, 2014, a reconnaissance-level site visit was conducted within the project footprint and a 100 ft radius buffer (study area), to assess/map potential special status biological resources. The project site was surveyed on foot and evaluated to determine its ability to support the special status species under consideration. The 100 ft buffer was viewed with binoculars from several vantage points. Wildlife observations, plant species, and habitat types encountered were documented. Focus was placed on searching for large burrows or burrow complexes and any potential wetland features, as well as potential wildlife corridors.

## Appendix B

### Habitats and Species Observed

The project site consisted of graveled road shoulder, fallow/ruderal land (some plowed, some grassland), residential driveways and landscaping, row crops, citrus and nut orchards, irrigated pastures, and grazed fields. The aquatic features within project area include portions of Dog Creek, irrigation ditches, roadside drainage ditches, an agricultural water holding pond and an ephemerally ponded area within a plowed field. In general, this area of Clovis is rural residential and agricultural. The proposed new right-of-way needed for the road widening will expand into narrow portions of each of the land uses. These land uses are highly disturbed habitats and often support very little native plant species. Plant species observed were those typical of disturbed land, such as non-native grasses (*Avena* spp., *Bromus* spp., *Cynodon dactylon*, *Festuca perennis*, *Hordeum* sp.) and weedy forbs (*Amsinckia* sp., *Brassica* sp., *Capsella bursa-pastoris*, *Erodium cicutarium*, *Lactuca serriola*, *Helminthotheca echiodes*, *Lathyrus* sp., *Malva* sp., *Matricaria matricariodes*, *Medicago polymorpha*, *Plantago* sp., *Raphanus* sp., *Rumex* sp., *Sonchus* sp., *Taraxacum officinale*, *Tribulus terrestris*). A few large trees and shrubs were located within the project area, the majority are non-native or landscape trees (such as bamboo (*Phyllostachys* sp.), *Eucalyptus* sp., and giant sequoia (*Sequoiadendron giganteum*)) associated with the residences along Shaw Avenue.

Within Dog Creek, there were a few old willows (*Salix* sp., one recently cut down) on the north side of Shaw Ave. This side of the creek was heavily impacted or disturbed by a large herd of pygmy goats, as well as an orchard that extended to the top of bank. The reach of Dog Creek on the south side of Shaw Ave contained a small grove of non-native eucalyptus trees, with very little understory vegetation other than some annual grasses and ruderal forbs. The south side is also farmed up to the edge of the top of bank. At the time of the survey, the fields adjacent to this portion of creek were plowed with some regrowth – perhaps with a grain crop. Jurisdictional waters or other water /wetland features may be present on or near the site, including Dog Creek, a few roadside drainage ditches, and an ephemerally ponded area of a plowed field. The ponded area appears to be fed by roadside drainage ditches and was plowed recently at the time of the reconnaissance survey. A formal wetland delineation is needed and will identify whether these are in fact jurisdictional features. A few rodent burrows (<5 inches in diameter) were present within the current Shaw Ave right-of-way. It is unknown if additional, and perhaps larger, burrows are present outside of the project footprint, since access was not granted on neighboring properties.

Graveled road shoulders and fallow/ruderal land ordinarily provide low to marginal habitat for some terrestrial wildlife, primarily due to the amount of regular ground disturbance and heavy traffic. In this case, human presence and feral or domestic animals associated with the adjacent residential development creates an even lower habitat value. However, wildlife species and sign (tracks and scat) observed on or near the project site during the visit included several species of birds and a few mammals (Table 1).

**Table 1.** Wildlife species observed during reconnaissance survey conducted on March 8, 2014.

## Appendix B

| SPECIES NAME   | COMMON NAME                |
|--|----------------------------|
| <b>BIRDS (ALL PROTECTED BY THE MIGRATORY BIRD TREATY ACT*)</b> |                            |
| <i>Agelaius phoeniceus</i>                                     | Red-winged blackbird       |
| <i>Aphelocoma californica</i>                                  | Western scrub-jay          |
| <i>Bombycilla cedrorum</i>                                     | Cedar waxwing              |
| <i>Buteo jamaicensis</i>                                       | Red-tailed hawk            |
| <i>Calypte anna</i>  | Anna's hummingbird         |
| <i>Charadrius vociferus</i>                                    | Killdeer                   |
| <i>Colaptes auratus</i>  | Northern flicker           |
| <i>Elanus leucurus</i>   | White-tailed kite          |
| <i>Euphagus cyanocephalus</i>                                  | Brewer's blackbird         |
| <i>Haemorhous mexicanus</i>                                    | House finch                |
| <i>Melospiza melodia</i>                                       | Song sparrow               |
| <i>Mimus polyglottos</i>                                       | Northern mockingbird       |
| <i>Sayornis nigricans</i>                                      | Black phoebe               |
| <i>Setophaga coronata</i>                                      | Yellow-rumped warbler      |
| <i>Sturnus vulgaris</i>  | European starling*         |
| <i>Zenaida macroura</i>  | Mourning dove              |
| <b>MAMMALS</b>   |                            |
| <i>Otospermophilus beecheyi</i>                                | California ground squirrel |
| <i>Thomomys</i> sp.  | Gopher (mounds)            |

\*denotes a non-native species, not protected by MBTA

Wildlife species which may occur or use the project site for foraging or breeding include

- bird species such as white-tailed kite, barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), American crow (*Corvus brachyrhynchos*), black phoebe, northern mockingbird, Brewer's blackbird, and European starling, killdeer (pair observed copulating in field during survey), and various passerine species;
- small mammals such as deer mice (*Peromyscus maniculatus*), house mouse (*Mus musculus*), fox squirrel (*Sciurus niger*), California vole (*Microtus californicus*), old-world rats (*Rattus* sp.);
- various bat species may forage on insects above the nearby canal, creek, vacant land or near street lights, and possibly roost in the attic of houses, in the abandoned building adjacent to the project, or in large trees;
- medium-sized mammals accustomed to human disturbance which seek rodent prey such as raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), feral and domestic cats (*Felis domesticus*);
- and reptile species such as western fence lizard (*Sceloporus occidentalis occidentalis*), and gopher snake (*Pituophis melanoleucus*).

## Appendix B

### Potential Direct and Indirect Project Impacts

*Would the project:*

- a. *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service? (Less than significant with Mitigation incorporation)*

The project site consisted of graveled road shoulder, rural residential yards, and agrigulural land (irrigated pastures, disked fields, row crops, orchards, and fallow land). Additionally, from maps provided by the City of Clovis, the proposed right-of-way will encroach upon man-made roadside drainage ditches, a portion of Dog Creek, and possibly two small wet areas (which appear to be the result of roadside drainage and an ornamental pond in a front yard). As such, the project site has been disturbed from its natural state for many years. Although loss of agricultural land and residential yards may result in decreased foraging area for some species, such land is of limited habitat value for sensitive plant and wildlife species, especially due to the amount of disturbance from humans, vehicles, and domestic animals on a regular basis. Loss of potential wetlands and waters within the project area is yet to be determined, and awaiting a formal wetland delineation. The direct impacts of the proposed road widening will be a loss of marginal habitat and possible direct mortality for any animals in the path of construction equipment. Direct mortality could occur to common fossorial or slow-moving mammals and reptiles within the project area. Direct take could also occur for bird eggs and nestlings within the project area if vegetation removal or ground disturbance occur during the nesting season, generally February 1 through August 31. In addition to Migratory Bird Treaty Act (MBTA)-covered bird species, other special status bird species that could occur in the vicinity include Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), Loggerhead shrike (*Lanius ludovicianus*), and burrowing owl (*Athene cunicularia*) (Appendix A). The project may also result in direct take of three species of special status plants, Sanford's arrowhead (*Sagittaria sanfordii*) forked hare-leaf (*Lagophylla dichotoma*) and California jewel-flower (*Caulanthus californicus*), if present (Appendix B). Indirect impacts to species that may still use the area after construction could include decreased dispersal, increased mortality and injury, and increased debris that through ingestion or physical contact can be harmful to wildlife. All of these impacts are caused by the increase in human disturbance (vehicles, people, and pets). However, impacts to special status species can be minimized to a less than significant impact with the incorporation of avoidance and minimization measures.

### Special Status Species Impacts and Avoidance Measures

Database queries indicated 30 animals and 14 plant species with special status occur or have historically occurred within the 9-quad search area (Appendices A and B). Many of the species from the generated list either were historic, extirpated occurrences, or were species with very specialized habitat requirements that were not present on the site or within the vicinity. Therefore, the majority of the species were "ruled out". Based on the habitat types present within the study area, only 4 animal and 3 plant special status species have the potential to occur on the site.

