



DRAFT

ENVIRONMENTAL IMPACT REPORT

FOR THE

2010 SHASTA COUNTY REGIONAL TRANSPORTATION PLAN (SCH: 2008092090)

APRIL 2010

Prepared for:

Shasta County Regional Transportation Agency
1855 Placer Street
Redding, CA 96001
(530) 225-5475

Prepared by:

De Novo Planning Group
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Sacramento, CA 95819
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D e N o v o P l a n n i n g G r o u p

A Land Use Planning, Design, and Environmental Firm



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Chapters	Page Numbers
Executive Summary.....	ES-1
1.0 Introduction	1.0-1
1.1 Shasta County RTPA.....	1.0-1
1.2 2010 Shasta County RTP - Vision and Function	1.0-1
1.3 Purpose of the EIR	1.0-2
1.4 Type of EIR	1.0-2
1.5 Requirements of a Master EIR	1.0-3
1.6 Intended Uses of the MEIR	1.0-4
1.7 Known Responsible and Trustee Agencies	1.0-4
1.8 Environmental Review Process.....	1.0-5
1.9 Organization and Scope	1.0-7
1.10 Comments Received on the Notice of Preparation	1.0-8
2.0 Project Description	2.0-1
2.1 Project Location.....	2.0-1
2.2 Project Goals and Objectives	2.0-1
2.3 Project Description.....	2.0-7
2.4 Uses of the EIR and Required Agency Approvals.....	2.0-52
3.1 Aesthetics.....	3.1-1
3.1.1 Environmental Setting	3.1-1
3.1.2 Regulatory Setting	3.1-6
3.1.3 Impacts and Mitigation Measures	3.1-9
3.2 Agricultural Resources	3.2-1
3.2.1 Environmental Setting	3.2-1
3.2.2 Regulatory Setting	3.2-6
3.2.3 Impacts and Mitigation Measures	3.2-8
3.3 Air Quality and Climate Change	3.3-1
3.3.1 Environmental Setting	3.3-1
3.3.2 Regulatory Setting	3.3-11
3.3.3 Impacts and Mitigation Measures	3.3-14
3.4 Biological Resources	3.4-1
3.4.1 Environmental Setting	3.4-1

3.4-2 Regulatory Setting	3.4-19
3.4.3 Impacts and Mitigation Measures	3.4-23
3.5 Cultural Resources	3.5-1
3.5.1 Environmental Setting	3.5-1
3.5.2 Regulatory Setting.....	3.5-14
3.5.3 Impacts and Mitigation Measures	3.5-18
3.6 Geology and Soils	3.6-1
3.6.1 Environmental Setting	3.6-1
3.6.2 Regulatory Setting.....	3.6-8
3.6.3 Impacts and Mitigation Measures	3.6-11
3.7 Greenhouse Gases and Climate Change	3.7-1
3.7.1 Environmental Setting	3.7-1
3.7-2 Regulatory Setting	3.7-5
3.7.3 Impacts and Mitigation Measures	3.7-10
3.8 Hazards and Human Health	3.8-1
3.8.1 Environmental Setting	3.8-1
3.8.2 Regulatory Setting.....	3.8-6
3.8.3 Impacts and Mitigation Measures	3.8-8
3.9 Hydrology and Water Quality	3.9-1
3.9.1 Environmental Setting	3.9-1
3.9.2 Regulatory Setting.....	3.9-7
3.9.3 Impacts and Mitigation Measures	3.9-10
3.10 Land Use and Population	3.10-1
3.10.1 Environmental Setting	3.10-1
3.10.2 Regulatory Setting.....	3.10-10
3.10.3 Impacts and Mitigation Measures	3.10-17
3.11 Noise	3.11-1
3.11.1 Environmental Setting	3.11-1
3.11-2 Regulatory Setting	3.11-9
3.11.3 Impacts and Mitigation Measures	3.11-15
3.12 Transportation and Circulation.....	3.12-1
3.12.1 Environmental Setting	3.12-1

