Le Grande to Merced

NEPA ENVIRONMENTAL ASSESSMENT AND CEQA INITIAL STUDY (Volume 1)

Federal Railroad Administration

Date of Approval

Federal Railroad Administration

The following person may be contacted for additional information concerning this document:
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Appendix 1 – Air Quality
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1.0 INTRODUCTION

As a result of local jurisdictions seeking federal funding, the proposed construction of railway improvement projects along a 26.44 kilometer (km) (16.43 mi) segment of the BNSF Railway Company’s (BNSF) Le Grand to Merced Second Track Project requires evaluation under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). This 16.43-mile rail corridor segment stretches from the City of Merced on the north to the community of Le Grand on the south, traversing the communities of Kadota, Tuttle, and Planada within Merced County, California (see Figure 1). This Environmental Assessment/Initial Study (EA/IS) evaluates the environmental effects of installing a second main track within this segment of the San Joaquin Valley Corridor (Corridor or proposed project). Refer to Figures 2-1 through 2-6) for an overview of the proposed improvements within this Corridor segment.

The BNSF Railway and Amtrak operate about 50 trains per day along the Le Grand to Merced segment of this rail corridor. The referenced BNSF line is a segment of the fully developed Stockton Subdivision of the East-West Main Line Railroad Track connecting the California Division of the BNSF Railway to the Northwest, Powder, and Southwest Divisions of BNSF Railway facilities and the mid-western and eastern United States.

At the broadest level, the objective of the California Department of Transportation, Division of Rail (DOR), is to increase the efficiency of train flow on the BNSF San Joaquin Valley Corridor to better accommodate both the existing number of trains currently utilizing this corridor and any future increases in the speed and volume of future freight service and planned intercity and commuter rail passenger service. The proposed project contributes to this objective by making improvements to the existing facilities and adding sections of double tracking to enhance flexibility and efficiency of train operations in this segment of the San Joaquin Valley corridor.

1.1 PURPOSE AND NEED FOR ACTION

1.1.1 Purpose of Project

The proposed Le Grand to Merced rail corridor improvements are being implemented to achieve the following general objectives:

- Improve the reliability and on-time performance of the DOR’s intercity rail passenger services.
- Enhance ridership and better serve the public need for mobility through alternative transportation choices.
- Enhance passenger train service flow through implementing a variety of rail corridor improvements.
- Enhance the efficiency, flexibility, and reliability of railway freight movement through implementing a variety of rail corridor improvements; and
- Enhance the safety of overall railroad operations through implementing a variety of rail corridor improvements.
Passenger and freight trains have a maximum speed for each segment of track, and this project will not alter the maximum speed within the segment from Merced to Le Grand.

Specific objectives of the proposed project include:

A. Installation of the second main track and associated facilities along approximately 16.43 miles of this rail corridor segment to enhance efficiency of train movement and to ensure that passenger train service can operate on a reliable schedule.

B. Upgrade of specific sidings to mainline standards to facilitate train flow.

C. Replacement and/or installation of existing and new bridges and culverts, to ensure the best performance of drainage structures and overall function.

E. Improvements at highway/railroad track intersections to enhance safety of railroad operations and to minimize impacts on local circulation systems.

F. Upgrade of signals and other safety features along the existing track.

1.1.2 Need for Project

As part of its program to improve intercity passenger rail service, the Division of Rail, in cooperation with BNSF, is proposing to install a second track, and related improvements, to enhance the flow and safety of rail traffic between Merced and Le Grand.

The proposed project is being implemented to enhance efficiency of train movement along this Corridor and will ensure passenger train service can operate on a reliable schedule, which is the key aspect of rail passenger service that attracts additional passenger rail customers. Under present conditions, both passenger and freight trains experience delays on a daily basis due to the fact that most of the San Joaquin Corridor has only a single track. Using a computer model of Corridor operations, the Division of Rail has assessed train movements and identified those segments of the Corridor where installation of a second track can reduce or eliminate these delays. Along with other segments (such as Port Chicago to Oakley and Stockton to Escalon), the segment from Merced to Le Grand has been identified as a high priority for installation of a second main track. With the installation of a second track through this Corridor segment, overall efficiency of train flow will be substantially enhanced.

The track improvements between Merced and Le Grand are not being implemented to allow for expanded railway traffic. Although a future increase in the number of trains may occur as a result of commercial demand, any such increase will occur regardless of whether this project is implemented or not. The construction of the Second Track Project will enhance the flow of train traffic along the rail corridor. At its current operating level (approximately 50 trains per day, mixed freight, and passenger), schedule delays occur along this segment of the corridor, which results in trains being pulled over to sidings to allow other trains to pass. With implementation of the proposed track improvements, and related infrastructure improvements, such train movement conflicts will be minimized in the future under both current and potential future train traffic volumes.
Potential increases in the frequency of freight services, as well as the continuation and expansion of commuter rail services and intercity train services as an alternative mode of transportation, indicate that there will be more delays in the future to commuter rail and freight movement services that share the same single-track system.

At the present time, there is a single mainline track, with some sidings, along the entire Le Grand to Merced segment of the rail corridor. Under this proposal a second track would be constructed and sidings upgraded to mainline status, from just northwest of Deadman Creek, southeast of Le Grand to just northwest of State Highway 140 (Yosemite Parkway) in the City of Merced. Refer to Figures 2-1 through 2-6.

Existing rail infrastructure would also be upgraded to provide for safer and more efficient operations. Besides congestion relief and safety, other benefits of the proposed project are: to reduce air and noise pollution emanating from idling vehicles waiting for trains to pass through at grade crossings; to upgrade signals and overall safety of rail operations within this corridor; and to reduce noise pollution created by train air horn and warning signals.

Failure to implement the second main track would have a negative effect because train traffic congestion along the Corridor would continue to occur. Further, if train operations increase in the future, the slower train traffic would cause greater accumulations of traffic at existing at-grade crossings, which would in turn result related increases in air emissions, noise and congestion on the local circulation system.

1.2 DECISIONS NEEDED

There have been no previous environmental reviews done under either NEPA or CEQA for this proposed project. The State Department of Transportation, Division of Rail, is the CEQA Lead Agency and the Federal Railroad Administration (FRA) will serve as the NEPA Lead Agency. The project sponsors are the DOR and BNSF Railway Company (BNSF).

This EA/IS document will provide the necessary information to determine if further environmental analyses are needed in order to fulfill NEPA and/or CEQA requirements. This EA/IS evaluates the potential effects on the environment from construction and operation of the proposed improvements in order to support a DOR decision on the project and potential federal funding assistance through the FRA. Once the EA/IS is completed, the DOR will either adopt a Negative Declaration or Mitigated Negative Declaration or decide to prepare an Environmental Impact Report (EIR) under CEQA. The FRA will either issue a Finding of No Significant Impact (FONSI) based on the findings in this document, or decide to prepare an Environmental Impact Statement (EIS) to comply with NEPA. Only after the above procedures are completed and a decision finalized for the project can federal funding, expected to be distributed through the FRA, be approved and released for implementation of the project.

1.3 PERMITS, LICENSES AND RELATED LAWS

The project will be required to obtain several permits including, but not necessarily limited to: a Section 404 permit from the U.S. Army Corps of Engineers (Corps); a California Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification; a California Department of Fish and Game (CDFG) Streambed Alteration Agreement (1601 or 1603 Agreement); a construction stormwater discharge permit – National Pollutant Discharge Elimination System...
(NPDES) through filing a Notice of Intent with the State Water Resources Control Board and compiling and implementing a Storm Water Pollution Prevention Plan (SWPPP), which is overseen by the RWQCB. Although the data indicate no listed species occur within the project area of potential effect (APE), it may also be necessary to obtain incidental take permits for listed protected species from the U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Game (CDFG). A County Drainage Permit will be required from Merced County for activities affecting watercourses and drainage facilities in unincorporated areas. A Flood Control Encroachment Permit may be required for any temporary or permanent encroachment on Merced Irrigation District properties or rights-of-way.

Various encroachment or construction permits from the County; BNSF and the City of Merced; and business licenses in these jurisdictions may also be required.

1.4 ORGANIZATION OF THE EA/IS

This document is organized under the FRA’s EA format. The project objective, purpose, and need statement, and permit requirements are described in Section 1.0. The project alternatives are described and evaluated in Section 2.0. Section 3.0 describes existing resources that may be affected by the proposed project. Section 4.0 evaluates the consequences of project activities on any physical, biological, and/or human resources located within the project vicinity. References for the report are listed in Section 5.0. Track schematics are presented in Attachment A. Technical Reports and engineering data are presented in Volume 2, Technical Appendices. CEQA issues are addressed by referencing the technical data and text in the EA using the current Initial Study Environmental Checklist Form, which follows this EA document.
2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVE 1 (PREFERRED ALTERNATIVE)

The description contained herein for the Second Track Project - Le Grand to Merced Project provides the reviewer with a written summary of the project as it would be developed by the DOR if this project is approved, funded and implemented. The project description focuses on the physical facilities and associated activities that would be implemented as part of the proposed project and the manner in which the physical and human environment may be altered by project implementation.

The proposed second main track is a public works project that was originally envisioned to be funded entirely through State or Intercity Rail Passenger funds. If funded, this project will be implemented by the DOR in conjunction with BNSF. To comply with the NEPA and CEQA, this EA/IS has been prepared to address the changes to the physical and human environment that may occur if this second main track project is approved and implemented by the DOR.

2.1.1 Project Objectives

It is the DOR’s overall project goal to improve the reliability and on-time performance of the Amtrak’s intercity rail passenger services. Within the existing rail corridor, the passenger train service flow (efficiency) is proposed to be enhanced by implementing a variety of rail corridor improvements. Efficiency is not directly related to the maximum speed of trains, but is more dependent upon the ability of trains to flow through a rail corridor without stopping or slowing due to slower trains on the track ahead or to allow other trains to pass.

This project will not alter the maximum speed of trains within the San Joaquin Valley corridor segment from Merced to Le Grand. However, it will provide a second track, upgrades to selected sidings and other improvements that will allow two trains to travel in parallel along a segment of track without slowing or stopping for the other trains. Thus, a train would not have slow down or stop due to a slower train on the track segment, but would be able to “pass” the slower train using the second track. A passenger train would be able to pass a slower freight train and be better able to maintain its public schedule. Improving passenger train ability to meet schedules is forecast to enhance ridership (schedule reliability attracts return ridership and new riders) and better serve the public need for mobility through alternative transportation choices.

2.1.2 Project Location

The BNSF identifies all points along its tracks by the distance from the point where the track originates. For this project, the upgrade of existing siding and installation of the second main track will begin on the east end southeast of the community of Le Grand, at about Milepost (MP) 1039.9 (1039.9 miles from the point of origin in Albuquerque, New Mexico. The new construction and other proposed improvements will extend northwest, a distance of approximately 16.43 miles, to MP 1056.4 which is within the City of Merced. The project is wholly located within Merced County. Figure 1 shows the regional location of the entire project.

The entire length of railway to be improved as part of the Le Grand Double Tracking Project is located within the County of Merced. Figures 2-1 through 2-6 show the whole proposed alignment on the affected U.S. Geological Survey (USGS) 7.5 minute topographic maps. The
USGS topographic maps that apply to the project area are the Merced, Planada, Plainsburg, and Le Grand Quadrangles, 7.5 Minute Series topographic maps. From the north the project is located in Sections 19, 20, 29, 28, 27, 26 and 25 of Township 7 South, Range 14 East, Mount Diablo Base and Meridian (MDBM); Sections 30, 29, 28, 27, 34, and 35 of Township 7 South, Range 15 East, MDBM; Sections 2, 1, and 12 of Township 8 South, Range 15 East, MDBM; and Sections 7, 18, 17, 20, 21, and 28 of Township 8 South, Range 16 East, MDBM. The project improvements are best illustrated on the Conceptual Track Alignment Schematic (Track Chart) provided as Attachment A.

2.1.3 Project Description

The following descriptions are taken from the Preliminary Engineering Design prepared by J.L. Patterson and Associates (JLP).

As part of its program to improve intercity passenger rail service, the State Department of Transportation, Division of Rail (Caltrans) is proposing to upgrade the capacity of the BNSF Railway Company’s existing San Joaquin Valley railroad corridor. The whole corridor currently under consideration is located between the cities of Bakersfield and Oakland and Bakersfield and Sacramento, California. The proposed project under consideration consists of approximately 16.43 miles of railway corridor from Milepost 1039.93 to Milepost 1056.36 (shown on Figure 1 and Figures 2-1 through 2-6) located within the communities of Le Grand, Planada, Tuttle, and Kadota and the City of Merced. The proposed project extends from about 0.25 mile northwest of M Street, within the City of Merced, southeast to about 0.04 mile northeast of Deadman’s Creek within the community of Le Grand.

The San Joaquin Corridor is currently utilized for passenger service to and from the San Francisco Bay Area and Sacramento metropolitan areas. DOR’s two main objectives are to increase passenger train schedule reliability and provide for the accommodation of potential increase in both intercity passenger service and freight train volumes without sacrificing passenger train schedule reliability.

Within the whole San Joaquin Corridor, passenger service capacity is proposed to be enhanced by implementing a variety of rail corridor improvements. The range of potential improvements include:

a. Installation of a new second mainline track in selected areas (double tracking with 25-foot and 15-foot centers throughout the alignment),
b. Installation of new sidings (storage track),
c. Extension or upgrade of existing sidings,
d. Upgrading track structure and special track work, and
e. Upgrading signal systems.

For the Le Grand section of the BNSF’s San Joaquin Corridor, the primary improvement proposed to enhance efficiency of train movement along the corridor is installation of a second main track, termed double tracking. The project also includes: siding upgrades; siding removal; construction of crossovers and bridges; culvert and irrigation crossing extensions; construction and removal of turnouts; modification of existing road crossings; and signal improvements.
Because of the constraint for train movement which presently exists along the Le Grand segment of track, DOR has decided to proceed with the improvements required for this section of the railroad corridor at the earliest possible date that funding becomes available. As a result, this evaluation will be focused solely on the track system improvements required for this segment of the rail corridor. Other segments of the rail corridor have been and will be considered for improvement under separate environmental and engineering reviews, as engineering is completed and the improvement projects are sufficiently defined to permit detailed environmental analysis. However, this segment has independent utility and, if approved, will be implemented regardless of improvements being considered at other locations within the San Joaquin Corridor.

**General Design Features**
The proposed second main line track closely follows the existing track and is designed for a maximum allowable speed of 79 miles per hour (mph) for passenger trains and 70 mph for freight trains. The second main line track is designed to match the existing main line track through this segment of the Corridor.

All connections to sidings and spur tracks from the new track will be made using minimum No. 11 turnouts. Where existing track is being upgraded to mainline standard, connections to sidings and spur tracks will also use No. 11 turnouts. All mainline connections are by means of No. 24 turnouts and crossovers. Roadbed sections will be constructed to conform to current BNSF new construction standards for mainline and major spur tracks. The proposed second mainline track, as well as the upgraded mainline track, will use BNSF standard mono-block concrete ties with a resilient fastening system. Running rail will be continuously welded 136CWR rail (136 lbs per foot of rail) on tangents and curves flatter than one degree. Sharper curves will be laid with 141#CWR rail. Cross ties through grade crossings, as well as transition ties, will be 10-foot-long wood ties.

The limits of the area of potential effect (APE) will be fixed at 5 feet from the edge of the new drainage ditch paralleling the new mainline track.

**Track Design**
For the following design elements, refer to Attachment A (Track Schematic).

- **Double tracking:** 12.75 miles total
  - From Milepost 1041.81 to Milepost 1047.7
  - From Milepost 1048.44 to Milepost 1054.3

- **Siding Upgrades:** 4.68 miles total
  - Milepost 1039.93 to Milepost 1041.81
  - Milepost 1047.7 to Milepost 1048.44
  - Milepost 1054.3 to Milepost 1056.36

- **Removal of siding:** 1.27 miles total
  - Milepost 1046.43 to Milepost 1047.7

- **Crossovers:** Between two future tracks
  - Milepost 1041.81
  - Milepost 1041.92
Milepost 1047
Milepost 1047.3

Mainline transitions:
- Milepost 1047.55 to Milepost 1047.7
- Milepost 1053.8 to Milepost 1053.92

Construction of turnouts:
- Milepost 1046.72
- Milepost 1050.34
- Milepost 1050.43
- Milepost 1051.64
- Milepost 1052.73

Removal of turnouts:
- Milepost 1041.81
- Milepost 1046.72
- Milepost 1050.43
- Milepost 1050.96
- Milepost 1051.64
- Milepost 1052.46
- Milepost 1052.73

Signal improvements along the entire 16.43 mile project alignment.

The proposed project also includes repositioning of existing track by less than one foot to accommodate 15 ft. on-center alignment.

**Structural Bridge Design**
The bridge design will follow BNSF and AREMA standards. Table 2-1 contains a summary of the bridge structure work proposed as part of this project. After final engineering is complete, it may be determined that some improvements are not required.

<table>
<thead>
<tr>
<th>Mile Post</th>
<th>Stream / Street Name</th>
<th>Description of Work</th>
</tr>
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<tr>
<td>1042.2</td>
<td>Mariposa Creek</td>
<td>Install new parallel bridge at 15 ft. centers north of existing bridge using 56 foot steel beam spans, building new piers on 30” diameter CIDH piles in line with every other pier.</td>
</tr>
<tr>
<td>1045.9</td>
<td>Bridge</td>
<td>Hydrology study needed. May need pre-stressed concrete slab bridge.</td>
</tr>
<tr>
<td>1046.6</td>
<td>Miles Creek</td>
<td>Hydrology study needed. Mainline bridge scheduled for renewal 2010.</td>
</tr>
<tr>
<td></td>
<td>A&amp;B</td>
<td></td>
</tr>
<tr>
<td>1052.4</td>
<td>Unnamed</td>
<td>Install new parallel bridge at 15 ft. centers south of existing bridge using 14’ pre-stressed concrete building new piers on driven H piles in line with other piers.</td>
</tr>
</tbody>
</table>

Grade Crossing Design
Grade crossings (a location where an existing roadway crosses the railroad tracks at-grade, as opposed to being separated from the tracks by an overpass or underpass) will follow current BNSF standards using pre-cast steel clad, shunt resistant concrete panels on 10-foot-long
timber ties spaced on 19.5-inch centers. The timber ties will use tie plates adapted for the same elastic rail clips as the concrete cross ties. End ramps will be provided per BNSF standards.

Table 2-2
SUMMARY OF GRADE CROSSING WORK

<table>
<thead>
<tr>
<th>Mile Post</th>
<th>Street Name</th>
<th>Description of Proposed Work and Recommendations</th>
</tr>
</thead>
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<tr>
<td>1040.49</td>
<td>Private</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers.</td>
</tr>
<tr>
<td>1041.17</td>
<td>Le Grand Road</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
<tr>
<td>1041.43</td>
<td>Jefferson Street</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
<tr>
<td>1041.74</td>
<td>Cunningham Road</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
<tr>
<td>1042.47</td>
<td>County Dump Road</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1044.54</td>
<td>Burchell Avenue</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1045.52</td>
<td>Mission Avenue</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1046.96</td>
<td>Childs Avenue</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
<tr>
<td>1047.36</td>
<td>Plainsburg Road</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
<tr>
<td>1048.47</td>
<td>Private</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1048.93</td>
<td>Private</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1049.79</td>
<td>Private</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1050.42</td>
<td>Arboleda Drive</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1051.93</td>
<td>Tower Road</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1052.42</td>
<td>Kibby Road</td>
<td>Install second track through grade crossing at 15’ centers and pave road out to new catch point. Modify RR Grade Crossing Warning Signs to double track.</td>
</tr>
<tr>
<td>1055.11</td>
<td>Glen Avenue</td>
<td>Minor grade crossing geometry modifications based on widening to 15 ft. track centers. No gate relocation necessary.</td>
</tr>
</tbody>
</table>

Culverts, Drainage and Irrigation Crossings
There will be no change to the existing drainage patterns. Existing culverts and irrigation crossings will be extended beneath the new track and drainage ditches adjacent to the tracks will be reconstructed as required to maintain historic flow paths.
The following Table 2-3 shows the culvert and irrigation crossing work to be done as part of this project. After final engineering is complete, it may be determined that some improvements are not required.

**Table 2-3**

**SUMMARY OF CULVERT DRAINAGE AND IRRIGATION CROSSINGS WORK**

<table>
<thead>
<tr>
<th>Mile Post</th>
<th>Description</th>
<th>Description of Proposed Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1041.9</td>
<td>Culvert, 36” x 25’ Conc. Pipe</td>
<td>Extend approx. 15’ to the north</td>
</tr>
<tr>
<td>1042.69</td>
<td>Culvert, 58” x 36’ Corrugated Pipe</td>
<td>Extend w/60” pipe approx. 15’ to the north</td>
</tr>
<tr>
<td>1042.691</td>
<td>Culvert, 58” x 36’ Corrugated Pipe</td>
<td>Extend w/60” pipe approx. 15’ to the north</td>
</tr>
<tr>
<td>1042.75</td>
<td>Siphon, 3’ x 4’ x 142’ Conc. Box</td>
<td>Extend headwall for retention if necessary, Maintain Roadway</td>
</tr>
<tr>
<td>1043.0</td>
<td>Culvert, 36” x 25’ Conc. Pipe</td>
<td>Demo old headwall and extend approx. 15’ to the north</td>
</tr>
<tr>
<td>1043.8</td>
<td>Culvert, 36” x 48’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the north</td>
</tr>
<tr>
<td>1043.9</td>
<td>Siphon, 24” x 142’ Conc. Pipe</td>
<td>Extend if roadway needs to be maintained</td>
</tr>
<tr>
<td>1044.5</td>
<td>Siphon, 10’ x 8’ x 180’ Conc. Box</td>
<td>Extend headwall for retention if necessary, Maintain Roadway</td>
</tr>
<tr>
<td>1044.501</td>
<td>Siphon, 10’ x 8’ x 180’ Conc. Box</td>
<td>Extend headwall for retention if necessary, Maintain Roadway</td>
</tr>
<tr>
<td>1044.502</td>
<td>Siphon, 10’ x 8’ x 180’ Conc. Box</td>
<td>Extend headwall for retention if necessary, Maintain Roadway</td>
</tr>
<tr>
<td>1044.8</td>
<td>Culvert, 48’ x 60’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the north</td>
</tr>
<tr>
<td>1045.4</td>
<td>Siphon, 24” x 149’ Conc. Pipe</td>
<td>Extend if roadway needs to be maintained</td>
</tr>
<tr>
<td>1045.7</td>
<td>Culvert (Owens Creek), 3-42”x64’ Corrugated Pipe</td>
<td>Extend approx. 17’ to the north</td>
</tr>
<tr>
<td>1045.701</td>
<td>Culvert, 42” x 64’ Corrugated Pipe</td>
<td>Extend approx. 17’ to the north</td>
</tr>
<tr>
<td>1045.702</td>
<td>Culvert, 42” x 64’ Corrugated Pipe</td>
<td>Extend approx. 17’ to the north</td>
</tr>
<tr>
<td>1046.3</td>
<td>Siphon, 48” x 42”x143’ Conc. Pipe</td>
<td>Extend if roadway needs to be maintained</td>
</tr>
<tr>
<td>1046.301</td>
<td>Siphon, 48” x 42”x143’ Conc. Pipe</td>
<td>Extend if roadway needs to be maintained</td>
</tr>
<tr>
<td>1047.1</td>
<td>Culvert, 60” x 70’ Corrugated Pipe</td>
<td>Extend w/60” corrugated pipe</td>
</tr>
<tr>
<td>1047.101</td>
<td>Culvert, 60” x 70’ Corrugated Pipe</td>
<td>Extend w/60” corrugated pipe</td>
</tr>
<tr>
<td>1047.4</td>
<td>Culvert, 36” x 58’ Corrugated Pipe</td>
<td>Extend w/36” corrugated pipe</td>
</tr>
<tr>
<td>1047.7</td>
<td>Culvert, 48” x 58’ Corrugated Pipe</td>
<td>Extend w/48” corrugated pipe</td>
</tr>
<tr>
<td>1049.3</td>
<td>Culvert, 60” x 50’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1049.301</td>
<td>Culvert, 60” x 50’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1049.7</td>
<td>Culvert, 18” x 16’ Conc. Pipe</td>
<td>Extend w/18” smooth walled pipe (or retire)</td>
</tr>
<tr>
<td>1051.401</td>
<td>Siphon, 3’ x 4’ x 100’ Conc. Box</td>
<td>Extend if roadway needs to be maintained</td>
</tr>
<tr>
<td>1052.9</td>
<td>Culvert, 65” x 40’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1052.901</td>
<td>Culvert, 65” x 40’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1052.902</td>
<td>Culvert, 65” x 40’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1052.941</td>
<td>Culvert, 54” x 50’ Corrugated Pipe</td>
<td>Extend headwall to retain toe. Extend culverts if roadway needs to be maintained.</td>
</tr>
<tr>
<td>1052.941</td>
<td>Culvert, 54” x 50’ Corrugated Pipe</td>
<td>Extend headwall to retain toe. Extend culverts if roadway needs to be maintained.</td>
</tr>
<tr>
<td>1053.4</td>
<td>Culvert, 36” x 40’ Corrugated Pipe</td>
<td>Extend approx. 15’ to the south</td>
</tr>
<tr>
<td>1054.2</td>
<td>Culvert, 54” x 48’ Corrugated Pipe</td>
<td>Extend w/54” corrugated pipe</td>
</tr>
</tbody>
</table>

**2.1.4 Other Project Aspects**

**Land Acquisition**
The existing BNSF right-of-way varies between approximately 100 feet and 250 feet in the Le Grand to Merced corridor. Along most of the alignment, the existing right-of-way width is
sufficient for the track improvements to be completed with the proposed separation between the existing track and proposed second main track. The proposed distance between the existing and the new track is 15 feet on center, i.e., not between the edges of the track. The BNSF indicates that there would be no need for land acquisition to accommodate the final project footprint. The need to obtain construction easements is also not likely, but is still possible.

Utility Crossings
There are utility lines that may be affected by construction of the project. These include natural gas and oil pipelines, water and sewer lines, electric, cable and telephone lines, and storm drains. These lines will either be left in place and avoided by construction, or working in conjunction with the owners of these utility lines, the lines will be relocated within the BNSF right-of-way. In a few instances, a utility line may no longer be in use and it will either be removed within the BNSF right-of-way or it will be closed. All utility relocations or closure will be implemented after close coordination with the owner of the utility line.

Staging Areas
The proposed project will have a number of staging areas to accommodate storage of equipment and material, and to provide parking for employees. The staging areas will occur along the BNSF track right-of-way at least 7.62 meters (25 ft) from the closest track. Any needed staging areas outside the railroad's right-of-way will be the responsibility of the contractor and cannot be identified at this time. Where permits (entitlements or regulatory permits) are required for staging areas, such permits will be obtained by the contractor and any subsequent environmental documentation, if required, will be prepared and processed on a case-by-case basis by the contractor.

2.1.5 Construction Activities for the Second Mainline Track

Construction Activities
The proposed project will be completed by implementing a series of construction activities that will require approximately 36 to complete if approval is granted to proceed with installing the double track improvements outlined above for this segment of the rail corridor. The existing BNSF right-of-way varies between approximately 100 feet and 250 feet in the Le Grand segment. Along much of the alignment, shown in Attachment A, the right-of-way is sufficient for the track improvements to be completed with the proposed 15-foot separation between the existing track and proposed track; this is 15 feet on center, not between the edges of the track.

The proposed project will involve a series of construction activities that will culminate in BNSF track-laying teams installing 136 lbs welded rail on the new “high fill” that will be installed along the Le Grand segment. The term “high fill” refers to the elevated fill area on which the existing track is located and the new elevated fill area where the new track will be installed. The 136 lb welded rail is the heaviest rail currently being used by BNSF and it provides the best ride and safety for high speed trains, such as the existing and proposed passenger trains. The first step in the construction process will be to install the fill to elevate the new track surface an average of about 5 feet above existing ground level, so that it is at the same elevation as the existing mainline track. This is accomplished in the following manner:

1. A grading contractor will be placed under contract to first create a compacted base for installation of the fill. Approximately 22,000 cubic yards of material will exported and available for local use, or deposited within a five-mile radius of the site as a result of
grading. Approximately 45,000 cubic yards of sub-ballast (Aggregate CL2) will be imported to the site. This material will be purchased from commercial sources in the project area and delivered by truck. Assuming 10 cubic yards per truck delivery, a total of 2,200 truck trips will be required to export extra material and 4,500 trips will be required to import sub-ballast. This equates to an estimated 50 truck trips per day for material export (total of about 44 days) and 50 truck trips per day for deliveries of fill material (total of about 90 days). An estimated 30 people are forecast to be employed during grading and typical grading equipment (dozers, graders, rollers, etc.) will be used to properly compact and install the fill. Completion of the fill is expected to require approximately 3 to 4 months from the date construction begins.

2. During the same period that the fill is being installed, a separate work crew will be installing bridges, drainage pipelines, and other support facilities for the second track, all within the project APE. Several irrigation ditches must be bridged within this segment of the rail corridor and several road crossings will have to be improved to ensure safety for vehicles using these roads. In addition, pipelines (such as water, natural gas, etc.) located under the railroad right-of-way will have to be protected, either by encasement, relocation or other similar measures. An estimated 50 employees may be utilized on this phase of construction. Most of the material for constructing these support facilities will be delivered by truck and are part of the 60 to 80 truck deliveries to the project alignment each day. It is anticipated that these facilities will be completed in 5 to 7 months, with the proposed bridges requiring the greatest amount of time to complete. As part of this phase of the project, existing telephone poles within the BNSF Le Grand segment alignment will be removed by a contractor and the materials removed will be recycled for other uses.

3. The final phase of construction has been allocated 2 to 3 months for completion. This stage involves laying the new track and installing the new track signals to ensure safety along the new track. Track installation is carried out by BNSF personnel with material delivered by rail. On top of the fill, concrete rail cross ties and ballast rock will be installed. Then the new rails will be installed on top of this new base. The new 136 lbs rail (the rail weighs 136 lbs per meter of rail) will be delivered in one-quarter mile segments that are delivered by a special train. The new track can be installed at a rate of approximately one mile per day once the track base has been completed. Track laying requires approximately 50 people to carry out the required tasks. At the same time new signals required for operations and safety will be installed and hooked up to BNSF’s electrical system which parallels the existing track. Once the new track is installed, the road crossings will be installed. When the track is completed and tested and the signals have been installed and tested, the new track will be available to support rail operations.

The proposed project will be completed by implementing a series of construction activities. Contracts for construction of new track are typically awarded on an incremental basis. Each construction segment or function may be awarded by separate contracts. Such contracts are dependent upon funding available from Division of Rail, which has competing projects in different areas of the state.

Operations
The purpose of the proposed improvements in the Le Grand segment of the San Joaquin Corridor is to enhance efficiency of rail traffic flow through this segment of track. By installing a new track, the existing rail traffic will flow more efficiently and any addition of new trains in the
future (passenger or freight) can occur without any constraint. One of the requirements for effective and efficient passenger train operation is the ability to establish and meet schedules for customers. With only one track along much of the existing rail corridor through the San Joaquin Valley, there can be conflicts between freight and passenger trains that can cause both types of trains to incur delays.