## Appendix B

### ***Special Status Birds***

#### **Impacts**

Four special status avian species (Swainson's hawk, white-tailed kite, loggerhead shrike, and burrowing owl) have the potential to nest and/or forage within the study area. Swainson's hawk and white-tailed kite could nest in the large trees within and adjacent to the study area. Loggerhead shrike could nest in shrubs within and adjacent to the study area and forage in the open fields. Although none were detected during reconnaissance survey, burrowing owls could move into the area prior to construction, and occupy any large burrows during the nesting and wintering seasons. Since CDFW usually requires a various sized "no disturbance" buffers around nesting sites for these species, construction-related disturbance could be considered take under CESA and MBTA. Specific impacts to burrowing owl according to the *Staff Report on Burrowing Owl Mitigation* (CDFW 1995) include any "disturbance within 50 meters (approx. 160 ft) [75 m (250 ft) during breeding season] which may result in harassment of owls at occupied burrows; destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow(s)". In addition, other migratory birds will likely be nesting in the study area and vicinity, most of which are protected by the Migratory Bird Treaty Act (USCA 1918). For example, a pair of killdeer were observed copulating in a plowed field within the study area during the reconnaissance survey. These ground nesting birds can nest anywhere bare ground is available within the study area. Both construction related disturbance and the removal of vegetation within the project area could result in nest abandonment or direct mortality of eggs, chicks, and/or fledglings. This type of impact to migratory birds, including special status bird species, would be considered take under the MBTA and CESA, and therefore, is a potentially significant impact. In order to minimize impacts to avian species, nests and nesting habitat should not be disturbed or destroyed. The following measures will reduce potential impacts to a less than significant level.

#### **Avoidance and Minimization Measures**

1. Avoidance. Any vegetation removal will take place between September 1 and February 1 to avoid impacts to nesting birds in compliance with the Migratory Bird Treaty Act.
2. Pre-construction Surveys.
  - a. Within 14 days prior to project construction, a qualified biologist will conduct pre-construction surveys for
    - i. Active nest sites in trees, bushes, or grass within a species/taxonomic group specific buffers of the project area (Swainson's hawk – 0.5 mile, other raptor species such as white-tailed kite – 500 ft, non-raptor species (loggerhead shrike, etc. – 250 ft). Survey protocol developed by the Swainson's hawk Technical Advisory Committee (TAC) should be followed (CDFW 2000).
    - ii. Active western burrowing owl burrows in the project area and suitable habitat within 150 m (500 ft), and evaluate use by owls in accordance with California Department of Fish and Wildlife survey guidelines (CBOC 1993, CDFW 1995, CDFW 2012). Surveys will document if burrowing

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owls are nesting or using habitat in or directly adjacent to the project area. Survey results will be valid only for the season (breeding (Feb 1-Aug 31) or non-breeding (Sept 1-Jan 31) during which the survey is conducted.

- b. If no active nests or burrows are detected during the pre-construction survey, then no further action is required. If an active nest or burrow is detected, then the following minimization measures will be implemented.

### 3. Minimization/Establish Buffers.

- a. Swainson's hawk, white-tailed kite, loggerhead shrike, and MBTA-protected species: If any active nests are discovered (and if construction will occur during bird breeding season), the USFWS and/or CDFW will be contacted to determine protective measures required to avoid take. These measures could include fencing off an area where a nest occurs, or shifting construction work temporally or spatially away from the nesting birds. Biologists are required on site to monitor construction while protected migratory birds are nesting in the project area. If an active nest is found after the completion of the pre-construction surveys and after construction begins, all construction activities will stop until a qualified biologist has evaluated the nest and erected the appropriate buffer around the nest.
- b. Burrowing owl :

If burrowing owls are detected within the survey area, CDFW should be consulted to determine the suitable buffer. These buffers will take into account the level of disturbance of the project activity, existing disturbance of the site (vehicle traffic, humans, pets, etc.), and time of year (nesting vs. wintering). If avoidance is not feasible, the City will work with CDFW to determine appropriate mitigation, such as passive exclusion or translocation, and associated mitigation land offset (CDFW 2012).

4. If avoidance is not feasible, as per the General Plan Update PEIR (City of Clovis 2014), "A qualified biologist will develop appropriate mitigations that will reduce project impacts to sensitive or protected biological resources to a less than significant level. The type and amount of mitigation will depend on the resources impacted, the extent of the impacts, and the quality of habitats to be impacted. Mitigations may include, but are not limited to: 1) Compensation for lost habitat or waters in the form of preservation or creation of in-kind habitat or waters, either on-site or offsite, protected by conservation easement; 2) Purchase of appropriate credits from an approved mitigation bank servicing the Clovis General Plan Update Area; 3) Payment of in-lieu fees."

## **Special Status Plants**

### **Impact**

If any special plant populations are present, the project may result in direct mortality of individual plants, loss of portions of the population, and reduction of the seed bank. No special status plant species were present during the time of the reconnaissance survey. However, the site survey was not conducted at the peak blooming period for some potentially occurring plants. Based on their elevation range, required habitat, and/or soil type, the majority of the species

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resulting from the 9-quad query could be ruled out. Still, the site provides the correct elevation, soil, and habitat types for three special plants (see Appendix B for a description of habitat requirements). Therefore, special status plant species have the potential to be significantly impacted without the implementation of the following measures.

**Avoidance and Minimization Measures**

1. Focused Surveys. In order to fully assess impacts to potentially occurring special status plants, focused botanical surveys for the three species which may potentially occur on-site shall be conducted prior to project construction, during the appropriate blooming period (see Table 2).
2. Avoidance. If special status plant species are detected, populations shall be avoided on the site by installing ESA fencing around the portion of the population within the project area.
3. If avoidance is not feasible, as per the General Plan Update PEIR (City of Clovis 2014), “A qualified biologist will develop appropriate mitigations that will reduce project impacts to sensitive or protected biological resources to a less than significant level. The type and amount of mitigation will depend on the resources impacted, the extent of the impacts, and the quality of habitats to be impacted. Mitigations may include, but are not limited to: 1) Compensation for lost habitat or waters in the form of preservation or creation of in-kind habitat or waters, either on-site or offsite, protected by conservation easement; 2) Purchase of appropriate credits from an approved mitigation bank servicing the Clovis General Plan Update Area; 3) Payment of in-lieu fees.”

| NAME   | BLOOMING PERIOD   |
|--|-------------------|
| California jewel-flower ( <i>Caulanthus californicus</i> ) | February - May    |
| Forked hare-leaf ( <i>Lagophylla dichotoma</i> )           | April - September |
| Sanford's arrowhead ( <i>Sagittaria sanfordii</i> )        | May - October     |

- b. Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U. S. Wildlife Service? (Potentially significant impact)*

The proposed right-of-way and project components will encroach into portions of Dog Creek (a Water of the United States (City of Clovis 2014)), as well as irrigation ditches, roadside drainage ditches, an agricultural water holding pond and an ephemerally ponded area within a plowed field. Therefore, a formal wetland delineation is necessary for determining impacts and mitigation measures for these potential wetlands and waters. Given the degraded condition of Dog Creek in this area, it is likely that the impact to habitat will be less than significant with the incorporation of mitigation measures. However, without a formal wetland delineation, as well as consultation with appropriate regulatory agencies, a determination of less than significant cannot be given.

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According to the City of Clovis General Plan Update Final PEIR (City of Clovis 2014): The City of Clovis shall incorporate in the project the following measures Mitigation Measure 4-4 (Page 3-20): (Mitigation Measure 4-4 is appropriate for the proposed road widening project even though it is a public works project and not a development project (e.g., residential subdivision, shopping center)).

The City shall require applicants of development projects that have the potential to affect jurisdictional resources, to contract with a qualified biologist to conduct a jurisdictional delineation following the methods outlined in the US Army Corps of Engineers Wetland Delineation Manual to map the extent of wetlands and non-wetland waters, determine jurisdiction, and assess potential impacts. The results of the delineation shall be presented in a wetland delineation letter report and shall be incorporated into the CEQA document(s) required for approval and permitting of the proposed development project (*For the proposed street widening project, the CEQA document would be the EIR the City of Clovis must complete before the project can be approved.*).

Applicants of development projects that have the potential to impact jurisdictional features shall obtain permits and authorizations from the US Army Corps of Engineers, California Department of Fish and Wildlife, and/or Central Valley Regional Water Quality Control Board. The agency authorization would include impact avoidance and minimization measures as well as mitigation measures for unavoidable impacts. Specific avoidance, minimization, and mitigation measures for impacts to jurisdictional resources shall be determined through discussions with the regulatory agencies during the proposed development project permitting process and may include monetary contributions to a mitigation bank or habitat creation, restoration, or enhancement.

- c. *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (Potentially significant impact)*

See explanation in section b.

- d. *Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites? (Less than Significant)*

The site does not appear to constitute a “movement corridor” for native wildlife (USFWS 1998) that would attract wildlife to move through the site any more than the surrounding agricultural lands. Much of the area in general is surrounded by rural residential development, including many fenced yards, which restricts access for wildlife. Although Dog Creek is within the project area, this section of creek is degraded from heavy goat grazing and woven wire fencing needed to contain livestock, so movement through the area, especially for any mid-large sized wildlife is inhibited. Smaller wildlife species and birds are not expected to be further inhibited by a road widening project, as long as the creek passage/flow under the road is not blocked in any way. Therefore, the project will have a less than significant effect on regional wildlife movements (MO).

- e. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (No Impact)*

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The project appears to be consistent with relevant biological resources policies of the City of Clovis and would not conflict with local policies or ordinances protecting biological resources (City of Clovis 2014, MO). Compliance with Sections 4-1, 4-2, and 4-3 of the City of Clovis General Plan Update Final EIR will be ensured by adhering to the previously mentioned avoidance, minimization, and mitigation measures and by completing a formal wetland delineation.

**f. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional or state habitat conservation plan? (No Impact)***

The project would not conflict any provisions of any local, regional or state habitat conservation plan (MO, USFWS 1998, 2005).

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- U. S. Code Annotated (USCA). 1918. Migratory bird treaty act of 1918. U.S. Code, Section Title 16, Parts 703-712.
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U.S. Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxvi + 606 pp.