3.12.2 Regulatory Setting	3.12-11
3.12.3 Impacts and Mitigation Measures	3.12-12
4.0 Other CEQA-Required Topics	4.0-1
4.1 Cumulative Setting and Impact Analysis.....	4.0-1
4.2 Growth-Inducing Effects	4.0-11
4.3 Significant Irreversible Effects	4.0-15
4.4 Significant and Unavoidable Impacts.....	4.0-16
4.5 Issues Determined to Be Less Than Significant.....	4.0-17
5.0 Alternatives to the Proposed Project	5.0-1
5.1 CEQA Requirements.....	5.0-1
5.2 Alternatives Considered in this EIR.....	5.0-6
5.3 Environmental Analysis.....	5.0-11
6.0 Report Preparers.....	6.0-1
7.0 References	7.0-1

Tables	Page Numbers
Table ES-1: Comparison Summary of Alternatives to the Proposed Project.....	ES-2
Table ES-2: Project Impacts and Proposed Mitigation Measures.....	ES-5
Table 2-1: short term Transit Maintenance, Operations and Capital Funding (in dollars).....	2.0-12
Table 2-2: long term Transit Maintenance, Operations and Capital Funding (in dollars)	2.0-12
Table 2-3: Short Range (2010-2014) SHOPP Projects Programmed-CALTRANS (District 2)	2.0-15
Table 2-4: Short-Range(2010-2014) SHOPP Projects Not Programmed.....	2.0-16
Table 2-5: Shasta County Bridge Replacement Plan (20-Year Forecast - years 2009-2016) (in \$1000s)	2.0-17
Table 2-6: Shasta County Bridge Replacement Plan (20-Year Forecast - years 2016-2023) (in \$1000s)	2.0-18
Table 2-7: Shasta County Bridge Replacement Plan (20-Year Forecast - years 2023-2030) (in \$1000s)	2.0-19
Table 2-8: Summary of Bridge Projects Short-Term-Redding Area	2.0-10
Table 2-9: Long-Range (2020-2030) SHOPP Projects Not Programmed.....	2.0-22
Table 2-10: Summary of Capacity Projects-Caltrans.....	2.0-23
Table 2-11: Summary of Safety Projects-Shasta County	2.0-24
Table 2-12: Summary of Capacity Increasing Projects-Shasta County	2.0-26
Table 2-13: Summary of Safety Projects-City of Anderson	2.0-28
Table 2-14: Summary of Capacity Increasing Projects-City of Anderson	2.0-29
Table 2-15: Summary of Safety Projects-City of Redding	2.0-32
Table E 2-16: Summary of Capacity Increasing Projects-City of Redding	2.0-33

Table E 2-17: Summary of Safety and Capacity Increasing Projects-City of Shasta Lake	2.0-37
Table 2-18: Shasta County Bikeways	2.0-42
Table 2-19: City of Anderson Bikeways.....	2.0-43
Table 2-20: City of Redding Bikeways	2.0-44
Table 2-21: City of Shasta Lake Bikeways	2.0-45
Table 2-22: Future Multiple-Use Trails in the Redding Area	2.0-46
Table 2-23: Project Funding Summary -Caltrans	2.0-48
Table 2-24: Project Funding Summary -Shasta County.....	2.0-49
Table 2-25: Project Funding Summary-City of Anderson.....	2.0-50
Table 2-26: Project Funding Summary-City of Redding	2.0-51
Table 2-27: Project Funding Summary-City of Shasta Lake	2.0-52
Table 3.1-1: Officially Designated State Scenic Highway – Shasta County	3.1-3
Table 3.1-2: Officially Designated County Scenic Highway – Shasta County.....	3.1-3
Table 3.1-3: Eligible State Scenic Highway – Shasta County.....	3.1-3
Table 3.1-4: National Rivers Inventory – Shasta County.....	3.1-5
Table 3.2-1: Summary comparison of Crop Values.....	3.2-2
Table 3.2-2: Shasta County Farmlands and Other Lands by Land Use Category	3.2-4
Table 3.3-1: Federal and State Ambient Air Quality Standards	3.3-8
Table 3.3-2: State and National Attainment Status	3.3-9
Table 3.3-3: Ambient Air Quality Monitoring Data (Anderson – North Street)	3.3-10
Table 3.3-4: Ambient Air Quality Monitoring Data (Redding – Health Department Roof).....	3.3-10
Table 3.3-5: Ambient Air Quality Monitoring Data (Shasta Lake)	3.3-11
Table 3.3-6: Ambient Air Quality Monitoring Data (Lassen Natl Park)	3.3-11
Table 3.3-7: Shasta County AQMD Air Quality Emissions Thresholds	3.3-14
Table 3.3-8: National Attainment Status.....	3.3-15
Table 3.3-9: State Attainment Status	3.3-16
Table 3.3-10: ROG, CO, and NOx Emissions (Tons per Day)	3.3-16
Table 3.3-11: Particulate Matter Emissions (Tons per Day).....	3.3-17
Table 3.3-12: Regional Vehicle Miles Traveled Comparison.....	3.3-20
Table 3.4-1: Special Status Species Present or Potentially Present in Shasta County	3.4-11
Table 3.6-1: Fault Activity Rating	3.6-3
Table 3.6-2: Modified Mercalli Intensity Scale for Earthquakes.....	3.6-3
Table 3.7-1: VMT, Daily Trips, Vehicles and CO2 (1990 through 2030).....	3.7-11
Table 3.8-1: EnviroStor Database.....	3.8-11
Table 3.9-1. State of California Watershed Hierarchy Naming Convention	3.9-1
Table 3.9-2: Hydrologic Units (Watersheds)	3.9-2
Table 3.9-3: Shasta County Section 303(d) Impaired Waterbodies.....	3.9-6
Table 3.10-1: Population Estimates for Major Jurisdictions and Subareas in Shasta Co.	3.10-4