By installing double tracks along portions of the route, there will be sufficient double trackage within this segment to permit high speed passenger trains to maintain their speed without any constraint and to meet schedules. At the same time freight trains will also be able to maintain their schedules, which have become continuously more rigorous as intermodal rail operations have expanded. Thus, in the immediate future there may be no actual increase in the number of trains on the tracks, but all of the trains will be able to operate with fewer constraints and delays. The opportunity also exists for additional passenger trains (which have many fewer rail cars than freight trains) to utilize the corridor in the future without further degrading track capacity. Thus, the objective of providing for better rail corridor efficiency and flow of rail traffic will be substantially enhanced by implementing the track improvements for the Le Grand segment of the corridor.

2.2 ALTERNATIVE 2

This alternative would provide almost all the improvements presented in the preferred alternative with the exception of the improvements with biological impacts that require State or federal agency permits. This alternative would not include expansion or improvements to bridges at four locations and therefore would result in only parts of the rail segment being upgraded to two parallel mainline tracks. The double tracking would end just before each bridge crossing and begin again after the bridge crossing.

Therefore, under this alternative, the bridges would not be built at Milepost 1042.25 (Mariposa Creek), Milepost 1045.90 (Owens creek, Milepost 1049.30, or Milepost 1052.94.

The number of trains using the segment of the rail corridor would not change as a result of implementation of this alternative.

2.3 NO-ACTION ALTERNATIVE

In the no-action alternative, the existing conditions in the project alignment would remain. No upgrades to the existing rail would occur. No signal or safety improvements would be made and traffic flow would not be improved. The number of trains using the rail corridor segment would remain the same or increase as anticipated, but without the addition of the second track improvements in this segment of the rail corridor.
3.0 AFFECTED ENVIRONMENT

3.1 PHYSICAL ENVIRONMENT

3.1.1 Air Quality

3.1.1.1 Regulatory Setting

Introduction

All levels of government have some responsibility for protecting air quality. This section outlines the responsibilities of federal, state, regional and local government agencies in air quality matters and provides an explanation regarding how they interact.

Federal

At the federal level, the Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA). The FCAA was signed into law in 1970. The Act was substantially amended in 1977 and again in 1990.

The FCAA required the EPA to set National Ambient Air Quality Standards (NAAQS) for several problem air pollutants on the basis of human health and welfare criteria. NAAQS were established for the following "criteria" air pollutant (so called because they were established on the basis of health criteria):

- Carbon monoxide (CO)
- Ozone (O₃)
- 10-micron or less particulate matter (PM-10)
- 2.5 microns or less particulate matter (PM-2.5)
- Nitrogen dioxide (NO₂)
- Sulfur dioxide (SO₂)
- Lead (Pb)

NAAQS are intended to protect, with an adequate margin of safety, those persons most susceptible to respiratory distress, such as people suffering from asthma or other illness, the elderly, very young children, or others engaged in strenuous work or exercise.

The FCAA required each state to prepare an air quality improvement plan called the State Implementation Plan (SIP) for those pollutants that exceed NAAQS. The SIP is a dynamic document and through an ongoing review process it is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The EPA has responsibility to review all state SIPs to determine if they conform to the mandates of the FCAA and will achieve air quality goals when implemented. If the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the non-attainment area and may impose additional control measures.

State

The California Air Resources Board (ARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing its
own air quality legislation called the California Clean Air Act (CCAA), adopted in 1988. The ARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. The ARB also has the responsibility to produce a major part of the SIP for pollution sources, such as automobiles, that are state-wide in scope. It relies on the local air districts to provide additional strategies for site-specific sources such as factories, power plants, etc. The ARB combines its data with all local district data and submits the completed SIP to the EPA.

The FCAA allows states to establish their own clean air standards, provided the state standards are at least as stringent as the NAAQS. California had established California Ambient Air Quality Standards (CAAQS) even before the first FCAA was ever adopted. The current inventory of NAAQS and CAAQS is shown in Table 3.1.1-1. The health effects of various criteria air pollutants are shown in Table 3.1.1-2.

Local
State law recognized that air pollution does not respect political boundaries and therefore required the ARB to divide the state into separate air basins based on similar geographic and meteorological conditions. Each air basin is governed by an air district that has the primary responsibility for control of air pollution from all sources other than emissions directly from motor vehicles, which are the responsibility of the ARB and the EPA. Air districts adopt and enforce rules and regulations to achieve state and federal ambient air quality standards and enforce applicable state and federal law.

Currently, the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) has jurisdiction over air quality matters in the SJVUAB. The SJVUAPCD was formed in 1991. The air district is responsible for air quality programs in San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and a portion of Kern County.

The SJVUAPCD has a large number of air quality responsibilities. For many years, its primary role was in the control of stationary sources of air pollution. More recent legislation at the state and federal levels increased local air district responsibilities to implement transportation control measures (TCMs). The SJVUAPCD also coordinates its air quality planning and improvement efforts with various councils/associations of governments, transportation planning agencies, as well as with economic development or trade associations to maximize the benefit and minimize the impact of air pollution improvement efforts.

3.1.1.2 Affected Environment

Meteorology/Climate

Introduction
The proposed project is located in the San Joaquin Valley Air Basin (SJVAB). The SJVAB is defined by the Sierra Nevada Mountains in the east, the Coast Range in the west, and the Tehachapi Mountains in the south. The valley opens to the sea in the north at the Carquinez Straits via the San Francisco Bay. The basin is a large bowl open only to the north.
<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>Federal Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O₃)</td>
<td>1 Hour</td>
<td>0.09 ppm (180 µg/m³)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>8 Hour</td>
<td>0.070 ppm (137 µg/m³)</td>
<td>Same as Primary Standard</td>
</tr>
<tr>
<td></td>
<td>24 Hour</td>
<td>0.075 ppm (147 µg/m³)</td>
<td>Ultraviolet Photometry</td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM₁₀)</td>
<td>24 Hour</td>
<td>50 µg/m³</td>
<td>150 µg/m³</td>
</tr>
<tr>
<td></td>
<td>Annual Arithmetic Mean</td>
<td>20 µg/m³</td>
<td>Same as Primary Standard</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM₂₅)</td>
<td>24 Hour</td>
<td>No Separate State Standard</td>
<td>35 µg/m³</td>
</tr>
<tr>
<td></td>
<td>Annual Arithmetic Mean</td>
<td>12 µg/m³</td>
<td>Same as Primary Standard</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>8 Hour</td>
<td>9.0 ppm (10 mg/m³)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>20 ppm (23 mg/m³)</td>
<td>Non-Dispersive Infrared Photometry (NDIR)</td>
</tr>
<tr>
<td></td>
<td>8 Hour (Lake Tahoe)</td>
<td>6 ppm (7 mg/m³)</td>
<td>–</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>Annual Arithmetic Mean</td>
<td>0.030 ppm (57 µg/m³)</td>
<td>Same as Primary Standard</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.18 ppm (339 µg/m³)</td>
<td>Gas Phase Chemiluminescence</td>
</tr>
<tr>
<td>Lead</td>
<td>30-Day average</td>
<td>1.5 µg/m³</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Calendar Quarter</td>
<td>–</td>
<td>Same as Primary Standard</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>Annual Arithmetic Mean</td>
<td>–</td>
<td>0.030 ppm (80 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>24 Hour</td>
<td>0.04 ppm (105 µg/m³)</td>
<td>Ultraviolet Fluorescence</td>
</tr>
<tr>
<td></td>
<td>3 Hour</td>
<td>–</td>
<td>0.14 ppm (365 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.25 ppm (655 µg/m³)</td>
<td>–</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8 Hour</td>
<td>Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.</td>
<td>No</td>
</tr>
<tr>
<td>Sulfates</td>
<td>24 Hour</td>
<td>25 µg/m³</td>
<td>Ion Chromatography</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>1 Hour</td>
<td>0.03 ppm (42 µg/m³)</td>
<td>Ultraviolet Fluorescence</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>24 Hour</td>
<td>0.01 ppm (26 µg/m³)</td>
<td>Gas Chromatography</td>
</tr>
</tbody>
</table>

Source: California ARB (06/26/08)
### Table 3.1.1-2
#### HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Sources</th>
<th>Primary Effects</th>
</tr>
</thead>
</table>
| Carbon Monoxide  | • Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust.  
| (CO)             | • Natural events, such as decomposition of organic matter.               | • Reduced tolerance for exercise.  
|                  |                                                                         | • Impairment of mental function.  
|                  |                                                                         | • Impairment of fetal development.  
|                  |                                                                         | • Death at high levels of exposure.  
|                  |                                                                         | • Aggravation of some heart diseases (angina).  
| Nitrogen Dioxide | • Motor vehicle exhaust.  
| (NO2)            | • High temperature stationary combustion.  
|                  | • Atmospheric reactions.                                                 | • Aggravation of respiratory illness.  
|                  |                                                                         | • Reduced visibility.  
|                  |                                                                         | • Reduced plant growth.  
|                  |                                                                         | • Formation of acid rain.  
| Ozone (O3)       | • Atmospheric reaction of organic gases with nitrogen oxides in sunlight. | • Aggravation of respiratory and cardiovascular diseases.  
|                  |                                                                         | • Irritation of eyes.  
|                  |                                                                         | • Impairment of cardiopulmonary function.  
|                  |                                                                         | • Plant leaf injury.  
| Lead (Pb)        | • Contaminated soil.                                                     | • Impairment of blood function and nerve construction.  
|                  |                                                                         | • Behavioral and hearing problems in children.  
| Fine Particulate| • Stationary combustion of solid fuels.  
| Matter (PM-10)   | • Construction activities.                                              | • Reduced lung function.  
|                  | • Industrial processes.                                                 | • Aggravation of the effects of gaseous pollutants.  
|                  | • Atmospheric chemical reactions.                                        | • Aggravation of respiratory and cardio respiratory diseases.  
|                  |                                                                         | • Increased cough and chest discomfort.  
|                  |                                                                         | • Soiling.  
|                  |                                                                         | • Reduced visibility.  
| Fine Particulate| • Fuel combustion in motor vehicles, equipment, and industrial sources.  
| Matter (PM-2.5)  | • Residential and agricultural burning.                                  | • Increases respiratory disease.  
|                  | • Industrial processes.                                                 | • Lung damage.  
|                  | • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics. | • Cancer and premature death.  
|                  |                                                                         | • Reduces visibility and results in surface soiling.  
| Sulfur Dioxide   | • Combustion of sulfur-containing fossil fuels.  
| (SO2)            | • Smelting of sulfur-bearing metal ores.                                 | • Aggravation of respiratory diseases (asthma, emphysema).  
|                  | • Industrial processes.                                                 | • Reduced lung function.  
|                  |                                                                         | • Irritation of eyes.  
|                  |                                                                         | • Reduced visibility.  
|                  |                                                                         | • Plant injury.  
|                  |                                                                         | • Deterioration of metals, textiles, leather, finishes, coatings, etc.  

Source: California Air Resources Board, 2002.

The region's topographic features restrict air movement through and out of the basin. The Coast Range hinders wind access into the basin from the west, the Tehachapis prevent
southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to air movement to the east. These topographic features result in weak air flow that becomes stagnant when high barometric pressure forms over the region. As a result, the SJVAB is highly susceptible to pollutant accumulation over time.

An Air Quality Impact Analysis prepared by Giroux & Associates is provided as Appendix 1 of Volume 2, Technical Appendices.

Wind Speed and Direction
Wind speed and direction play an important role in dispersion and transport of air pollutants. During the summer, winds usually originate at the north end of the valley and flow in a south-southeasterly direction through Tehachapi Pass into the Mojave Desert Air Basin. During the winter, winds typically reverse and flow in a north-northwesterly direction. Wind speeds are moderate in summer and light in winter.

Superimposed on this seasonal regime is the diurnal wind cycle. In the SJVAB, this cycle takes the form of a combination of sea breeze-land breeze and mountain-valley regimes. The sea breeze-land breeze regime has a sea breeze flowing into the valley from the north during the day and a land breeze flowing out of the valley at night. The mountain-valley regime has an upslope (mountain) flow during the day and a down slope (valley) flow at night. These phenomena add to the complexity of regional windflow and pollutant transport within the SJVAB.

Temperature
The SJVAB has an "inland Mediterranean" climate averaging over 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. Summer high temperatures often exceed 100°F and average 95°F.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a decidedly maritime influence in the valley. The high mountains to the east prevent the cold, continental air masses from reaching the valley. Winters, thus, are mild and humid. The average daily low temperature is 45°F.

Precipitation
Precipitation in the project area falls almost exclusively from mid-November to mid-April from the fringes of mid-latitude storms. Merced averages 12 inches of rain annually. However, a shift in the annual storm track can cause rainfall to vary from less than 50 percent to over 200 percent of the annual average.

Temperature Inversions
The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversions. A temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an "inversion." Inversions can exist at the surface, or at any height above the ground. The height of the base of the inversion is known as the "mixing height". This is the level to which pollutants can mix vertically without impediment.

Air above and below the inversion base does not interchange because of differences in air density. Warm air above the inversion is less dense than below the base. The inversion base represents an abrupt density change where little exchange of air occurs. Inversion layers are
significant in determining air pollution concentrations. There are two principal types of inversions that occur in the SJVAB - a surface or radiation inversion, and a subsidence inversion. Surface inversions are formed when the ground surface becomes cooler than the air above it during the night. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher aloft remains relatively warm. The inversion is destroyed when heat from the sun warms the ground the next day.

Radiation inversions occur most persistently during light wind episodes. The lack of horizontal mixing due to light winds, and the constraint on vertical mixing due to the inversion, leads to elevated pollution "hot spots" in the immediate vicinity of a source of air pollution. Radiation inversions are strongest and most persistent in winter when nights are longest and wind speeds are lightest.

Subsidence inversions occur as air is pushed downward by some mechanism such as the differential pressure changes in the atmosphere. As this air moves downward, it compresses causing its temperature to increase. This type of inversion may persist for many days because ground-based mixing processes do not influence the heights where such inversions form. These inversions occur most strongly in summer. The elevated lid over the valley traps photochemical pollutants such as ozone. Although ozone is destroyed near the surface at night, the elevated layers act as a reservoir that mixes down to the surface early the next day. Whereas radiation inversions are most critical near individual pollution sources, subsidence inversions affect the air pollution climate of the entire valley.

Baseline Air Quality
State and federal regulations require that airsheds be designated as being either in "attainment" or "non-attainment" with respect to specified clean air standards. For non-attainment airsheds, the designation typically includes a modifier that describes the severity of non-attainment. In the absence of representative monitoring data, the airshed may also be designated as "unclassified." Since state and federal AAQS are different, and because severity thresholds differ between state and federal requirements, the project area has two different sets of attainment classifications. The air quality standards attainment classifications for the air basin, including the project site, are as follows:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Designation/Classification</th>
<th>State</th>
<th>Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O₃) 1-Hour</td>
<td>Non-Attainment/Severe</td>
<td>No Standard</td>
<td></td>
</tr>
<tr>
<td>Ozone (O₃) 8-Hour</td>
<td>Non-Attainment/Severe</td>
<td>Non-Attainment Serious</td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>Attainment</td>
<td>Attainment</td>
<td></td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>Attainment</td>
<td>Attainment</td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>Attainment</td>
<td>Unclassified</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM-10)</td>
<td>Non-Attainment</td>
<td>Non-Attainment Serious</td>
<td></td>
</tr>
<tr>
<td>Fine Particulate (PM-2.5)</td>
<td>Non-Attainment</td>
<td>Non-Attainment Serious*</td>
<td></td>
</tr>
</tbody>
</table>

Note: * effective April 2009.
Ozone and PM-10 are clearly the "problem" air pollutants in the project area, and in the air basin as a whole. The project area is however, slightly better ventilated than locations farther south in the San Joaquin Valley from marine airflow through the Carquinez Straits. Ozone levels are lower in comparison to the southern counties in the basin. While Merced experienced 14 violations of the state one-hour ozone standard in 2008, there were 95 days above the standard at some locations in the basin. Similarly, the 8-hour state standard was exceeded on 54 days in 2008 compared to 127 days above standards basin-wide. PM-10 levels in the project area are also lower than farther south within the valley. In 2007, Merced had an estimated 36 days per year exceeding the state PM-10 standard. In downtown Fresno, an estimated 54 days were above the 24-hour California PM-10 standard. On the south side of Bakersfield, the PM-10 data predicts that there was an estimated 147 days with unhealthy PM-10 levels. (PM-10 is usually not monitored every day such that the percentage of observed violations is applied to 365 days to estimate the probably annual total). Because attainment designations apply basin-wide, the project area is held to the same stringent air quality control requirements as those portions of the air basin with more substantially degraded air quality.

3.1.2 Water Resources

3.1.2.1 Regulatory Setting

Water resources are regulated by federal, state, regional, and local and agencies.

Section 401 of the federal Clean Water Act (CWA) requires a Water Quality Certification for any work proposed in stream crossings, stream banks or stream courses, or wetlands. Additionally, if a U.S. Army Corps of Engineers (ACOE) permit is required, the ACOE guidelines would be followed in order to ensure ACOE approval of the Water Quality Certification.

The State Water Resources Control Board (SWRCB) regulates California's water quality and administers water rights. The Board, through its nine regional boards, establishes wastewater discharge requirements and carries out water pollution control programs. It also issues permits for new water rights and assists in determining existing rights.

SWRCB has established a statewide construction General Permit applicable to the project. Under this general permit, it is the responsibility of the project proponent to submit a Notice of Intent (NOI) to the SWRCB, prepare and implement a Stormwater Pollution Prevention Plan (SWPPP), and revise the SWPPP as necessary as construction conditions change. The Best Management Practices (BMPs) within the SWPPP must include both structural and non-structural measures, where applicable, and the assignment of long-term maintenance responsibilities that protect water quality. The Central Valley Water Quality Control Board is the jurisdictional entity that enforces the construction General Permit and SWPPP. These agencies oversee the implementation of the SWPPP and ensure that the BMPs are fully implemented and effective through routine monitoring and enforcement actions.

A Merced County Drainage Permit is required for activities that affect watercourses and drainage facilities in the unincorporated County areas of the proposed project. A drainage permit from the City of Merced, through its Storm Water Management Program is also required. There are three aspects to the existing regulatory setting related to hydrology and flood hazards. The federal components include: control of development within 100-year flood hazard areas, as designated by the Federal Emergency Management Agency (FEMA); control of
erosion and sedimentation during construction under the General Construction permit required for compliance with the Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) permits for non-point sources of pollution; and the requirement to control long-term sources of water pollution through the implementation of a Water Quality Management Plan (WQMP). These latter two programs are implemented at the state level through the State Water Resources Control Board and the Central Valley Region Regional Water Quality Control Board, and at the local level by Merced County.

Local and regional land use jurisdictional agencies participate in the National Flood Hazard Insurance Program. Under this program, flood hazards have been determined based on 500-year and 100-year storm events. General Plans identify, and specific projects are reviewed in light of, the 100-year flood zones which could create hazardous conditions if they are developed. The 100-year flood areas are generally adjacent to creek and drainage channels.

The Office of Emergency Services (OES) is the County's centralized emergency response agency responsible for organizing and directing emergency services and disaster programs. This agency comes under the administration and management of the California Department of Forestry which has also been contracted by the County to provide fire fighting services. The OES receives updated dam inundation information from the State Office of Emergency Services and is responsible for identifying evacuation routes based on this data.

3.1.2.2 Affected Environment

Groundwater

Groundwater is a significant source of water supply in the proposed project area and throughout the County. It is supplied by runoff from foothills and mountains which percolates through the valley's alluvial deposits into the San Joaquin Basin aquifer. The San Joaquin Basin aquifer is not considered a Sole Source Aquifer under the Sole Source Aquifer protection program is authorized by section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.).

According to the University Community Plan General Plan Amendment EIR, the groundwater basin that underlies the Merced area consists of a wedge of unconsolidated sedimentary deposits of sand, gravel, silt, and clay that thickens from a feather edge at the mountain front of the Sierra Nevada to the east, to its greatest thickness at its western margin near the San Joaquin River. The thickness of the sedimentary deposits is estimated to be more than 12,000 feet near the San Joaquin River, but the effective thickness of the usable aquifer is only about 1,000 feet because the deeper sedimentary deposits contain saline water. Groundwater is found at shallow depths in the Merced area, and groundwater flow is generally from northeast to southwest; however, groundwater pumping creates localized cones of depressions, and irrigation may cause mounding, complicating the flow patterns and causing them to change in time.

Due to the variety of climate and geologic conditions that occur regionally, the groundwater basin experiences fluctuation in the depth of its water table resulting from differing rainfall amounts, and changing local domestic and agricultural water pumping patterns. Demand "loss" of groundwater can also result from seepage into streams, evaporation, and crop transpiration.
Both irrigation and urban water districts provide Merced County's municipal, domestic and irrigation needs. They range in size from the Merced Irrigation District, which encompasses about 241 square miles, to Volta Community Services District, which serves less than 100 acres. Nearly all the County is within the boundaries of a water purveyor district. The proposed project is within the Merced Irrigation District boundary and is also supplied by the City of Merced. Most water districts in Merced County rely on groundwater for only a limited portion of their supplies. However, the City of Merced uses groundwater as its primary water supply.

Currently, groundwater withdrawals in the Valley subbasin exceed recharge. The overdraft is primarily noticeable in areas around El Nido and Le Grand. Use of water from the State Water Project and the Central Valley Water Projects has reduced overdraft and increased recharge.

Surface Waters
Drainages in the vicinity of the proposed double track are predominately man-made irrigation canals, both lined and unlined. Four drainage channels will be impacted by the proposed project that appears to be subject to the jurisdiction of the U.S. Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board. Only two of these channels support native vegetation. They are Owens’ Creek and Mariposa Creek. Owens’ Creek is associated with agricultural uses and is highly disturbed. However Mariposa Creek is characterized by open water habitat with a riparian over story consisting of willows and cottonwoods, and an understory largely comprised of blackberry. A complete description of all four of these jurisdictional channels is in the Biological Assessment in Appendix 3 of Volume 2, Technical Appendices.

The Federal government's Central Valley Project (CVP) began delivering water to the San Joaquin Valley in the 1940's, and the State Water Project (SWP) followed with additional imports of water in the late-1960's. Surface water sources include the Merced River and recirculation of drainage water. There is an extensive system of drainage and irrigation canals throughout the project area owned and maintained by Merced Irrigation District.

Water Quality
Water quality in the County differs from east to west and from north to south. The stream flow into the Merced River in the northern part of the County is of very good quality, but gradually decreases south through the Valley due to the inflow of excess irrigation waters, products of erosion and other non-point source pollution.

The quality of groundwater is determined primarily by salt concentrations, and to a lesser degree by levels of nutrients, pesticides and other contaminants. Low quality groundwater is found throughout much of the San Joaquin Valley Basin. Overall groundwater quality is generally similar to surface water quality. It is good to excellent in the higher foothill areas and decreases in quality with increasing salt and other constituent concentrations toward the Valley center low areas. High nitrogen species in the project area are also a pollution problem. Contributing to high nitrogen levels in water are fertilizers, animal manures, treated sewage from percolation ponds or land disposal, septic systems, natural geologic sources and plant residues from cropland and native vegetation.

The improper location and/or operation of septic tanks and other individual wastewater systems can also affect the quality of groundwater and seriously impair the use of water for water supply, recreation and fish and wildlife habitat. Most individual systems are septic tanks, which provide
primary treatment only. Septic tanks do provide basic bacteriological breakdown of solids to a liquid state allowing discharge into a subsurface leach field. Effluent then percolates or evaporates. Such systems still contain nitrates which can percolate through the soil and find its way into the shallow groundwater table. In areas where prolonged flooding can occur, such as in the project area, leach fields and percolation can be compromised, adding to the inability to dilute nutrients remaining after septic tank treatment.

According to the County General Plan, the groundwater quality within the area of the proposed project is considered hard water (high in Calcium Carbonate). The groundwater in the areas of City of Merced and community of Planada also have problems with Dibromochloropropane from urban pesticide use and east of Planada there are areas of high nitrate groundwater.

Hydrology and Floodplain
The County Flood Damage Prevention Ordinance contains specific requirements for development in various flood zones designated on the FIRM maps. According to the Flood Insurance Rate Maps of the project area, most of the project area is within the 100-year floodplain with many areas experiencing 1 or 2 ft. flood depths.


Dam Inundation
According to the County of Merced General Plan there are eleven major dams either in or adjacent to Merced County with known populations in their respective inundation areas. The State has judged all of the dams in Merced County to be safe. The Bear, Owens and Mariposa Reservoir Dam inundation areas traverse the project area.

Dam failures can result from a number of natural or manmade causes such as earthquakes, erosion, improper siting, rapidly rising flood waters and structural/design flaws. A dam failure can cause loss of life, damage to property, and other ensuing hazards, as well as the displacement of persons residing in the inundation path. Damage to the electric generating facilities and transmission lines associated with hydroelectric dams, could also impact life support systems in communities outside the immediate hazard areas. A catastrophic dam failure, depending on the size of the dam and population downstream, could exceed the response capability of local communities. Virtually no urban area in the County is free from flooding in the event of dam failure.

3.1.3 Noise and Vibration

3.1.3.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and addressing noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation differ between NEPA and CEQA.

CEQA Noise Issues
CEQA requires a strictly no-build versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact
under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project, unless such measures are infeasible.

**NEPA Noise Issues**

NEPA regulations require certain noise abatement criteria (NAC) that are used to determine when a noise impact may occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The NAC hourly A-weighted noise levels are shown in the following table, Table 3.1.3-1.

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>NAC, Hourly A-Weighted Noise Level, dBA Leq(h)</th>
<th>Description of Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>57 Exterior</td>
<td>Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities are essential if the area is to continue to serve its intended purpose.</td>
</tr>
<tr>
<td>B</td>
<td>67 Exterior</td>
<td>Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.</td>
</tr>
<tr>
<td>C</td>
<td>72 Exterior</td>
<td>Developed lands, properties or activities not included in Categories A or B above.</td>
</tr>
<tr>
<td>D</td>
<td>---</td>
<td>Undeveloped lands.</td>
</tr>
<tr>
<td>E</td>
<td>52 Interior</td>
<td>Residence, motel, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.</td>
</tr>
</tbody>
</table>

Under NEPA guidelines, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then the potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, newly constructed development versus development pre-dating 1978 and the costs per benefited residence.

**3.1.3.2 Affected Environment**

There are several potentially significant primary sources of community noise within the County. These sources include traffic on major roadways and highways, railroad operations, airports and industrial/agricultural activities.
There are several potentially significant primary sources of community noise within the project area. These sources include traffic on major roadways and highways, railroad line and railroad yard operations, airports and industrial/agricultural activities.

Roadways
The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Ldn contours for the State Highways and major County roadways in the project area of Merced County. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The FHWA Model is based upon reference energy emission levels for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dBA. To predict Ldn values it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Traffic data representing annual average traffic volumes for existing and future conditions were obtained from Caltrans and the Merced County Planning Department. Using this traffic information and the FHWA methodology, traffic noise levels as defined by Ldn were calculated for existing (1988) and projected future (2000) traffic volumes within the unincorporated areas of the County and existing (1990) and projected future (2010) traffic volumes within the city of Merced.

Table 3.1.3-2
EXISTING AND PROJECTED LDN NOISE CONTOUR DATA FOR PROJECT AREA
Distance (in feet) to LdN contour from roadway segment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Merced General Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Street: 16th to 27th streets (Crosses project area)</td>
<td>N/A</td>
<td>60 dB 140 feet</td>
<td>65 dB 65 feet</td>
<td>70 dB 30 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65 dB 65 feet</td>
<td>70 dB 30 feet</td>
<td>N/A</td>
</tr>
<tr>
<td>M Street 16th to 27th Street (Crosses project area)</td>
<td>N/A</td>
<td>60 dB 80 feet</td>
<td>65 dB 37 feet</td>
<td>70 dB 17 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 dB 80 feet</td>
<td>65 dB 37 feet</td>
<td>N/A</td>
</tr>
<tr>
<td>Highway 140: SR 99 to Santa Fe (Crosses project area)</td>
<td>N/A</td>
<td>65 dB 190 feet</td>
<td>70 dB 97 feet</td>
<td>70 dB 17 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65 dB 190 feet</td>
<td>70 dB 97 feet</td>
<td>N/A</td>
</tr>
<tr>
<td>Highway 140: Santa Fe to Arboleda (Parallels and is immediately adjacent to project alignment)</td>
<td>N/A</td>
<td>65 dB 158 feet</td>
<td>70 dB 78 feet</td>
<td>70 dB 35 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65 dB 158 feet</td>
<td>70 dB 78 feet</td>
<td>N/A</td>
</tr>
<tr>
<td>County of Merced General Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highway 140: SR 59 to Planada (Parallels and is immediately adjacent to project alignment)</td>
<td>60 dB 182 feet</td>
<td>65 dB 86 feet</td>
<td>N/A</td>
<td>60 dB 246 feet</td>
</tr>
<tr>
<td></td>
<td>65 dB 86 feet</td>
<td>65 dB 114 feet</td>
<td>N/A</td>
<td>65 dB 114 feet</td>
</tr>
</tbody>
</table>

25
Railroads
Railroad operations in Merced County consist of high speed mainline operations on the BNSF Railway and on the Union Pacific Transportation Company (U.P.) Railroad along State Route 99. A low speed U.P. branch line operation occurs in the west side of the County through the communities of South Dos Palos and Volta.

Noise levels from railroad operations within the project area of Merced County were quantified using the analytical methods developed in 1973 by Wyle Laboratories (Wyle Laboratories Report WCR-73-5). The Wyle methodology calculates noise exposure based upon reference noise level data for various types of trains under different operating conditions, distance from the tracks, speed and the characteristics of the track the trains are passing over.

BNSF Railroad
Mainline operations on the BNSF Railway in the project area traverse the City of Merced and communities of Le Grand, and Planada. According to the Chief Dispatcher's office in Fresno, there are presently an average of 22 freight and 4 passenger trains per day in this area. Maximum speed is 70 mph for freights and 79 mph for passenger trains. Freight trains may occur at any time during the day or night, and passenger trains generally operate during the daytime (7:00 a.m. - 10:00p.m.) hours. According to the Wyle methodology, the above-described type and frequency of operations will result in noise exposures of 65 and 60 dBA Ldn at approximately 345 and 650 feet, respectively, from the center of the tracks. Noise levels in the vicinity of grade crossings are somewhat higher than this due to the use of the warning horn. If it is assumed that operations may increase by 15%, the distances to the 65 and 60 dBA Ldn contours would be approximately 375 and 700 feet from the tracks. Source: Chief Dispatcher, AT&SF Railway, Fresno, California

Industrial and Other Major Noise Sources
The production of noise is an inherent part of many industrial, commercial and agricultural processes, even when the best available noise control technology is applied. Noise production within an industrial, commercial or agricultural facility is controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise emissions from such operations have the potential to exceed locally acceptable standards at noise sensitive land uses.