Appendix B

**Site Photos – March 8, 2014**



Drainage ditch and culvert on north side of Shaw Ave across from intersection with Thompson.



Drainage ditch on north side of Shaw Ave running between Thompson and Marjan.

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Plowed field where roadside drainage ditch likely empties. Northwest corner of Shaw and Marjan.



Newly planted orchard, at location of previously large ponded area (as per GoogleEarth aerial photo 2013), just east of Dog Creek.

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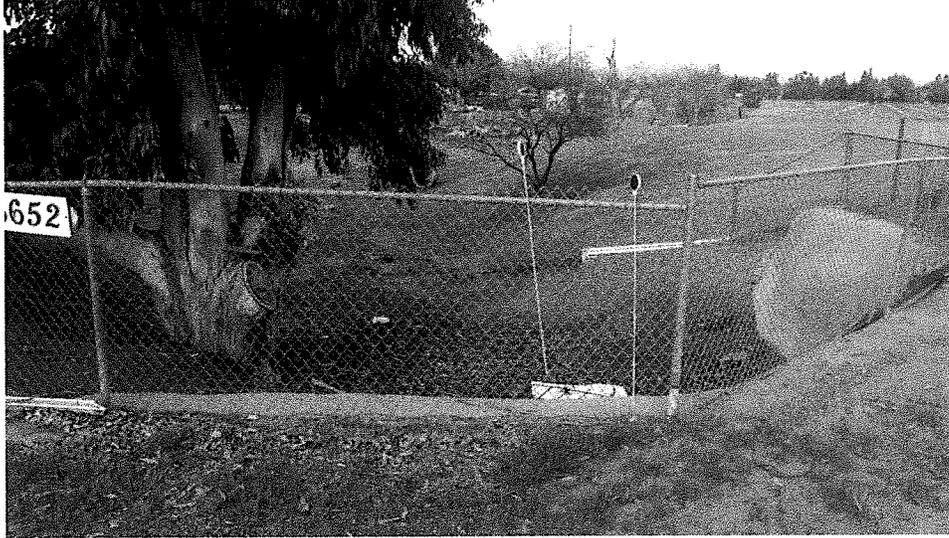


Dog Creek, south side of Shaw Ave, showing bed and bank and lack of understory vegetation.



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Dog Creek, south side of Shaw Ave, showing plowed/cultivated field up to top-of-bank of creek.



Dog Creek, north side of Shaw Ave, showing bed and bank and highly disturbed riparian zone.



Dog Creek, north side of Shaw Ave, showing culvert/creek underpass that was recently constructed.

Appendix C  
Noise & Groundborne Vibration Impact Analysis

Prepared by  
**Ambient Air Quality & Noise Consulting**

**February 2015**

# **NOISE & GROUNDBORNE VIBRATION IMPACT ANALYSIS**

**FOR**

**SHAW AVENUE WIDENING  
BETWEEN N. DEWOLF AVE.  
AND N. MCCALL AVE.  
CLOVIS, CA**

**FEBRUARY 2015**

**PREPARED FOR:**  
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## LIST OF COMMON TERMS AND ACRONYMS

|                  |   |
|------------------|---|
| ANSI             | Acoustical National Standards Institute, Inc. |
| Caltrans         | California Department of Transportation       |
| CEQA             | California Environmental Quality Act          |
| CNEL             | Community Noise Equivalent Level              |
| dB               | Decibels                                      |
| dBA              | A-Weighted Decibels                           |
| FHWA             | Federal Highway Administration                |
| FTA              | Federal Transit Administration                |
| Hz               | Hertz   |
| HVAC             | Heating Ventilation & Air Conditioning        |
| in/sec           | Inches per Second                             |
| L <sub>dn</sub>  | Day-Night Level                               |
| L <sub>eq</sub>  | Energy-Equivalent Sound Level                 |
| L <sub>max</sub> | Maximum Sound Level                           |
| OPR              | California Office of Planning & Research      |
| Pk-Hr            | Peak Hour                                     |
| ppv              | Peak Particle Velocity                        |
| U.S. EPA         | United States Environmental Protection Agency |

## INTRODUCTION

This report discusses the existing noise setting and evaluates potential noise impacts associated with implementation of the proposed project. Noise mitigation measures are recommended where the predicted noise levels would exceed applicable noise standards.

### PROPOSED PROJECT SUMMARY

The proposed project includes the widening of Shaw Avenue, between N. DeWolf Avenue and McCall Avenue, and installation of various related improvements. At buildout, the project will widen Shaw Avenue to a total of six travel lanes between N. DeWolf Avenue and Highland Avenue, and to a total of five travel lanes between Highland Avenue and McCall Avenue. The intent of the proposed improvements is to provide improved traffic capacity and safety for motorists and pedestrians. The project location is depicted in **Figure 1**. The project site plan is depicted in **Figure 2**.

## EXISTING SETTING

### CONCEPTS AND TERMINOLOGY

#### ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency.

#### **Amplitude**

Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

#### **Frequency**

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (U.S. EPA 1971). Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 3**.



**FIGURE 2**  
**Project Site Plan & Nearby Residential Land Uses (1 of 3)**

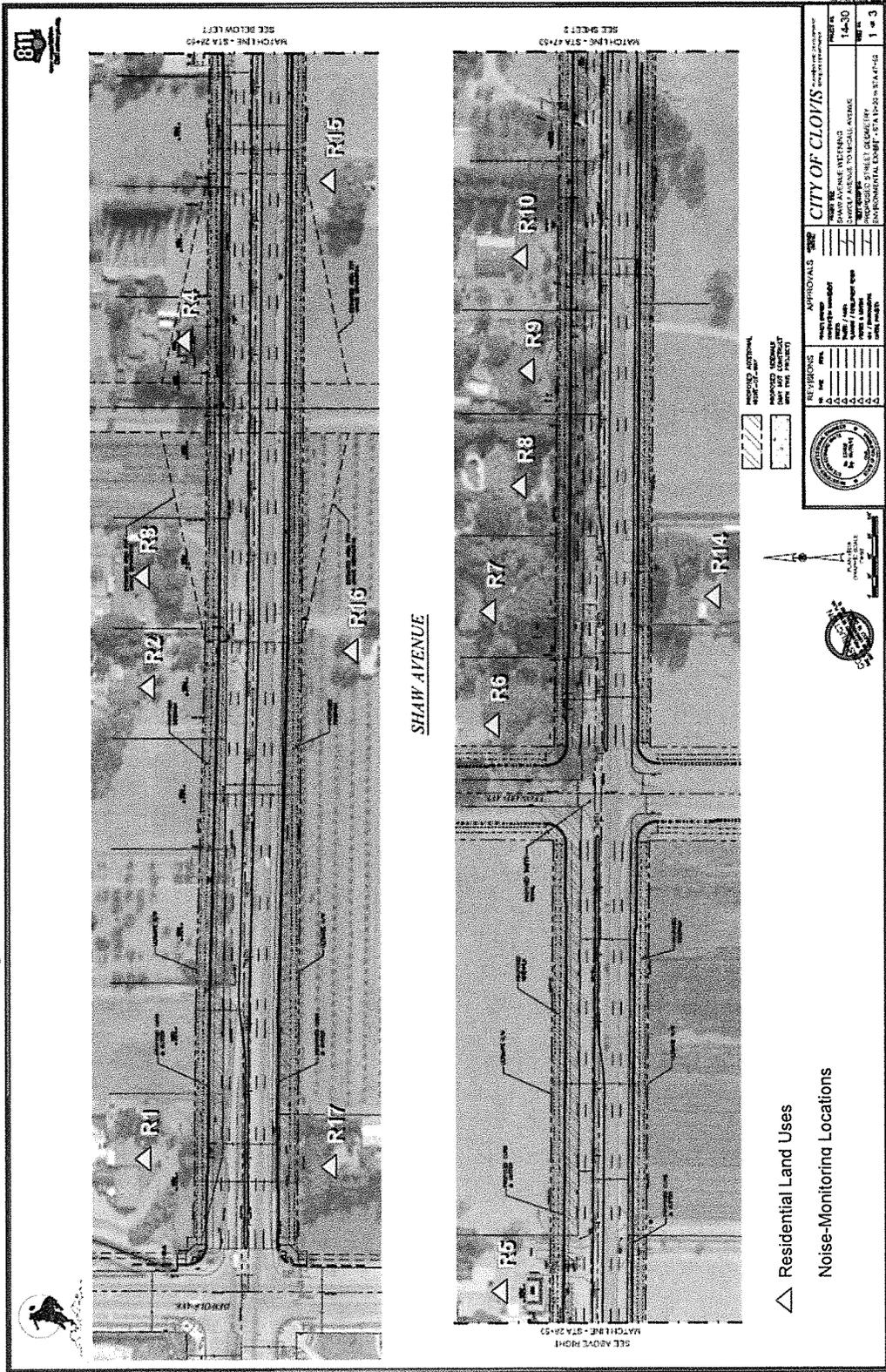


Image Source: City of Clovis 2015

Noise & Groundborne Vibration Impact Analysis  
 Shaw Avenue Widening Between N. DeWolf Avenue and N. McCall Avenue