Table 3.10-2: Shasta County Housing by Housing Type (Cities and Unincorporated Area) - 2009	3.10-5
Table 3.10-3: Region to State Profile of Selected Employment Characteristics per 2000 Census	3.10-7
Table 3.10-4: Region to State Profile of Selected Employment Characteristics per 2000 Census	3.10-7
Table 3.10-5: Region to State Profile of Selected Employment Characteristics per 2000 Census	3.10-7
Table 3.10-6: Age Distribution	3.10-8
Table 3.10-7: Household Income in 1999	3.10-8
Table 3.10-8: Number of Vehicles Per Household (HH)	3.10-8
Table 3.10-9: Region to State Profile of Selected Characteristics	3.10-9
Table 3.10-10: Census Place to State Profile of Selected Characteristics.....	3.10-9
Table 3.10-11: Census Place to State Profile of Selected Characteristics.....	3.10-10
Table 3.11-1: Common Acoustical Descriptors.....	3.11-4
Table 3.11-2: Existing (Year 2010) Traffic Noise Levels	3.11-6
Table 3.11-5: Construction Equipment Noise Levels	3.11-18
Table 3.11-6: Predicted Increases in Future (Year 2030) Traffic Noise Levels.....	3.11-21
Table 3.11-7: Predicted Future (Year 2030) Traffic Noise Contours.....	3.11-22
Table 3.11-8: Representative Vibration Source Levels for Construction Equipment.....	3.11-23
Table 3.12-1: State Highways in Shasta County.....	3.12-3
Table 3.12-2: Bicycle Routes on State Highways in Shasta County	3.12-9
Table 3.12-3: Regional Performance Indicator Comparison.....	3.12-13
Table 3.12-4: Roadway Segment Level of Service Analysis	3.12-14
Table 4.1-1: Population Estimates for Major Jurisdictions and Subareas in Shasta Co.	4.0-1
Table 4.1-2: Region to State Profile of Selected Employment Characteristics per 2000 Census	4.0-2
Table 5.2-1: Unconstrained Projects.....	5.0-7
Table 5.3-1: Predicted Increases in Future (Year 2030) Traffic Noise Levels.....	5.0-14
Table 5.3-2: Regional Transportation Comparison	5.0-15
Table 5.3-3: Roadway Levels of Service Comparison between the alternatives	5.0-16
Table 5.3-4: Comparison Summary of Alternatives	5.0-22

Figures

Page Numbers

Note: Figures are located at the end of the chapters.