From a land use planning perspective, industrial noise control issues focus upon two objectives: to prevent the introduction of new noise generating uses in a noise sensitive area, and to prevent encroachment of noise sensitive uses upon existing noise generating facilities. The first objective can be achieved by applying noise performance standards to proposed new noise generating uses. The second objective can be met by requiring that new noise sensitive uses in proximity to existing noise generating facilities include mitigation measures to ensure compliance with noise performance standards.
It should be recognized that the propagation of noise is dependent on atmospheric conditions. Atmospheric turbulence, temperature, humidity, and other conditions, which change from day to night and season to season, will result in noise level fluctuations. This phenomenon is most apparent at distances greater than a few hundred feet from a noise source. Since many sensitive receiver locations in the project area are one-half mile or more from noise sources, it is probable that noise level measurements conducted at different seasons and under different atmospheric conditions would produce different results.

The following descriptions of an existing industrial noise source that represents the relative noise impacts of such uses in the project area:

Forrest Freeze Trucking
Forrest Freeze Trucking operates a truck storage facility near the corner of Childs Avenue and Brantley Street, south of Merced. Approximately 5-10 truck trailers are stored on the property at a given time. Refrigerated trailers are not stored on the property. During the time of inspection (January 26, 1989), there were no truck movements on or off the property. The slowly moving trucks in the trucking operation may produce a maximum level of 71-74 dBA at 100 feet, and idling trucks produce 62-63 dBA at 100 feet. The proposed project is located more than a mile from this business.

Agricultural operations, with noise generated by general farm equipment, ventilation equipment, and animals such as cows and chickens are also abundant in the project area. Noise from agriculture varies with season and animal housing arrangements.

Merced Municipal Airport
The Merced Municipal Airport is located near the intersection of Grogan Way and West Avenue, in the City of Merced. The one runway (30-12) at the airport is 5,904 feet long. About 103 total aircraft, consisting of 92 single-engine and 11 twin-engine aircraft are based at the airport. No helicopters, aerial application or jet aircraft are based at the airport, although transient business jets often use the airport. There are currently about 50,000 annual operations at the airport. The airport is generally surrounded by agricultural and industrial land uses. The proposed project is located more than 2 miles from the airport. Source: Mr. Dan Oates, Airport Manager

Community Noise Survey
A community noise survey was conducted for the 2000 County General Plan to document noise exposure in areas of the County containing noise sensitive land uses. For that purpose, noise-sensitive lands uses were considered to include residential areas, schools and hospitals.

Noise monitoring sites were selected to be representative of typical conditions in areas of the community where such uses are located. Short-term noise monitoring was conducted during two periods of the daytime (7 a.m. - 10 p.m.) and one period of the nighttime (10 p.m. - 7 a.m.), during January, 1989 so that reasonable estimates of the Ldn could be prepared. Four long-term noise monitoring sites were established to record the variation of noise levels through 24 hours. One of these stations is within the project area in the community of Planada.

The community noise survey results indicate that typical noise levels in noise sensitive areas of Merced County are in the range of 37 dBA to 67 dBA Ldn. Noise from traffic on state and local roadways and aircraft from Castle Air Force Base are the controlling factors for background
noise levels in the County. In general, the areas of Merced County which contain noise sensitive uses away from these sources are relatively quiet.

3.1.4  **Geology and Soils**

3.1.4.1  **Regulatory Setting**

The key federal law related to these issues is the Historic Sites Act of 1935, which established a national registry of natural landmarks and protects “outstanding examples of major geological features.”

Due to the size of areas to be disturbed by the proposed project, the filing of a Notice of Intent with the State Water Resources Control Board and the preparation and implementation of a Storm Water Pollution Prevention Program (SWPPP) is mandatory. New construction must conform with Basin Plan water quality standards when slopes are exposed. Potential water erosion must be controlled during construction to meet the Regional Board’s Basin Plan stormwater discharge requirements. After the construction phase, long-term erosion control can be accomplished by keeping soils under vegetative cover, hardscape (pavement, gravel, or other hard cover) and planting wind breaks. The type of vegetation used for landscape cover and wind breaks must comply with each jurisdiction’s planting requirements.

3.1.4.2  **Affected Environment**

**Major Geologic Features**

There are no major geologic features that would warrant protection under the Historic Sites Act of 1935 within the project area. The project area is on a flat to gently sloping alluvial plain.

**Earthquake Faults**

There are no identified active earthquake faults near the project alignment. However, there are several faults that could cause damage to structures, including rail facilities, as a result of a large earthquake event. The following information is from the University Community Plan General Plan Amendment Final EIR, 2004.

The only fault known inside Merced County is the “Ortigalita” fault, also known as the Telsa-Ortigalita fault, located in the western quarter of Merced County, dissecting the Coast Ranges in a northwesterly direction. This fault has not been active in historic times.

The nearest fault of major significance is the San Andreas Fault, located approximately 15 miles west of the Merced County line. Also located outside Merced County are the Hayward and Calaveras faults to the northwest, the White Wolf, Garlock, and Sierra Nevada faults to the south of the County, and the Bear Mountain fault zone, located approximately five miles east of the County’s eastern border. These faults would be the primary sources of seismic activity in Merced County.

Further discussion of earthquake faults and the risks associated with them is provided in the Public Health and Safety section of this EA.
Soil Erosion
According to the County of Merced General Plan, there is no reliable estimate of the annual amount of soil loss locally due to soil erosion. However, soil erosion is a natural process which can become accelerated by human activities such as construction and agricultural practices. Key factors affecting erosion and sedimentation are the extent of vegetation, vegetative cover, slopes, amount of rainfall and soil porosity. Development induced erosion resulting from construction activities, is the greatest source of localized sedimentation problems; primarily caused by vegetation removal, compaction of porous soils and large drainage areas. Improperly managed agricultural practices can also be a source of accelerated soil erosion, either from over grazing on sloped areas, land clearing or winter farming. Through cooperation with the Soil Conservation Service and local resource conservation districts, Merced County (and its farmers) maintain a high level of erosion control awareness and practice.

Soil Types
The majority of the County is situated in the center of a great agricultural belt, produced primarily from unconsolidated sedimentary rocks and alluvial sediments deposited by several of the great river tributaries draining into the San Joaquin River. Potential sand and gravel resources are located north of Le Grand.

The following soils are present within the project footprint:

- Honcut silt loam 0 to 1 percent slope, Honcut silty clay loam 0 to 1 percent slope, Honcut silty clay loam channelized 0 to 8 percent slope, Honcut fine sandy loam 0 to 1 percent slope, Honcut silt loam 0 to 1 percent slope;

- Wyman clay loam deep over hardpan, 0 to 1 percent slope, Wyman clay loam 0 to 3 percent slope, Wyman loam 0 to 3 percent slope, Wyman loam deep over hardpan 0 to 3 percent slope;

- Yokohl clay loam, 0 to 3 percent slope, Yokohl clay 0 to 3 percent slope, Yokohl loam 0 to 3 percent slope;

- Burchell silty clay loam 0 to 1 percent slope;

- Landlow silty clay loam 0 to 1 percent slope, Landlow clay 0 to 1 percent slope;

- Porterville clay 0 to 3 percent slope;

- Marguerite silty clay loam 0 to 1 percent slope;

- Yolo loam 0 to 1 percent slope;

- Keys gravelly loam 0 to 8 percent slope;

- Bear Creek loam 0 to 3 percent slope;

- Raynor clay 0 to 3 percent slope, Raynor clay 3 to 8 percent slope; and

- Riverwash.
Merced County has a large area designated as prime soils, reflected directly in the high economic value of agricultural production in the County. Le Grand and Planada are entirely surrounded by prime soils.

The proposed project APE contains limited, highly localized erosion, typically found on the small slopes that occur where deep fills have been installed across swales along the track alignment. None of these erosion features were observed to have caused removal substantial amounts of material or accumulation of sediment. Further discussion of soils and geology is provided in the Farmlands/Timberlands and Public Health and Safety sections of this EA.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Ecological Systems

3.2.1.1 Regulatory Setting

This section of the document discusses ecological system and natural community issues of concern. The focus of this section is on biological communities, not individual plants or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat (unique natural communities or natural communities of concern) and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in a following section which addresses threatened and endangered species, and wetlands and other waters of the United States and State of California are also discussed in a following section of this document.

The proposed action is the installation of approximately 16.5 miles of a second mainline track within the BNSF Railway Company’s San Joaquin Valley railroad corridor, along the segment extending from Le Grand to Merced, in Merced County, California. This will require grading, installation of fill, sub-base, ballast, new track and new signals, new road crossings, new bridges and new culverts along this “Le Grand” segment of the San Joaquin Valley railroad corridor. Biological resources surveys were conducted during December 2008 and again January and February 2009. Based on these field surveys and consultation with pertinent parties, the biologists at Tom Dodson & Associates compiled a detailed “Biological Assessment for the Le Grand Double Track Projec,” (Biological Assessment or BA) the proposed action, which extends from Le Grand to Merced in Merced County, California. A copy of this report is attached in Appendix 3 of Volume 2, Technical Appendices.

3.2.1.2 Affected Environment

According to the Biological Assessment, the majority of the proposed Le Grand double track segment topography is flat, with slopes ranging from zero to five percent. There are some areas with short, steep slopes along filled areas associated with the previous grading of the railroad track (originally installed in the 1895-97 timeframe). The Federal Railroad
Administration (FRA) regulations require that rail structures and bridges be kept clear of vegetation to minimize fire hazards. Therefore, the vast majority of the Le Grand double track segment is unvegetated and highly disturbed from ongoing maintenance activities. The vegetation that does occur along this segment of track is characterized as ruderal vegetation, i.e., non-native, weed species such as Storks bill (*Erodium cicutarium*), brome grasses (*Bromus* sp.), and tumble weed (*Salsola tragus*). Surrounding land uses primarily consist of agriculture (vineyards, orchards, and pastures) with some urban/suburban/rural suburban development adjacent to the tracks in the communities of Le Grand, Planada, Calpack, Tuttle, Kadota and the City of Merced.

Wildlife observations made during the survey were dominated by bird and mammal species. Observations of wildlife included scat, tracks, burrows, nests, calls and individual animal sightings. Common mammals observed included domesticated dogs and Beechy ground squirrel (*Spermophilus beecheyi*). Common bird species observed were crows (*Corvus brachyrhynchos*) and mourning dove (*Zenaida macroura*).

There are four stream/drainage channels that cross the existing track over the 16.5 mile Le Grand double track segment. All four channels are considered to be waters of the United States and waters of the State of California, but only two of these channels support native riparian or wetland vegetation, Mariposa Creek and Owens’ Creek. Only Mariposa Creek is characterized by open water habitat with a riparian overstory consisting of willows and cottonwoods, and an understory largely comprised of blackberry. Owens’ Creek is associated with agricultural uses and is highly disturbed, with limited native vegetation.

### 3.2.2 Wetlands and Other Waters

#### 3.2.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S. C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act (CAA) regulates the discharge of dredged or fill material into waters of United States, including wetlands. Water of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CAA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CAA.

Section 404 of the CAA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation’s waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (Corps) with participation and some oversight by the federal Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E. O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the FRA, cannot undertake or provide assistance for new construction located in
wetlands unless the head of the agency finds: (1) that there is no practicable alternative to
construction and (2) the proposed project includes all practicable measures to minimize harm.
At the state level, wetlands and waters are regulated primarily by the California Department of
Fish and Game (CDFG) and the Central Valley Regional Water Quality Control Board (Regional
Board or RWQCB). Sections 1600-1607 of the Fish and Game Code require any agency that
proposes a project that will substantially divert or obstruct the natural flow of or substantially
change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction.
If CDFG determines that the project may substantially and adversely affect fish or wildlife
resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional
limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian
vegetation, whichever is wider.

The Regional Boards were established under the Porter-Cologne Water Quality Control Act to
oversee water quality. This is done through the issuance of water quality certifications in
compliance with Section 401 of the Clean Water Act when the area of potential effect is located
in waters of the United States. When only State waters are involved in the discharge of dredged
or fill material, the Regional Board can review and issue waste discharge requirements (WDR)
under the Porter-Cologne Act to achieve the same water quality protection objectives.

3.2.2.2 Affected Environment

Each of the drainage/stream channels that will be affected by the proposed Le Grand double
track project is already occupied by a bridge with pilings. These bridges were installed long
(1895-97) before the current regulatory procedures were established for obtaining regulatory
permits to discharge fill. The proposed project includes the installation of four new bridges or
bridge expansions that will include new bridge pilings at the four drainage/stream channel
crossings. According to the BA findings, the following waters of the United States and State of
California will be permanently impacted from the new bridge pilings:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Milepost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariposa Creek</td>
<td>1042.25</td>
</tr>
<tr>
<td>Owens’ Creek</td>
<td>1045.90</td>
</tr>
<tr>
<td>Unnamed Channel</td>
<td>1049.30</td>
</tr>
<tr>
<td>Unnamed Channel</td>
<td>1052.94</td>
</tr>
</tbody>
</table>

The Mariposa Creek channel contains riparian vegetation that is characterized by a large
riparian overstory consisting of willow (Salix sp.) and cottonwoods (Populus fremontii). This
creek channel contains open water flow most of the year and has an understory dominated by
blackberry plants.

Owens’ Creek is characterized by limited riparian habitat dominated by willows. This channel is
very narrow and may be able to be clear-spanned to avoid discharge of fill into the channel.

The unnamed channel at Milepost 1049.30 consists of a culvert extension, not a bridge, and the
channel is maintained and characterized by non-native upland grasses.

The unnamed channel at Milepost 1052.94 is characterized by a concrete lined channel that is
used to transport irrigation water to local crops. There is no vegetation associated with this
crossing.
3.2.3 Threatened and Endangered Species and Species of Special Concern

3.2.3.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et. seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species (listed species) and the ecosystem upon which they depend. Under Section 7 of this act, federal agencies are required to consult with the U.S. Fish and Wildlife Service (FWS) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as “harass, harm pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et. Seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species (listed species). Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or otherwise attempt to hunt, pursue, catch, capture or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.2 of the Fish and Game Code.

3.2.3.2 Affected Environment

As previously described, the vegetation that does occur along this segment of track is characterized as ruderal vegetation, i.e., non-native, weed species such as Storks bill (*Erodium cicutarium*), brome grasses (*Bromus* sp.), and tumble weed (*Salsola tragus*). Surrounding land uses primarily consist of agriculture (vineyards, orchards, and pastures) with some urban/suburban/rural suburban development adjacent to the tracks in the communities of Le Grand, Planada, Calpack, Tuttle, Kadota and the City of Merced.

There are four stream/drainage channels that cross the existing track over the 16.5 mile Le Grand double track segment. All four channels are considered to be waters of the United States and waters of the State of California, but only two of these channels support native riparian or wetland vegetation, Mariposa Creek and Owens’ Creek. Only Mariposa Creek is characterized by open water habitat with a riparian overstory consisting of willows and cottonwoods, and an understory largely comprised of blackberry. Owens’ Creek is associated with agricultural uses and is highly disturbed, with limited native vegetation.

To assist in identifying potential listed and sensitive species, the biologists consulted the CDFG California Natural Diversity Data Base for four topographic maps in the area: Merced, Planada,
Plainsburg and Le Grand (7.5' Topographic Series); contact regulatory agencies for lists of sensitive species; and reviewed the Merced County and City of Merced General Plans and General Plan environmental documents for lists of sensitive species within their jurisdiction. Refer to Table 1 of the attached BA for a comprehensive discussion of species found within the general project area and an evaluation of the potential occurrence of both plants and animals within the project APE. The following discussion addresses only those species with a potential for occurring with the project APE.

**California tiger salamander:** No suitable habitat for this species occurs within the proposed project APE. This species is restricted to grasslands and low depressions called vernal pools. The tiger salamander is listed as endangered under FESA. This species is not associated with permanent water sources such as Mariposa Creek, or with chronic disturbances for agricultural uses and disturbed railroad right-of-way associated with this project.

**Big Tarplant:** This species is not known to occur in the vicinity of the proposed project. It is a species of concern and was not observed during the surveys. However, there is suitable habitat adjacent to the project APE.

**Ferruginous hawk:** There are roosting and nesting sites adjacent to the project APE. However, there is little or no foraging habitat that occurs within the APE. This species was not observed in the surveys and is listed as a species of concern.

**Swainson’s hawk:** There are roosting and nesting sites adjacent to the project APE. However, there is little or no foraging habitat that occurs within the APE. This species was not observed in the surveys and it is listed as threatened under CESA.

**Mountain plover:** There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. It was not observed along the APE during any of the surveys and it is listed as threatened under FESA and a species of concern by the State.

**Northern harrier:** There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. It was not observed along the APE during any of the surveys and it is listed as a species of concern by the State.

**Western pond turtle:** Mariposa Channel does have habitat suitable for this species. None were observed during the surveys of the alignment and a species of special concern by the U.S. and State.

**Valley elderberry longhorn beetle:** No elderberry plants were observed within the project APE. It is listed as a threatened species under FESA. Therefore, the probability of this species occurring within the APE is zero.

**American peregrine falcon:** There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. It was not observed along the APE during any of the surveys and it is listed as an endangered species under CESA.
San Joaquin Valley woodrat: There is suitable habitat for this species at the Mariposa Creek crossing within the APE. This species was not observed during the surveys and is listed as endangered by FESA and a species of concern by the State.

California red-legged frog: This species was not observed during any of the field surveys. The closest known occurrence is more than ten miles from the APE. It is listed as threatened under FESA and a species of concern by the State. Due to railroad maintenance activities and agricultural practices, the probability of this species occurring within the project APE is low.

Western spadefoot toad: Mariposa Channel does have habitat suitable for this species. None were observed during the surveys of the alignment and is a protected species by the State.

Giant garter snake: This species was not observed during any of the field surveys. There are no records for this species east of Interstate 99 in the vicinity of the project APE. It is listed as threatened under FESA and also threatened under CESA. Due to railroad maintenance activities and agricultural practices, the probability of this species occurring within the project APE is low.

San Joaquin kit fox: This species was not observed during any of the field surveys. There are no natural grasslands associated with this segment of the project. No large burrows were observed within the project APE. It is listed as endangered under FESA and threatened under CESA. Based on the available data, the probability of this species occurring within the project APE is very low.

Please refer to the BA in Appendix 3 of Volume 2, Technical Appendices for a complete list of sensitive species and the evaluation of potential for these species to occur within the project APE. Based on the field surveys of the APE and a review of the sensitive species data bases, several listed and sensitive species have a potential to occur within the project APE although none have been observed within the APE during any of the previous surveys.

3.2.4 Invasive Species

3.2.4.1 Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The California noxious weed list can be used to define the invasive plants that must be considered as part of the analysis for this project.

3.2.4.2 Affected Environment

As indicated in the project description and in the discussion of the existing Ecological Systems (Section 3.2.1 above), the project alignment is highly disturbed and maintained to prevent growth of plants that could conflict with existing rail operations or contribute to wildland fire hazards. Based on the existing data, the project APE primarily consists of non-native weed
species, including many historically invasive plants (including tumbleweeds and non-native grasses).

3.3 HUMAN ENVIRONMENT

3.3.1 Transportation

3.3.1.1 Regulatory Setting

The involved agencies of the state of California and the FRA are committed to carrying out the 1990 Americans With Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

The special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Countywide Circulation diagram, individual Specific Urban Development Plans (SUDPs), and Rural Residential Center (RRC) maps make up the official Road Circulation Plan for Merced County. These roadways include: minor collectors, major collectors, arterials and freeways. All other roads are considered local roads. In Merced County, the actual design and construction of a road is administered by either the Merced County Department of Public Works or CALTRANS (for State Highways). In rare instances, private roads may be constructed which may not meet the design and construction requirements of the County or State. Private roads typically function as local roads by providing direct access to adjacent properties.

3.3.1.2 Affected Environment

Merced County contains a variety of roads which have different characteristics, ranging from narrow two lane dirt roads in the rural areas to highways and a freeway connecting the more urban areas and traversing the rural areas. The County General Plan anticipates that urban areas within Merced County will continue to grow and will become a larger percentage of the total County population. Commuting will become more extensive to reach large employment centers within and outside of Merced County. The movement of people, goods and services through non-automotive transportation modes is, and will continue to be, vitally important to Merced County.

There are several alternative forms of transportation which serve County residents and businesses. Rail and air services transporting people and freight provide access to the rest of the state and the nation. Public transit systems help ease congestion and provide transportation services locally. The Transit Joint Powers Authority provides fixed route bus services throughout the City of Merced and to surrounding communities including Planada and Le Grand. Greyhound-Trailways also provides charter service in the County, and several taxi-cab companies provide service in the area.

Bicycle routes make it easier for residents to use bicycles as a form of transportation and also serve a recreational function. The Merced County Association of Governments (MCAG)
prepared the Merced County Regional Bikeway Plan. Using this as a guide, Merced County adopted bicycle routes for individual unincorporated communities which are shown on the SUDP maps of each Community Specific Plan. The General Plan contains the Countywide Bicycle Route Plan, The future construction of bikeways will be administered by either the Merced County Department of Public Works or CALTRANS, depending upon which agency is responsible for the road. Bike routes either have separated right-of-way travel lanes (Class I Bicycle Route) or shared rights-of-way along roads (Class II or III Bicycle Routes). Class I bikeways provide completely separated right-of-way designations for the exclusive use of bicycles and pedestrians. Generally, as vehicle traffic levels increase, a more exclusive right-of-way would be provided for bicyclists.

Merced County is served by four municipal airports and one regional airport. One of these airports is in the City of Merced. There are also several private airstrips in Merced County. The Merced Airport provides commercial passenger and freight air services.

Two companies currently provide rail service to Merced County; the Union Pacific Railroad (UPRR) and BNSF. All lines generally traverse the County in a northwest-southwest direction. These rail lines are primarily used for the movement of freight, although Amtrak passenger trains currently run along the BNSF line with one passenger station in the City of Merced. The closest freight shipment harbor to the County is at the Port of Stockton. The rivers in Merced County, though the Merced and San Joaquin Rivers are navigable waterways, do not have enough year-round flow to be used for freight shipment. An estimated 50 trains (north and south combined) presently use the BNSF tracks through the Merced to Le Grand segment of the San Joaquin Valley rail corridor.

3.3.2 Land Status, Land Use, Zoning and Aesthetics

3.3.2.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically and culturally pleasing surrounds [42 U.S.C. 4331(b)(2)]. Final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Land use management is not generally activated through federal or state policy and management systems, unless the federal or state governments own the land; thus, the project area is subject to regional and local planning guidance and regulations. The only federal and state land use policies or regulations that would potentially affect the project are those for specific resources (such as for mineral and biological resources). Otherwise, the project area is subject to county-wide and regional planning efforts in regional growth management and environmental management, particularly for congestion management (transportation) and solid waste management issues. The project area is also subject to regional planning efforts, in which regional comprehensive plans for growth management, mobility/transportation, and air quality management apply. The governing land use documents are the County of Merced General Plan and associated Zoning Ordinance and Development Code, and the General Plan and Development Code of the City of Merced.
Land use issues are included as a topic for evaluation in this EA in order to determine if any potential land use or growth inducement impacts are associated with the construction of the proposed project within the BNSF railroad corridor. Any facilities that are constructed as a part of the project need to be consistent with the General Plans of the agencies with land use jurisdiction along the corridor. Additionally, these facilities must be constructed to minimize incompatibilities with existing and prospective future uses on adjacent and/or affected properties.

**County of Merced**
The County of Merced General Plan Land Use Element provides the goals and policies for addressing land use issues within the unincorporated areas of the County. None of the policies apply specifically or exclusively to the rail corridors that traverse the County. The basis for planning is an “urban center” concept model. The urban centered concept is directed at utilizing cities and unincorporated communities or centers to accomplish anticipated urban expansion in an orderly manner, based on the ability of these communities to furnish public services along with land needs based on population demands and in balance with employment-generating land uses.

**City of Merced**
The City of Merced General Plan Urban Expansion element provides the goals and policies for addressing land use issues within the City. None of the policies apply specifically or exclusively to the rail corridors that traverse the City. Similar to the County, the basis for planning is an “urban center” concept model

**Regional Planning Agency**
The Merced County Association of Governments (MCAG) is comprised of the cities and county of Merced and is the regional agency that tasked with coordinating comprehensive regional planning for the project area. MCAG is designated as the Metropolitan Planning Organization (MPO) and the Regional Transportation Planning Agency for the Merced region.

**Consistency with State, Regional and Local Plans**
Although local communities do not have jurisdiction or direct approval over the implementation of the proposed project, certain components of the project may subject to review and approval by other agencies. This includes encroachment permits from local jurisdictions where construction activities may occur outside of the BNSF right-of-way (not anticipated for this project); filing of a Notice of Intent with the State for a Construction Activity General Permit; and regulatory permits from the Corps, Regional Water Board and Department of Fish and Game. These permits are discussed in their pertinent Subchapters, including Water Resources and Biological Environment. For example, where the drainage channels must be modified, the permits must be obtained from the referenced regulatory agencies before construction activities can proceed in such areas.

Regarding land use issues, both the City and County General Plans acknowledge the BNSF rail corridor through their jurisdictions and the need for alternatives to on-road vehicular transportation systems.

The proposed project is fully consistent with all State, Regional and Local Plans. Specifically, this project reduces or eliminates delays in the local and regional passenger rail system that presently occur due to problems associated with utilizing a single mainline track for both freight
and passenger rail uses. This will enhance rail traffic flow locally and it will substantially reduce air emissions associated with idling trains. These benefits are attained without any increase in the volume of trains using the track segment or any increase in population in the region.

Sensitive Land Uses

Coastal Zone
The project area is not within a Coastal Zone Management Area. Therefore, the federal and state plans associated with such designated areas do not apply to the proposed project.

Wild and Scenic Rivers
There are no designated Wild and Scenic Rivers in the project area. Therefore, the federal and state plans associated with such designated areas do not apply to the proposed project.

Other Sensitive Land Uses Within One Quarter Mile of Project Alignment

Schools:
- John Muir Elementary School, 300 W. 6th Street, Merced
- Herbert Hoover Middle School, 800 E. 26th St., Merced
- Merced Montessori School, 436 W. 1st St., Merced
- St. Patrick’s Parish School, 1400 E. 27th St., Merced
- Joseph Novack Academy, 2025 E. Santa Fe Ave., Merced
- Cesar Chavez Middle School, 161 Plainsburg Rd, Planada
- Le Grand Head start, 13071 Le Grand Rd., Le Grand
- Le Grand High School, 2961 Le Grand Rd., Le Grand

Hospital:
- Mercy Medical Center, 301 E. 3rd Street, Merced

Recreation:
- Applegate Park and Zoo, 1045 West 25th Street, Merced

Miscellaneous:
- Single and multi-family residences
- Agricultural operations/animal keeping

3.3.2.2 Affected Environment

The six cities in the County are evenly distributed, with three along Highway 99 in eastern Merced County and three west of the San Joaquin River. Unincorporated communities are more concentrated in eastern Merced County reflecting larger population concentrations based on historic growth. Information provided in the Agricultural Chapter of the County General Plan (Table VII-8) indicates that as of 1984, there was enough vacant land designated within the major incorporated and unincorporated urban communities to accommodate a 371 percent increase in population. The project area is characterized by its extensive agricultural and rural residential uses and growing urban/suburban centers. The project area is within the City of Merced and communities of Tuttle, Planada, and Le Grand.
Community Specific Plans are subunits of the County General Plan. They are focused plans adopted for the larger unincorporated area which have public sewer and water systems. These plans are consistent with the overall General Plan and provide clarification and refinement of local community issues and policy. The seven adopted Community Specific Plans were prepared between 1981 and 1983 with the assistance of local Municipal Advisory Councils. These councils are made up all the Community Specific Plans include a summary of community characteristics and planning issues, identify local plan goals, objectives and policies, and describe land use designations reflected in the community plan map. The communities of Tuttle, Planada and Le Grand have specific and separate land use maps.

The proposed project alignment is primarily characterized by existing and planned agricultural uses. There are also areas designated for commercial, industrial and residential uses along the alignment within the urban areas.

Farmlands/Timberlands

Regulatory Setting

The rail corridor owned by BNSF ranges between 75 feet and 250 feet in width. This corridor is maintained by BNSF solely for the support of rail operations. Federal rules prevent the introduction of vegetation that could pose a fire or other safety hazard to rail operations within this corridor. Therefore, no agricultural operations or timberlands are permitted within this corridor. However, the majority of the lands adjacent to the project alignment are agricultural in nature and much of the area surrounding the project alignment is considered important or prime farmland.

There are four major classifications of farmland adopted by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). These classifications are based on the fertility of soils and such factors as water availability. “Prime Farmland” has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops, when managed according to modern farming methods. “Farmland of Statewide Importance” is land other than prime farmland with a good combination of physical and chemical characteristics for producing food, feed, forage, and fiber. “Unique Farmland” is land other than prime farmland and land of statewide importance that has a special combination of soil quality, growing season, and moisture supply needed to produce sustained high yields of a specific crop. “Farmland of Local Importance” is defined as important to the local agricultural economy.

The State is required to prepare current maps of the important farmland in agricultural counties of California and monitor permanent farmland conversion. The California Department of Conservation, Division of Land Resource Protection’s Farmland Mapping and Monitoring Program also uses this system for the classification of farmland. In addition to the farmland classifications above, the California Department of Conservation describes three other categories, as follows: “Grazing Land” is land on which the existing vegetation is suited to the grazing of livestock. “Urban and Built-Up Land” is land that does not fall within an agricultural category and is occupied by structures with a density of at least one structure to one and one-half acres “Other Land” is all other land that does not meet the criteria of any other category.

The California Land Conservation Act (Williamson Act) was established in 1965 to protect agricultural lands from conversion to non-agricultural use. Merced County began participating in the Williamson Act in 2000 for unincorporated portions of the County. Owners of land placed
under Williamson Act contract receive lower property tax rates, but must keep the land in agricultural production or related use for the ten-year contracts that are automatically renewed each subsequent year (after the initial ten year period) unless a notice of non-renewal is filed. Merced County (County Ordinance Code Section 7-29-1070) and several of the cities in the County have a right-to-farm ordinance which is meant to reduce conflicts between urban and agricultural land. The County ordinance, for example, requires notice on all parcel maps, subdivision maps or use permits relating to all agricultural land, as well as building permits for new residential construction or mobile home installation on or adjacent to agriculture.

Physical Environment
Merced County is located within the central San Joaquin Valley, ranking 7th in agricultural importance in California. Nearly 93 percent of the land in Merced County is considered agricultural according to the California Department of Conservation Important Farmland Acreage Summary 2000 (Table B-1, Farmland Conversion Report 2000-2002, December 2004). Prime, Statewide, Unique and Local farmland consists of 589,072 acres, with grazing land covering another 581,729 acres. The monetary majority of agricultural activities in the County are related to livestock and poultry production and the products associated with them.

Field crops include barley, beans, corn, cotton, hay, pasture, rice, silage, straw, stubble, sugar beets, and wheat. Vegetable crops include beans, melons, sweet potatoes, and tomatoes. Fruit and nut crops include almonds, apricots, figs, grapes, nectarines, peaches, pistachios, plums, strawberries, and walnuts. In addition to the above crops, Merced County’s agricultural businesses produce seeds, nursery products, a bee industry, and an aquaculture industry. Milk is Merced County’s leading commodity followed by poultry and almonds.