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 February 2015

**FIGURE 2**  
**Project Site Plan & Nearby Residential Land Uses (2 of 3)**

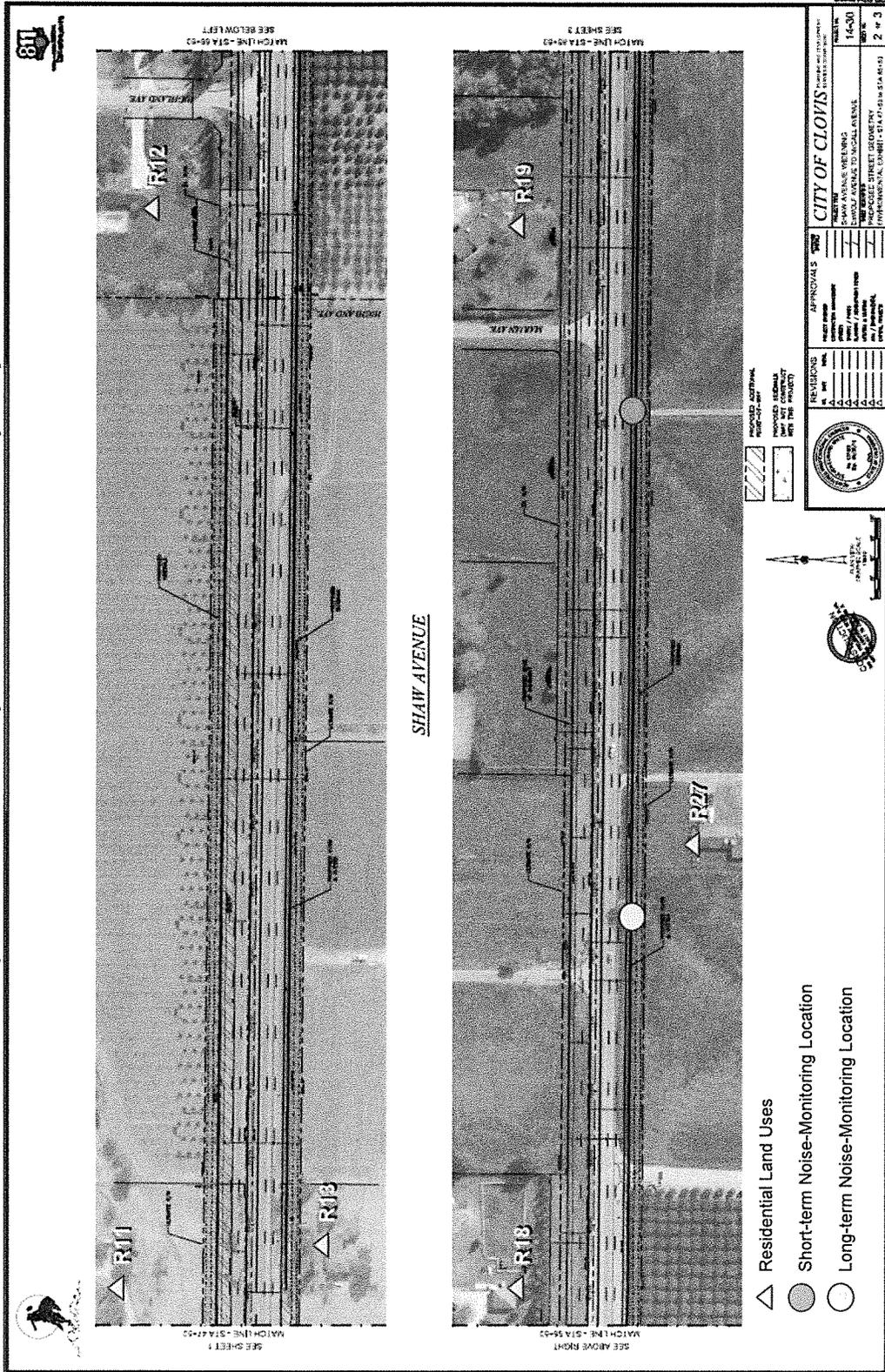


Image Source: City of Clovis 2015

Noise & Groundborne Vibration Impact Analysis  
 Shaw Avenue Widening Between N. DeWolf Avenue and N. McCall Avenue

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**FIGURE 2**  
**Project Site Plan & Nearby Residential Land Uses (3 of 3)**

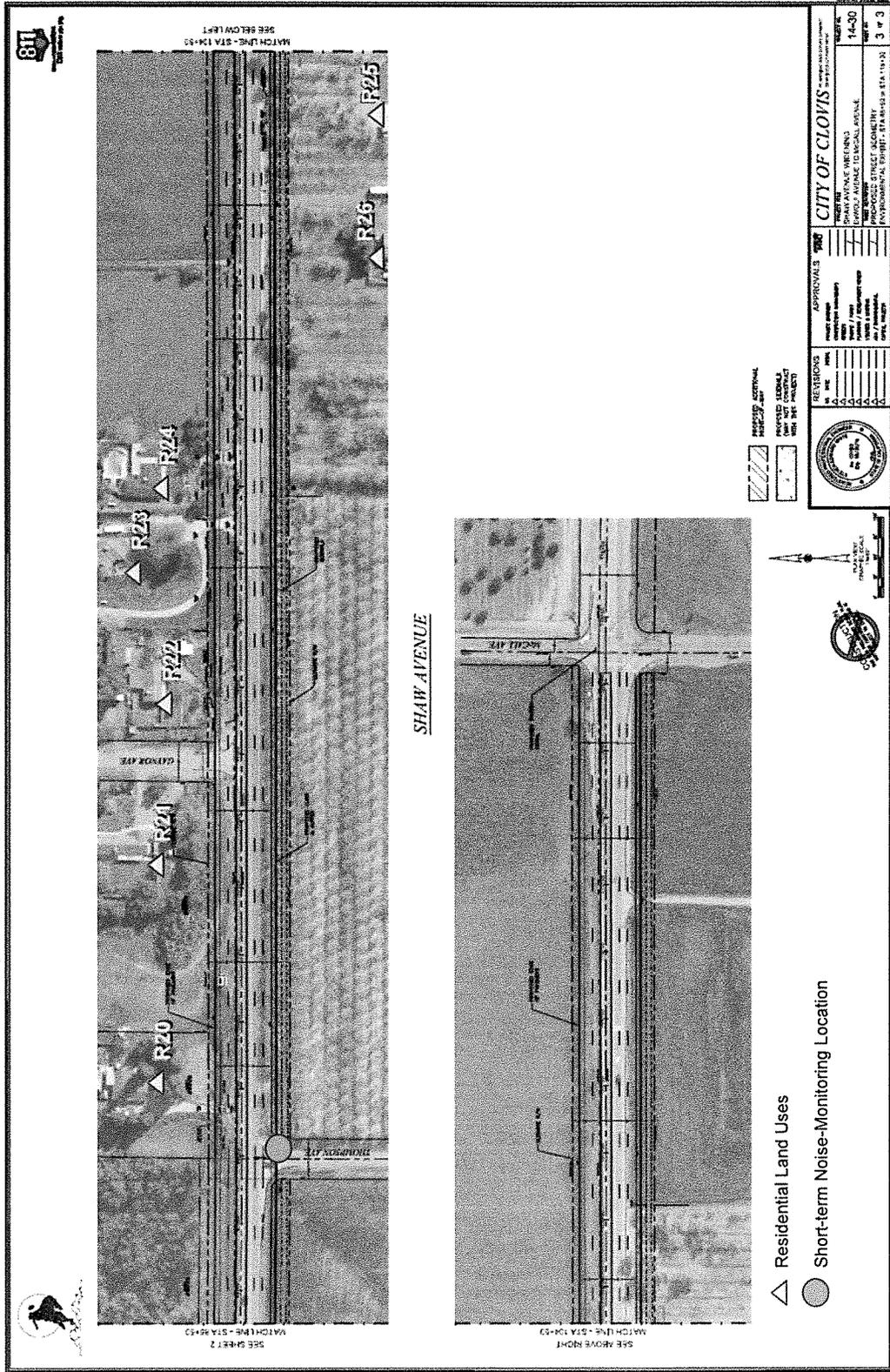


Image Source: City of Clovis 2015

**FIGURE 3**  
**Common Noise Levels**

| Common Outdoor Activities                          | Noise Level (dBA) | Common Indoor Activities                    |
|--|-------------------|---|
| Jet Fly-over at 300m (1000 ft)                     | 110               | Rock Band                                   |
| Gas Lawn Mower at 1 m (3 ft)                       | 100               |   |
| Diesel Truck at 15 m (50 ft),<br>at 80 km (50 mph) | 90                | Food Blender at 1 m (3 ft)                  |
| Noisy Urban Area, Daytime                          | 80                | Garbage Disposal at 1 m (3 ft)              |
| Gas Lawn Mower, 30 m (100 ft)                      | 70                | Vacuum Cleaner at 3 m (10 ft)               |
| Commercial Area                                    |                   | Normal Speech at 1 m (3 ft)                 |
| Heavy Traffic at 90 m (300 ft)                     | 60                |   |
| Quiet Urban Daytime                                | 50                | Large Business Office                       |
|  |                   | Dishwasher Next Room                        |
| Quiet Urban Nighttime                              | 40                | Theater, Large Conference Room (Background) |
| Quiet Suburban Nighttime                           |                   | Library                                     |
| Quiet Rural Nighttime                              | 30                | Bedroom at Night,                           |
|  |                   | Concert Hall (Background)                   |
|  | 20                | Broadcast/Recording Studio                  |
|  | 10                |   |
| Lowest Threshold of Human Hearing                  | 0                 | Lowest Threshold of Human Hearing           |

Source: Caltrans 2012

### **Addition of Decibels**

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

### **Sound Propagation & Attenuation**

#### Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 decibels for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 decibels per doubling of distance from the source.

#### Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

#### Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in minimum 5 dB of noise reduction. Taller barriers provide increased noise reduction. To be effective, barriers typically need to extend, uninterrupted, roughly 3 to 4 times in length beyond the perpendicular distance between the source and receiver.

Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 15 dBA exterior-to-interior noise reductions for building facades, with windows open, and approximately 20-30 dBA, with windows closed. With compliance with current Title 24 energy efficiency standards, which require increased building insulation and inclusion of an interior air ventilation system to allow windows on noise-impacted façades to remain closed, exterior-to-interior noise reductions typically average approximately 25 dBA. The absorptive characteristics of interior rooms, such as carpeted floors, draperies and furniture, can result in further reductions in interior noise.

## NOISE DESCRIPTORS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the sound-pressure level in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies, which is referred to as the "A-weighted" sound level (expressed in units of dBA). The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with environmental noise.

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are  $L_{eq}$ ,  $L_{dn}$ , and CNEL. The energy-equivalent noise level,  $L_{eq}$ , is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level,  $L_{dn}$ , is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to  $L_{dn}$  but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.) The calculated CNEL is typically approximately 0.5 dBA higher than the calculated  $L_{dn}$ . Common noise level descriptors are summarized in **Table 1**.

## HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the

threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

**TABLE 1**  
**Common Acoustical Descriptors**

| Descriptor  | Definition   |
|---|--|
| Energy Equivalent Noise Level<br>( $L_{eq}$ )       | The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.   |
| Minimum Noise Level<br>( $L_{min}$ )                | The minimum instantaneous noise level during a specific period of time.  |
| Maximum Noise Level<br>( $L_{max}$ )                | The maximum instantaneous noise level during a specific period of time.  |
| Day-Night Average Noise Level<br>(DNL or $L_{dn}$ ) | The DNL was first recommended by the US EPA in 1974 as a "simple, uniform and appropriate way" of measuring long term environmental noise. DNL takes into account both the frequency of occurrence and duration of all noise events during a 24-hour period with a 10 dBA "penalty" for noise events that occur between the more noise-sensitive hours of 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours. |
| Community Noise Equivalent Level<br>(CNEL)          | The CNEL is similar to the $L_{dn}$ described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated $L_{dn}$ .   |

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;

- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

A limitation of using a single noise-level increase value to evaluate noise impacts, as discussed above, is that it fails to fully account for pre-project noise conditions. With this in mind, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in transportation noise impact assessments. FICON-recommended noise evaluation criteria are summarized in **Table 2**.

As depicted in **Table 2**, a noise level increase of 5.0, or greater, would typically be considered to result in increased levels of annoyance where existing ambient noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB, or greater. Increases of 1.5 dB, or greater, could result in increased levels of annoyance in areas where the ambient noise level exceeds 65 dB. The rationale for the FICON-recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance (FICON 1992, FAA 2000).

**TABLE 2**  
**Federal Interagency Committee on Noise**  
**Recommended Criteria for Evaluation of Increases in Ambient Noise Levels**

| Ambient Noise Level Without Project | Increase Required for Significant Impact |
|-------------------------------------|--|
| < 60 dB                             | 5.0 dB, or greater                       |
| 60-65 dB                            | 3.0 dB, or greater                       |
| > 65 dB                             | 1.5 dB, or greater                       |
| <i>Source: FAA 2000, FICON 1992</i> |  |

## AFFECTED ENVIRONMENT

### NOISE-SENSITIVE LAND USES

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are also considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

Noise-sensitive land uses located adjacent to Shaw Avenue consist of rural residences located at varying distances from the roadway. Residential land uses located nearest Shaw Avenue, between N. DeWolf Avenue and McCall Avenue are depicted in **Figure 2**.

## AMBIENT NOISE ENVIRONMENT

To document existing ambient noise levels in the project area, short-term (i.e., 1-hour, or less) and one long-term (i.e., 24-hour) ambient noise measurements were conducted. Measurements were conducted on October 23, 2014 and on February 3, 2015 using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter. The meter was calibrated before use and is certified to be in compliance with ANSI specifications. Measured noise levels are summarized in **Table 3**. Measured long-term noise levels are depicted in **Figure 4**.

Based on the measurements conducted, average-hourly traffic noise levels (in  $L_{eq}$ ) at approximately 35 feet from the roadway centerline generally range from the mid 50's to the low 70's. Average-hourly nighttime noise levels are generally 10-15 dB lower than daytime noise levels. Based on the long-term measurement conducted, the peak-hour noise level occurred during the a.m. commute period. The measured average-daily noise level (in dBA CNEL) was approximately 2 dB lower than the measured peak-hour noise level.

**TABLE 3**  
**Summary of Short-term Noise Measurement Surveys**

| Location  |   | Monitoring Period     | Noise Levels (dBA) |           |
|---|---|-----------------------|--------------------|-----------|
|   |   |                       | $L_{eq}$           | $L_{max}$ |
| ST-1  | Shaw Avenue, between Leonard Avenue and N. Highland Avenue. Approximately 35 feet from road centerline. | 10/23/14, 13:00-13:10 | 68.3               | 82.1      |
|   |   | 2/3/15, 4:40-5:00     | 61.2               | 79.8      |
|   |   | 2/3/15, 5:00-6:00     | 63.6               | 83.2      |
|   |   | 2/3/15, 6:00-7:00     | 71.0               | 78.6      |
|   |   | 2/3/15, 7:00-8:00     | 72.9               | 83.7      |
| ST-2  | Shaw Avenue at N. Thompson Avenue. Approximately 33 feet from road centerline.                          | 10/23/14, 13:30-13:40 | 67.3               | 79.7      |
|   |   | 10/23/14, 15:10-15:20 | 68.9               | 81.8      |
| <i>Ambient noise measurements were conducted using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter. Refer to Figure 2 for corresponding measurement locations.</i> |   |                       |                    |           |

## REGULATORY FRAMEWORK

### NOISE

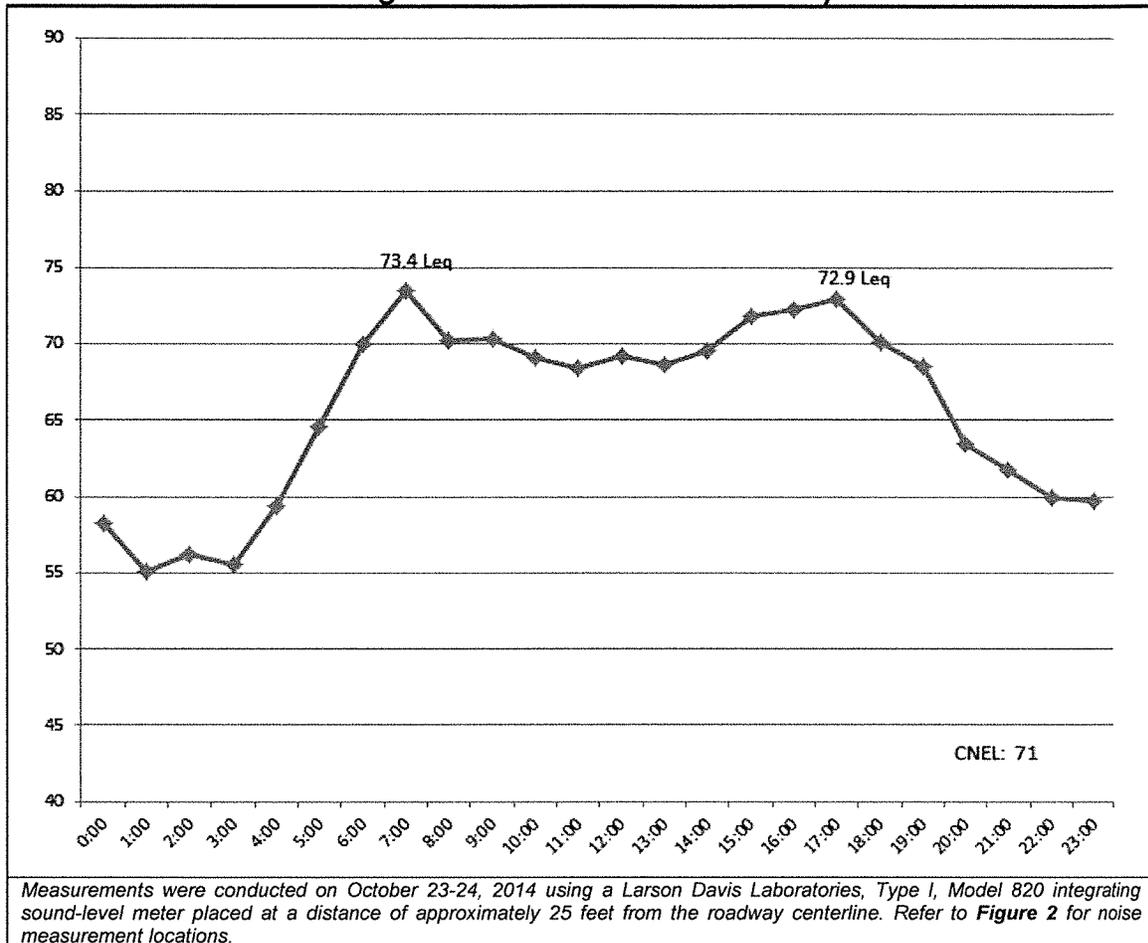
#### City of Clovis

##### City of Clovis General Plan

The Clovis General Plan Noise Element includes noise standards for determination of land use compatibility for new land uses and for evaluation of noise impacts to existing noise-sensitive land uses. For residential land uses, exterior noise levels up to 65 dBA CNEL are considered "normally compatible." The City has also established an interior noise standard for residential land uses of 45 dBA CNEL. The City's noise standards are depicted in **Table 4**.