Figure 2.1-1 Regional Location	2.0-55
Figure 2.1-2 Vicinity Map	2.0-57

Figure 3.1-1 Scenic Resources.....	3.1-11
Figure 3.2-1 Important Farmlands and Williamson Act Lands.....	3.2-11
Figure 3.3-1 Air Basins and Districts.....	3.3-23
Figure 3.4-1 Bioregions Map.....	3.4-31
Figure 3.4-2 Land Cover Types.....	3.4-33
Figure 3.6-1 Geologic Hazards Map.....	3.6-15
Figure 3.8-1 Superfund Sites.....	3.8-15
Figure 3.9-1 Hydrology Map.....	3.9-17
Figure 3.10-1 Land Uses.....	3.10-21
Figure 3.11-1 Common Noise Levels.....	3.11-25
Figure 3.11-2 Existing (Year 2002) Noise Contours – Redding Municipal Airport.....	3.11-27
Figure 3.11-3 Future (Year 2022) Noise Contours – Redding Municipal Airport.....	3.11-29
Figure 3.11-4 Future (Year 2022) Noise Contours – Benton Airpark.....	3.11-31
Figure 3.12-1 Regional Roadway Network.....	3.11-17

Exhibits

Page Numbers

Exhibit 3.3-1: National MSAT Emission Trends 1999 – 2050 for Vehicles Operating on Roadways Using EPA’s MOBILE6.2 Model.....	3.3-19
Exhibit 3.10-: Population Estimates in Shasta Co. (1990-2040).....	3.10-4
Exhibit 4.0-1: Means of Transportation to Work in Shasta Co.	4.0-3
Exhibit 4.2-1: Population Estimates in Shasta Co. (1990-2040).....	4.0-13

Appendices

Appendix A – Notice of Preparation, Initial Study, Written Public Comments, Scoping Meeting
Appendix B – EMFAC Modeling
Appendix C – Native American Consultation - Correspondence
Appendix D – Active Transportation/Research Compiled from Rails to Trails Conservancy
Appendix E – Noise Modeling

INTRODUCTION

The Shasta County Regional Transportation Agency (SCRTPA) has determined that a Master Environmental Impact Report (MEIR) is required for the 2010 Shasta County Regional Transportation Plan Update (2010 RTP or proposed project) pursuant to the requirements of the California Environmental Quality Act (CEQA). According to CEQA Guidelines the MEIR procedure is an alternative to preparing a project EIR, staged EIR, or program EIR for certain projects which will form the basis for later decision making. It is intended to streamline the later environmental review of individual projects included within the 2010 RTP. The CEQA statutes specifically state that an MEIR may be prepared for a Regional Transportation Plan.

The MEIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives, identification of significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. This MEIR identifies issues determined to have no impact or a less than significant impact, and provides detailed analysis of potentially significant and significant impacts. Comments received in response to the NOP were considered in preparing the analysis in this MEIR.

PROJECT DESCRIPTION

The proposed project is the adoption and implementation of the 2010 Regional Transportation Plan (2010 RTP or proposed project) for Shasta County. The 2010 RTP embodies three elements: Policy Element, Action Element, and Financial Element. The 2010 RTP is a program-level regional planning document that addresses long-term goals and objectives for all transportation modes (highways, local roads, bridges, transit, bicycle, aviation, and rail). Refer to Chapter 2.0 Project Description for a complete description of the 2010 RTP. The full 2010 RTP is available for review at the SCRTPA website (www.scrtpa.org).

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

This Draft EIR addresses environmental impacts associated with the 2010 RTP that are known to the SCRTPA, were raised during the Notice of Preparation (NOP) process, or raised during preparation of the Draft EIR. This Draft EIR discusses potentially significant impacts associated with aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and population, noise, and transportation and circulation. During the NOP process, the USEPA presented numerous recommendations to the SCRTPA regarding air quality, green house gas emissions, regional land use, smart growth, growth inducement, indirect impacts, transportation policies, and mitigation measures. The Attorney General identified the requirement to thoroughly address the opportunities to reduce GHG emissions from the transportation sector, and urged the SCRTPA to identify a comprehensive transportation strategy that will reduce greenhouse gasses that cause global warming. The Native American Heritage Commission identified the potential for impacts to archaeological resources, and recommended methods to determine the existence of

archaeological resources as well as mitigation measures should archaeological resources be affected by the proposed project. No other environmental issues were raised in the NOP and associated Initial Study, during the NOP period. The Shasta County Department of Public Health presented numerous recommendations regarding policies designed to improve public health as it relates to active transportation (i.e. bicycling and walking). The Central Valley Flood Protection District identified the need to obtain permits from the District for any construction activities that occur within the tributaries or distributaries of the Sacramento River and designated floodways.