3.3.3 Socioeconomic Conditions

3.3.3.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. Final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

3.3.3.2 Affected Environment

According to the County of Merced General Plan, from 1990 to 2000, the population of California grew 13.8% from 29.7 million to 33.8 million people. Within that total, the eight-county San Joaquin Valley Metropolitan Region (including Merced County) was home to 3.3 million people or 9.7% of California’s population. And within that region, Merced County’s population grew 18% during the decade of the 1990’s. It is projected that the largest percentage household growth in California between 1997 and 2010, and then again between 2010 and 2020 will occur in the eight-county San Joaquin Valley Region and account for 11% of all California households. Within the region, population growth will be fairly evenly distributed, with Merced, Madera and Kings Counties expected to increase the least, according to the California Department of Finance. Merced County’s population is forecast to grow 60% to approximately 338,000 by 2020, due in part to migration to the County’s west side from Bay Area commuters, the area’s
relatively lower housing prices, and the opening of the new University of California campus at Merced.

**Population**
According to the 2000 Census, during the last decade (1990-2000), the population of Merced County increased from 178,403 to 210,554 with the six cities growing by 22%, and the unincorporated area – the focus of this Housing Chapter of the County of Merced General Plan - increasing 11% from 70,058 to 77,927.

**Ethnic Classification**
According to the 2000 Census, Hispanics account for 45.3% of the population; Caucasians account for 40.6% of the population in the county; Asians are the next largest group with 6.8% of the County population, African Americans make up 3.8% of the County population; American Indians account for 1.2% of the population; and Pacific Islanders and “others” account for the remaining 2.3% of people in the County.

According to the County of Merced General Pan Housing Element, the County has a low median household income and also has one of the highest percentages of both homeowners and renters who pay more than 30% of their income towards housing monthly costs. 24.7% of County residents live below the poverty level.

According to the Merced County Association of Governments’ (MCAG) projections, Merced County’s population is expected to increase 30% (from 210,554 to 273,923) by 2010. Within the unincorporated area of the County, the population is expected to grow 8%.

<table>
<thead>
<tr>
<th>Table 3.3.3-1</th>
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<tbody>
<tr>
<td><strong>MERCED COUNTY POPULATION PROJECTS</strong></td>
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<tr>
<td>Delhi</td>
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<tr>
<td>8,022</td>
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<tr>
<td>Franklin Beachwood</td>
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<td>Hilmar</td>
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<td>Le Grand</td>
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<td>Planada</td>
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<td>Santa Nella</td>
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<tr>
<td>Winton</td>
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<tr>
<td>Total Unincorporated</td>
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<td>Total County</td>
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</table>

Source: U.S. Census, MCAG Regional Housing Needs Plan *S. Dos Palos/Midway included in Dos Palos SUDP estimate.

<table>
<thead>
<tr>
<th>Table 3.3.3-2</th>
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<tbody>
<tr>
<td><strong>MERCED COUNTY INCOME GROUPS</strong></td>
</tr>
<tr>
<td>Income Groups</td>
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<tr>
<td>Very Low</td>
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<tr>
<td>Low</td>
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<tr>
<td>Moderate</td>
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<tr>
<td>Above Moderate</td>
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</table>

Source: Department of Housing & Community Development *Poverty Threshold for Family of Four
The 2005-2007 American Community Survey 3-Year Estimates (U.S. Census Bureau) has demographic profile estimates available for the City of Merced, but not for the County or the communities of Planada or Le Grand. According to the estimates made in the survey, the median household income in the City of Merced was $35,042 and median family income was $38,443 with a per capita income of $17,088. The survey also estimated that 22.6 percent of families, and 26.9 percent of individuals in the City were living below the poverty level.

Community Character and Cohesion
This issue concerns the human environment, in terms of profiling a community in regards to boundaries and neighborhoods. Local businesses, homes and activity centers play a part in defining a community, as well as demographic characteristics, economic base, locations of community facilities and other relevant characteristics. Consideration of possible impacts of a proposed project is given to increasing or decreasing public access, dividing neighborhoods, separating residences from community facilities, growth, changes in the quality of life, and increasing urbanization or isolation.

The railroad tracks have existed within the community for more than 100 years. The proposed project would not have an adverse long-term effect on the community. There would likely be a positive effect on the community as the double-track project and improvements to signaling and control along with improvements to roads will make it less likely for trains to be delayed, resulting in less waiting and fewer interruptions in the flow of traffic where roads intersect with railroad crossings. This will improve the flow of traffic on local streets within the project area. Additionally, air quality effects of freight and passenger trains near the rail corridor should be reduced as fewer train delays result in less idling of trains and lower adverse air quality emissions. Noise from idling trains would also be reduced.

Relocation
In terms of possible relocations, the Department’s Relocation assistance program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, et seq.). These relocation requirements are embodied in the Caltrans Director’s Title VI Policy Statement. Since no property acquisition will be required in association with this project, relocation policy requirements do not affect this proposed project.

The proposed project would not result in the relocation of any persons living in the area and no homes would become uninhabitable as a result of project implementation. The proposed project would be located next to existing facilities in the existing railroad corridor with no need for land acquisition.
3.3.4 Environmental Justice

3.3.4.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

3.3.5 Public Health and Safety

3.3.5.1 Regulatory Setting

Fire and Police Protection

Fire and police protection services are provided to the project area by the County of Merced and City of Merced. These emergency response personnel also respond to earthquakes, flooding, and other emergency situations.

Hazardous Materials

The principal agency for managing contamination from illegal or accidental releases of hazardous materials and wastes in the State of California is the Department of Toxic Substances Control (DTSC). In addition to enforcing state regulations (California Code of Regulations (CCR) Titles 17, 19, and 22), the DTSC was granted authorization from the federal EPA in 1992 to be the agency responsible for regulating the generation, transport, and disposal of hazardous waste under the authority of the Resource Conservation and Recovery Act (RCRA) in California. Other agencies that may periodically coordinate with DTSC or with the enforcement of regulations that address site activities include: Merced County Office of Emergency Services, City of Merced fire department, the Regional Water Quality Control Board (RWQCB), Central Valley, the State Water Resources Control Board, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), the Department of Transportation, and the California Highway Patrol.

In addition to the above regulatory agencies, BNSF maintains its own internal team to manage hazardous materials and wastes and to respond to train accidents that result in the spill of hazardous or toxic materials into the environment along its rail corridors. Management of hazardous and toxic materials being shipped by rail includes maintaining records of such materials being shipped on each train and standard response procedures and trained personnel to deal with accidental spills when they occur.

*Hazard vs. Risk*

Worker and public health are potentially at risk whenever hazardous materials are present or will be used. It is important to differentiate between the "hazard" of these materials and the acceptability of the "risk" they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to human health and the environment is determined by the probability of exposure to the hazardous substance and the severity of harm such exposure would pose. The likelihood and means of exposure, in addition to the inherent toxicity of a substance, determine the degree of
risk to human health. When the risk of an activity is judged acceptable by society in relation to perceived benefits, the activity is judged to be safe.

Means of Exposure
Exposure to hazardous materials could occur in the following manner: (1) improper handling or use of hazardous materials during the course of business, particularly by untrained personnel; (2) failure of storage containment systems; (3) environmentally unsound treatment/disposal methods; (4) transportation accidents; (5) fire, explosion or other emergencies; or (6) permitted release of hazardous materials by regulatory agencies. The following factors influence the health effects of exposure to hazardous materials:

- the dose to which the person is exposed,
- the frequency of exposure, the duration of exposure,
- the exposure pathway (route by which a chemical enters a person's body), and
- the individual's unique biological susceptibility.

The means of exposure as outlined above would determine the way in which toxic materials are absorbed into the body and, therefore, the bodily organs or systems affected. The major ways in which toxic materials may enter and be absorbed by the body are through the mouth (ingestion), the skin (penetration), or the lungs (inhalation). How a hazardous substance gets into the body and what damage it causes depends on the form or physical properties of the substance (i.e., liquid, solid, gas, dust, fibers, fumes or mist). A chemical may be toxic by one route (inhalation) and not another (ingestion).

Health effects from exposure to toxic materials may be acute or chronic. Acute effects, usually resulting from a single exposure to a toxic material, may include significant immediate damage to organs and systems in the body, and possibly death. Chronic effects, usually resulting from long term exposure to a toxic or hazardous substance, may also include systemic and organ damage, as well as birth defects, genetic damage and cancer.

Hazardous Material Handling
Hazardous materials will routinely be utilized during short-term construction activities. Petroleum products, such as diesel fuel, gasoline, lubricants, etc. are required to support construction equipment in the field, and such materials can be accidentally released to the environment. Ongoing rail operations also involve the use and/or transport of hazardous substances. Table 3.3.5-1 lists federal, state and local regulatory agencies that oversee hazardous substances handling and management, and the statutes and regulations that these agencies administer. The following discussion contains a summary review of regulatory controls pertaining to hazardous materials.
<table>
<thead>
<tr>
<th>Regulatory Agency</th>
<th>Jurisdiction</th>
<th>Authority</th>
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<tbody>
<tr>
<td><strong>FEDERAL AGENCIES</strong></td>
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<tr>
<td>Environmental Protection Agency</td>
<td>Federal</td>
<td>Federal Water Pollution Control Act</td>
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<td>Clean Air Act</td>
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<td>Resource Conservation &amp; Recovery Act (RCRA)</td>
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<td>Comprehensive Environmental Response, Compensation &amp; Liability Act</td>
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<td>Superfund Amendments &amp; Reauthorization Act (SARA)</td>
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<td></td>
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<td>Federal Insecticide, Fungicide &amp; Rodenticide Act</td>
</tr>
<tr>
<td>Occupational Safety and Health Administration</td>
<td>Federal</td>
<td>Occupational Safety and Health Act &amp; CFR 29</td>
</tr>
<tr>
<td><strong>STATE AGENCIES</strong></td>
<td></td>
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</tr>
<tr>
<td>Dept. of Toxic Substances Control</td>
<td>State</td>
<td>California Code of Regulations (CCR) Titles 17, 19, &amp; 22</td>
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<tr>
<td>Dept. of Industrial Relations (CAL-OSHA)</td>
<td>State</td>
<td>California Occupational Safety &amp; Health Act, CCR Title 8</td>
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<tr>
<td>State Water Resources Control Board &amp; Regional Water Quality Control Board</td>
<td>State</td>
<td>Porter-Cologne Water Quality Control Act</td>
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<td></td>
<td>Underground Storage Tank Law</td>
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<td>Health &amp; Welfare Agency</td>
<td>State</td>
<td>Safe Drinking Water &amp; Toxic Enforcement Act</td>
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<tr>
<td>Air Resources Board &amp; Air Pollution Control District</td>
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<td>Air Resources Act</td>
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<td>AB 1807</td>
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<td>Air Toxics “Hot Spots” Information and Assessment Act</td>
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<td>Office of Emergency Services</td>
<td>State</td>
<td>Hazardous Materials Release Response Plans/Inventory Law</td>
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<td>Acutely Hazardous Materials Law</td>
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<tr>
<td>Dept. of Fish and Game</td>
<td>State</td>
<td>Fish and Game Code</td>
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<tr>
<td>Dept. of Food and Agriculture</td>
<td>State</td>
<td>Food and Agriculture Code</td>
</tr>
<tr>
<td>State Fire Marshal</td>
<td>State</td>
<td>Uniform Fire Code, CCR Title 19</td>
</tr>
</tbody>
</table>
Federal

Federal agencies that regulate hazardous and toxic materials include the EPA, the Occupational Safety and Health Administration (OSHA), the Nuclear Regulatory Commission (NRC), the U.S. Department of Transportation (DOT), and the National Institutes of Health (NIH). The following federal laws and guidelines govern hazardous materials. Hazardous materials handling and management associated with the proposed project must comply with applicable regulations as follows:

- Federal Water Pollution Control Act
- Clean Air Act
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Toxic Substances Control Act

Until August 1992, the principal agency at the federal level regulating the generation, transport and disposal of hazardous waste was the EPA under the authority of the RCRA. However, effective August 1, 1992, the California Environmental Protection Agency (Cal-EPA) and the DTSC, were authorized to implement the State's hazardous waste management program in lieu of the EPA.

State

The Cal-EPA and the State Water Resources Control Board generally govern the use of hazardous materials and the management of hazardous waste. The California Highway Patrol (CHP) and the California Department of Transportation (Department) enforce hazardous
substance transportation regulations. Chemical suppliers must comply with all applicable packaging, labeling and shipping regulations.

Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Hazardous Materials Release Response Plans and Inventory Act
- Porter-Cologne Water Quality Control Act
- Tanner Toxics Act

DTSC has primary regulatory responsibility for the management of hazardous materials/substances and the generation, transport and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). DTSC can delegate enforcement to local jurisdictions that enter into agreements with the State agency. State regulations applicable to hazardous materials are indexed agreements in Title 26 of the CCR.

**Regional**
The SJVUAPCD works with the CARB and is responsible for developing and implementing rules and regulations to control the emission of air toxics on a local level. The SJVUAPCD establishes permitting requirements, inspects emission sources, and enforces measures through educational programs and/or fines. The Central Valley Regional Water Quality Control Board controls the discharge of toxic materials in wastewater and from disposal facilities through the issuance of waste discharge requirements and NPDES permits under authority from the State Water Resources Control Board and the federal EPA.

**Local**
The project runs through a portion of Merced County and the City of Merced. The General Plan safety elements address hazardous materials and the risk of upset. The fire departments of these jurisdictions follow state and federal regulations in responding to hazardous-waste related incidents.

**Hazardous Materials Transportation**

**Federal**
The DOT has the regulatory responsibility for the safe transportation of hazardous materials between states and to foreign countries. DOT regulations govern all means of hazardous materials transportation (except for those packages shipped by mail, which are covered by the U.S. Postal Service regulations), including transportation by rail. DOT regulations are contained in the Code of Federal Regulations Title 49.

Under RCRA, the EPA sets standards for transporters of hazardous waste. In turn, the federal government authorized the State of California to carry out EPA regulations concerning transportation of hazardous wastes originating in, or passing through, the State.

**State**
The State of California has adopted regulations for the intrastate movement of hazardous materials. State regulations are indexed in the CCR Title 26.
The CHP has primary responsibility for enforcing federal and State regulations related to the transport of hazardous materials over streets and highways, including hazardous materials labeling and packaging regulations. The CHP also responds to hazardous materials transportation emergencies. The goal of these regulations is to prevent leakage and spills of material in transit and to provide detailed information to clean-up crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance.

Common carriers which transport hazardous materials on roadways are licensed by the CHP under conditions specified in CCR Title 26, Division 14.1 Transportation of Hazardous Material, Section 32000.5, License to Transport Hazardous Materials. This section requires licensing of every motor (common) carrier who transports, for a fee, in excess of 226.8 kilogram (kg) (500 lbs) of hazardous materials at one time, and every carrier, if not for hire, who carries more than 453.6 kg (1,000 lbs) of hazardous materials of the type requiring placards. If the supplier or distributor carries fewer than 453.6 kg (1,000 lbs) of material, a license is not required.

For railroads, there are no restrictions on transportation routes. There are controls on the types of materials which can be transported and on the location of the materials in relation to possible sources of ignition (e.g., the locomotive).

**Hazardous Materials Worker Safety Requirements**

**Federal**
The Federal Occupational Safety and Health Administration (Fed/OSHA) is the agency responsible for ensuring worker safety. Fed/OSHA sets federal standards for implementation of training in the work place, exposure limits, and safety procedures in the handling of hazardous materials (as well as other hazards). Fed/OSHA also establishes criteria by which each state can implement its own health and safety program.

**State**
The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing work place safety regulations within the State. Cal/OSHA standards are often more stringent than federal regulations.

Cal/OSHA regulations concerning the management of hazardous materials include requirements for safety training, availability of safety equipment, hazardous materials exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces the hazard communication program regulations, which include provisions for identifying and labeling hazardous materials, providing employees with Material Safety Data Sheets (MSDSs), describing the hazards of chemicals, and documenting employee training programs.

Both federal and state laws include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. The training must include safe methods for handling hazardous materials, an explanation of MSDSs, use of emergency response equipment, and building emergency response plans and procedures.
Seismic Safety
The Alquist-Priolo Earthquake Fault Zoning Act (1973) was created to prohibit the location of most structures for human occupancy across the traces of active faults, thus lessening the hazard of fault rupture. Cities and counties affected by the zones must regulate certain development within the zones and withhold development permits until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

Hazards as they relate to public safety are of concerns for project design. Of primary importance to the project area is that of seismic hazards. The anticipated Maximum Credible Earthquake (MCE) and location of fault zones drive the design and retrofit of structures. The state, county and local hazards overlays are used to assess the risks of proposed projects. In addition, BNSF has its own strict design standards that account for seismic activity and its effect on rail corridor design and operation.

3.3.5.2 Affected Environment

Fire Protection
The proposed project area is not in a wildland fire area. However, due to the extensive agricultural operations, wide open topography, with few fire breaks and seasonal dry hot conditions, there is the potential for grassland fires in the project area.

The Merced County Fire Department is administered and suppression personnel are provided through a contract with the California Department of Forestry and Fire Protection (CDF). Support personnel are Merced County employees. The Department is a full service fire department providing emergency services to all unincorporated areas of the County through a network of fire stations, personnel, and equipment. The Department’s headquarters is located at 735 Martin Luther King Jr. Way, Merced, California.

Fire protection services for the City of Merced are provided by the Merced Fire Department. Five fire stations are used by the Department.

Fire Station #51 serves as headquarters for the Department. The Fire Department has five full-time employees and no volunteers.

City of Merced Fire Stations

- Station #51 735 Martin Luther King Jr. Way
- Station #52 Merced Airport
- Station #53 800 Loughborough Drive
- Station #54 1425 E. 21st Street
- Station #55 Intersection of Parsons and Silverado

In addition to fire suppression, the City Department provides other services such as emergency medical services, building inspection, fire prevention, building plan review, arson investigation, and public education.

Police Protection
The Merced County Sheriff’s Department provides police protection services throughout the County. The Merced County Sheriff’s main headquarters is located at 700 West 22nd Street,
Merced, California. In the event that the Sheriff’s Department requires assistance or is unable to respond within the unincorporated areas surrounding the cities, local Police Departments dispatch officers as needed, upon request of the Sheriff’s Department. The Sheriff’s Department has full law enforcement authority in the unincorporated areas of Merced County, and the California Highway Patrol also has full traffic enforcement responsibility for State Highways routes in unincorporated areas of the County.

Police protection services are provided to the City of Merced by the Merced Police Department. The City has three police stations. The Department’s main headquarters is the Central Station located at 611 W. 22nd Street, Merced, California 95340. The other two stations are the North Station which is located at 1109 Loughborough Drive and the South Station is located at 470 E. 11th Street.

Seismic Setting
The project area is not within or near an Alquist-Priolo fault zone. The nearest faults of major historical significance to the project alignment are the San Andreas to the west, and the Hayward and Calaveras faults to the northwest; the White Wolf, Garlock, and Sierra Nevada faults to the south, and the Bear Mountain Fault Zone east of and parallel to the eastern border of Merced County. These faults are likely to continue to be the principal source of seismic activity affecting the County of Merced. The "Telsa-Ortigalita Fault" is located in the western part of the County, dissecting the Coast Range in a northwesterly direction. This fault has not been active in historic times.

Ground-shaking can cause damage by itself or through the potential secondary effects such as fire, and dam failure. Ground settlement may also occur in the unconsolidated valley sediments, many of which are saturated with water. These sediments represent the poorest kind of soil condition for resisting seismic shock waves. The changes that occur, such as liquefaction and loss of strength in fine-grained materials, can result in ground cracking, unequal settlement, subsidence and other surface changes.

A great deal of soil compaction and settlement can also result from seismic ground shaking. If the sediments which compact during an earthquake are saturated with water, soil can liquefy and lose its capacity to support structures. The extent of damage ranges from minor displacement to total collapse of a building. Engineering treatment of either the ground or structures or both can sometimes stabilize hazards, such as liquefaction. Although no specific liquefaction hazard areas have been identified in the County, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high water table coincide. The project area is not identified as being within a subsidence area by the County General Plan, however the area does have some potential to experience high groundwater and may be at risk for subsidence.

Flood Inundation Areas
Most floods in Merced County are produced by extended periods of rainfall during the winter months. Dam failure is another source of potential flooding which was addressed separately in the water resources section of this EA. Much of the project area is within the 100-year floodplain.
3.3.6 **Contaminated Sites**

Natural and man-made chemical contamination is an issue facing some areas of the County, especially in the areas of urban development. Ongoing farming operations have chemical storage tanks and vehicles which historically have caused localized contamination problems. Local agricultural experts are certain that pesticide contamination is presently not a problem in the County. They state that chemicals used have a short active life and are quickly broken down by natural processes. Most soil contamination problems that have arisen recently are associated with increased salts and selenium due to agricultural drainage and irrigation activities.

According to the Envirostor database of the State of California Department of Toxic Substance control, there are numerous sites within one mile of the project alignment that have had contamination issues and many are still in the process site remediation. The sites are being remediated under the Leaking Underground Fuel Tank (LUFT) or Spills, Leaks, Investigations and Clean-up (SLIC) programs administered by the State Water Resources Control Board. Contamination ranges from gasoline and diesel fuels and other automotive-related substances, to dry-cleaning chemicals and agricultural bi-products and pesticides which contaminate soils and/or groundwater. None of these sites are on a National priority list and none occur within the proposed project APE.

3.3.7 **Recreation and Section 4(f) Properties**

3.3.7.1 **Regulatory Setting**

The County and City traversed by the proposed project determine the number and types of parks and recreational facilities that are appropriate to serve their respective jurisdictions. They also provide and maintain those facilities. Many recreation areas are located in the vicinity of the proposed project, some of which are close to or adjacent to the existing rail corridor. There are no specific federal or state regulations applicable to recreation. Local regulations related to recreation are set forth in adopted Plans and ordinances of the project proponents.

3.3.7.2 **Affected Environment**

The County of Merced and the City of Merced offer thousands of acres of federal, state, and local recreation facilities to accommodate many types of outdoor leisure activities ranging from sightseeing to boating, picnicking, and camping. Private lands provide open space recreation facilities for public use as well, including golf courses, duck hunting clubs, recreational vehicle campgrounds, and equestrian camps. School districts located throughout the County also offer open space and play areas for public use. These facilities provide both economic and open space benefits to County and City residents. Park sites contain various types of facilities which are based on the needs of the residents served. Picnic areas and playground equipment are usually deemed essential for a park to serve the surrounding neighborhood. Specialized recreational facilities (e.g., tennis courts, swimming pool, ball fields, and private fitness center) also exist. In addition to operating and maintaining park facilities, the County of Merced and City of Merced Parks and Recreation Departments supervise activities such as aquatics, youth sports programs, and after school programs. No recreation facilities occur within the proposed project APE.
The following public parks are near the proposed project alignment:

Courthouse Park and Courthouse Square; McSwain Park; Planada Park (Houlihan Park), Le Grand Community Park; Merced Community Park; Applegate Park, and Joe Herb Park.

Private Recreation facilities in the project area include Merced Golf Club, Burt crane Duck Club, and Castle Duck Club.

There are also several public and private schools near the proposed project alignment that provide recreational opportunities.

3.3.8 Cultural and Historic Resources

3.3.8.1 Regulatory Setting

The National Historic Preservation Act of 1996 (NHPA), as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings structures and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800).

The Archaeological Resources Protection Act (ARPA) applies when a project may involve archaeological resources located on federal or tribal land. ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place. Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the “use” of land from historic properties.

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department of Transportation to inventory state-owned structures in its right-of-way.

3.3.8.2 Affected Environment

The proposed action is the installation of approximately 16.5 miles of a second mainline track within the BNSF Railway Company’s San Joaquin Valley railroad corridor, along the segment extending from Le Grand to Merced, in Merced County, California. This will require grading, installation of fill, sub-base, ballast, new track and new signals, new road crossings, new bridges and new culverts along this “Le Grand” segment of the San Joaquin Valley railroad corridor. A cultural resources survey was conducted during January and February 2009. Based on this field survey and consultation with pertinent parties, the cultural resources consulting firm of CRM TECH compiled a detailed Historic Property and Survey Report (HPSR) of the proposed action from Le Grand to Merced. A copy of this report is included as Appendix 4 of Volume 2, Technical Appendices.
The HPSR was compiled through a process that included field surveys of the project alignment and consultation of various parties and site records reviews. Specifically CRM TECH consulted with the following agencies:

1. Local Government: City and County of Merced Planning Departments
2. Native American Heritage Commission
3. Native American Tribes, Groups and Individuals
4. Local Historical Society/Historic Preservation Group

The following resources were also consulted:

1. National Register of Historic Places
2. California Register of Historical Resources
3. California Historic Resources Inventory
4. California Historical Landmarks
5. California Points of Historical Interest
6. Caltrans Historic Highway Bridge Inventory
7. Archaeological Site Records: Central California Information Center, California State University, Stanislaus
8. Pertinent U.S. Geological Survey topographic maps dating back to 1917 (Planada) and 1918 (Plainsburg)

The HPSR recommends a finding for the proposed action that no historic properties will be affected as a result of project implementation as outlined above and in the detailed project description.

3.3.9 Utilities and Public Services

3.3.9.1 Regulatory Setting

This is considered to be a local jurisdictional environmental issue, such that a regulatory setting section is not required to be included in the EA.

3.3.9.2 Affected Environment

Water Facilities
Water in the project area is provided by the Merced Irrigation District, City of Merced, and local private wells. Groundwater is a primary source of water with surface water as a secondary source. Detailed discussion of water is included in the water resources section of this EA. BNSF does not maintain any water supply facilities within the proposed project APE, but water supply infrastructure does cross the proposed project alignment.

Wastewater Facilities

City of Merced
The City's wastewater treatment facility had a capacity of 10 MGD. A 10 MGD expansion is to be accomplished in two phases of 5 MGD each to bring the plant's total capacity to 20 MGD. This capacity is expected to serve the projected 2020 urban area population of 140,000 as well as new businesses and industries. No wastewater facilities occur within the project APE.
Le Grand
The community of Le Grand appears to have ample sewer capacity with approximately 465 customers. The facility is operating at approximately 65% of capacity and has the capability of serving about 250 more customers. The Le Grand Community Services District recently had a “water distribution system improvements” analysis done to address some supply and distribution problems that the three wells have experienced. The three wells are capable of producing 1,500 gpm, but flow testing on representative water hydrants indicates a flow of 550 to 875 gpm. There are currently 468 residential customers using an average of 360 gallons per day/per household. The District will be seeking financial assistance to fund the necessary improvements. The Le Grand High School District is at 75% of capacity with an enrollment of 432 students.

Planada
The sewer and water facilities for the community of Planada are both nearing capacity. The wastewater facility has previously been in violation of state regulations and as a result no additional sewer hook-ups are being issued, although 35 additional hook-ups are currently available. The Planada Community Services District proposes to upgrade and expand the wastewater collection system and treatment and disposal facility. Presently, the District has a consultant preparing a study to determine the best alternative for increasing the treatment capacity. This report is scheduled for completion by the next regular board meeting in May 2009 and will include rough estimates and recommendations.

It is assumed that the capacity of the treatment facility will be increased by at least 50,000 gallons per day, which will serve about 1,600 additional single-family residential units. The District Board will need to consider how to fund the expansion of the treatment plant (e.g., loans, grants, benefit assessment district, Mello-Roos, etc.). The date when the expansion will be completed is unknown at this time, but is estimated that it could take 2-3 years depending on economic conditions, availability of funding sources etc. A new well is currently being drilled, which when completed, will provide service to 300-400 new customers. According to the engineer for the District, the existing water facilities have adequate capacity to serve the housing allocation, assuming there is no change in the condition or acceptability of the existing water facilities, and the developers construct the necessary pipeline extensions. The current enrollment of the Planada school district is 834 students, which represents approximately 69% of capacity. High school students living in Planada attend Le Grand schools.

Solid Waste
The proposed project area solid waste disposal needs are served by the City of Merced Department of Public Works and Winton Disposal/Waste Management. The Landfills used are the Highway 59 Landfill at 6040 N. Highway 59 in Merced and the Billy Wright Landfill at 17173 South Billy Wright Road in Los Banos. The Permitted capacity in tons per day for the Highway 59 landfill is 1,500 tons per day and for the Billy Wright Landfill is 800 tons per day. The total capacity of the Highway 59 Landfill is 30,012,352 cubic yards with 2,924,516 cubic yards capacity remaining. The total capacity of the Billy Wright Landfill is 3,650,000 cubic yards with 1,095,750 cubic yards remaining. The closure date for the Highway 59 Landfill is 2030, and for the Billy Wright Landfill is 2010.

Public Schools
According to the Merced Genera Plan, there are 20 school districts within the County of Merced including 85 schools serving Kindergarten through Grade 12 (K-12). Additionally, the Merced
County Office of Education operates 6 K-12 schools, including Juvenile Hall, 22 private schools also serve students county-wide, employing 163 teachers. Community colleges, universities, and institutes located within Merced County include: California State University of California, Merced and Merced College.

The Merced County Enterprise EIR, March 2008, lists the following public school districts in the project area:

Merced City Elementary School District (1,563 students)
Merced Union High School District (9,240 students)
Planada Elementary School District (886 students)
Weaver Union Elementary School District (1,562 students)
Le Grand Union Elementary School District (443 students)
Le Grand Union High School District (609 students)

**Stormwater**
All of the cities and the larger unincorporated communities in Merced County have stormwater drainage facilities. Other small, unincorporated, communities drain to retention basins and detention basins with a natural drain or into an irrigation district canal.

The City of Merced requires the construction of stormwater percolation/detention basins with new development. Percolation basins are designed to collect stormwater and filter it before it is absorbed into the soil and reaches the groundwater table. Detention basins are designed to temporarily collect runoff so that flow can be controlled into canals and streams which have limited capacity. The disposal system is mainly composed of Merced Irrigation District facilities, including water distribution canals and laterals and drains, and of natural channels that traverse the area.

**Electricity**
Electricity in the project area is supplied by both Pacific Gas and Electric (PG&E) and the Merced Irrigation District. Existing trunk and transmission facilities are adequate to meet present and projected demand.

**Natural Gas**
PG&E provides natural gas throughout Merced County.

**Telephone**
AT&T (formerly Pacific Bell) serves Merced County with a telecommunications network.

**Cellular Service**
US Sprint supplies 100% digital fiber to Merced. Cellular telephone service is provided by Cellular One, GTE, and Pacific Bell Wireless.
4.0 ENVIRONMENTAL CONSEQUENCES

4.1 PHYSICAL RESOURCES

4.1.1 Air Quality

4.1.1.1 Impacts

Alternative 1 (Preferred Alternative)

CEQA Thresholds of Significance

CEQA requires that each Lead Agency identify significant effects on the environment and to adopt measurable thresholds to evaluate/mitigate an impact where feasible. Ozone and PM-10 are the two non-attainment pollutants in the air basin that merit critical consideration relative to project-related air quality impacts. While any generation of air pollution is of concern, precursors to ozone and/or PM-10 generation have the most stringent thresholds. For projects within the SJVAB, the SJVUAPCD, in its "Guide for Assessing and Mitigating Air Quality Impacts," or GAMAQI (rev. 2002), recommends use of the following thresholds for project operations:

- ROG  10 tons/year
- NOx  10 tons/year
- CO violation of 1- or 8-hour standard

The proposed project is considered air quality positive in improving train service and reducing idling/congestion. The only anticipated potential impact would derive from project construction. Construction activities are treated somewhat differently under APCD guidelines. Unless construction projects are very large or they extend over several years, implementation of recommended mitigation measures in the GAMAQI document is presumed to reduce air quality impacts to individually less-than-significant levels.