In addition, the City's Municipal Code, Article 6, Section 5.27.604, limits construction activities to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 5:00 p.m. on Saturday and Sunday. From June 1st through September 15th, permitted construction activity may commence after 6:00 a.m. Monday through Friday.

**FIGURE 4**  
**Long-term Noise Measurement Survey**



#### GROUNDBORNE VIBRATION

Sources of earthborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.), or manmade causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous such as factory machinery, and transient, such as explosions.

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement.

**Table 4  
City of Clovis Interior & Exterior Noise Standards**

| LAND USE CATEGORIES  |  | ENERGY AVERAGE (CNEL)            |                       |
|--|--|----------------------------------|-----------------------|
| Primary Land Uses  | Additional Uses Allowed                                      | Interior <sup>1</sup>            | Exterior <sup>2</sup> |
| Residential  | Single Family, Multifamily                                   | 45 <sup>3</sup> /55 <sup>4</sup> | 65 <sup>7</sup>       |
|  | Mobile Home  | —                                | 65 <sup>5</sup>       |
| Commercial/ Industrial   | Hotel, motel, transient lodging                              | 45                               | 65 <sup>6</sup>       |
|  | Commercial, retail, bank, restaurant                         | 55                               | —                     |
|  | Office building, professional office, research & development | 50                               | —                     |
|  | Gymnasium (Multipurpose)                                     | 50                               | —                     |
|  | Health clubs   | 55                               | —                     |
|  | Manufacturing, warehousing, wholesale, utilities             | 65                               | —                     |
| Institutional  | Hospital, school classroom                                   | 45                               | 65                    |
|  | Church, library  | 45                               | —                     |
| Open Space   | Parks  | —                                | 65                    |
| <b>Notes:</b><br>1. Interior environment excludes bathrooms, toilets, closets, and corridors.<br>2. Outdoor environment limited to private yard of single family or multifamily residences private patio which is accessed by a means of exit from inside the unit; mobile home park; hospital patio; park picnic area; school playground; and hotel and motel recreation area.<br>3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided pursuant to Appendix Chapter 12, Section 1208 of UBC.<br>4. Noise level requirement with open windows, if they are used to meet natural ventilation requirement.<br>5. Multi-family developments with balconies that do not meet the 65 CNEL are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.<br>6. Exterior noise level shall be such that interior noise level will not exceed 45 CNEL.<br>7. Except those areas affected by aircraft noise. |  |                                  |                       |

Source: City of Clovis 2014

The City of Clovis does not have specific policies pertaining to vibration levels. However, various agencies, such as the California Department of Transportation (Caltrans), have developed recommended criteria for the evaluation of groundborne vibration levels with regard to potential human annoyance and building structural damage. Caltrans-recommended criteria for the evaluation of groundborne vibration events are summarized in **Table 5**. The vibration levels are presented in terms of peak particle velocity (ppv) in inches per second (in/sec) for continuous/frequent sources.

The effects of groundborne vibration levels, with regard to human annoyance and structural damage, is influenced by various factors, including ground type, distance between source and receptor, duration, and the type of vibration events (i.e., continuous or transient). As indicated in **Table 5**, the threshold at which there is a risk to normal structures is 0.2 ppv in/sec. This same threshold is typically considered the level at which increased levels of annoyance may begin to occur to occupants of nearby buildings. The recommended criteria for transient sources of single isolated events (i.e., blasting or demolition ball drops) is generally twice the levels identified for continuous/frequent sources (Caltrans 2002(b), 2004).

**TABLE 5**  
**Effects of Vibration on People and Buildings**

| Peak Particle Velocity (inches/second)   | Human Reaction   | Effect on Buildings  |
|--|--|--|
| 0.006–.019   | Range of threshold of perception   | Vibrations unlikely to cause damage of any type                                  |
| 0.08   | Vibrations readily perceptible   | Recommended upper level to which ruins and ancient monuments should be subjected |
| 0.1  | Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities    | Virtually no risk of architectural damage to normal buildings                    |
| 0.2  | Vibrations may begin to annoy people in buildings  | Threshold at which there is a risk of architectural damage to normal dwellings   |
| 0.4-0.6  | Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges | Architectural damage and possibly minor structural damage                        |
| <p><i>Notes: Vibration levels based on peak particle velocity in the vertical direction for continuous/frequent intermittent sources. The criteria for transient sources of single isolated events (i.e., blasting or demolition ball drops) is generally twice the levels identified for continuous/frequent sources. Where human reactions are concerned, the value is at the point at which the person is situated. For buildings, the value refers to the ground motion. No allowance is included for the amplifying effect, if any, of structural components.</i></p> <p><i>Source: Caltrans 2002, 2004</i></p> |  |  |

## IMPACTS AND MITIGATION MEASURES

### METHODOLOGY

Short-term noise impacts associated with construction activities were analyzed based on typical construction equipment noise levels and distances to the nearest noise-sensitive land uses. Noise levels were predicted based on an average noise-attenuation rate of 6 dB per doubling of distance from the source utilizing the Federal Highway Administration (FHWA) Roadway Construction Model.

Traffic noise levels were calculated using the FHWA Traffic Noise Model, version 2.5, based on traffic data obtained from existing environmental documentation. Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. To determine changes in traffic noise levels attributable to the proposed project, traffic noise levels for Shaw Avenue were modeled at the nearest primarily-affected noise-sensitive land uses. For informational purposes, predicted traffic noise levels were also modeled at the adjacent commercial land use (H&E Nursery). Increases in traffic noise levels attributable to the proposed project were calculated by comparing the predicted noise levels with and without project implementation. Noise modeling assumptions and results are included in **Appendix A**.

## THRESHOLDS OF SIGNIFICANCE

The *CEQA Guidelines* do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this section, a noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. For purposes of this analysis, a significant increase in ambient noise would occur if:

- The project results in an increase in ambient noise levels of 5 dB, or more, in areas where the ambient noise level at primarily affected noise-sensitive land uses is less than the City's "normally acceptable" exterior noise level of 60 dBA CNEL/L<sub>dn</sub>;
- The project results in an increase in ambient noise levels of 3 dB, or more, in areas where the ambient noise level at primarily affected noise-sensitive land uses is 60-65 dBA CNEL/L<sub>dn</sub>;
- The project results in an increase in ambient noise levels of 1.5 dB, or more, in areas where the ambient noise level at primarily affected noise-sensitive land uses is greater than the City's "conditionally acceptable" exterior noise level of 65 dBA CNEL/L<sub>dn</sub>;

The rationale for the above-recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance.

The *CEQA Guidelines* also do not define the levels at which ground-borne vibration levels would be considered excessive. For this reason, Caltrans' recommended ground-borne vibration thresholds were used for the evaluation of impacts based on increased potential for structural damage and human annoyance (**Table 5**). Caltrans considers a peak particle velocity (ppv) threshold of 0.2 inches per second (in/sec) to be the level at which architectural damage (i.e., minor cracking of plaster walls and ceilings) to normally-constructed buildings may occur. This same threshold is typically considered the level at which increased levels of annoyance may begin to occur to occupants of nearby buildings.

## PROJECT IMPACTS

**IMPACT NOISE-1: *Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

Implementation of the proposed project would not result in a significant long-term noise impact to nearby noise-sensitive land uses. However, short-term construction related noise levels could potentially adversely affect nearby noise-sensitive land uses. For residential land uses, activities occurring during the more noise-sensitive nighttime hours would be of particular concern given the potential for increased levels of sleep disruption to occupants of nearby residential dwellings. Construction activities occurring during the nighttime hours would, therefore, be considered to have a **potentially significant** impact. Refer to *Impact Noise-2* and *Impact Noise-3* for additional discussions of short-term and long-term noise impact, respectively.

**IMPACT NOISE-2: Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g., land clearing, grading, excavation, and paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Noise levels associated with individual construction equipment are summarized in **Table 6**.

**TABLE 6  
Typical Construction Equipment Noise Levels**

| Equipment                | Typical Noise Level (dBA Lmax)<br>50 feet from Source |
|--------------------------|---|
| Air Compressor           | 81  |
| Backhoe                  | 80  |
| Compactor                | 82  |
| Concrete Mixer           | 85  |
| Concrete Vibrator        | 76  |
| Crane, Mobile            | 83  |
| Dozer                    | 85  |
| Generator                | 81  |
| Grader                   | 85  |
| Impact Wrench            | 85  |
| Jack Hammer              | 88  |
| Loader                   | 85  |
| Truck                    | 88  |
| Paver                    | 89  |
| Pneumatic Tool           | 85  |
| Roller                   | 74  |
| Saw                      | 76  |
| <i>Sources: FTA 2006</i> |   |

As depicted in **Table 6**, noise levels generated by individual pieces of construction equipment typically range from approximately 74 dBA to 89 dBA at 50 feet (FTA 2006). Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Average-hourly noise levels associated with road improvement projects can vary, reaching combined levels of up to approximately 83 dBA  $L_{eq}$  at 50 feet, depending on the activities performed. Short-term increases in vehicle traffic, including worker commute trips and haul truck trips may also result in temporary increases in ambient noise levels at nearby receptors.