ALTERNATIVES TO THE PROPOSED PROJECT

The CEQA Guidelines require an EIR to describe a reasonable range of alternatives to the project or to the location of the project which would reduce or avoid significant impacts, and which could feasibly accomplish the basic objectives of the proposed project. Since the primary objective of the 2010 RTP is to guide short- and long-term transportation improvements countywide, a discussion of alternative sites is not appropriate. The alternatives analyzed in this EIR include the following four alternatives which includes the proposed project:

- No Project Alternative (2004 Regional Transportation Plan)
- Financially Constrained Alternative(2010 RTP-Funded Projects)
- Financially Unconstrained Alternative (Funded and Unfunded Projects)
- Transit Investment Alternative (Increase Funding of Public Transit Projects by Diverting Future Funds from the Unconstrained Alternatives)

Alternatives are described in detail in Chapter 5. Table ES-1 provides a comparison of the alternatives using a qualitative matrix that quantifies the impacts of each alternative relative to the other alternatives. The No Project Alternative has the lowest overall impact (score of 27) and is environmentally superior to the three other alternatives. However, CEQA requires the EIR to identify an environmentally superior alternative among the other alternatives when the No Project Alternative is the environmentally superior alternative. The Financially Constrained and the Transit Investment Alternatives both tie for the second lowest overall impact with a score of 29. However, the Financially Constrained Alternative has a lower score compared to the Transit Investment Alternative in seven of the twelve impact topics that are analyzed. Therefore, not considering the No Project Alternative, the Financially Constrained Alternative is deemed the environmentally superior alternative because it provides the greatest reduction of potential impacts in comparison to the other alternatives. The Transit Investment Alternative is the second best alternative in terms of environmental impacts.

TABLE ES-1: COMPARISON SUMMARY OF ALTERNATIVES TO THE PROPOSED PROJECT

ENVIRONMENTAL ISSUE	NO PROJECT ALTERNATIVE	FINANCIALLY CONSTRAINED ALTERNATIVE	FINANCIALLY UNCONSTRAINED ALTERNATIVE	TRANSIT INVESTMENT ALTERNATIVE
Aesthetics	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on aesthetics. As roadway infrastructure improvement projects would decrease under this alternative, the potential for development of roadway infrastructure to degrade scenic views, remove scenic resources, change visual character, and result in increased light and glare would be less under the No Project Alternative when compared to the other alternatives.			
Agricultural Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on agricultural resources. As roadway infrastructure improvement projects would decrease under this alternative, the potential for development of roadway infrastructure to convert agricultural lands to non-agricultural uses as well as the potential for conflicts with agricultural lands would be less under the No Project Alternative when compared to the other alternatives.			
Air Quality	4 (Worst)	3 (Medium)	2 (Better)	1 (Best)
	The Transit Investment Alternative would result in the lowest potential for adverse impacts on air quality. As roadway infrastructure improvement projects would increase to alleviate LOS deficiencies and transit service and bike/pedestrian use would increase under this alternative, the total VMT per capita would decrease, which would result in a corresponding decrease of vehicle related air quality emissions. However, the increase in transit funding may not result in a proportionate decrease in emissions.			
Biological Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on biological resources. As roadway infrastructure improvement projects would decrease there would be fewer construction and infrastructure development projects that would negatively impact special-status species, their habitat, sensitive habitat, migration corridors, and wetlands/riparian resources under the No Project Alternative when compared to the other alternatives.			
Cultural Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on cultural resources. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to degrade or destroy cultural resources, including archaeological, paleontological, historic, and human remains, under the No Project Alternative when compared to the other alternatives.			
Geology and Soils	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have a greater chance of risks associated with geology and soils, including runoff, erosion, sedimentation, as well as risks to humans from fault rupture, seismic ground shaking, liquefaction, landsliding, lateral spreading, and soil expansion, under the No Project Alternative when compared to the other alternatives.			
Greenhouse Gases and Climate Change	4 (Worst)	3 (Medium)	2 (Better)	1 (Best)
	The Transit Investment Alternative would result in the lowest potential for adverse impacts from Greenhouse Gases and Climate Change. As roadway infrastructure improvement projects would increase to alleviate LOS deficiencies and transit service and bike/pedestrian use would increase under this alternative, the total VMT per capita would decrease, which would result in a corresponding decrease of vehicle related greenhouse gas emissions. However, the increase in transit funding may not result in a proportionate decrease in emissions.			
Hazards and Human	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)