In order to mitigate cumulative air quality impacts, the SJVUAPCD has developed Rule 9510 (Indirect Source Review, or ISR). Rule 9510 requires that emissions from construction equipment greater than 50 hp must be reduced by 20 percent for NOx and 45 percent for PM-10 compared to comparable emissions from the statewide average equipment fleet. If the construction contractor is unable to fully document this level of reduction, payment of an in-lieu fee may be made to fund other emissions reduction programs within the Central Valley (purchase cleaner buses, cleaner farm equipment, etc.). Required compliance with Rule 9510 (either through on-site controls or payment of a mitigation fee) will reduce cumulative air quality impacts to a less-than-significant level.

Federal Thresholds

As noted above, NEPA guidelines do not encourage designation of impacts as (in)significant. However, Section 176(c) of the Clean Air Act Amendments of 1990 prohibit federal participation in projects that would impede implementation of the state implementation plan (SIP) for federal non-attainment pollutants. “Participation” includes project funding as well as granting any federal permits. If the project-related emissions from construction and operations are less than specified “de minimis” levels, no further SIP consistency demonstration is required. The San Joaquin Valley is designated as a “serious” non-attainment area for the federal 8-hour ozone
standard. The basin is a non-attainment area for PM-2.5, and a maintenance area for PM-10. Based upon these designations, the following emissions levels are presumed evidence of SIP conformity:

<table>
<thead>
<tr>
<th>Emission Type</th>
<th>Emissions Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC/ROG</td>
<td>50 tons/year</td>
</tr>
<tr>
<td>NOx</td>
<td>50 tons/year</td>
</tr>
<tr>
<td>PM-2.5</td>
<td>100 tons/year</td>
</tr>
<tr>
<td>PM-10</td>
<td>100 tons/year</td>
</tr>
</tbody>
</table>

The air basin has requested a “bump up” from a “serious” to a “severe” non-attainment designation for ozone. If the bump-up is approved, the de minimis thresholds for VOC and NOx will decrease to 25 tons per year.

**Construction Activity Impacts**

Dust is typically the primary concern during construction of new infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions.” Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). These parameters are not known with any reasonable certainty prior to project development and may change from day to day. Any assignment of specific parameters to an unknown future date is speculative and conjectural.

Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal “default” factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values. This assumption may or may not be totally applicable to site-specific conditions on the proposed project site. As noted previously, emissions estimation for project-specific fugitive dust sources is therefore characterized by a considerable degree of imprecision.

Average daily PM-10 emissions during site grading and other disturbance are estimated in EPA’s emission factor handbook (AP-42) to be 26.4 pounds/acre. Use of enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. Daily emissions with use of reasonably available control measures (RACMs) for PM-10 can reduce emission levels to around ten (10) pounds per acre per day. With the use of best available control measures (BACMs) the California Air Resources Board URBEMIS2007 computer model predicts that emissions can be reduced to 1-2 pounds per acre per day.

Of the total 9-12 months estimated for project construction, grading and roadbed construction will require approximately 3-4 months. Simultaneous with roadbed preparation other construction activities which include placement of drainage pipes, construction of crossovers, turn-outs and mainline transitions and installation of eight new bridges will occur. Secondary support facility construction will require 5-7 months with some activity concurrent with roadbed installation. The final stage of construction involves the laying of new track for 2-3 months. There is estimated to be an average of 100 construction workers employed during these activities. Estimated round trip drive distance is 40 miles (20 miles one way).
The average disturbance width for a double track project is 25 feet. For a 16.43 mile project, a total of 49.8 acres would be a potential source area for fugitive dust generation. If ten percent were in active construction on any given day, 5.0 acres would be under daily simultaneous heavy construction at some point. With the use of RACMs, daily PM-10 emissions during site grading would be 50 pounds per day (5.0 X 10.0 = 50 lb/day). With the use of Best Available Control Measures (BACM) required by the SJVUAPCD Regulation VIII, daily PM-10 emissions can be further reduced. Because of the PM-10 non-attainment status of the air basin, construction activity dust emissions are considered to have a cumulative impact requiring enhanced mitigation even if individual thresholds are not exceeded.

Current research in particulate-exposure health suggests that the most adverse effects derive from ultra-small diameter particulate matter comprised of chemically reactive pollutants such as sulfates, nitrates or organic material, called “PM-2.5”. A limited amount of construction activity particulate matter is in the PM-2.5 range. PM-2.5 emissions are estimated by the California ARB to comprise 20.8 percent of PM-10. Other studies have shown that the fugitive dust fraction of PM-2.5 is closer to 10 percent. With mitigation, fugitive PM-2.5 emissions during roadbed construction will be reduced to about ten pounds per day assuming the higher PM-10 fraction.

Exhaust emissions will result from on and off-site heavy equipment. The types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. Equipment exhaust emissions were calculated presuming that roadbed installation will excavation of 22,000 cubic yards (CY) of earth and the import or 45,000 CY of sub ballast rock. Haul trucks were assumed to have a 20 cubic yard capacity and a round trip distance of 20 miles for haul trucks was assumed. The URBEMIS2007 computer model was used to calculate emissions from the following prototype construction equipment fleet with the above grading information and employee commute data.

| Track-bed Preparation | 2 Graders  
|                       | 6 Compactors 
|                       | 4 Rollers 
|                       | 2 Dozers 
|                       | 2 Backhoes 
|                       | 2 Water Trucks 
| Ancillary Facilities  | 2 Concrete Saws 
|                       | 1 Grader 
|                       | 2 Dozers 
|                       | 2 Signal Boards 
|                       | 4 Backhoes 
|                       | 2 Trenchers 
|                       | 2 Water Trucks 
| Track Installation    | 2 Cranes 
|                       | 2 Forklifts 
|                       | 2 Generators 
|                       | 4 Welders 

Construction activity emissions were calculated for trackbed preparation in 2012. Although ancillary construction (drainage, bridges, crossings, etc.) will occur concurrently with roadbed preparation, the two activities were split to facilitate abstraction of the emissions data. The track installation activity relies on train haul delivery of materials. Because URBEMIS cannot
calculate rail haul or associated train engine idle, these calculations were obtained independently as shown in Table 4.1.1.-1 below:

### Table 4.1.1-1
CONSTRUCTION ACTIVITY EMISSIONS (tons/year)

<table>
<thead>
<tr>
<th>Activity</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>SO₂</th>
<th>Exh. PM-10</th>
<th>Exh. PM-2.5</th>
<th>CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trackbed preparation (16 weeks)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mitigation</td>
<td>0.4</td>
<td>3.5</td>
<td>2.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>422.7</td>
</tr>
<tr>
<td>With Mitigation</td>
<td>0.4</td>
<td>2.6</td>
<td>2.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>422.7</td>
</tr>
<tr>
<td>Percent Reduced</td>
<td>0%</td>
<td>26%</td>
<td>0%</td>
<td>0%</td>
<td>49%</td>
<td>49%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Section 176 (c) de minimus</strong></td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>n/a</td>
<td>100</td>
<td>100</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Ancillary Construction (24 weeks)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mitigation</td>
<td>0.6</td>
<td>4.5</td>
<td>3.2</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>561.7</td>
</tr>
<tr>
<td>With Mitigation</td>
<td>0.6</td>
<td>3.4</td>
<td>3.2</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>561.7</td>
</tr>
<tr>
<td>Percent Reduced</td>
<td>0%</td>
<td>25%</td>
<td>0%</td>
<td>0%</td>
<td>52%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Track Installation (12 weeks)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mitigation</td>
<td>0.2</td>
<td>2.1</td>
<td>0.9</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>825.6</td>
</tr>
<tr>
<td>With Mitigation</td>
<td>0.2</td>
<td>1.3</td>
<td>0.9</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>825.6</td>
</tr>
<tr>
<td>Percent Reduced</td>
<td>0%</td>
<td>40%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Annual Total (Non Trackbed)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mitigation</td>
<td>0.8</td>
<td>6.6</td>
<td>4.1</td>
<td>0.0</td>
<td>0.3</td>
<td>0.3</td>
<td>825.6</td>
</tr>
<tr>
<td>With Mitigation</td>
<td>0.8</td>
<td>5.3</td>
<td>3.8</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>825.6</td>
</tr>
<tr>
<td>Percent Reduced</td>
<td>0%</td>
<td>29%</td>
<td>0%</td>
<td>0%</td>
<td>41%</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total Project (non-rail)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mitigation</td>
<td>1.2</td>
<td>10.1</td>
<td>6.0</td>
<td>0.0</td>
<td>0.5</td>
<td>0.5</td>
<td>1,248.4</td>
</tr>
<tr>
<td>With Mitigation</td>
<td>1.2</td>
<td>7.2</td>
<td>6.0</td>
<td>0.0</td>
<td>0.3</td>
<td>0.2</td>
<td>1,248.4</td>
</tr>
<tr>
<td>Percent Reduced</td>
<td>0%</td>
<td>28%</td>
<td>0%</td>
<td>0%</td>
<td>49%</td>
<td>49%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Section 176 (c) de minimus</strong></td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>n/a</td>
<td>100</td>
<td>100</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Rail Haul Delivery Track and Ballast and Engine Idle (12 weeks)</strong></td>
<td>0.0</td>
<td>1.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: URBEMIS2007 Model, Output in Appendix  
*ARB Area Source Emissions Inventory
CEQA Impact
With the application of available mitigation (use of Tier 3-rated diesel equipment and use of diesel particulate filters), peak annual NOx emissions will not exceed the APCD's GAMAQI threshold of 10 tons per year. It should further be noted that this threshold is designed for evaluating operational emissions and not from construction. For construction, the critical determinant is whether all reasonably available control will be applied.

With the use of low-NOx equipment, the total project NOx emissions would be reduced in excess of the requisite Rule 9510 goal of 20 percent of NOx compared to the fleetwide average. The actual anticipated NOx reduction from off-road equipment would be higher than 20 percent, but no NOx “credit” was assigned to on-road travel for fill and other construction materials. With such a level of control, a finding of less-than-significant air quality impact from NOx emissions can be supported.

NEPA Impact
The project, within the NEPA definition of intensity and context, represents a short-term impact in order to achieve a long-term air quality benefit. Its limited intensity is seen in comparing the total project emissions to the Section 176(c) SIP conformity de minimis thresholds. NOx emissions would be well below the 50 ton per year “serious” non-attainment area threshold. Even with a bump-up to “severe”, NOx emissions would still be far less than the 25 ton per year de minimis level. With a limited level of impact, with stringent mitigation requirements under APCD Regulation VIII (dust control) and Rule 9510 (indirect source review), and with a long-term air quality benefit of double-tracks, construction activity air quality impacts are not considered substantially adverse within a NEPA context.

Emissions estimates and controls were based upon a generic equipment fleet. A more precise quantification of emissions and mitigation will be required when a construction contractor and his/her equipment fleet is selected. An air impact assessment (AIA) form must be submitted, including a construction schedule and fleet detail form, prior to obtaining grading permits. The required APCD forms are attached in the appendix indicating the high degree of detail required to confirm the adequacy of mitigation to meet Rule 9510 requirements. The dust control requirements under Regulation VIII are similarly extensive. The applicable requirements from existing dust control rules are similarly included in the appendix.

Naturally Occurring Asbestos
Naturally occurring asbestos (NOA) is a concern in some parts of California where serpentine rock formations contain high fractions of asbestos-containing materials. However, that concern revolves around the subsequent abrasion and release of such material from roadways paving with NOA aggregates. There is negligible re-suspension of such material from a railroad track bed because there is no mechanical wearing process. Even if the track bed ballast rock contained elevated levels of NOA, there is no mechanism to cause an airborne release.

Operational Impacts

Idle Reduction
The only operational difference would be to reduce idling times on sidings waiting for the single track to clear. Generally, freight trains yield to passenger trains. There are approximately 40 freight trains using this track segment that may experience delay. For purposes of
calculations, 50 percent of four-engine freight trains were assumed delayed for 15 minutes each. The daily delay "penalty" because of track conflict is:

\[
4 \text{ engines} \times 20 \text{ freight trains delayed} \times 15 \text{ minutes/delay}
\]

\[
= 1,200 \text{ engine-minutes of idling}
\]

Idling train engines are not substantial polluters. Diesel engines emit mainly NOx and NOx generation depends upon oxidation temperature. At "cool" idle, NOx generation rates are low. The emissions "savings" from a reduction of 1,200 idling minutes were calculated using EPA factors for Tier 1 engines and are as follows (lb/day):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>1.1</td>
</tr>
<tr>
<td>ROG</td>
<td>0.4</td>
</tr>
<tr>
<td>NOx</td>
<td>5.9</td>
</tr>
<tr>
<td>SOx</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>PM-10</td>
<td>&lt;0.3</td>
</tr>
</tbody>
</table>

These reduced emissions are not necessarily considered substantial, but any reductions of ozone precursor emissions (NOx and ROG) in a non-attainment airshed is positive.

**PM-2.5 and PM-10 Hot Spot Potential**

Transportation projects may cause increased levels of particulate emissions at locations where a significant number of diesel vehicles congregate at a single location. A qualitative “hot spot” analysis is required for “projects of air quality concern” (POAQC) located in non-attainment areas if FHWA or FTA funding or approval will occur. The guidelines that characterizes a POAQC is a facility that serves 10,000 diesel-fueled trucks (or equivalent) per day. The proposed project would occur on a track segment carrying 50 trains per day. Diesel combustion emissions would be slightly reduced by substantial elimination of idling on sidings. The proposed project is not a POAQC and thus does not require a PM-10/PM-2.5 “hot spot” analysis.

**Microscale CO Hot-Spot Analysis**

Transportation projects are required to demonstrate that they will not create new CO “hot spots” or worsen existing violations. Analysis guidance documents are focused almost exclusively on roadway CO emissions. The proposed project will not increase on-road congestion, and may reduce vehicular delays at locations where idling trains currently block on-road traffic. A micro-scale CO impact analysis is not required for this project.

**Cumulative Impacts**

The proposed double-track may promote an increase in freight and passenger movement by improved rail schedule reliability. However, transport by rail is considered more pollution-efficient than on-road movement. Rail would generally not induce growth of goods/passenger movement, but only accommodate an existing possible commercial demand. Cumulative air quality impacts are considered less-than-significant.
**Greenhouse Gas Emissions**

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth’s atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. The Governor’s Office of Planning and Research is in the process of developing CEQA significance thresholds for GHG emissions but thresholds have yet to be established. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California’s reputation as a “national and international leader on energy conservation and environmental stewardship.” It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate “early action” control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California’s GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, over the next 13 years (by 2020).
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Additionally, through the California Climate Registry (CCAR), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

**Impacts - Greenhouse Gas Emissions**

Short-term GHG emissions will also derive from construction activities.

Worst-case construction emissions were assumed to occur in a year where trackbed preparation, ancillary construction and project installation were to occur. The URBEMIS2007
computer model predicts that a peak activity day will generate the following CO₂ emissions from a combination of these activities:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Emissions (tons/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trackbed Preparation</td>
<td>423</td>
</tr>
<tr>
<td>Ancillary Construction</td>
<td>561</td>
</tr>
<tr>
<td>Track Installation</td>
<td>264</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,248</strong></td>
</tr>
</tbody>
</table>

For purposes of analysis, it was assumed that non-CO₂ GHG emissions are negligible, and that the total project construction GHG burden can be characterized 1,248 tons/year that all the above activities occur in a single year.

In 2004, the statewide annual GHG inventory in CO₂-equivalent levels (including all non-CO₂ gases weighted by their thermal absorption potential) was 492,000,000 metric tons (541,000,000 short tons). The worst-case project combined construction impact of 1,248 tons/year represents approximately 0.0002 percent of the statewide burden.

There are no adopted thresholds of GHG emissions significance. However, GHG emissions are implicated in the acceleration of global warming experienced in the last several decades. Climatic impacts are global in scale. Any project-specific contribution to the global issue is miniscule. In the absence of any definitive thresholds of significance, the GHG emphasis on a project-specific level is to reduce energy consumption and reduce vehicular travel as much as is reasonably feasible. Unless there is a greater shift to clean energy such as solar, hydroelectric, wind, nuclear, etc., no substantial reduction in GHG is likely attainable by conventional methods except through energy conservation.

**Alternative 2**

Alternative 2 proposes to avoid installing a second track at the four channel crossings, Mariposa Creek (Milepost 1042.25), Owens Creek (Milepost 1045.90) and Mileposts 1049.30 and 1052.94. From a short-term standpoint, these changes would reduce overall emissions from construction activities by eliminating about two miles of construction activities, assuming about ½ mile at each milepost location would be required to install cross-overs in a safe manner. Under this alternative, construction activity emissions for the Le Grand segment would be reduced by about 15% overall. These short-term emissions would not be substantial and would conform with the SIP. Mitigation measures outlined for the preferred project would still be required.

The long-term beneficial effect on air emissions would continue, but would not be as positive as installing the second main track along the whole alignment as proposed by the preferred alternative. The ability for trains to traverse the whole segment, as envisioned by the preferred project, on two tracks reduces the potential for trains to be stopped due to other traffic on the single track segment. The overall flow of train traffic along the San Joaquin Valley corridor under Alternative 2 will be enhanced, but to a lesser degree. Thus, the long-term benefits to air quality will be less under Alternative 2.
No Action Alternative

The no project alternative would continue the existing pattern of trains forced onto sidings because of track demand conflicts. Such a pattern delays train schedules, creates safety issues as trains change speeds where they enter or exit the mainline, blocks surface streets, emits excess air pollutants from idling engines and creates noise impacts at idling engine locations. The no project alternative is considered less environmentally superior than the proposed project.

4.1.1.2 Avoidance, Minimization and/or Mitigation Measures

Construction and operation of the double-track system will have less-than-significant. Short-term construction impacts will be less than significant. SJVUAPCD in Regulation VIII requires that Best Available Control Measures (BACMs) be used where feasible. Recommended construction activity mitigation including BACM’s includes:

4.1.1-1 Dust Control

- Apply soil stabilizers to inactive areas.
- Prepare a high wind dust control plan and implement plan elements and terminate soil disturbance when winds exceed 25 mph.
- Stabilize previously disturbed areas if subsequent construction is delayed.
- Water exposed surfaces and haul roads 3 times/day.
- Cover all stock piles with tarps.
- Replace ground cover in disturbed areas as soon as feasible.
- Reduce speeds on unpaved roads to less than 15 mph.

4.1.1-2 Exhaust Emissions

- Require 90-day low-NOx tune-ups for off-road equipment.
- Limit allowable idling to 5 minutes for trucks and heavy equipment.
- Utilize equipment whose engines are equipped with diesel oxidation catalysts if available.

SJVUAPCD has developed an Indirect Source Review (ISR) regulation designed to mitigate cumulative air quality impacts from development, including construction. ISR rules for construction require use of enhanced construction equipment technology, or the payment of an in-lieu mitigation fee. Preliminary calculations have demonstrated the feasibility of reducing NOx by 20% and PM-10 by 45% compared to the fleet-wide average. An AIA form must be submitted to the SJVUAPCD to verify that the project-specific equipment fleet will meet the above heightened efficiency requirements.

4.1.2 Water Resources

4.1.2.1 Impacts

Alternative 1 (Preferred Alternative)
The proposed project is the construction of a second main line track and associated facilities. The project includes short- or long-term activities that will consume substantial volumes of water. During construction, it is estimated that between 18,925 and 37,850 liters (5,000 to 10,000 gallons) of water will be required per day to control the generation of fugitive dust, with
more water being required during track construction. Assuming 180 days of ground disturbing activities along the track alignment and 10,000 gallons of water used per day to control fugitive dust, including construction of the various bridges, a total of 6,784 cubic meters (5.5 acre-feet) of water could be consumed. Recycled water may be available along the alignment which can eliminate any demand on local groundwater or other potable water supplies. Mitigation is required to ensure that recycled water is used where it is available. Based on the small volume of water and utilization of recycled water, where available, the impact on groundwater supplies is not forecast to be a substantial adverse impact. The project alignment does not lie over a Sole Source Aquifer as described in the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.).

Over the long-term, the preferred alternative will not create a demand for water resources because the alignment is allowed to revegetate with local native plants and weed species that are adapted to the local climate. No irrigation is proposed for this segment of the alignment and no long-term adverse effect is forecast to result from implementing the preferred alternative.

In general, the majority of project alignment is topographically compatible with all of the proposed project facilities outlined in the Project Description. For example, the topography of the track alignment is essentially flat and drainage from the BNSF right-of-way (ROW) is already established along its whole length through the segment. The new track will occupy a portion of this ROW, but it is not forecast to substantially increase runoff or cause any major modifications in discharge of runoff from the ROW. This is because the new track will continue to absorb rainfall similar to the existing soil along the easement.

Local effects on drainage would result primarily from the construction activities associated with the proposed action, such as removal of vegetative cover, grading, excavating, and re-contouring the soils. These activities could alter soil profiles and the local topography. However, no substantial or long-term adverse effects to surface or groundwater hydrology is anticipated to result from project implementation.

The proposed project will alter the existing drainage pattern in portions of the project alignment, but these alterations will not cause major changes in the direction or volume of flow. The amount of any increase in runoff, is not forecast to be significantly increased because permeability remains relatively the same where the new track replaces the compacted ground within the BNSF right-of-way. In addition, all drainage culverts or boxes will be extended beneath the new track and will be installed at the same or comparable size as the existing culverts. Consequently, no substantial effect to downstream surface water hydrology is anticipated.

The amount of runoff from the BNSF ROW will not be substantially increased, as the area adjacent to the existing tracks will be replaced by the new track which will continue to absorb precipitation in a manner similar to the existing compacted soil. A new track is not impervious, and in fact, with the ballast underneath the rail and ties it can absorb precipitation better than the existing compacted right-of-way. Runoff from the ROW will continue to be collected and discharged to the same drainage system as presently used along the ROW. The Project Description shows the work proposed at bridges and culverts along the alignment.

Grade crossing improvements may alter current drainage patterns in some locations. Flow can be managed on site-by-site basis by implementation of a number of mitigation measures which
are outlined below. Such measures include identification and study of flood hazards and inundation areas, and the utilization of mitigation technology that is appropriate to each grade crossing setting based on standard civil engineering drainage solutions. With the implementation of the flood hazard mitigation measures for each element of the project, the potential effects related to area hydrology constraints will be reduced and would not be considered substantial or adverse.

Implementation of the proposed project will place some of the proposed facilities in areas exposed to 100-year flood hazards, as outlined in the existing setting discussion above. Portions of the existing railroad track and facilities already lie within the 100-year flood hazard area as identified within the respective jurisdictions’ General Plans. The new second track will be similarly exposed. However, the new track is not forecast to impede or redirect flood flows in any different manner than the existing environmental setting. At certain locations, adverse modifications to the physical environment that would impede or redirect flood flows could occur, particularly at bridges. Design measures will mitigate impacts.

The proposed project does not have facilities that will expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Based on all geologic studies and maps for the region, the location of the BNSF alignment is sufficiently distant from water such that seiche or tsunami are unlikely to affect the new track.

**Construction**

The process of constructing the second main track would result in construction activities that have a potential to cause erosion, sedimentation and accidental release of pollutants that could violate water quality standards. A Storm Water Pollution Prevention Plan (SWPPP) has been compiled that will be applicable for all project activities. The goal of this SWPPP is to protect overall water quality during the installation of the new rail and support infrastructure. Construction activities could potentially affect water quality by the storage and handling of hazardous materials, as well as, soil erosion or sedimentation. With the implementation of best management practices (BMPs) outlined in the SWPPP, the potential for adverse water quality impacts due to the transport of hazardous materials, erosion or sedimentation to receiving waters can be controlled to a less than substantial level. A performance standard for reducing pollutants in stormwater runoff is included in the mitigation below to ensure that local water quality standards are protected.

The California State Water Resources Control Board (SWRCB) has established a statewide construction General Permit applicable to the project. Under this general permit, it is the responsibility of the project proponent to submit a Notice of Intent (NOI) to the SWRCB, prepare and implement the SWPPP, and revise the SWPPP as necessary as construction conditions change. The BMPs must include both structural and non-structural measures, where applicable, and the assignment of long-term maintenance responsibilities. The Central Valley Regional Water Quality Control Board also has responsibility for overseeing compliance with the General Permit. These agencies oversee the implementation of the SWPPP and ensure that the BMPs are fully implemented and effective through routine monitoring and enforcement actions.
Post Development

Development of the proposed project will not alter the permanent activities associated with the project area (rail and surface transportation activities), but it will alter their configuration by adding a second parallel track 15 feet on center. The Central Valley and Regional Water Quality Control Board and the Merced County Flood Control and Water Conservation District have established municipal stormwater discharge standards for the surface runoff along the project alignment and the stormwater discharged from the modified track alignment must meet these discharge standards in order to ensure that significant water quality degradation will not occur. Mitigation is provided below to ensure that future surface water runoff from the project alignment does not cause substantial water quality degradation from stormwater discharged by BNSF facilities over the long-term.

Mitigation is described in this section of this EA which will reduce to a level of insignificance or entirely avoid the potentially significant surface water quality and groundwater quality degradation impacts of the project.

The proposed project may substantially alter the existing drainage pattern of the project site in a manner which could result in substantial erosion or siltation onsite. Portions of the project alignment are moderately susceptible to erosion. Positive drainage will be provided and runoff shall be controlled to mitigate the potential for erosion. In general, the majority of project alignment is topographically compatible with all of the proposed project facilities outlined in the Project Description. For example, the topography of the track alignment is essentially flat and drainage from the BNSF right-of-way (ROW) is already established along its length. The new track will occupy a portion of this ROW, but it is not forecast to substantially increase runoff or cause any major modifications in discharge of runoff from the ROW. This is because the new track will continue to absorb rainfall similar to the existing soil along the easement.

Local effects on drainage would result primarily from the construction activities associated with the proposed action, such as grading, excavating, and re-contouring the soils. These activities could alter soil profiles and the local topography and create a potential for significant erosion. To ensure that significant erosion is not created during construction and operation of future specific projects, best management practices are incorporated into the SWPPP to control such water related erosion. These BMPs will ensure that discharges of surface runoff will not exceed the erosive velocity for affected areas and that no unstable slopes are installed as part of future projects.

During construction, removal of vegetative cover and disturbance of existing topography by the exposure of graded area could increase the potential for erosion by wind and water. Appropriate watering for fugitive dust controls and water erosion control measures to address non-point source stormwater runoff and related water pollution will be necessary during construction of specific Second Main Track facilities in previously undeveloped areas. After construction, soils underlying facilities and pavements will not be subject to erosion. With implementation of all SWPPP measures, erosion and drainage alteration impacts attributable to the Project will be reduced to a less than adverse impact level.

The proposed project will alter the existing drainage pattern in portions of the project alignment, but these alterations will not cause major changes in the direction or volume of flow. The amount of any increase in runoff is not forecast to be significantly increased because permeability remains relatively the same where the new track replaces the compacted ground
within the BNSF right-of-way. In addition, all drainage culverts or boxes will be extended beneath the new track and will be installed at the same or comparable size as the existing culverts.

As discussed immediately above, the amount of runoff from the BNSF ROW will not be substantially increased, as the area adjacent to the existing tracks will be replaced by the new track which will continue to absorb precipitation in a manner similar to the existing compacted soil. A new track is not impervious, and in fact, with the ballast underneath the rail and ties it can absorb precipitation better than the existing compacted right-of-way. Runoff from the ROW will continue to be collected and discharged to the same drainage system as presently used along the ROW.

Grade crossing improvements may alter current drainage patterns in some locations. Flow can be managed on site-by-site basis by implementation of a number of mitigation measures which are outlined below. Such measures include the utilization of mitigation technology that is appropriate to each grade crossing setting based on standard civil engineering drainage solutions. With the implementation of mitigation measures for each element of the project, the potential impacts related to drainage constraints will be reduced and can be classified as less than adverse.

Regarding water quality, the strategy developed as part of the SWPPP BMPs is to incorporate a “Treatment Train” concept. This is a series of BMPs used in conjunction with one another to “treat” runoff. Each BMP has been chosen for its ability to remove or limit erosion, to keep soil on-site, and sediment control to reduce the impact of sedimentation. With the implementation of the BMPs in the future as each portion of the project is constructed, the potential impacts related to area hydrology and drainage constraints will be reduced and can be classified as less than adverse.

The proposed project is the construction of a second main track, and previous sections of this subchapter indicate that there will be activities with a potential to cause degradation of water quality. A SWPPP has already been prepared for this project and will be implemented for all project activities. With the implementation of the BMPs outlined in this construction water quality control Plan, the potential for the degradation of water quality will be controlled through design measures to a less than substantial adverse impact.

**Alternative 2**
Alternative 2 would result in essentially the same, or slightly fewer, water resources impacts than those associated with the preferred alternative. At the channel crossings the removal of the bridges would eliminate any potential for degradation of flows within the channels, as several crossings over jurisdictional waters would be avoided under this alternative. The total construction area would be reduced by about 10%-15% under this alternative which would result in less area exposed to potential short- and long-term degradation of surface water quality. Overall the BMPs and other mitigation measures required to control potential for water quality degradation would be just as effective for Alternative 2 as for the preferred alternative. The net effect of this alternative is to expose less area to potential erosion and sedimentation and associated water quality degradation. Overall costs of mitigation would also be reduced (less area in which BMPs must be implemented), but the potential effect on all surface flows, except in the channels beneath the four bridges, would be comparable to the preferred alternative.
No-Action Alternative
The no-action alternative would result in no impacts to water resources. Water resources conditions would remain as they are today. No short or long term impacts to water resources would occur.

4.1.2.2 Avoidance, Minimization and/or Mitigation Measures

Construction and operation of the facilities identified in the proposed project have the potential to result in significant adverse water resource effects if not mitigated. Mitigation measures are identified in this sub-section to reduce potential effects from the construction and operation of the project, its associated infrastructure improvements, and the on-going operation of the rail line to a less than substantial level. No substantial adverse modifications in drainage channels will result from implementing the proposed project with mitigation. Because the project minimizes increases in runoff no significant cumulative water resource or flood effects are forecast to result from implementing the proposed project.

The following measure shall apply to activities proposed within the 100-year flood hazard areas.

4.1.2-1 Where new track facilities are constructed in a flood zone, the facility will be installed to convey flood flows or hardened against flood related impacts. Bridge structures shall safely pass the 100-year design storm for the watershed with adequate freeboard. Storm flows downstream of new track facilities shall convey flows in essentially the same manner as those leaving the present BNSF alignment.

The following measure shall apply to project components that generate short- and long-term demand for water resources.

4.1.2-2 Where reclaimed water is reasonably available (short-haul trucking from a WWTP or from a recycled water pipeline), it shall be used in place of potable water for construction activities and for any areas permanently irrigated in the future along the second track alignment.

These measures are sufficient to reduce potential hydrology and floodplain effects to a less than significant level. Their implementation will also not cause substantial additional hydrology or floodplain effects not already evaluated in this Subchapter of the EA.