For nearby residential land uses, noise-generating construction activities occurring during the more noise-sensitive nighttime hours would be of particular concern given the potential for increased levels of sleep disruption to occupants of nearby residential dwellings. The proposed project does not identify hourly restrictions for construction activities. As a result, this impact would be considered to have a **potentially significant** short-term noise impact to occupants of nearby residential land uses.

### **Mitigation Measures**

**MM Noise-1:** The following measures shall be implemented to reduce construction-generated noise levels:

- a. Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 5:00 p.m. on Saturday and Sunday. From June 1st through September 15th, permitted construction activity may commence after 6:00 a.m., Monday through Friday.
- b. Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.

### **Significance After Mitigation**

Implementation of the above mitigation measures would limit construction activities to the less noise-sensitive periods of the day, consistent with requirements typically imposed for noise-generating construction activities by the City of Clovis. In addition, the use of mufflers would reduce individual equipment noise levels by approximately 10 dBA. With implementation of the above mitigation measures, this impact would be considered **less than significant**.

**IMPACT NOISE-3: Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

### **Existing Conditions**

#### Exterior Traffic Noise Levels

Traffic noise levels were calculated using the FHWA Traffic Noise Model, version 2.5, based on traffic data obtained from existing environmental documentation. Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. The TNM model was calibrated using existing noise measurement data. Increases in traffic noise levels attributable to the proposed project were calculated by comparing the predicted noise levels at nearby residential land uses with and without project implementation. Interior noise levels were calculated based on the predicted exterior noise levels at the structure's façade and assuming an average exterior-to-interior noise reduction of 25 dB, which is typical for residential construction. Modeled receptor locations are depicted in **Figure 2**.

Predicted exterior traffic noise levels for existing conditions are summarized in **Table 7**. With project implementation, some vehicle traffic along Shaw Avenue would be located closer to adjacent land uses. As a result, traffic noise levels are projected to increase at adjacent land

uses. As depicted in **Table 7**, predicted existing noise levels with project implementation would increase by approximately 2 to 4 dBA at adjacent residential land uses. Significant increases would be projected to occur at residential receptors R4, R8-R10, R17-R19, R21, R22, and R24. Residential receptor locations are depicted in **Figure 2**.

#### Interior Noise Levels

Predicted interior traffic noise levels were calculated based on the predicted exterior noise levels at the residential structure and assuming an average exterior-to-interior noise reduction of 25 dB, which is typical for residential construction.

Predicted interior traffic noise levels for the nearest residential land uses are summarized in **Table 8**. As depicted, predicted interior noise levels at the nearest residential land uses would not exceed the City's interior noise level of 45 dBA CNEL.

#### **Impact Summary**

Predicted exterior noise levels at nearby land uses, with project implementation, would not exceed the City's "normally acceptable" exterior noise standard of 65 dBA CNEL. However, significant increases would occur at residential receptors R4, R8-R10, R17-R19, R21, R22, and R24. It is important to note that the exterior activity areas for many of the nearest residential land uses are largely shielded from direct line of sight of Shaw Avenue by the residential dwelling structure or fencing. In these locations, exterior traffic noise levels would be approximately 5 dBA lower than the predicted levels identified in **Table 7**. Nonetheless, this impact would be considered ***potentially significant***.

#### **Mitigation Measures**

Access to the nearest residential land uses is provided via driveways that access Shaw Avenue. In order to maintain access to these dwellings, the construction of a sound barrier is not feasible.

#### **Future Cumulative Conditions**

##### Exterior Traffic Noise Levels

Under future cumulative conditions projected vehicle traffic on this segment of Shaw Avenue is projected to increase substantially. The incremental increases in future cumulative traffic noise levels attributable to the proposed project are summarized in **Table 9**. As depicted, predicted future cumulative traffic noise levels at the nearest residences would range from approximately 65 to 71 dBA CNEL. Implementation of the proposed project would, as noted above, result in increases in traffic noise levels at these same residences of approximately 2 to 4 dBA.

**TABLE 7**  
**Predicted Exterior Traffic Noise Levels – Existing Conditions**

| Receptor Location | Predicted Noise Level (dBA CNEL/L <sub>dn</sub> ) <sup>1</sup> |              |                         |                                    |
|-------------------|--|--------------|-------------------------|------------------------------------|
|                   | Without Project  | With Project | Difference <sup>2</sup> | Significant Increase? <sup>3</sup> |
| R1                | 58   | 62           | 4                       | No                                 |
| R2                | 58   | 62           | 4                       | No                                 |
| R3                | 57   | 61           | 4                       | No                                 |
| R4                | 60   | 64           | 4                       | Yes                                |
| R5                | 58   | 62           | 4                       | No                                 |
| R6                | 56   | 60           | 4                       | No                                 |
| R7                | 57   | 61           | 4                       | No                                 |
| R8                | 60   | 64           | 4                       | Yes                                |
| R9                | 60   | 63           | 3                       | Yes                                |
| R10               | 60   | 63           | 3                       | Yes                                |
| R11               | 55   | 59           | 4                       | No                                 |
| R12               | 56   | 60           | 4                       | No                                 |
| R13               | 62   | 64           | 2                       | No                                 |
| R14               | 60   | 62           | 2                       | No                                 |
| R15               | 62   | 64           | 2                       | No                                 |
| R16               | 60   | 62           | 2                       | No                                 |
| R17               | 60   | 63           | 3                       | Yes                                |
| R18               | 60   | 63           | 3                       | Yes                                |
| R19               | 60   | 63           | 3                       | Yes                                |
| R20               | 59   | 61           | 2                       | No                                 |
| R21               | 60   | 63           | 3                       | Yes                                |
| R22               | 61   | 64           | 3                       | Yes                                |
| R23               | 57   | 59           | 2                       | No                                 |
| R24               | 61   | 64           | 3                       | Yes                                |
| R25 & R26         | 56   | 59           | 2                       | No                                 |
| R27               | 60   | 62           | 2                       | No                                 |

1. Traffic noise levels were calculated using the FHWA TNM model based on traffic data obtained from existing environmental documentation.  
2. Difference in noise levels reflects the incremental increase attributable to the proposed project.  
3. Significant increase is defined as:  

- Project-generated increase in ambient noise levels of 5 dB, or more, in areas where the ambient noise level is less than 60 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 3 dB, or more, in areas where the ambient noise level is 60-65 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 1.5 dB, or more, in areas where the ambient noise level is greater than 65 dBA CNEL/L<sub>dn</sub>.

Refer to **Figure 2** for receptor locations.

**TABLE 8**  
**Predicted Interior Traffic Noise Levels – Existing Conditions**

| Receptor Location | Predicted Noise Level (dBA CNEL/L <sub>dn</sub> ) <sup>1</sup> |              |   |                           |
|-------------------|--|--------------|---|---------------------------|
|                   | Without Project  | With Project | Equals/Exceeds 45 dBA CNEL with Project | Significant? <sup>3</sup> |
| R1                | 33   | 37           | No                                      | No                        |
| R2                | 33   | 37           | No                                      | No                        |
| R3                | 32   | 36           | No                                      | No                        |
| R4                | 35   | 39           | No                                      | No                        |
| R5                | 33   | 37           | No                                      | No                        |
| R6                | 31   | 35           | No                                      | No                        |
| R7                | 32   | 36           | No                                      | No                        |
| R8                | 35   | 39           | No                                      | No                        |
| R9                | 35   | 38           | No                                      | No                        |
| R10               | 35   | 38           | No                                      | No                        |
| R11               | 30   | 34           | No                                      | No                        |
| R12               | 31   | 35           | No                                      | No                        |
| R13               | 37   | 39           | No                                      | No                        |
| R14               | 35   | 37           | No                                      | No                        |
| R15               | 37   | 39           | No                                      | No                        |
| R16               | 35   | 37           | No                                      | No                        |
| R17               | 35   | 38           | No                                      | No                        |
| R18               | 35   | 38           | No                                      | No                        |
| R19               | 35   | 38           | No                                      | No                        |
| R20               | 34   | 36           | No                                      | No                        |
| R21               | 35   | 38           | No                                      | No                        |
| R22               | 36   | 39           | No                                      | No                        |
| R23               | 32   | 34           | No                                      | No                        |
| R24               | 36   | 39           | No                                      | No                        |
| R25 & R26         | 31   | 34           | No                                      | No                        |
| R27               | 35   | 37           | No                                      | No                        |

1. Traffic noise levels were calculated using the FHWA TNM model based on traffic data obtained from existing environmental documentation.  
2. Difference in noise levels reflects the incremental increase attributable to the proposed project.  
3. Significant increase is defined as:  

- Project-generated increase in ambient noise levels of 5 dB, or more, in areas where the ambient noise level is less than 60 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 3 dB, or more, in areas where the ambient noise level is 60-65 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 1.5 dB, or more, in areas where the ambient noise level is greater than 65 dBA CNEL/L<sub>dn</sub>.

Refer to **Figure 2** for receptor locations.