ENVIRONMENTAL ISSUE	NO PROJECT ALTERNATIVE	FINANCIALLY CONSTRAINED ALTERNATIVE	FINANCIALLY UNCONSTRAINED ALTERNATIVE	TRANSIT INVESTMENT ALTERNATIVE
Health				
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to increase the risks associated with hazards and hazardous materials, under the No Project Alternative when compared to the other alternatives.			
Hydrology and Water Quality	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to increase water quality impacts from construction and dewatering, or cause impacts to groundwater recharge, flooding, erosion, or siltation from the alteration of drainage patterns, under the No Project Alternative when compared to the other alternatives.			
Land Use/ Population and Housing	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would result in the lowest potential for adverse impacts associated with land use/population and housing. While this alternative would have the potential to induce additional growth due to increased roadway capacity, this alternative would also be the most consistent with land use planning activities in the county and its jurisdictions as this alternative would implement the transportation projects necessary to serve planned development as well as provide transportation services at adequate levels. Therefore, the Financially Unconstrained Alternative would have less of an impact on land use/population and housing than other alternatives.			
Noise	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would improve the vehicle circulation system to provide a reduction in Vehicle Miles Traveled (VMT) and Vehicle Hours of Delay (VHD). The result would be an improvement to the roadway traffic noise levels. Under the Transit Investment Alternative roadway infrastructure improvement projects would also increase as would transit service and bike/pedestrian use so there would be improvements to the noise environment.			
Transportation and Circulation	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would reduce greater impacts associated with roadway LOS and roadway safety in comparison to the other alternatives. As this alternative would involve additional improvements to the roadway system to increase capacity and roadway safety, this alternative would result in improved roadway safety, improved LOS, and a reduction in VHD in comparison with the proposed project and other alternatives.			

SUMMARY OF IMPACTS AND MITIGATION MEASURES

In accordance with the CEQA Guidelines, this MEIR focuses on the significant effects on the environment. The CEQA Guidelines defines a significant effect as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project. A less than significant effect is one in which there is no long or short-term significant adverse change in environmental conditions. Some impacts are reduced to a less than significant level with the implementation of mitigation measures and/or compliance with regulations. The definition of "beneficial" effect is not defined in the CEQA Guidelines, but for purposes of this EIR a beneficial effect is one in which an environmental condition is enhanced or improved.

The SCRTPA is serving as lead agency for the 2010 RTP and has prepared this MEIR to provide the public and responsible and trustee agencies with an objective analysis of the potential environmental impacts resulting from adoption and implementation of the proposed project. The SCRTPA will not serve as the CEQA lead agency on individual RTP projects as they are planned, engineered, and constructed. This MEIR is intended to be used as the primary environmental document to evaluate all subsequent planning and permitting actions associated with the 2010 RTP; however, the SCRTPA does have authority to impose restrictions on the agencies that will serve as CEQA lead agency for those projects (i.e. Caltrans, Shasta County, the Cities of Anderson, Redding, and Shasta Lake, and the Native American Tribal Governments).

The environmental impacts of the proposed project, the impact level of significance prior to mitigation, the proposed mitigation measures and/or adopted policies and standard measures that are already in place to mitigate an impact, and the impact level of significance after mitigation are summarized in Table ES-2.