4.1.2-3 The Storm Water Pollution Prevention Plan (SWPPP) prepared for the Le Grand double track segment shall be implemented for the proposed project. The best management practices (BMPs) identified in the Plan, or measures determined equivalent by a qualified engineer, will be used for each site to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality including solid waste and require that any spill be cleaned-up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. The portion of the SWPPP that addresses erosion and related sediment discharge shall specify the percentage of pollutant removal that must be achieved to meet the current discharge standards established by the Regional Board for each area. At a minimum, BMPs shall achieve removal of sediment and other pollutants from disturbed sites to the maximum extent practicable.
4.1.2-4 For long-term mitigation of site disturbances, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.) or areas re-seeded with native vegetation to minimize potential erosion within the alignment, particularly from concentrated flows (rills, gully, etc.) and sediment transport from the alignment will be minimal as part of future surface runoff.

These measures are sufficient to control potential water quality and stormwater runoff effects to a less than substantial level. Their implementation will also not cause substantial additional water quality effects not already evaluated in this Subchapter of the EA.

The areas where the Second Main Track Project have a potential to cause local cumulative impacts include: contributions to increased cumulative runoff and contributions to potential water quality degradation. Because the project minimizes increases in runoff and controls discharge of pollutants during both construction and operation in accordance with waste discharge thresholds established by the Regional Board for the project area, no substantial adverse cumulative water quality or stormwater runoff effects are forecast to result from implementing the proposed project. With mitigation, less than significant modifications in drainage channels and in water quality will result from implementing the proposed project, but these unavoidable changes are not forecast to be substantial adverse effects to these resources.

4.1.3 Noise and Vibration

4.1.3.1 Impacts

Alternative 1 (Preferred Alternative)
The primary adverse noise effects of the proposed project are a result of construction activities and on-going train operations. All construction activities are either less than adverse impacts with no mitigation or less than adverse with implementation of mitigation measures.

The addition of a second track will bring the apparent centerline of noise generation a distance of 12.5 feet closer on the side with the added track. The apparent noise centerline will move farther away on the other side of the existing track. Assuming both the existing and new tracks are used equally, any existing noise-sensitive uses within 125 feet of the new track would be noise-impacted. Outside Merced, homes are generally set back from the existing track by 125 feet or more. In Merced, a double track already exists such that the noise centerline will not be relocated.

The BNSF Track Improvement project will generate two sources of noise along its alignment: temporary construction activity noise and railway service noise. No increase in railway service will occur as a result of project implementation. Any operational emissions impacts would derive from a slight relocation of the rail center-line, from possible speed increases associated with reduced delay at existing sidings, and from possible future rail traffic growth.

Impact Significance Criteria (CEQA Thresholds of Significance)
A project is considered to have a significant noise impact where it causes an adopted noise standard to be exceeded for the project site or for adjacent sensitive receivers. A substantial increase in an environment where noise standards are already exceeded would also be considered a significant impact. In addition to being concerned about the absolute noise level that might occur when a new source is introduced into an area, it is also important to consider
the existing noise environment. If the existing noise environment is quiet and the new noise source greatly increases the noise exposure, even though a criterion level might not be exceeded, an impact may occur. Lacking adopted standards for evaluating such impacts, general rules of thumb for community noise environments are that a change of 5 dB or more is readily noticeable and, therefore, is considered a significant impact. Changes between 3 and 5 dB may be noticed by some individuals and are, therefore considered to constitute a substantial increase since under these conditions sporadic complaints may occur. Changes in community noise levels of 3 dB(A) or less are normally less noticeable and therefore considered less-than-significant with respect to CEQA guidelines.

Federal Noise Impact Criteria
The Federal Transit Administration (FTA) has developed guidelines for noise/vibration impact assessment from heavy rail projects. In the absence of definitive guidance for general rail project impact assessment, the FTA’s Transit Noise and Vibration Impact Assessment (DOT-T-95-16, 1995) has been presumed applicable to the proposed project as well.

FTA guidelines define three classes of land uses where noise exposure should be evaluated, and the guidelines specify the change in noise levels that would have no impact, limited impact and definite impact. The project alignment has Category 2 land uses within its potential noise impact corridor of 375 feet (FTA Manual, Table 401, Rail Mainline). Category 2 uses are residences. These occur mainly in the City of Merced and unincorporated communities in Kadota, Tuttle, Planada and Le Grand. Category 1 uses (amphitheaters, concert pavilions, etc) do not occur near the track. Category 3 uses (schools, libraries, churches, etc) occur at few locations. However, any noise impacts are addressed in terms of the more stringent Category 2 noise standards.

The measured peak hour Leq at 50 feet from the BNSF track centerline was 76 dB. Because the residential (Category 2) uses in various communities close to the tracks already have high baseline noise conditions, even a small increase in noise is considered environmentally adverse. Any project-related increment of 66 dB or more would be enough to create a noise impact under FTA guidelines. This represents an allowable increase in baseline conditions of 0.5 dB or less as characterizing an impact. Because the proposed project will not of itself generate any increase in train activity, but only move existing traffic more safely and efficiently, the physical change in track location is the only direct project impact that would likely create a potential change in noise levels.

Effects of the Project
Noise impacts for new projects are generally divided between short-term construction and long-term operational sources. For the BNSF Track Improvement project, freight and passenger services already exist. The improvements are designed to improve inter-city and community passenger service throughout the Central Valley, move trains at more efficient speeds, and reduce engine idling and delays on side tracks. These activities may change noise conditions along the project alignment. Operational activity noise changes, plus the noise effects associated with construction, are the focus of the project noise impact analysis.
Short-Term Impacts

Impact 1: Construction-related activities associated with the transport of workers and equipment, as well as site preparation and construction would result in short-term noise impacts.

Implementation of the proposed project would involve the addition of new railroad tracks next to existing tracks in Merced County and improvements to signals and crossings. Activities associated with such construction may be a highly noticeable temporary noise source. Noise from construction activities would be generated by two primary sources during the construction phase: the on-road transport of construction materials and workers and, off-road construction itself. Since transportation of personnel and materials will occur on already traveled roadways, background noise conditions will mask any project on-road contributions. Some heavy materials delivery for track improvements is proposed to be via trains such that on-road truck noise will be limited.

Construction activities occur in various steps, each of which involves different types of equipment and a distinct noise characteristic. These steps would alter the character of the noise levels surrounding the construction sites as the project is developed.

For track improvements, earth moving and materials handling equipment to establish a new track bed, would include typical machinery such as small dozers, front loaders, etc. Typical operating cycles may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels at 50 feet from earth moving equipment typically range from 73 to 96 dB. Although noise ranges during all phases of construction are similar in level, the second phase, track laying, typically varies from 85 to 90 dB at 50 feet from the source. This activity has the potential to temporarily create clearly audible noise levels at the closest receptors due to the various power tools and equipment used in track and tie placement, welding and finishing the track. Such temporary noise levels are similar in magnitude to those already occurring many times per day from passing trains. They are not “new” noise sources within the existing acoustic environment. With implementation of recommended mitigation measures such as limiting construction hours in accordance with the City or County Codes in each project jurisdiction and the temporary nature of construction, impacts from construction activities would be reduced to a less-than-significant level.

Long-Term Impacts

Impact 2: Implementation of the proposed project would result in an increase of train noise levels at noise-sensitive uses along the BNSF track.

Noise level changes due to construction and use of a second track would shift the noise generation “centroid” closer to the location of the nearest track. The effective noise generation distance is currently the distance to the nearest track. The addition of another track closer to the nearest noise-sensitive land use would change the effective generation location.

Any sensitive land use would experience an “impact” if the receiver is located within 125 feet of the nearest track, and the new track is added on the receiver’s side of the existing track. A noise reduction would occur on the side of the tracks father away from the new addition. There are no sensitive land uses located so close to the existing track as to experience a noise impact.
solely from the addition of a second track except within the City of Merced. However, existing trackage from the Merced Wye on the southeast side of town to the end of the project limits near “M” Street is already double tracked. Little change in track utilization will occur within the city. Setbacks in various unincorporated communities are generally sufficient as to maintain noise level increases at less than +0.5 dB.

Increases in noise levels associated with continued growth on the project track segment, which is not a part of this project, will derive from the projected growth of track utilization. Given the elevated baseline levels, a relatively small increase would constitute an impact under federal guidelines. Freight train traffic increases of more than perhaps 15 percent would increase noise by +0.6 dB, or 0.1 dB in excess of the federal guideline. The increase would be less than the +3 dB increment identified as significant under CEQA thresholds.

However, the primary anticipated growth would be in passenger and commuter rail. Such vehicles are quieter than freight trains. With the gradual conversion of the California economy from manufacturing to service and with no major anticipated change in the agricultural economy of the Central Valley, a slow future passenger increase with little change in freight traffic will likely create future train activity noise that is very similar to existing conditions. Project implementation would not substantially increase the intensity of noise events within the context of existing noise conditions.

**Vibration Impact Assessment**

The proposed project will relocate approximately one-half of existing train movements onto the new track. The proposed project does not accommodate service demand that could not be met on existing trackage. Therefore, the number of vibration events would be identical with or without the project.

The zone of potential vibration impact is less than 100 feet from the track centerline. Addition of a second mainline track will slightly change the maximum location of vibration perception, and may slightly increase the severity of individual vibration events toward the side of new track construction. The centroid of vibration generation (mainly from train locomotive) will shift by +12.5 feet for a 25-foot separation between the existing and proposed track. The potential vibration perception distance will increase toward the track side of new construction. Conversely, the number of perceptible vibration events on the side away from the new track near the fringe of the perception threshold will decrease as one-half of existing traffic is assumed to be shifted to the new track away from the closest receivers.

The increase vibration is not considered a substantial increase even at 100 feet from the existing nearest track. Most existing residences are 150 feet or more from the nearest track. Their maximum increase is likely an imperceptible change from current conditions. Addition of a second mainline track will not have a substantially adverse vibration effect on the closest residences along several portions of the project.

**Alternative 2**

Implementation of alternative 2 would result in the same or similar impacts as implementation of the preferred alternative.
No-Action Alternative
Under the no-action alternative there would be no construction. Therefore there would be no short-term noise impacts. All long-term impacts would remain the same as without the proposed project.

4.1.3.2 Avoidance, Minimization and/or Mitigation Measures

There would be no substantial adverse effects to noise or vibration resulting from operation of the proposed project. Therefore, there are effects that require avoidance, minimization, and/or mitigation measures. Construction noise effects will be minimized by implementing the following measures:

4.1.3-1 Construction shall be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday, and between 9 a.m. to 6 p.m. on Saturday, and shall be prohibited on Sundays and federal holidays, except in emergencies.

4.1.3-2 Utilize construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.

4.1.3-3 All construction vehicles and fixed or mobile equipment shall be equipped with properly operating and maintained mufflers or sound attenuation devices, as specified in regulations at the time of construction.

4.1.3-4 Schedule the construction such that the absolute minimum number of equipment would be operating at the same time at the same location.

4.1.3-5 Maintain good relations with the school and community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and of the expected temporary and intermittent noise increases during the construction period.

4.1.3-6 All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided with adequate hearing protection devices to ensure no hearing damage will result from construction activities.

4.1.3-7 If equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account), portable noise barriers shall be installed that are demonstrated to be adequate to reduce noise levels at receptor locations below hearing damage thresholds. This may include erection of temporary berms or plywood barriers to create a break in the line-of-sight, or erection of a heavy fabric tent around the noise source.

4.1.3-8 The construction contractor shall establish a noise complaint program which shall, at a minimum, consist of a centralized noise complaint number posted along the construction alignment and coordinated with each local jurisdiction. Noise/vibration complaints received at this number shall receive a formal response, either by making modifications to project
operations or activities or by installing measures to reduce noise/vibration at the receptor location.

4.1.4 Geology and Soils

4.1.4.1 Impacts

Alternative 1 (Preferred Alternative)
This project proposes the construction of a second main track, supporting bridges, supporting signal systems, and the on-going operation of railroad. Typically, people will be present onsite for only short periods of time during construction and maintenance activities and future operations of the rail system, as individual trains pass through the area.

The geology and soil issues of focus in this evaluation are examined at the level of constraints imposed on future activities proposed in support of the project. These geology constraint issues are evaluated in the following text.

The project area and alignment are located in an area characterized by moderate to high seismic activity. There are no known active faults that cross the Le Grand double track alignment, i.e., the project site is not located in an Alquist-Priolo Earthquake Fault Zone, and the project alignment is not located in an area where potential or inferred faults are forecast to cross the rail corridor alignment.

The type of project proposed does not expose residences or living quarters to seismic hazards. BNSF maintains crews that monitor and repair any damage from natural hazards that may affect their main line tracks. The potential for fault rupture along the proposed alignment is considered to be low, and potential impacts can be mitigated to reduce impacts by implementing the mitigation measures listed in the following subsection. These measures will ensure that the proposed structures are not subjected to significant fault rupture hazards in the event of future seismic activity. The mitigation measures are designed to deal with future projects on a case-by-case basis and will reduce potential adverse effects to levels that are not considered substantial.

Based on the various reference documents, moderate to severe seismic ground shaking along the proposed alignment can be expected over the life of the proposed project, caused by earthquakes along portions of the fault systems within the vicinity of the project. As part of the project, the proposed new infrastructure system will be constructed to ensure that it can meet current railroad design code and safety requirements, including seismic standards. Any replacement or modification of existing structures with new facilities will include incorporation of current seismic design standards into the new facilities. Because of the identified potential for significant seismic shaking hazards within the project area, mitigation will be implemented to ensure that construction of new facilities meets safety requirements.

Liquefaction results when water-saturated, sandy, unstable soils are subject to intense shaking, such as that caused by an earthquake. These soils lose cohesiveness, causing structures to fail. At the site-specific level, there may be potential to experience liquefaction constraints. These impacts can be managed on a site-by-site basis by implementation of a number of mitigation measures which are outlined below. With the implementation of the seismic liquefaction hazard mitigation measures, based on site-specific geotechnical reports, the
potential impacts related to area liquefaction constraints can be controlled and would not be considered substantial.

The immediate Project Area is not subject to significant landslide or mudflow hazards, as it is entirely in a flat valley area. Therefore, landslide or rockfall hazards are not anticipated to be an issue, let alone significant. No mitigation measures are required, other than those engineering practices related to constructed embankments-development thereof and stabilization measures.

The project area generally is not subject to substantial erosion or unstable soil conditions from grading activities, nor will any of the activities implemented by the proposed project cause any major changes in topography. Soil data indicate that portions of the project area are moderately to highly susceptible to soil failure (shifting and/or sinking). Drainage and runoff will be controlled to mitigate the potential for erosion during construction activities.

All ground disturbing activities will affect localized surface areas, but these activities can be designed to minimize the amount of ground disturbance. Local effects on soils and geology would result primarily from the construction activities associated with the proposed action, such as grading, excavating, and re-contouring the soils.

These activities could alter soil profiles and create a potential for erosion. To ensure that substantial erosion and unstable soil conditions are not created during construction and operation of the proposed project, mitigation measures are identified to control typical water-related erosion. These measures will ensure that discharges of surface runoff will not exceed the erosive velocity for affected areas and that no unstable slopes are installed. However, it is noted that site-specific geotechnical studies must be conducted in order to determine the extent of potential soil failure of any newly created embankments.

During construction, removal of vegetative cover and disturbance of existing topography by the exposure of cut slopes and grading activities could also increase the potential for erosion by wind and water. Appropriate fugitive dust control measures and water erosion control measures to address non-point source water pollution will be necessary during construction of specific rail sections and related new facilities.

The proposed project does not include septic tanks or alternative waste water disposal systems. No potential for any effects to such facilities exists from implementing the proposed project.

The proposed project is not in an area with active mining operations. No known mineral resources are mapped within the project alignment. The narrow APE of the project further reduces the potential impact to mineral resources because no portion of the project will be implemented outside of the existing rail corridor. Since no known mineral resources occur along the proposed project alignment, no loss of availability of a known resource will occur from implementing the proposed project.

Alternative 2
Alternative 2 would have fewer potential geology and soils impacts as fewer bridge improvements would be constructed than under the preferred alternative. However there would still be substantial impacts that would require the same mitigation measures to be implemented.
No-Action Alternative
Under the no-action alternative, no project would be implemented. Therefore there would be no impacts to soil and geology resources or constraints along the Le Grand double track segment.

4.1.4.2 Avoidance, Minimization and/or Mitigation Measures

The following mitigation measures will be implemented for activities implemented under the proposed project. Implementation of these measures can reduce potential effects of project implementation.

Soils
Mitigation measures are available to minimize erosion problems associated with wind and water, especially during the construction phase when cut slopes are exposed. During construction, the length of time vegetation and other cover is absent should be minimized. Due to the size of areas to be disturbed by the proposed project, the filing of a Notice of Intent with the State Water Resources Control Board and the preparation and implementation of a Storm Water Pollution Prevention Program (SWPPP) is mandatory. New construction must conform with Basin Plan water quality standards when slopes are exposed. All or an appropriate combination of the following measures can be used to control potential water erosion during construction to meet the Regional Board Basin Plan stormwater discharge requirements. After the construction phase, long-term erosion control can be accomplished by keeping soils under vegetative cover or hardscape (pavement, gravel, or other hard cover). After construction, soils underlying facilities and pavements will not be subject to erosion, both due to the vegetation cover and the flat terrain that will remain the same after construction.

Where appropriate, one or more of the following measures will be implemented in conjunction with the existing SWPPP for the Le Grand double track segment.

4.1.4-1 Add protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).

4.1.4-2 Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After construction, soil shall be compacted to a level similar to pre-construction conditions.

4.1.4-3 Construct diversion dikes and interceptor ditches to divert water away from construction areas.

4.1.4-4 Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.

4.1.4-5 Apply provisions of erosion and sediment control that reduce volume and velocity of flows and content of sediment to levels that do not cause significant rill or gully erosion in susceptible areas. In addition, provide for restoration of areas that do become eroded.

4.1.4-6 The above measures shall be implemented as part of the existing Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) that shall reduce pollutants, such as sediment, from the disturbed site to the maximum extent practicable as defined by the Regional Water Quality Control Board. Copies of the SWPPP and WQMP
shall be provided to the Regional Board for review and comment prior to construction.

Mitigation measures identified above shall be employed within the proposed project area as necessary. In addition, mitigation measures dealing with seismic and geologic hazards as addressed in the General Plans/EIRs of the Participating Jurisdictions shall be implemented and are hereby incorporated by reference. For the most part, construction in accordance with railroad design and safety standards addressing seismic design requirements for the project area will be sufficient to protect the project facilities. Examples of measures which are designed to minimize the potential for damage, injury and loss of life resulting from geologic hazards include the following.

Geology

4.1.4-7 Construction of rail structures in areas identified in the preliminary geotechnical report as having a high liquefaction potential shall be implemented in accordance with measures identified in this report or as designated by the engineering design standards.

4.1.4-8 Apply seismic design and construction criteria to all rail structures subject to significant seismic shaking in accordance with the preliminary geotechnical report.

4.1.4-9 Require stability analysis for areas designated “Generally Susceptible” and “Mostly Susceptible” to liquefaction/subsidence on the local jurisdiction’s Hazards Overlay Maps. If evidence of liquefaction/subsidence is identified along the track sections, project design mitigation may include:
- In-situ densification of susceptible soil.
- Ground improvements such as removal and replacement of susceptible soils or dewatering.
- Deep foundations designed to accommodate liquefaction.
- Shallow foundation design to accommodate vertical and lateral ground displacement.

4.1.4-10 Require future site-specific geotechnical investigations of proposed construction of embankments and bridge/grade separations to include an assessment of potential impacts and site specific design measures related to expansive and otherwise unstable soils and specific measures to control these constraints. The identified design measures shall be implemented by BNSF.

The foregoing are general examples of appropriate mitigation measures. As individual facilities are implemented additional, more detailed project-specific measures may be employed.

Future development in the general area of the Le Grand double track segment is subject to local jurisdictions, and no other projects are known to be proposed within the BNSF right-of-way or on immediately adjacent property. With implementation of the mitigation measures outlined above, the proposed project would be compatible will allowed uses in the area and is not forecast to contribute to cumulative exposure of humans in occupied structures to seismic, liquefaction or subsidence hazards.
The geologic and soil resource impact evaluation presented above indicates that the proposed project has a potential to cause or be exposed to substantial adverse geotechnical effects or constraints, due to the physical location of the project in an area with high seismic activity. With implementation of mandatory design requirements to control geotechnical hazards and related mitigation measures, these effects would be reduced and would not be considered substantial.

4.2 BIOLOGICAL RESOURCES

4.2.1 Alternative 1 (Preferred Alternative)

4.2.1.1 Ecological Systems

With the exception of the new bridges across the existing waters of the United States and State, the habitat within the APE consists of a man-made, highly disturbed plant community that supports non-native weed species. This is a result of ongoing maintenance operations of the BNSF property easement designed to protect safety of the existing rail operations and control potential for wildland fire hazards. A total of approximately 80 acres of this habitat will be permanently removed as a result of installing the second main track within the Le Grand double track segment.

Although removal of this habitat may adversely affect local wildlife populations to some degree, no sensitive species have been identified within this alignment and the loss of this habitat is not forecast to cause a substantial adverse effect on any important ecological systems or sensitive species. In fact, by removing a portion of the maintained easement, the proposed action will result in removal of a substantial pool of invasive plant habitat. This is considered to be a beneficial effect locally. In addition to the permanent loss of habitat, there will be temporary loss due to construction activities. This area will continue to be maintained by BNSF after construction is completed and a seed mix of native plants, with non-native seeds controlled, can be used to revegetate the temporarily disturbed construction areas once construction is completed. The objective would be to control invasive species population to the extent feasible in the future.

The only sensitive ecological system along the project alignment is the riparian habitat located at Mariposa Creek and the waters of the United States and State found at three other drainage crossings along the alignment. The permanent area of affected waters within the project APE has been determined to consist of the following:

<table>
<thead>
<tr>
<th>Location</th>
<th>Milepost</th>
<th>Impact Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariposa Creek</td>
<td>1042.25</td>
<td>0.13 acre</td>
</tr>
<tr>
<td>Owens’ Creek</td>
<td>1045.90</td>
<td>0.01 acre</td>
</tr>
<tr>
<td>Unnamed Channel</td>
<td>1049.30</td>
<td>0.001 acre</td>
</tr>
<tr>
<td>Unnamed Channel</td>
<td>1052.94</td>
<td>0.003 acre</td>
</tr>
</tbody>
</table>

In addition to the estimated permanent area of impact, about 1/4 acre of area (~11,000 square feet) of the Mariposa Creek channel will be temporarily affected by construction activities. About 0.15 acre of area (7,000 square feet) will be temporarily affected by construction activities at the other three drainage channels. Thus, the maximum permanent effect on federal and state waters from implementing the proposed project is estimated to be about 0.15 acre and the maximum temporary effect is estimated to about 0.40 acre. This permanent and temporary loss of habitat (although the actual acreages in the field may be less) is considered to be a
substantial adverse effect on this habitat type; therefore, the following mitigation measure will be implemented.

Implementation of this mitigation measure is considered adequate to offset the adverse effects on the riparian and waters ecological system that will be adversely affected by the proposed project.

4.2.1.2 Wetlands and Other Waters

Please refer to the analysis provided in Section 4.2.1 above, Ecological Systems. The project will cause a permanent loss of approximately 0.15 acre of wetland/riparian habitat and waters of the United States and State, and disturbance of an estimate 0.40 acre of such habitat, including 0.25 acre that will not be permanently affected. The mitigation identified above is considered sufficient to compensate for the permanent loss of this habitat and to restore the temporary loss of habitat to a comparable or higher quality of habitat.

4.2.1.3 Threatened and Endangered Species and Species of Special Concern

Based on the field survey and evaluation of potential habitats within the project APE, a potential exists to adversely affect several listed species or species of special concern. The following evaluation of potential effects is provided for the species described in Chapter 3, Section 3.2.

California tiger salamander: Because suitable habitat for this species occurs at Mariposa Creek, construction activities must occur during the summer when this species is active and able to avoid the bridge construction impact area. To compensate for loss of habitat for this species, mitigation measure 4.2.1-1 will be implemented. This will result in no net loss of habitat for this species. To avoid any direct mortality of this species, the following mitigation measure will be implemented.

4.2.1-1 Prior to initiating construction, BNSF shall conduct a survey for California tiger salamander and if the construction area at Mariposa Creek is occupied by this species, they shall be relocated outside of the construction area in accordance with protocols agreed upon by the U.S. Fish and Wildlife (FWS). To prevent access during construction an exclusion fence shall be established around the construction site. Biological monitors will need to be utilized to relocate this species prior to construction and through periodic monitoring verify that the construction area has not been re-occupied by this species. Once construction of the bridge is completed, the construction area will be restored to a comparable or higher habitat value than the existing condition.

Big tarplant: This species is not known to occur in the vicinity of the proposed project. A pre-construction survey for this species within the project APE shall be conducted, and if any of this plant is found, the individuals shall be relocated outside of both the temporary and permanent project APE.

Ferruginous hawk: There are roosting and nesting sites adjacent to the project APE, but none within the APE. The following mitigation measure will be implemented to address potential adverse effects to this bird and other bird species during nesting.
4.2.1-2 To avoid an illegal take of active bird nests or harm to nesting birds on adjacent property, any grubbing, brushing or tree removal will be conducted outside of the State identified nesting season (nesting season is February 15 through September 1). Alternatively, the District may conduct a nesting bird survey in accordance with California Department of Fish and Game protocols to demonstrate that no bird nests will be disturbed by project construction activities.

Swainson's hawk: There are roosting and nesting sites adjacent to the project APE. Implementation of mitigation measure 4.2.1-2 will ensure that any nests adjacent to the project APE will not be adversely affected by the proposed project.

Mountain plover: There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. Prior to construction, the construction APE, including all staging areas, shall be surveyed prior to construction to verify that no nests of this bird species will be affected by project implementation.

Northern harrier: There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. Prior to construction, the construction APE, including all staging areas, shall be surveyed prior to construction to verify that no nests of this bird species will be affected by project implementation.

Western pond turtle: Mariposa Channel does have habitat suitable for this species. None were observed during the surveys of the alignment and a species of special concern by the U.S. and State. During the survey for the California tiger salamander in Mariposa Creek, the surveyors shall verify whether the Western pond turtle occupies the project APE. If this species does occupy the project APE in Mariposa Creek, implementation of mitigation measure 4.2.1-1 will be sufficient to protect individuals of this species and to provide compensation for loss of habitat in Mariposa Creek.

Valley elderberry longhorn beetle: No elderberry plants were observed within the project APE. It is listed as a threatened species under FESA. Therefore, the probability of this species occurring within the APE is zero. No adverse effect to this species is forecast to occur from implementing the proposed project.

American peregrine falcon: There is no suitable habitat within the railroad alignment. However, agricultural fields adjacent to the project APE could support this species. Implementation of mitigation measure 4.2.3-2 will ensure that any nests adjacent to the project APE will not be adversely affected by the proposed project.

San Joaquin Valley woodrat: There is suitable habitat for this species at the Mariposa Creek crossing within the APE. During the survey for the California tiger salamander in Mariposa Creek, the surveyors shall verify whether the San Joaquin Valley woodrat occupies the project APE. If this species does occupy the project APE in Mariposa Creek, implementation of mitigation measure 4.2.1-1 will be sufficient to protect individuals of this species and to provide compensation for loss of habitat in Mariposa Creek.

California red-legged frog: This species was not observed during any of the field surveys. The closest known occurrence is more than ten miles from the APE. It is listed as threatened under FESA and a species of concern by the State. Due to railroad maintenance activities and
agricultural practices, the probability of this species occurring within the project APE is low. No adverse effect to this species is forecast to occur from project implementation.

**Western spadefoot toad:** Mariposa Channel does have habitat suitable for this species. During the survey for the California tiger salamander in Mariposa Creek, the surveyors shall verify whether the Western spadefoot toad occupies the project APE. If this species does occupy the project APE in Mariposa Creek, implementation of mitigation measure 4.2.1-1 will be sufficient to protect individuals of this species and to provide compensation for loss of habitat in Mariposa Creek.

**Giant garter snake:** This species was not observed during any of the field surveys. There are no records for this species east of Interstate 99 in the vicinity of the project APE. It is listed as threatened under FESA and also threatened under CESA. Due to railroad maintenance activities and agricultural practices, the probability of this species occurring within the project APE is low. No adverse effect to this species is forecast to occur from project implementation.

**San Joaquin kit fox:** This species was not observed during any of the field surveys. There are no natural grasslands associated with this segment of the project. No large burrows were observed within the project APE. No adverse effect to this species is forecast to occur from project implementation.

Implementation of these mitigation measures is considered adequate to offset the adverse effects on the listed or species of concern that may occur within the project APE and that could be adversely affected by the proposed project.

### 4.2.1.4 Invasive Species

As described in Section 4.2.1 above, the proposed project will reduce the existing area within the project APE that supports invasive species. In addition, by implementing the following mitigation measure that requires revegetation of disturbed construction areas with plant species native to the project area and capable of withstanding ongoing vegetation management activities, the potential effects on invasive species concerns are forecast to be beneficial.

4.2.1-3 **Following construction activities within any portion of the project area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management and that will not conflict with BNSF operational requirements. The seeds mix shall be verified to contain the minimum amount of invasive plant species seeds reasonably available for the project area.**

Implementation of this mitigation measure is considered adequate to minimize future invasive species occupancy of the disturbed areas within the BNSF right-of-way.

Based on the findings of the BA, the analysis environmental consequences in this Biology subchapter (4.2), and the implementation of the above mitigation measures, the proposed action is not forecast to cause any substantial adverse effects on biological resources.
4.2.2 Alternative 2

Implementation of Alternative 2 would result in fewer biological impacts than the preferred alternative as all impacts to jurisdictional waters would be avoided. No permits for disturbance of identified channels would be required for this alternative and overall impacts to jurisdictional waters would be reduced by an estimated 0.40 acre of temporary impact and 0.15 of permanent loss. All other biological resource impacts would remain approximately the same within the Le Grand double track segment. The net effect on biological resources for both Alternatives 1 and 2 would be less than substantial with implementation of proposed mitigation measures.

4.2.3 No-Action Alternative

No biological impacts would result from the no-action alternative and no mitigation would be required.

4.3 HUMAN RESOURCES

4.3.1 Transportation

4.3.1.1 Impacts

Alternative 1 (Preferred Alternative)
Development of the preferred alternative as described in Chapter 1 of this EA will result in the creation of short-term circulation system impacts and related generation of additional short-term volumes of traffic which could adversely affect the area’s circulation system. No increase in train traffic will be generated by implementation of the proposed project. However, train traffic is forecast to increase in the future, regardless of whether the proposed improvements are implemented, due to anticipated increases in future passenger and freight traffic within the region.

The County and City of Merced utilize a range of level of service conditions as the threshold of significance for circulation system impacts. However, for construction purposes the short-term impact on local roadway level of service is not considered to be a significant adverse impact, because the condition will typically be limited to a few weeks to a month at any one intersection during construction of the proposed rail corridor improvements.

Future With Project Conditions
Under future with project conditions, the rail improvements would be operational which would increase rail efficiency by reducing conflicts between freight and passenger trains. This would also lead to increases in average rail operational speeds (not maximum speed) and less delays to passenger service. In addition to increased efficiency of rail traffic, vehicular traffic on the improved at-grade road crossings would also be improved by some unquantifiable amount based on less time being occupied at each crossing by trains in the future on the two track system. This improvement would slightly reduce, but not eliminate, existing vehicular delays associated with rail traffic.