As discussed earlier in this report, the level of increase deemed acceptable is dependent on the ambient noise level. For instance, where traffic noise levels do not exceed applicable standards, acceptable increases in noise levels can range from 3 to 5 dBA. However, if noise levels exceed the commonly acceptable noise standard, which is commonly defined as 65 dBA CNEL, a smaller noise-level increase of 1.5 dBA would typically be considered sufficient to result in increased levels of annoyance. As noted in **Table 9**, projected future cumulative traffic noise levels at the nearest residential land uses are projected to exceed the City's noise standard of 65 dBA CNEL. Implementation of the proposed project would result in increases of more than 1.5 dBA at these same residences.

As noted above, it is important to note that the exterior activity areas for many of the nearest residential land uses are largely shielded from direct line of sight of Shaw Avenue by the residential dwelling structure or fencing. In these locations, exterior traffic noise levels would be approximately 5 dBA lower than the predicted levels identified in **Table 9**.

#### Interior Traffic Noise Levels

Predicted interior traffic noise levels were calculated based on the predicted future cumulative exterior noise levels at the residential structure and assuming an average exterior-to-interior noise reduction of 25 dB, which is typical for residential construction. Predicted interior traffic noise levels for the nearest residential land uses are summarized in **Table 10**. As depicted, predicted interior noise levels at the nearest residential land uses, under future cumulative conditions, would exceed the City's interior noise level of 45 dBA CNEL.

#### **Impact Summary**

Predicted exterior future cumulative noise levels at nearby land uses, with project implementation, would result in significant increases at the nearest residences that would also exceed the City's "normally acceptable" exterior noise standard of 65 dBA CNEL. Predicted interior noise levels at a majority of these residences would also exceed the City's interior noise standard of 45 dBA CNEL. As a result, this impact would be considered ***potentially significant***.

#### **Mitigation Measures**

In order to effectively reduce exterior noise levels at the adjacent residences, sound barriers would need to be constructed along the adjacent property lines. To be effective, sound barriers generally need to extend, uninterrupted, a distance of approximately 3 to 4 times the distance between the receiver and the barrier.

Access to the nearest residential land uses is provided via driveways that access Shaw Avenue. In order to maintain access to these dwellings, the construction of a sound barrier is not feasible.

**TABLE 9**  
**Predicted Exterior Traffic Noise Levels – Future Conditions**

| Receptor Location | Predicted Noise Level (dBA CNEL/L <sub>dn</sub> ) <sup>1</sup> |              |                         |                           |
|-------------------|--|--------------|-------------------------|---------------------------|
|                   | Without Project  | With Project | Difference <sup>2</sup> | Significant? <sup>3</sup> |
| R1                | 66   | 70           | 4                       | Yes                       |
| R2                | 66   | 70           | 4                       | Yes                       |
| R3                | 66   | 70           | 4                       | Yes                       |
| R4                | 68   | 72           | 4                       | Yes                       |
| R5                | 67   | 71           | 4                       | Yes                       |
| R6                | 65   | 69           | 4                       | Yes                       |
| R7                | 65   | 69           | 4                       | Yes                       |
| R8                | 68   | 72           | 4                       | Yes                       |
| R9                | 68   | 71           | 3                       | Yes                       |
| R10               | 68   | 71           | 3                       | Yes                       |
| R11               | 65   | 69           | 4                       | Yes                       |
| R12               | 65   | 69           | 4                       | Yes                       |
| R13               | 71   | 73           | 2                       | Yes                       |
| R14               | 68   | 70           | 2                       | Yes                       |
| R15               | 71   | 73           | 2                       | Yes                       |
| R16               | 68   | 71           | 2                       | Yes                       |
| R17               | 69   | 71           | 3                       | Yes                       |
| R18               | 69   | 72           | 3                       | Yes                       |
| R19               | 69   | 72           | 3                       | Yes                       |
| R20               | 68   | 70           | 2                       | Yes                       |
| R21               | 69   | 71           | 3                       | Yes                       |
| R22               | 70   | 73           | 3                       | Yes                       |
| R23               | 66   | 68           | 2                       | Yes                       |
| R24               | 70   | 73           | 3                       | Yes                       |
| R25 & R26         | 66   | 68           | 2                       | Yes                       |
| R27               | 69   | 71           | 2                       | Yes                       |

1. Traffic noise levels were calculated using the FHWA TNM model based on traffic data obtained from existing environmental documentation.  
2. Difference in noise levels reflects the incremental increase attributable to the proposed project.  
3. Significant increase is defined as:

- Project-generated increase in ambient noise levels of 5 dB, or more, in areas where the ambient noise level is less than 60 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 3 dB, or more, in areas where the ambient noise level is 60-65 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 1.5 dB, or more, in areas where the ambient noise level is greater than 65 dBA CNEL/L<sub>dn</sub>.

Refer to **Figure 2** for receptor locations.

**TABLE 10**  
**Predicted Interior Traffic Noise Levels – Future Conditions**

| Receptor Location | Predicted Noise Level (dBA CNEL/L <sub>dn</sub> ) <sup>1</sup> |              |   |                           |
|-------------------|--|--------------|---|---------------------------|
|                   | Without Project  | With Project | Equals/Exceeds 45 dBA CNEL with Project | Significant? <sup>2</sup> |
| R1                | 41   | 45           | Yes                                     | Yes                       |
| R2                | 41   | 45           | Yes                                     | Yes                       |
| R3                | 41   | 45           | Yes                                     | Yes                       |
| R4                | 16   | 47           | Yes                                     | Yes                       |
| R5                | 42   | 46           | Yes                                     | Yes                       |
| R6                | 40   | 44           | No                                      | No                        |
| R7                | 40   | 44           | No                                      | No                        |
| R8                | 43   | 47           | Yes                                     | Yes                       |
| R9                | 43   | 46           | Yes                                     | Yes                       |
| R10               | 43   | 46           | Yes                                     | Yes                       |
| R11               | 40   | 44           | No                                      | No                        |
| R12               | 40   | 44           | No                                      | No                        |
| R13               | 46   | 48           | Yes                                     | Yes                       |
| R14               | 43   | 45           | Yes                                     | Yes                       |
| R15               | 46   | 48           | Yes                                     | Yes                       |
| R16               | 43   | 46           | Yes                                     | Yes                       |
| R17               | 44   | 46           | Yes                                     | Yes                       |
| R18               | 44   | 47           | Yes                                     | Yes                       |
| R19               | 44   | 47           | Yes                                     | Yes                       |
| R20               | 43   | 45           | Yes                                     | Yes                       |
| R21               | 44   | 46           | Yes                                     | Yes                       |
| R22               | 45   | 48           | Yes                                     | Yes                       |
| R23               | 41   | 43           | No                                      | No                        |
| R24               | 45   | 48           | Yes                                     | Yes                       |
| R25 & R26         | 41   | 43           | No                                      | No                        |
| R27               | 44   | 46           | Yes                                     | Yes                       |

1. Traffic noise levels were calculated using the FHWA TNM model based on traffic data obtained from existing environmental documentation.  
2. Difference in noise levels reflects the incremental increase attributable to the proposed project.  
3. Significant increase is defined as:

- Project-generated increase in ambient noise levels of 5 dB, or more, in areas where the ambient noise level is less than 60 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 3 dB, or more, in areas where the ambient noise level is 60-65 dBA CNEL/L<sub>dn</sub>;
- Project-generated increase in ambient noise levels of 1.5 dB, or more, in areas where the ambient noise level is greater than 65 dBA CNEL/L<sub>dn</sub>.

Refer to **Figure 2** for receptor locations.

**IMPACT NOISE-4: Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

Based on data obtained from Caltrans, the highest measured traffic vibrations measured at the shoulder of major roadways have never exceeded 2.0 mm/s (Caltrans 2002(b)). Roadway vehicle traffic along area roadways would, therefore, not be considered a major source of groundborne vibration. As a result, traffic vibration levels associated with implementation of the proposed project would not be projected to exceed applicable thresholds at nearby land uses.

Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed improvements would likely require the use of various off-road equipment, such as tractors, concrete mixers, and haul trucks. The use of major groundborne vibration-generating construction equipment, such as pile drivers, would not be required for this project.

Groundborne vibration levels associated with representative construction equipment are summarized in **Table 11**. Based on the vibration levels presented in **Table 11**, ground vibration generated by construction equipment would not be approximately 0.08 in/sec ppv, or less, at 25 feet. Predicted vibration levels at the nearest onsite and offsite structures would not exceed the minimum recommended criteria for structural damage and human annoyance (0.2 in/sec ppv). As a result, this impact would be considered **less than significant**.

**TABLE 11  
Representative Vibration Source Levels for Construction Equipment**

| <b>Equipment</b>          | <b>Peak Particle Velocity at 25 Feet (In/Sec)</b> |
|---------------------------|---|
| Loaded Trucks             | 0.076   |
| Jackhammer                | 0.035   |
| Small Bulldozers/Tractors | 0.003   |

*Source: FTA 2006, Caltrans 2004*

**IMPACT NOISE-5: Would the project result in exposure of persons to aircraft noise.**

The nearest airport is the Fresno Yosemite International Airport, which is located approximately 3.7 miles southwest of the project site. No private or public airports are located within 2 miles of the project site. As a result, the proposed project would not subject construction workers to high levels of aircraft noise. In addition, implementation of the proposed project would not result in the construction or relocation of any noise-sensitive land uses, nor would project implementation interfere with airport operations. **No impact**.

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