TABLE ES-2: PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
AESTHETICS			
Impact 3.1-1: Substantial Adverse Effects on Scenic Vistas and Resources or Substantial Degradation of Visual Character	PS	Mitigation Measure 3.1.1 Prior to the design approval of RTP projects, the implementing agency should assess whether the project would remove any significant visual resources in the project area, which may include trees, rock outcroppings, and historical buildings, and should also assess whether the project would significantly obstruct views of scenic resources, such as views of Mount Shasta, Mount Lassen, the Sierra Nevada and/or Cascade Ranges, or scenic water features. If it is determined that the RTP project would remove significant visual resources, the implementing agency should consider alternative designs that seek to avoid and/or minimize impacts from removal of significant visual resources to the extent feasible. Project-specific design measures may include revisions to the plans to retain trees, rocks, and historic buildings, or replanting of trees, and/or the relocation of scenic features. If it is determined that the RTP project would significantly obstruct scenic views, the implementing agency should consider alternative designs that seek to avoid and/or minimize obstruction of scenic views to the extent feasible. Project-specific design measures may include reduction in height of improvements or width of improvements to reduce obstruction of views, or relocation of improvements to reduce obstruction of views.	LS
Impact 3.1-2: Light and Glare Impacts	PS	Mitigation Measure 3.1.2 The RTP projects should be designed to avoid spillover lighting to sensitive uses and should be designed to avoid sources of glare. Design measures should include the following: • Exterior lighting features should be directed downward and shielded in order to confine light to the boundaries of the subject project. Where more intense lighting is necessary for safety purposes, the design should include landscaping to block light from sensitive land uses, such as residences.	LS

CC – cumulatively considerable

LCC – less than cumulatively considerable

LS – less than significant

PS – potentially significant

B – beneficial impact

SU – significant and unavoidable

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
AGRICULTURAL RESOURCES			
Impact 3.2-1: Conversion of Farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance, to Non-Agricultural Uses	PS	Mitigation Measure 3.2.1: Prior to the design approval of RTP projects, the implementing agency should assess the project area for agricultural constraints. For federally funded projects, the implementing agency should complete a form AD-1006 to determine the Farmland Conversion Impact Rating in compliance with the Farmland Protection Policy Act. The AD-1006 should be submitted to the NRCS for approval. For non-federally funded projects, the implementing agency should assess the project for the presence of important farmlands (prime farmland, unique farmland, farmland of statewide importance), and if present, perform a Land Assessment and Site Evaluation (LESA). If significant agricultural are identified within the limits of the project, the implementing agency should consider alternative designs that seek to avoid and/or minimize impacts to the agricultural resources. Design measures may include, but are not limited to, reducing the proposed roadway width or relocating/realigning the improvement to avoid important and significant farmlands. If the improvement cannot be designed without complete avoidance of important or significant farmlands, the implementing agency should compensate for unavoidable conversion impacts in accordance with the Farmland Protection Policy Act and local and regional standards.	LS
Impact 3.2-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract	LS	None required.	--
AIR QUALITY			
Impact 3.3-1: Long-Term - Conflict with, or Obstruct, the Applicable Air Quality Plan, Cause a Violation of Air Quality Standards, Contribute Substantially to an Existing Air Quality Violation, or Result in a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area	LS	None required.	--

CC – cumulatively considerable

LCC – less than cumulatively considerable

LS – less than significant

PS – potentially significant

B – beneficial impact

SU – significant and unavoidable

2010 EXECUTIVE SUMMARY

<i>ENVIRONMENTAL IMPACT</i>	<i>LEVEL OF SIGNIFICANCE WITHOUT MITIGATION</i>	<i>MITIGATION MEASURE</i>	<i>RESULTING LEVEL OF SIGNIFICANCE</i>
Impact 3.3-2: Temporary - Conflict with, or Obstruct, the Applicable Air Quality Plan, Cause a Violation of Air Quality Standards, Contribute Substantially to an Existing Air Quality Violation, or Result in a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area	LS	None required.	--
Impact 3.3-3: Create Objectionable Odors Affecting a Substantial Number of People	LS	None required.	--
Impact 3.3-4: Contribute Substantially to, or Result in a Cumulatively Considerable Net Increase of Mobile Source Air Toxics	LS	None required.	--
Impact 3.3-5: Potential to release naturally occurring asbestos from earth movement or structural asbestos from demolition/renovation of existing structures	PS	Mitigation Measure 3.3-1: Prior to construction of RTP projects, the implementing agency should assess the site for the presence of asbestos including naturally occurring asbestos, and asbestos from structures such as road base, bridges, and other structures. In the event that asbestos is present, the implementing agency should comply with applicable state and local regulations regarding asbestos, including ARB's asbestos airborne toxic control measure (ATCM) (Title 17, CCR § 93105 and 93106), to ensure that exposure to construction workers and the public is reduced to an acceptable level. This may include the preparation of an Asbestos Hazard Dust Mitigation Plan to be implemented during construction activities.	LS
BIOLOGICAL RESOURCES			
Impact 3.4-1: Direct or Indirect Effects on Candidate, Sensitive, or Special-Status Species including their Habitat or Movement Corridors	PS	Mitigation Measure 3.4-1: Prior to final design approval of RTP projects, the implementing agency should have a qualified biologist conduct a field reconnaissance of the limits of the project area in an effort to identify any biological constraints for the project, including special status plants, animals, and their habitats, as well as protected natural communities including wetland and terrestrial communities. If the biologist identifies protected biological resources within the limits of the project area, the	LS