Construction Management
Construction related impacts on roadway levels of service were not quantitatively assessed in this document because it is too difficult to determine how local traffic patterns will be affected for...
the short periods during which construction will occur at each location. However any impacts which may occur due to construction activities are temporary in nature. That is, after the construction of the project is completed, any impacts associated with these construction activities will be eliminated. Therefore, any improvements of a physical/permanent nature would not be recommended for the few days that the second track would be installed at a roadway crossing. However, prior to the start of construction, a construction traffic management plan must be developed for each affected at-grade crossing; approved by the County or City and fully implemented by the construction contractor to minimize adverse effects on the flow of traffic during construction. The plan should address, but is not limited to, such items as:

- Time of construction activities (e.g., off-peak hours)
- Truck/Haul routes
- Construction employee parking
- Construction equipment staging
- Potential lane closures
- Work zone traffic control
- Control of traffic at any location where short-term hazards cannot be avoided

The construction traffic management plan is viewed as mitigation for short-term circulation system impacts and must be designed to minimize many of the anticipated impacts associated with the construction activities of the project.

**Cumulative Impacts**

For the most part, the areas surrounding the proposed project alignment have already been developed, and the traffic patterns established. No additional projects along the alignment that would directly effect the identified intersections during the same construction period have been identified. The potentially adverse short term circulation system impacts can be reduced to a level of less than substantial with implementation of the mitigation measures. No projects were identified that would directly affect the area of specific project elements. However, because the project will improve circulation over the long term, the cumulative traffic impacts resulting from future growth in the built-out region are not forecast to be significant. Traffic management plans being prepared for the construction of the project will identify any other projects to be constructed within the immediate area of a project element and mitigate any short term traffic congestion that may arise. Based on the data contained in this evaluation, the proposed project will not contribute to cumulatively significant traffic impacts during the construction period.

Based on data presented in this subchapter of the EA, the proposed project has no potential to cause substantial adverse effects to any circulation system components along the project alignment, after implementation of the required short-term mitigation measures. The traffic management mitigation identified in this document can reduce potential short-term unavoidable adverse circulation impacts during construction. Therefore, with implementation of the mitigation measures identified, it is concluded that the proposed project can be implemented without causing any unavoidable adverse circulation system effects over the short- or long-term.
Alternative 2
Implementation of Alternative 2 would result in the same impacts to circulation that would occur with the preferred alternative. However, as some portions of the rail corridor segment the double tracking would be interrupted to avoid improving selected bridge crossings, some at-grade crossing delays on local roads would not be reduced as much as they would be under the preferred alternative. Therefore, even though the adverse affects resulting from the implementation of the preferred alternative and alternative 2 would be similar, the benefits of implementing alternative 2 to the local circulation systems would not likely be as great as with implementation of the preferred alternative.

No-Action Alternative
The no-action alternative would result in no impacts to the transportation system as the existing conditions would not be changed.

4.3.1.2 Avoidance, Minimization and/or Mitigation Measures

Only one potential adverse circulation system impact has been forecast to occur if the proposed project is implemented as proposed. Otherwise, after completion of the proposed project, circulation is forecast to be marginally improved at all of the proposed at-grade road crossings as a result of future rail operations utilizing the two main tracks. This will result because the current local traffic delays due to trains operating on this segment of the BNSF rail corridor will be reduced by some unquantifiable amount of time. The following mitigation measure will be implemented to offset the potentially significant circulation system effects of constructing the new tracks through the existing at-grade road crossings.

4.3.1-1 Prior to initiating second main track construction, a construction traffic management plan shall be submitted and approved by the City and County of Merced. The standard of review for the submitted plans shall be the provision of safe, albeit inconvenient, traffic flow on the local circulation system during construction and the provision of adequate access through construction areas to meet safety and emergency vehicle access and transit through construction areas at all times when construction is underway for any components of the proposed project.

Implementation of the above measure will reduce the proposed project’s potential substantial circulation system impacts to a level of nonsignificance.

4.3.2 Land Status, Land Use, Zoning and Aesthetics

4.3.2.1 Impacts

Alternative 1 (Preferred Alternative)
Generally, the potential for land use conflicts is considered as the most adverse impact from implementing a project and these conflicts consist of activities allowed in adjacent land uses, such as construction and operation of a railroad adjacent to noise-sensitive land uses. A project’s impacts can be considered substantial and adverse if:

- The project causes an unavoidable conflict with a general plan land use designation or zoning classification;
The project conflicts with, or is inconsistent with, applicable environmental plans or policies adopted by agencies with jurisdiction over the project to the extent that the conflict is unavoidable and unresolvable;

The project is incompatible with existing land use in the vicinity;

The project results in an unavoidable disruption or division in the physical arrangement of an established community (including a low-income or minority community; or

The project induces significant growth within the project area or region.

At present BNSF maintains a single main line track through the Le Grand double track segment. On average about 50 trains per day pass through the area on the BNSF tracks. This includes both BNSF freight trains and Amtrak passenger trains. Merced has an existing Amtrak station which serves regional passenger needs. This situation will remain the same after implementation of the proposed project.

Regardless of whether the new track is installed, both commercial freight and passenger train operations will continue to pass through the project area, again with no change in the environment as a result of the proposed project. The future economy and fuel prices will dictate the number of future trains that will utilize BNSF’s rail corridor. If more trains are added with only a single track, then more trains will have to be put onto sidings to allow higher priority trains to pass.

The BNSF railroad line has been an existing feature in all of the communities affected by the proposed project. The BNSF rail corridor is wholly fee-owned, and consists of more than just the existing track. The fee-owned rail corridor ranges between 100 feet to 250 feet in width through the project corridor segment, and with the exception of allowing subsurface infrastructure (drainages, pipelines, communication/fiber optic systems, etc.). No other surface uses are permitted within this rail corridor in order to protect rail operations from conflicts. Expansion of the tracks within this right-of-way will utilize a greater portion of the corridor and result in some minor changes to existing road and bridge crossings.

However, none of the features proposed by the project will result in further division of communities along the corridor. The existing public crossings will remain in place and no greater division of the community will exist after the new project is implemented. Because some intersections will be improved by the proposed construction, the ability to cross the rail corridor may actually be enhanced with implementation of the proposed project.

Temporary construction activities will impact adjacent land uses at certain locations, such as at road crossings. Alternative routes (detours) will be provided, but it is still expected that access to certain businesses, residential and recreation areas may be affected for short terms during the construction period. There will be permanent physical modifications within the existing rail corridor that will impact adjacent land uses, but impacts will not result in any new substantial land use conflicts between continued use of the BNSF rail corridor and the existing and proposed future land uses. The road crossing changes should generally improve traffic patterns and access to these locations. No substantial unavoidable adverse land use effects are forecast to result from implementing the proposed project.
As the BNSF project will only improve existing services on an already-established rail line, and not create new services that might induce growth or result in major land use changes, no cumulative adverse impacts to land use are identified.

Aesthetics

Aesthetics issues are typically addressed in local (city or county) planning documents. These documents identify particular locations that are sensitive to physical changes in visual setting, or locations where the desire is to upgrade from the existing visual setting/conditions. Policies are specified in general plans; as well as ordinances to be found in development codes or zoning ordinances. Thus, in order to determine adverse effects under this issue, the local characteristics must be examined in relation to the proposed project to see if a project site or, in this case the project alignment, is within an aesthetically sensitive location. Also, the project's consistency with policies or ordinances must be demonstrated, otherwise an inconsistency may be considered an adverse impact.

The visual setting for the project area includes a wide flat valley dominated by agricultural uses. The project will not change land uses, or substantially affect the existing scenic vistas in the project area or visual aspects of the area. The construction activities will be temporary and localized. The long-term visual change will be the addition or upgrade of the second track at the same elevation as the existing track. For views across the tracks (perpendicular to the track), the existing visual settings/vistas are forecast to remain the same as they are now, i.e., no change in the existing visual setting. The only change in view will be along the track alignment (parallel to the track) where the second track will be visible, but once installed the visual setting will remain the same, i.e., a railroad track corridor.

The finalized designs for any new bridges or other facilities within or over local right-of-way may be reviewed by local or regional authorities, dependent upon location. In this case, the reviewing body will be either the County of Merced or the City of Merced. Designs for the new track segment within the rail corridor right-of-way will follow standard BNSF track design requirements and the visual setting will be comparable to the existing track. The height of the new track will be approximately the same as the existing track and the only change will be the addition of a second main track in the corridor, which does not contain any significant scenic resources.

Based on the above, it is concluded this project will not have a substantial adverse effect on a scenic vista or substantially degrade the visual character or quality of the project corridor. Potential impacts to the visual characteristics of the existing visual setting are considered less than adverse based on the proposed modifications to the existing visual environment described above.

A review of the County General Plan did not identify any state scenic highways in the proposed project area. Visual inspection of the whole scenic corridor determined that no scenic resources such as trees, rock outcroppings or historic buildings occur within the project area of potential effect (APE). Since no scenic resources occur within the APE and the physical changes to the corridor, that will be visible from implementing the proposed project, are not forecast to be substantial, the proposed project's potential impact to scenic resources, in or out of a state scenic highway corridor, is concluded to be a less than significant impact.
The existing visual setting is simply that of a linear rail corridor with tracks, culverts, signals and other appurtenant railroad support infrastructure. At certain locations along the corridor storage tracks contain stored rail cars; at other locations side tracks extend to industrial customers; and about 50 times per day, trains (freight and passenger) pass through this corridor. Based on the existing visual setting, the rail corridor does not contain important or significant visual characteristics or qualities. The proposed project will cause short-term construction activities that will result in construction equipment and activities that are necessary to install all of the project components to support a second track. Without any significant visual qualities or characteristics this short-term activity is not forecast to cause substantial degradation to the existing visual qualities.

Over the long-term the rail operations will remain the same or increase/decrease in conjunction with future commercial demand for rail transport, both freight and passenger. Future rail operations will increase or decrease independent of the proposed project, i.e., they will not be caused by the proposed project. Thus, the continued use of the corridor by trains will remain the same and no significant long-term degradation of the corridors visual qualities is forecast to occur if the proposed project is implemented.

The proposed project will not result in the installation of any linear light standards or the creation of any new sources of light. Any new signals adjacent to the new track will not be a source of substantial amounts of new light. Existing rail crossing lighting, such as that associated with crossing stop signs or signals, will receive more modern signals, but these will not alter the existing light environment based on the type of light standards used for safety purposes. No adverse light or glare effects are forecast to occur from implementing the proposed project

Within the existing rail corridor or adjacent to this linear corridor, no other activities have been identified to which the proposed project would make a cumulatively considerably contribution to adverse aesthetic impacts. Thus, no cumulative adverse aesthetic impacts are forecast to result from implementing the proposed project.

No unavoidable, adverse aesthetic effects have been identified in association with the implementation of the proposed project.

Sensitive Land Uses

Coastal Zone
The project area is not within a Coastal Zone Management Area as the coast is located about 100 miles to the west.

Wild and Scenic Rivers
There are no wild and scenic rivers within or near the proposed project alignment.

Farmlands/Timberlands
Generally, the direct or indirect conversion of agricultural land to non-agricultural land uses is considered a substantial adverse effect. In addition, land use proposals that conflict with existing agricultural-zoned areas may also be considered to have adverse effects.

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment
Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Otherwise, the project's location in relation to city or county land use maps (usually in the General Plans) is examined.

There are prime farmland, and farmland of statewide importance adjacent to the BNSF rail corridor. However, there are no agricultural resources that occur within the rail corridor or project alignment. Therefore, no potential exists to convert such farmland in the proposed project APE to non-agricultural use if the proposed project is implemented. None of the physical facilities proposed to support of the proposed second rail project will cause loss of any farmland, including farmland located in the vicinity of the project along the rail corridor.

The proposed project will not affect any zoning and none of the land within the APE is under a Williamson Act contract. Based on the fact that the project can not have any conflicts with zoning for agricultural uses or Williamson Act contracts, no impact to these issues can result from implementing the proposed project.

The proposed project does not involve any activities that could result in the conversion of Farmland to non-agricultural uses. As presently proposed, BNSF will not require any staging areas within producing agricultural lands and no indirect effects are forecast to adversely impact adjacent farmland because indirect effects, such as fugitive dust, will be controlled on site. Based on the fact that the project can not have any conflicts with zoning for agricultural uses or conversion of farmlands to non-agricultural uses, no substantial adverse effect associated with these issues can result from implementing the proposed project.

Within the existing rail corridor or adjacent to this linear corridor, no other activities have been identified to which the proposed project would make a cumulatively considerably contribution to adverse agricultural impacts. Thus, no cumulative adverse agricultural impacts are forecast to result from implementing the proposed project.

Other Sensitive Land Uses Within One Quarter Mile of Project Alignment

There would be little to no adverse impact on other sensitive land uses in the project area. The rail corridor would be enhanced to improve train flow and would likely reduce air quality and noise and vibration impacts on surrounding land uses associated with current rail operations. Vehicular and pedestrian traffic flow would also likely be enhanced at grade crossings.

Alternative 2
Implementation of Alternative would have the same impacts to land uses as implementation of the preferred alternative.

No-Action Alternative
The no-action alternative would result in no land use impacts as conditions within the proposed project would remain in their existing state.

4.3.2.2 Avoidance, Minimization and/or Mitigation Measures

Mitigation measures in the Transportation, Air Quality, and Noise sections of this EA will be applied to this project in order to avoid, minimize, or reduce the potential impacts on land use from project implementation.
Based on the potential visual impacts identified in the analysis above, the proposed project can be implemented without causing any substantial adverse aesthetic effects with no mitigation recommended.

Based on the potential lack of substantial agricultural resource impacts identified in the analysis above, the proposed project can be implemented without causing any substantial adverse agricultural resource effects with no mitigation required. No unavoidable, substantial adverse agricultural resource impacts have been identified in association with the implementation of the proposed project.

4.3.3 Socioeconomic Conditions

4.3.3.1 Impacts

Alternative 1 (Preferred Alternative)
The construction and operation of the proposed project will not require the acquisition of any property that contains housing resources. The proposed alignment is situated mostly along an agricultural corridor with some commercial, industrial, public facilities, residential and rural residential little area affected. The existing housing areas along the alignment are outside of the BNSF right-of-way.

This project does not propose the development of any new housing nor any new long-term employment in the area that could create an indirect demand for housing. This project is considered growth-accommodating and not growth-inducing in that it will facilitate existing passenger and freight train traffic. This project does not generate a demand for additional train operations or for any demand for local or regional growth.

Although some housing developments exist along the alignment, they are outside of the BNSF right-of-way will not be affected by this project. These houses were built long after the BNSF track was in operation and were installed with the awareness in each community of the housing proximity to the tracks and BNSF rail operations within the rail corridor. The proposed project will not alter the existing physical conditions and the whole project will be implemented within the existing BNSF right-of-way.

Community Character and Cohesion
The railroad tracks have existed within the community for many decades. In all likelihood the existing communities, Planada, Le Grand and others were intentionally located adjacent to the railroad tracks to benefit from its presence. The proposed project would not have an adverse long term effect on the community. There would likely be a positive effect on the community as the double-track project and improvements to signalizing and control along with improvements to roads will make it less likely for trains to be delayed, resulting in less waiting and fewer interruptions in the flow of traffic where roads intersect with railroad crossings. This will improve the flow of traffic on local streets within the project area. Additionally, air quality effects of freight and passenger trains near the rail corridor should be reduced as fewer train delays result in less idling of trains and lower adverse air quality emissions. Noise from idling trains would also be reduced.
Relocation
The proposed project would not result in the relocation of any persons living in the area and no homes would become uninhabitable as a result of project implementation. The proposed project would be located next to existing facilities in the existing railroad corridor with no need for land acquisition.

Alternative 2
Implementation of Alternative 2 would result in the same impacts as the preferred alternative. However, the benefits of reducing noise and air quality impacts on the surrounding communities may not be as great as with the implementation of Alternative 1.

No-Action Alternative
No impacts would occur as a result of implementing the no-action alternative as conditions would remain under existing conditions.

4.3.3.2 Avoidance, Minimization and/or Mitigation Measures
Implementation of the proposed project will not cause substantial adverse community cohesion, housing resource, or relocation effects. No mitigation is recommended.

4.3.4 Environmental Justice

4.3.4.1 Impacts

Alternative 1 (Preferred Alternative)
Overall, the residences within the project area have lower-than-average income level and the housing consists of low to moderate residential structures. However, the proposed project will not expose any population to substantial environmental justice effects. Air quality and noise effects of trains may decrease as a result of the proposed project and improving the flow of passenger trains will provide a more reliable alternative transportation mode to places of employment with higher paying jobs than may be available in the local communities.

Alternative 2
Implementation of Alternative 2 would result in the same environmental justice effects as the preferred alternative. However, the benefits of reducing noise and air quality impacts on the surrounding communities may not be as great as with the implementation of Alternative 1.

No-Action Alternative
No impacts would occur as a result of implementing the no-action alternative as conditions would remain under existing conditions.

4.3.4.2 Avoidance, Minimization and/or Mitigation Measures
Implementation of the proposed project will not cause substantial adverse environmental justice effects. No mitigation is recommended.
4.3.5 Public Health and Safety

4.3.5.1 Impacts

Alternative 1 (Preferred Alternative)
Implementation of the proposed project has the potential to increase hazards and risk of upset from its construction activities, limited utilization of hazardous materials, and continued operation of rail line to transport hazardous materials. Anytime construction activities are carried out, a potential exists for accidental releases of hazardous or toxic materials, particularly petroleum products. Operation of rail line also requires transportation of hazardous materials as part of routine operations.

A variety of land uses, including residential, commercial, industrial and agricultural, are adjacent to the existing right-of-way of the BNSF main line track as it runs through the Le Grand segment of Merced County and the city of Merced. Any work done in soils previously undisturbed adjacent to the tracks, have some potential to encounter contaminated areas. The use and generation of hazardous materials is commonplace as part of industrial or agricultural activities in these communities, as well as part of certain commercial activities. There are a number of businesses in the affected jurisdictions that handle hazardous materials such as agriculture, service stations, auto body shops, paint stores and dry cleaners. The implementation of the proposed project will not alter the on-going operations of these uses.

The proposed project is not located adjacent to or in the vicinity of any public or private airports.

Inherent to the use of hazardous materials is the risk of an accidental release. Because of this risk, Federal, State and local agencies have established regulations to minimize the likelihood of such occurrences. During construction or maintenance activities in support of the proposed project, fuels, oils, solvents, and other petroleum materials classified as "hazardous" will be used to support these operations.

There are two approaches to managing hazards: (1) minimize the potential release of hazardous or toxic substances into the environment; and (2) if released, have the resources and techniques on hand to respond to an accidental release, including controlling a release, managing any adverse exposure from a release; cleaning up (remediating) a release; and properly disposing of the material contaminated by the release.

Mitigation measures designed to reduce, control or remediate potential accidental releases must be implemented to prevent the creation of new contaminated areas that may require remediation in the future and to minimize exposure of humans to public health risks from accidental releases. Such measures are presented in the following section. These measures are provided to reduce the potential for such accidents to occur (use of spill prevention countermeasure practices to minimize potential for accidental releases as part of construction activities); to immediately collect and store or remove the primary source of contamination, including soils; and to remediate any residual contamination to levels that do not exceed regulatory thresholds for allowable use in the future. By implementing these measures, potentially substantial adverse environmental impacts from accidental releases associated with construction of the proposed project can be reduced to a less than significant level.
Regarding operations after the new facilities are installed the following findings have been developed: the improvements of the at-grade crossings will reduce safety hazards associated with rail operations relative to the existing condition. This occurs because a traffic movement will be better controlled and the intersections between the railroad tracks and roadways will be enhanced by implementing the proposed improvements at selected rail/local traffic intersections. Since this project provides more efficient flow of rail traffic the potential for rail accidents will be reduced. BNSF’s emergency response capabilities will remain the same and the ability to respond to accidents will remain the same after completion of the project as before. Therefore, the net effect of the proposed project is to reduce the potential for accidents relative to the current environmental setting and provide a comparable level of response capability should an accidental release of hazardous or toxic substances occur during future operations.

There always exists a potential to expose unknown contaminated areas during construction as a result of past rail activities within the proposed project right-of-way. In virtually all locations along the BNSF alignment, construction activities have the potential to expose contaminated areas that might require remediation, as well as disturb existing oil and gas pipelines. The concern exists that the construction operations may expose contaminated areas and require remediation during construction. This will require that any contamination be identified in the field during construction and that the SWPPP contain spill prevention control countermeasures to address the potential for encountering such contamination.

Mitigation is provided below to ensure that the exposure to or of past contamination as a result of past activities in the right-of-way will not result in significant exposure to contamination for future construction employees or residents located adjacent to the alignment. This measure can reduce potential substantial adverse effects from construction activities in support of the proposed project to a less than substantial adverse level.

There are schools located within one-quarter of a mile of the project alignment. These are listed as follows:

- John Muir Elementary School, 300 W. 6th Street, Merced
- Herbert Hoover Middle School, 800 E. 26th St., Merced
- Merced Montessori School, 436 W. 1st St., Merced
- St. Patrick’s Parish School, 1400 E. 27th St., Merced
- Joseph Novack Academy, 2025 E. Santa Fe Ave., Merced
- Cesar Chavez Middle School, 161 Plainsburg Rd, Planada
- Le Grand Head start, 13071 Le Grand Rd., Le Grand
- Le Grand High School, 2961 Le Grand Rd., Le Grand

None of the short-term construction activities or the long-term operations activities attributable to the proposed project will generate substantial quantities of hazardous emissions or require the handling of acutely hazardous materials, substances or wastes near an existing or proposed school. Since the rail corridor is already in operation, the addition of a second track would not result in an additional hazard for people attending the existing schools. Note that by reducing overall hazards from rail operations as outlined above, potential exposure to schools from accidental release of hazardous or toxic materials is reduced overall relative to the existing condition. An analogy illustrates this circumstance. Assume a single lane roadway with limited daily traffic. Occasionally, vehicles encounter each other during the day, and one vehicle has to pull over and let the other pass. Occasionally, the vehicles do not see each other and an
accident occurs, with one vehicle hitting the other. By installing a second lane on the road, the potential for accidents is substantially reduced. This circumstance applies to the installation of a second track, and the potential for an accident is reduced where a two-track system replaces a single track. As a result, the effect of the proposed project is to reduce the potential for accidents to affect schools, residents or businesses along the proposed project alignment.

As described above, inherent to the use of hazardous materials is the risk of an accidental release of hazardous or toxic materials. During construction or maintenance activities in support of the proposed project, fuels, oils, solvents, and other petroleum materials classified as "hazardous" will be used to support these operations.

Mitigation measures designed to reduce, or control potential accidental releases must be implemented to minimize exposure of humans to public health risks from accidental releases. Such measures are presented in the following section. These measures are provided to reduce the potential for such accidents to occur (use of best management practices to minimize potential for accidental releases). By implementing these measures potentially substantial adverse environmental effects from accidental releases associated with implementing the Second Track Project can be reduced and would not be considered substantial.

Emergency Services
The existing rail operations and at grade road crossings place a minimal demand on fire and police protection. The proposed project may cause short-term adverse impacts on emergency services provided by fire, ambulance and law enforcement services along the rail corridor. Closure of existing roads for certain periods may be required, and would require development of alternative emergency response routes. Similarly, construction staging areas may experience an increase in trespass and theft activities over the short-term, which can place additional demand on local law enforcement services. These issues are addressed below.

Fire Protection: Along the whole construction route, but particularly at the proposed at-grade road improvements as detailed in the project description, a potential exists to adversely impact emergency response from one side of the railroad tracks to the other. To address this potential impact, mitigation measure is identified below for implementation.

Implementation of the measure provided in the following section will ensure that potential adverse impacts to emergency fire response capability are mitigated to a level such that the current level of service (as of the date of construction) is maintained.

Over the long-term, the installation of both the second main track and the better at-grade intersections will facilitate better emergency response capabilities on both sides of the tracks. The second main track will facilitate better movement of trains along the corridor, thus reducing the amount of time that a train spends at any one point, such as at an existing road that crosses the tracks at grade. No mitigation is required for the long-term emergency access and fire protection capability of the affected fire departments. Future access will be equal to or better than the existing condition.

Because the two main tracks will reduce the potential for accidents, the future incidental demand for fire emergency services will be reduced by some unquantifiable amount.
The proposed project is not located in or near a wildland fire area. No potential exists to increase fire hazards in wildland areas or in the project area. Therefore, the proposed project is not forecast to adversely affect fire hazards within the project area.

**Police Protection**: Police emergency responses will experience the same short-term impacts during construction of the second track and the grade separation as fire emergency response. Similar mitigation shall be implemented to ensure that police response times are maintained within each jurisdiction’s response time guidelines. Implementation of the measure provided in the following section will ensure that potential significant adverse impacts to emergency police response capability are mitigated to a level such that the current level of service (as of the date of construction) is maintained.

Staging and equipment storage areas shall be provided with adequate protection to minimize potential for trespass and theft. Mitigation shall be implemented by BNSF during construction to minimize demand for law enforcement response during construction.

Implementation of the measure provided in the following section can ensure that potential significant adverse demand impacts for law enforcement resources during construction are mitigated below a substantial adverse level.

The long-term impacts from implementing the proposed project will be beneficial for law enforcement access throughout the City and County for the same reasons as outlined above for fire department emergency access. Because the two main tracks will reduce the potential for accidents, the future incidental demand for police emergency services will be reduced by some unquantifiable amount.

Based on the analysis presented above emergency services will not experience significant adverse impacts from project implementation as long as mitigation measures outlined in the next section are implemented.

**Seismic Safety**

The rail corridor is not located on or near an active earthquake fault. However, BNSF would build the rail improvements to withstand seismic events following standard engineering practices. Future development in the Project Area is subject to local jurisdictions, and no other projects are known to be proposed within the BNSF right-of-way or on immediately adjacent property. The proposed project would be compatible with allowed uses in the area and is not forecast to contribute to cumulative exposure of humans in occupied structures to seismic, liquefaction or subsidence hazards.

**Alternative 2**

The impacts resulting from implementing Alternative 2 would be the same or similar to those resulting from implementation of the preferred alternative.

**No-Action Alternative**

No Public Health and Safety impacts would occur as a result of implementing the no-action alternative. However, the benefits from improvements in traffic flow and access that would result from implementation of either the preferred alternative or Alternative 2 would also not occur.
4.3.5.2 Avoidance, Minimization and/or Mitigation Measures

The following mitigation measures are recommended as conditions of project implementation. These measures will be implemented to minimize the potential for hazard effects from implementing the proposed project.

4.3.5-1 All contaminated material encountered within the Le Grand segment shall be identified, collected and delivered to a licensed treatment, disposal or recycling facility that has the appropriate systems to manage the contaminated material without significant impact on the environment.

4.3.5-2 Before determining that an area contaminated as a result of an accidental release is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken within the contaminated area to verify that these clean-up thresholds have been met.

4.3.5-3 During construction activities within existing road rights-of-way or other easements where continuous access is required, a road operation management plan shall be prepared and implemented. At a minimum this plan shall define how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of traffic at all times, but particularly during periods of high traffic volumes; adequate signage and other controls, including flagpersons, to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; and at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining. This plan shall be submitted to local jurisdiction for review and comment prior to initiating construction within a given area.

The following mitigation measure will ensure that effects of the project on emergency services are avoided or minimized.

4.3.5-4 Prior to initiating construction of the proposed project, BNSF shall submit and have approved a fire or medical emergency response access plan that meets each affected jurisdiction's response time frame. Success for this measure will be determined by the local fire agency approving and verifying that the specific access response plan and measures will allow them to continue meeting their emergency response time frame objectives.

4.3.5-5 Prior to initiating construction of the proposed project, BNSF shall submit and have approved a police emergency response access plan that meets each affected jurisdiction's response time frame. Success for this measure will be determined by the local law enforcement agency approving and verifying that the specific access response plan and measures will allow them to continue meeting their emergency response time frame objectives.

4.3.5-6 Prior to initiating construction of the proposed project, BNSF shall submit and have approved an access control plan to its staging and equipment storage areas that meets each affected jurisdiction's crime minimization standards. Success for this measure will be determined by the local law enforcement agency approving and verifying that the specific access control plan and measures will allow them to continue meeting their access control time frame objectives.
enforcement agency approving and verifying that the access control plan and measures will minimize trespass and theft activities in accordance with local requirements.

4.3.5-7 Construction of the proposed project will expose the soil beneath the track. The construction contractor shall have a monitoring program established which will identify any discolored soil or odors associated with contamination and initiate a measurement and, if required, a remediation program to prevent exposure of persons or the environment to adverse concentrations of contamination shall be implemented.

The hazards, risk of upset and human health evaluation presented above indicates that the proposed project has a potential to cause adverse health risk effects from implementing the second main track project activities. It is possible to control or avoid the potential these potential health risk effects by implementing the identified mitigation measures. Therefore, no substantial adverse hazard, risk of upset or human health effects are forecast to occur if the proposed project and identified mitigation are implemented.

4.3.6 Contaminated Sites

4.3.6.1 Impacts

Alternative 1 (Preferred Alternative)
There are known contaminated sites within a mile of the proposed project alignment, However, these would not be impacted by the proposed project as none are within the project disturbance area, or, as in the case of potential groundwater contamination sites, would not be disturbed by the proposed project since all rail construction activities are surficial. Remediation underway at any of the sites would also not be impacted by the proposed project. The jurisdictions affected by this project participate in the County’s Hazardous Waste Management Program. Coordination with the County and City of Merced prior to work in each jurisdiction, which will require local permits, should be adequate to identify particular locations of concern and avoid potential impacts to contaminated sites to a non-significant level. Substantial adverse effects would not result from project implementation.

Alternative 2
The impacts resulting from implementing Alternative 2 would be the same or similar to those resulting from implementation of the preferred alternative.

No-Action Alternative
No contaminated sites impacts would occur as a result of implementing the no-action alternative. No disturbance to sites would occur.

4.3.6.2 Avoidance, Minimization and/or Mitigation Measures

No substantial adverse effects to contaminated sites would occur as a result of project implementation. Therefore, no mitigation is recommended.
4.3.7 Recreation and Section 4(f) Properties

This section evaluates potential parks, recreational, and 4(f) properties impacts associated with the construction of the proposed project within the BNSF railroad corridor.

The information in this subsection of the EA relies on the General Plans of Merced County and the City of Merced.

4.3.7.1 Impacts

Alternative 1 (Preferred Alternative)

No recreation activities are presently allowed or conducted with the existing BNSF right-of-way, which is privately owned land by BNSF.

The issue of indirect effects on recreation, due to the project reducing access, has been addressed in the Land Use evaluation and will not be repeated here other than the following summary. The installation of the main track will not create any new access limitations to recreation. Based on past experience, the addition of the second track will reduce the amount of time that the corridor is occupied at any one location because with a second track trains can pass without having to wait to use the single track. Thus, the ability for vehicles to utilize existing road crossings over the two track system will be enhanced, not degraded.

Regarding pedestrian trespass access over two tracks, the addition of the second track does not increase the difficulty of pedestrians to get from one side of the corridor to the next. The distance through the BNSF corridor remains the same. A pedestrian crossing the two tracks would still have to engage in trespass and look carefully in both directions to make sure a train is not in the corridor. As noted above, the amount of time a train occupies any single location in the corridor will be reduced with a second track.

This project will not contribute to an increase in the population of the area beyond that already allowed or planned for within the project area. Therefore, there would be no increase above current planned for demand for parks and other recreational facilities associated with this project. No new employees will be required to support the proposed project, so no direct increase in population in the area will occur.

Parks: A number of parks occur near the proposed alignment for the second main track. However, as park facilities are not located within the existing BNSF right-of-way, no construction or operation activities that occur within the existing right-of-way will have a direct impact on parks.

No potential adverse impacts to park facilities and resources can occur since direct or indirect effects (generation of additional demand due to population growth) are not forecast to occur from implementing the proposed project. Potential impacts to parks due to construction or operation related impacts (noise, aesthetics, etc.) are addressed in the appropriate section.

The project does not propose any new development or expansion of recreational facilities. No substantial adverse effects to parks and recreation will be caused by implementing the proposed project. The proposed project would not make a cumulatively considerable contribution to parks or recreational resources within or adjacent to the rail corridor.
Alternative 2
Alternative 2 will have the same effect on recreation and 4(f) properties as the preferred alternative, which is no effect.

No-Action Alternative
The no-action alternative would have no impact on recreation and 4(f) properties as existing conditions will not change.

4.3.7.2 Avoidance, Minimization and/or Mitigation Measures

No substantial adverse effects to parks and recreation or 4(f) properties will result from implementing the proposed project. Therefore, no mitigation is required.

4.3.8 Cultural and Historic Resources

4.3.8.1 Impacts

Alternative 1 (Preferred Alternative)
As a result of the research procedures, six historic-period sites were identified within or partially within the APE. One of these, 24-000648, represents the Bradley Overhead bridge (Bridge No. 39-0044), which was previously determined to be eligible for listing in the National Register of Historic Places. In light of that determination, the site meets the Section 106 definition of a “historic property” and the CEQA definition of a “historical resource.” An MOA for demolition of the Bradley Overhead Bridge and replacement as part of another project has been approved by the Federal Highway Administration and the California State Historic Preservation Offices, and has been accepted by the Advisory Council on Historic Preservation. Mitigation of project effects has been fulfilled with the extensive documentation of the historic structure in a Historic American Engineering Record. Therefore, the proposed undertaking will not have an unmitigated effect on the Bradley Overhead Bridge.

Site 24-001877 encompasses a group of buildings located within and adjacent to the APE near Le Grand, including the 1896 Le Grand depot and three ancillary buildings. Due to the loss of historic integrity, it does not appear eligible for the National Register of Historic Places, but appears eligible for the California register of Historical Resources. Consequently, it does not qualify as a “historic property” under Section 106 but qualifies as a “historical resource” under CEQA. While the ancillary buildings at Site 24-001877 are located within the boundaries of the APE, none of these ancillary buildings is closely associated with, or contributes to, the historic significance of the former depot building, which was moved to its current location just outside the APE sometime after 1966. Furthermore, the current project plans do not include the alteration, destruction, demolition, or removal of any of the buildings at Site 24-001877. Therefore, the proposed undertaking will have no effect on this “historical resource.”

Among the other four sites in the APE, 24-001881 consists of the existing BNSF railroad line that runs through the APE, originally built in 1895-1897, and 24-001878 to 24-001880 consist of the former locations of the railroad stations Le Grand, Planada, and Merced, exhibiting remnant features such as palm trees, concrete foundations, and station signs. None of these sites appeared to be eligible for listing in the National Register or the California Register, and thus none of them constitutes a “historic property” or a “historic resource.”
Based on the combination of field surveys, parties consulted and resources consulted, the following findings were reached in the HPSR:

- Caltrans has determined that there are properties evaluated as a result of the project that are not eligible for inclusion in the National Register within the project’s APE. Under Section 106 PA Stipulation VIII.C, Caltrans requests SHPO/THPO’s concurrence in this determination.

- Caltrans has determined that there are properties evaluated as a result of the project that are eligible for inclusion in the National Register within the project’s APE. Under Section 106 PA Stipulation VIII.C, Caltrans requests SHPO/THPO’s concurrence in this determination.

- Caltrans has determined a finding of No Historic Properties Affected, according to Section 106 PA Stipulation IX.A and 36 CFR 800.4(d)(1), is appropriate for this undertaking.

- Caltrans has determined that this project will have no effect on state-owned buildings and structures within the project limits that meet National Register and/or State Historical Landmarks eligibility criteria and is providing notice and summary to SHPO pursuant to PRC paragraph 5024(f).

Further, based on these findings, no further cultural resources studies are mandated by Section 106 and CEQA provisions on the APE unless project plans change to include potential impact on the former Le Grand depot building at Site 24-001877. No Section 4(f) historic resources were identified within the project APE, so no adverse effect to such historic resources can occur from project implementation.

Alternative 2
Implementation of alternative 2 would have the same impacts as the preferred alternative.

No-Action Alternative
The no-action alternative would have no impact on cultural resources.

4.3.8.2 Avoidance, Minimization and/or Mitigation Measures

It is Caltrans’ policy to avoid cultural resources whenever possible. Therefore, the following measures will be implemented to address the discovery of cultural materials or human remains during the construction process.

4.3.8-1 In the event that cultural resources not previously identified are encountered during ground disturbing activities, such activities shall be halted until a qualified archaeologist/historian can evaluate the nature and significance of the funds. The BNSF or its construction contractor shall implement the management recommendations of the archaeologist/historian that examines any accidentally exposed cultural resources.

4.3.8-2 If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the
remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the BNSF contract manager under whom the remains were discovered shall contact the Division of Rail Senior Environmental Planner so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Based on the findings of the HPSR and the implementation of the above mitigation measures, the proposed action is not forecast to cause any substantial adverse effects on cultural resources

4.3.9 Utilities and Public Services

4.3.9.1 Impacts

Alternative 1 (Preferred Alternative)
The utility issues of concern in this evaluation are increased demand for utility capacity without adequate existing capacity, or comparable increases in capacity from implementing the proposed

The proposed project will not require connection to any utility systems, except electricity (to power signals and other track support equipment) and the stormwater drainage system. The electricity demand for the new signals is forecast to be less than that which is currently consumed by the existing system. The stormwater drainage system impacts of the proposed project are discussed in the water resources section of this EA. The proposed project may require relocation of existing utilities, where such utilities cross the proposed alignment of the second main track. Such relocations are a key element of installing a new track and support infrastructure. The potential impacts of this utility relocation are addressed below.

The proposed project is an existing rail corridor. No wastewater treatment is associated with the implementation of the project. Therefore, no wastewater discharge orders will be affected and the project has no potential to conflict with such an order.

The proposed project will require the relocation of all utilities that may conflict with installation and operations of the second main track. Utility relocation is commonly a major component of the construction activities associated with the proposed project. These activities are addressed as part of other specific issue discussions, such as water resources, air quality, cultural resources, etc. For the purpose of relocating the utility systems and ensuring that they will function properly, the mitigation measure presented in the following section will be implemented by BNSF to ensure that utility capacity and service is not diminished or significantly affected by the proposed project.

Implementation of this measure will ensure that potential substantial adverse effects associated with utility system relocation are fully mitigated to a non-substantial level during both the short- and long-term.

The proposed project is a new second main track and associated infrastructure as described in the project description. This project will require modifications to existing storm drain facilities and the construction of new stormwater drainage facilities beyond those which currently exist.
These systems were designed to convey the same volumes of flows as the existing culverts and channels that occur along the alignment. The track chart in Attachment A shows all of the locations where drainage facilities will be extended within the BNSF right-of-way.

The proposed project will use water to support construction over the short-term. The project will not require water for long-term operations. The water required for construction is forecast to be about 30,000 gallons per day of construction for the second track and associated activities. This volume of water will place a short-term demand on local water supplies which are considered adequate to meet this construction water demand. The short-term demand by the proposed project is not forecast to cause significant water supply impacts. Mitigation is provided below to require the use of recycled water where available, which would further reduce the demand for potable water resources. No mitigation is required.

No wastewater treatment demand is associated with the proposed project, so no potential for adverse impact is forecast to occur from its implementation. No mitigation is required.

As the project is served by a landfill with sufficient permitted capacity to meet the project's solid waste disposal needs, no mitigation is required.

The proposed project will generate solid waste during construction. The soil/sediment excavated will either be utilized within the right-of-way as fill or it will be made available to local jurisdictions and/or commercial haulers as fill. The asphalt and other waste will be transported and disposed of at appropriate recycling or solid waste landfills. Merced County has identified sufficient disposal capacity to meet the short- and long-term needs of County residents. Based on the availability of adequate disposal and recycling capacity, disposal of the construction debris from the proposed project is not forecast to result in significant impacts to the environment.

The solid waste disposal of construction debris that will be generated by the proposed project, and disposal of contaminated soil or sediment that may be encountered during construction, will be carried out in full compliance with pertinent statutes and regulations. Impacts in this area would not be substantial.

Public Schools and other Public Services
The proposed project would not have an adverse effect on public schools and other public services. Traffic flow in the local area may improve as there is less delay at grade crossings and therefore access to facilities and emergency evacuations of these services may be improved.

Alternative 2
Alternative 2 would result in the same impacts to utilities and services as the preferred alternative with potentially fewer impacts to utilities at the channel crossings that would not be improved and potentially less improvement in traffic delays at grade crossings and consequently less improvement in access to facilities.

No-Action Alternative
The no action alternative would result in no adverse effects to public services and utilities but would also not reduce traffic delays at grade crossings and potentially improve access to facilities as with the other two alternatives.
4.3.9.2  Avoidance, Minimization and/or Mitigation Measures

The following mitigation measure will be implemented to ensure that all utility lines within the project alignment that must be relocated will be relocated in a manner consistent with maintaining the continued operation of the utility with a minimum of disruption.

4.3.9-1  Prior to initiating relocation of any utility system located within the railroad right-of-way, BNSF will notify the pertinent utility of the BNSF construction plan. The BNSF will work with the utility under the terms of the utilities agreement to occupy the BNSF’s right-of-way to limit short-term system relocation effects and minimize outages to the degree feasible. BNSF shall submit sufficient engineering data to verify that remaining utility systems will function as effectively after relocation as it does before relocation.

The following mitigation measure will ensure that the water used for fugitive dust control and other construction activities will be recycled water, where it is available and permitted for such use by the Regional Water Board.

4.3.9-2  Where available and permitted, the construction contractor shall utilize recycled water to control fugitive dust. The contractor shall make a positive demonstration to BNSF that such recycled water is or is not available prior to initiating ground disturbing activities requiring fugitive dust control.

4.3.9-3  Approving and verifying the traffic management and access control plan and measures will minimize trespass and theft activities in accordance with local requirements.

4.4  CONSTRUCTION IMPACTS

4.4.1  Impacts

4.4.1.1  Alternative 1 (Preferred Alternative)

The primary adverse effects of the proposed project are a result of construction activities and the detailed impact forecasts contained in the previous sections of this document. All construction activities are either less than adverse impacts with no mitigation or less than adverse with implementation of mitigation measures.

4.4.1.2  Alternative 2

Implementation of Alternative 2 would result in the same impacts as implementation of the preferred alternative with exception of resulting in fewer impacts due to construction of bridges over and within jurisdictional waters.

4.4.1.3  No-Action Alternative

Under the no-action alternative there would be no construction. Therefore, no construction impacts could occur under this alternative.
4.4.2 Avoidance, Minimization and/or Mitigation Measures

Mitigation measures that reduce all substantial effects of the proposed project are recommended within previous sections of this EA. With mitigation, there would be no substantial adverse effects resulting from construction of the proposed project.

4.5 CUMULATIVE IMPACTS

4.5.1 Impacts

4.5.1.1 Alternative 1 (Preferred Alternative)

Implementation of all the proposed improvements for the Project will contribute pollutants to the SJVACPD from construction of the facilities for a period estimated to be 12 to 18 months. These facilities are essential infrastructure system components designed to provide adequate rail and surface traffic flow in this portion of the rail corridor. The regional air planning agencies, MCAG and SJVAPCD, assume in their air planning documents (the RCPG and AQMP) that rail projects of this type are consistent with programs to reduce overall emissions and the emission forecast presented above verifies this assumption. Because this project is not forecast to cause substantial short- or long-term emissions or exceed regional significance thresholds, and because mitigation is provided to monitor and minimize localized construction impacts, the proposed project will not contribute to substantial short-term cumulative air quality impacts. Further, based on the analysis presented above, long-term pollution emissions from trains and motor vehicles are forecast to be reduced by some unquantifiable amount as a result of implementing this project. Therefore, implementation of the proposed project, is not forecast to cause or contribute to cumulatively considerable air quality impacts.

Cumulative noise effects will be reduced by the proposed project due to reducing the total amount of time that trains remain within the Le Grand segment and to eliminating trains stopped on sidings and using full power settings to re-start after being held on sidings. No additional surface runoff will be generated within the BNSF right-of-way that could cause an adverse cumulative contribution to downstream flows.

The area circulation system will be enhanced by the proposed grade separation, but the proposed project will contribute a minor amount of demand to the cumulative demand for water in the general area. No other public services, other than emergency services, are forecast to incur additional cumulative effects from implementing this project. Emergency services will benefit from implementing the proposed project and the ability to meet the cumulative demand for such services will be improved.

No other cumulative impact issues have been identified.

4.5.1.2 Alternative 2

Cumulative impacts resulting from implementation of alternative two would be similar to those experienced with implementation of the preferred alternative. However, cumulative impacts to jurisdictional waters would be reduced to zero under this alternative.
4.5.1.3 No-Action Alternative

No cumulative impacts would result from the no-action alternative. However, if no-action is taken to improve train flow in the project area, air quality impacts and noise and vibration impacts could increase as the number of train trips increase in the future.

4.6 GROWTH

The growth inducement issue related to the proposed project is partly addressed in the Air Quality section of this document. The conclusion reached regarding the project’s consistency with regional growth and air quality attainment projections stated in this subsection: The regional air planning agencies have stated in the CAP that rail projects of this type are consistent with programs to reduce overall emissions.

Traditionally, significant growth is induced in one of three ways. In the first instance, a new project is located in an isolated area and when developed it brings sufficient urban infrastructure to cause new or additional development pressure on the intervening and surrounding land. This type of induced growth leads to conversion of adjacent acreage to higher intensity uses, either unexpectedly or through accelerated development. This conversion occurs because the adjacent land becomes more suitable for development and, hence, more valuable because of the availability of the new infrastructure. This type of growth inducement is typically termed “leap frog” or “premature” development because it creates an island of higher intensity developed land within a larger area of lower intensity land use.

The proposed project will not cause or contribute to “leap frog” or “premature” development because its purpose is enhance the efficiency of train operations while improving safety for surface transportation by improving track segments and improving at-grade crossings. All circulation system components already exist within established alignments and none of the proposed facility components will extend into new areas that could be considered to contribute to leap frog or premature development. Land adjacent to the rail corridor and grade crossing locations is already developed with sub-urban/rural land uses, or planned for long-term agricultural use. Because the proposed project and support facilities envisioned by this project do not extend service to new uses or areas not already served by existing rail and surface transport system, it has no potential to cause or contribute to accelerated development within the project’s area of potential impact. Thus, implementation of the proposed project cannot cause or contribute to leap frog or premature growth.

A second type of growth inducement is caused when a project of large size, relative to the surrounding community or area, is developed within a community and impacts the surrounding community by producing a “multiplier effect,” which results in substantial indirect community growth, not necessarily adjacent to the project site or of the same type of use as the project itself. This type of stimulus to community growth is typified by the development of major destination recreation facilities, such as Disney World near Orlando, Florida, or around a military base, such as the Marine Corps Air Ground Combat Center near Twentynine Palms. The proposed project is not a new development that has a potential to cause growth through a “multiplier effect.” The rail and surface transportation systems are already in place and this type of project, improvements in the circulation system, does not have a potential to induce population growth or growth in the economy itself. The area served by the proposed project is a sub-urban/rural/agricultural area. The proposed project does not remove any existing constraint
on future development because existing areas to be served by the proposed project have alternative means to meet future transportation demands within the project area. No new “large” projects are known to be proposed or contingent on the implementation of the proposed project and no potential for this type of multiplier growth inducement can be caused by the implementing the proposed project.

A third and more subtle type of growth inducement occurs when land use plans are established that create a potential for growth because the available land and the permitted land uses result in the attraction of new development. This type of growth inducement is often attributed to projects designed to provide new infrastructure necessary to meet the land use objectives, or community vision, contained in the governing land use agencies’ general plans. In this case, the proposed project will install new infrastructure, but it will be an enhancement of an existing transportation system that is not forecast to attract new development. It is assumed that the proposed project’s features will allow both the rail and surface transport systems to operate more efficiently and safely to meet the current and future demand.

The question still remains as to whether the implementation of the proposed project accommodates existing commercial demand and the related environmental impacts caused by the increased population that can utilize the project’s new capacity in the future. The answer to this question can be found in the land use planning process which now determines the future vision of the communities and region to which the proposed project is a key transportation component. The ultimate vision of the area of potential impact is established by the regional planning agencies in conjunction with local general plans. These plans assume that the transportation infrastructure required to support the region’s population will be in place as growth occurs in the future. The net effect of these general and regional plans is to create a set of expectations regarding future land use, commercial demand and growth that may or may not occur depending upon the actual carrying capacity of the various utility system resources required to meet future growth. The proposed project provides one alternative transportation system improvement to meet this defined future growth.

The position taken in this document is that the utility and transportation planning process is appropriately a passive (accommodating) role, not an active (inducing) role, in future growth that is dictated by local land use plans. If communities within the project’s area of potential impact chose to restrict growth and maintain a certain vision of the future as a static or slowly growing entity, the land use planning agencies (cities and counties) had the opportunity during the general planning process to establish such plans for the establishment of a carrying capacity based land use plan. Under such circumstances, the demand for improvements to the rail system and the local surface transportation system is justified based on the existing population and utilization factors. In this instance, the proposed project is deemed to accommodate a level of future growth that is consistent with adopted General Plans’ land use designations, and the proposed project will not modify this level of future growth.

Under this circumstance, this evaluation of the third type of growth inducement for the proposed project concludes that it is not adversely growth inducing; rather, it is growth accommodating. It will not provide rail or surface traffic system improvements greater than that contained in both regional planning documents, such as the Regional Comprehensive Plan, the Air Quality Management Plan, and local growth forecasts. It also does not include infrastructure designed to support more intensive uses of land.
Alternative 2 is similar to the preferred alternative, in that it does not induce or facilitate growth. However, under Alternative 2, the entire track segment would not be improved to two main lines and therefore the air quality, noise and other potential benefits from implementation of the preferred alternative would likely be less.

Implementation of the no-action alternative would not induce or facilitate any growth. However, under this alternative the track segment would remain in its existing condition and the air quality, noise and other potential benefits from implementation of the preferred alternative, or Alternative 2 would not occur.

4.7 IRREVERSIBLE / IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project will utilize natural resources such as steel, sand, gravel and concrete to construct the rail corridor and associated improvements. This project will also commit the land to its continued use for rail facilities. These are not considered irreversible/irretrievable commitments of these resources. Should the proposed facilities no longer be needed, the facilities could be demolished and the steel, concrete and other materials recycled for other uses. Implementation of this project is not an irreversible commitment of the site to rail facility uses.

In the long term, this project will not increase the use of energy for rail transport of people or goods. The rail corridor improvements are likely to improve the reliability and efficiency of passenger and freight train transportation and lead to increased ridership of this alternative form of transportation. In the long term, this project is anticipated to reduce the use of energy for transportation compared with what would occur without the proposed project.

This project will result in an increase in the short term use of energy to manufacture, deliver and construct the proposed facilities. The use of non-renewable energy sources such as petroleum products and possibly natural gas and/or coal is considered an irreversible, irretrievable commitment of these natural resources. However, this commitment is short-term and based on the minimal amount of these resources that will be consumed in relation to the energy resources available, is considered a less than significant impact.
5.0 CEQA ENVIRONMENTAL CHECKLIST FORM

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

<table>
<thead>
<tr>
<th>Aesthetics</th>
<th>Agriculture Resources</th>
<th>Air Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Resources</td>
<td>Cultural Resources</td>
<td>Geology / Soils</td>
</tr>
<tr>
<td>Hazards &amp; Hazardous Materials</td>
<td>Hydrology / Water Quality</td>
<td>Land Use / Planning</td>
</tr>
<tr>
<td>Mineral Resources</td>
<td>Noise</td>
<td>Population / Housing</td>
</tr>
<tr>
<td>Public Services</td>
<td>Recreation</td>
<td>Transportation/Traffic</td>
</tr>
<tr>
<td>Utilities / Service Systems</td>
<td>Mandatory Findings of Significance</td>
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</tbody>
</table>

There are no impacts that are "Potentially Significant Impact" as indicated by the checklist on the following pages. All impacts resulting from project implementation would be less than significant or less than significant with mitigation incorporated.
**DETERMINATION** (To be completed by the Lead Agency)

On the basis of this initial evaluation:

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>I find that the proposed project <strong>COULD NOT</strong> have a significant effect on the environment, and a <strong>NEGATIVE DECLARATION</strong> will be prepared.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A <strong>MITIGATED NEGATIVE DECLARATION</strong> will be prepared.</td>
</tr>
<tr>
<td></td>
<td>I find that the proposed project <strong>MAY</strong> have a significant effect on the environment, and an <strong>ENVIRONMENTAL IMPACT REPORT</strong> is required.</td>
</tr>
<tr>
<td></td>
<td>I find that the proposed project <strong>MAY</strong> have a &quot;potentially significant impact&quot; or &quot;potentially significant unless mitigated&quot; impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An <strong>ENVIRONMENTAL IMPACT REPORT</strong> is required, but it must analyze only the effects that remain to be addressed.</td>
</tr>
<tr>
<td></td>
<td>I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or <strong>NEGATIVE DECLARATION</strong> pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or <strong>NEGATIVE DECLARATION</strong>, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.</td>
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</table>

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
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<th>Signature</th>
<th>Date</th>
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</table>
EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporated of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XIV, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   
   a) The significance criteria or threshold, if any, used to evaluate each question; and
   b) The mitigation measure identified, if any, to reduce the impact to less than significance.
## I. AESTHETICS – Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Have a substantial adverse effect on a designated scenic vista or designated scenic highway?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>b) Substantially damage publicly visible scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings?</td>
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<td></td>
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<td>X</td>
</tr>
<tr>
<td>c) Substantially degrade the existing visual character or quality of the site and its surroundings?</td>
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<td></td>
<td>X</td>
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<tr>
<td>d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

**Substantiation**

See Sections 3.3.2 and 4.3.2: Land Status, Land Use, Zoning and Aesthetics
II. AGRICULTURE RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Convert viable farmland (Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</td>
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<td>X</td>
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<tr>
<td>c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.2 and 4.3.2: Land Status, Land Use, Zoning and Aesthetics and 3.1.4 and 4.1.4: Geology and Soils
### III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Conflict with or obstruct implementation of the applicable air quality plan?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) 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)?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>d) Expose sensitive receptors to substantial pollutant concentrations?</td>
<td></td>
<td>X</td>
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<tr>
<td>e) Create objectionable odors affecting a substantial number of people?</td>
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<td>X</td>
<td></td>
<td></td>
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<tr>
<td>f) Result in greenhouse gas emissions that would hinder or delay the State’s ability to meet the reduction targets contained in AB 32?</td>
<td></td>
<td>X</td>
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</tbody>
</table>

**Substantiation:**

See Sections 3.1.1 and 4.1.1: Air Quality
IV. BIOLOGICAL RESOURCES — Would the project:

<table>
<thead>
<tr>
<th>Question</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 or policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Have a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the State of California Department of Fish and Game or U.S. Fish and Wildlife Service?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>e) Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Substantiation:

See Sections 3.2 and 4.2: Biological Environment
### V. CULTURAL RESOURCES – Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>Disturb any human remains, including those interred outside of formal cemeteries?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.8 and 4.3.8: Cultural and Historic Resources
<table>
<thead>
<tr>
<th>VI. GEOLOGY AND SOILS — Would the project:</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) 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? Refer to Division of Mines and Geology Special Publication 42.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) Strong seismic groundshaking?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii) Seismic-related ground failure, including liquefaction?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv) Landslides?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Result in substantial soil erosion or the loss of topsoil?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) 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 or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risk to life or property?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Substantiation:

See Sections 3.1.4 and 4.1.4: Geology and Soils and 3.3.5 and 4.3.5: Public Health and Safety
VII. HAZARDS AND HAZARDOUS MATERIALS — Would the project:

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

<table>
<thead>
<tr>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.5 and 4.3.5: Public Health and Safety and 3.3.6 and 4.3.6: Contaminated Sites
### VIII. HYDROLOGY AND WATER QUALITY

Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant Impact with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Violate any water quality standards or waste discharge requirements?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>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 offsite?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>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 onsite or offsite?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>f)</td>
<td>Otherwise substantially degrade water quality?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g)</td>
<td>Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>h)</td>
<td>Place within a 100-year flood hazard area structures which would impede or redirect flood flows?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>j) Inundation by seiche, tsunami, or mudflow?</td>
<td>Potentially Significant Impact</td>
<td>Less Than Significant with Mitigation Incorporated</td>
<td>Less Than Significant Impact</td>
<td>No Impact</td>
</tr>
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<td>---</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.1.2 and 4.1.2: Water Resources and 3.3.5 and 4.3.5: Public Health and Safety.
IX. LAND USE AND PLANNING — Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Physically divide an established community?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Conflict with any applicable habitat conservation plan or natural community conservation plan?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substantiation:

See Sections 3.3.2 and 4.3.2: Land Status, Land Use, Zoning and Aesthetics 3.2 and 4.2: Biological Environment
X. MINERAL RESOURCES — Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Result in the loss of availability of any known mineral resource that would be of value to the region and the residents of the state?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substantiation:

See Sections 3.1.4 and 4.1.4: Geology and Soils
Le Grand to Merced
Environmental Assessment

<table>
<thead>
<tr>
<th>XI. NOISE — Would the project result in:</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant Impact with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 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?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Substantiation:

See Sections 3.1.3 and 4.1.3: Noise and Vibration
### XII. POPULATION AND HOUSING — Would the project:

<table>
<thead>
<tr>
<th>Would the project:</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant Impact with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Induce substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.2 and 4.3.2: Land Status, Land Use, Zoning and Aesthetics and 4.6: Growth
### XIII. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Fire protection?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Police protection?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Schools?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Recreation/Parks?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Other public facilities?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.5 and 4.3.5: Public Health and Safety, 3.3.9 and 4.3.9: Utilities and Public Services and 3.3.7 and 4.3.7: Recreation and Section 4(f) Properties.
### XIV. RECREATION —

<table>
<thead>
<tr>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
</table>

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?  

- X

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?  

- X

**Substantiation:**

See Sections 3.3.7 and 4.3.7: Recreation and Section 4(f) Properties
### XV. TRANSPORTATION / TRAFFIC — Would the project:

<table>
<thead>
<tr>
<th>Would the project:</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b) Exceed, either individually or cumulatively, level of service standards established by local or regional agencies for designated roads or highways?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) 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?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>e) Result in inadequate emergency access?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Result in inadequate parking capacity?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.3.5 and 4.3.5: Public Health and Safety and 3.3.1 and 4.3.1: Transportation
### XVII. UTILITIES AND SERVICE SYSTEMS

- Would the project:

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b)</td>
<td>Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c)</td>
<td>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?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>d)</td>
<td>Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>e)</td>
<td>Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>f)</td>
<td>Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>g)</td>
<td>Comply with federal, state, and local statutes and regulations related to solid waste?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Substantiation:**

See Sections 3.1.2 and 4.1.2: Water Resources, 3.3.5 and 4.3.5: Public Health and Safety and 3.3.9 and 4.3.9: Utilities and Public Services
**XVIII. MANDATORY FINDINGS OF SIGNIFICANCE**

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact or Does Not Apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Substantiation:**

a) See Sections 3.2 and 4.2: Biological Environment and 3.3.8 and 4.3.8: Cultural and Historic Resources

b) See Section 4.5: Cumulative impacts

c) See Sections 3.1.1 and 4.1.1: Air Quality; 3.1.2 and 4.1.2: Water Resources; 3.1.3 and 4.1.3: Noise and Vibration; 3.1.4 and 4.1.4: Geology and Soils; 3.3.1 and 4.3.1 Transportation; 3.3.2 and 4.3.2: Land Status, Land Use, Zoning and Aesthetics; 3.3.5 and 4.3.5: Public Health and Safety; 3.3.6 and 4.3.6: Contaminated Sites; 3.3.7 and 4.3.7: Recreation and Section 4(f) Properties; 3.3.8 and 4.3.8: Cultural and Historic Resources; 3.3.9 and 4.3.9: Utilities and Public Services; and 4.6: Growth

**Conclusion**

With implementation of the required mitigation listed in this document, the proposed construction and operation of the Le Grand double track project is not forecast to cause any significant adverse environmental impacts to any of the environmental resource issues addressed in this Initial Study/Environmental Assessment. The Division of Rail proposes to issue a Negative Declaration with mitigation as the appropriate environmental determination for this project to comply with the California Environmental Quality
Act (CEQA). The DOR will issue a Notice of Intent to Adopt a Negative Declaration and distribute this document for public review for a 30-day review process. Assuming potential project impacts remain less than significant, and after receipt of comments and development of responses to comments, the DOR will consider adopting the Negative Declaration. All parties that submit comments will be notified of the date that the agency will consider approval of the Negative Declaration.
6.0 REFERENCES

American Factfinder, U.S. Census Bureau, http://factfinder.census.gov

CRM TECH, Historic Property Survey Report for Le Grand to Merced, California – Double Track Project, BNSF Railway Company Mainline Track (MP 1039.9 to MP 1056.4), March 13, 2009

Envirostor, State of California, Department of Toxic substances Control, http://www.envirostor.dtsc.ca.gov/public


Giroux & Associates, Air Quality Impact Analysis for BNSF Le Grand Double Track Project, MP 1039.93 to MP 1056.36, San Joaquin Valley, California, March 24, 2009


J.L. Patterson, Preliminary Engineering Design, March 2009

Merced Vision 2015 General Plan, April 1997, City of Merced

City of Merced Municipal Code

Merced County Year 2000 General Plan, December 1990

Merced County Zoning Code

University Community Plan Final EIR, November 2004, County of Merced

Final EIR County of Merced Enterprise Zone EIR, July 2008

MCAG Merced County Association of Governments, Programs and Projects, http://www.mcagov.org/


State of California, Department of Finance website: [http://www.dof.ca.gov](http://www.dof.ca.gov)

Tom Dodson & Associates, Biological Assessment for the Le Grand Double Tracking MP 3510.0 to MP 1056.17, March 2009
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FIGURES
FIGURE 1
Regional Location
FIGURE 2-2
Project Location (Kadota - Central West)
FIGURE 2-3
Project Location (Tuttle - Central East)
FIGURE 2-4
Project Location (Planada)
FIGURE 2-6
Project Location (Le Grand - Southend)