CC – cumulatively considerable

LCC – less than cumulatively considerable

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B – beneficial impact

SU – significant and unavoidable

ES-8

Draft Master Environmental Impact Report – Shasta County 2010 RTP

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
		implementing agency should first, consider alternative designs that seek to avoid and/or minimize impacts to the biological resources. If the project cannot be designed without complete avoidance, the implementing agency should coordinate with the appropriate regulatory agency (i.e. USFWS, NMFS, CDFG, ACOE) to obtain regulatory permits and implement project-specific mitigation prior to any construction activities.	
Impact 3.4-2: Adverse Effects on Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, Regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service, or on Federally Protected Wetlands as Defined by Section 404 of the Clean Water Act through Direct Removal, Filling, Hydrological Interruption, or Other Means	PS	Implement mitigation measure 3.4-1.	LS
Impact 3.4-3: Interference with the Movement of Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites	PS	Implement mitigation measure 3.4-1. <i>Mitigation Measure 3.4-2: Prior to design approval of RTP projects, the implementing agency should incorporate economically viable design measures, as applicable and necessary, to allow wildlife to move through the transportation corridor. Such measures may include appropriately spaced breaks in a center barrier, or other measures that are designed to allow wildlife to move through the transportation corridor. If the project cannot be designed with these design measures (i.e. due to traffic safety, etc.) the implementing agency should coordinate with the appropriate regulatory agency (i.e. USFWS, NMFS, CDFG) to obtain regulatory permits and implement alternative project-specific mitigation prior to any construction activities.</i>	LS
Impact 3.4-4: Conflicts with an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, Recovery Plan, or Local Policies or Ordinances Protecting Biological Resources	LS	None required.	--

CC – cumulatively considerable

LCC – less than cumulatively considerable

LS – less than significant

PS – potentially significant

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2010 EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
CULTURAL RESOURCES			
Impact 3.5-1: Cause a Substantial Adverse Change to a Significant Historical or Archaeological Resource, or Directly or Indirectly Destroy or Disturb a Unique Paleontological Resource or Human Remains	PS	Mitigation Measure 3.5-1: Prior to the implementation of RTP projects, the implementing agency should take steps to avoid and/or to reduce impacts to cultural resources and human remains. Measures should include: - The implementing agency should retain a professional archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology to prepare a project specific cultural resources study (i.e., archaeological and historical investigations). The study should identify cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) in the project area, determine their eligibility for inclusion in the California Register of Historical Resources, and provide mitigation measures for any resources in the project area that cannot be avoided. - The implementing agency should contact the Native American Heritage Commission (NAHC) for a check of the Sacred Lands files prior to the initiation of an RTP project and should contact all of the groups identified by the NAHC for consultation. Should Sacred Lands be present, coordination with the Native American community is required and the project should be designed to avoid the Sacred Lands or reduce impacts to the extent feasible. - If cultural resources or Native American resources are identified, every effort should be made to avoid significant cultural resources, with preservation an important goal. If significant sites cannot feasibly be avoided, appropriate mitigation measures, such as data recovery excavations or photographic documentation of buildings, should be undertaken consistent with applicable state and federal regulations. - Implementing agencies and the contractors performing the improvements should adhere to the following requirements: - If, during the course of construction cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) are discovered work should be halted in the area reasonably suspected to overlie the discovery. The implementing agency should retain a qualified archaeologist that meets the	LS

CC – cumulatively considerable

LCC – less than cumulatively considerable

LS – less than significant

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B – beneficial impact

SU – significant and unavoidable

ES-10

Draft Master Environmental Impact Report – Shasta County 2010 RTP

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
		Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology to determine the significance of the discovery. - If human remains are discovered, all work should be halted in the area reasonably suspected to overlie the discovery. The implementing agency must notify the County Coroner, according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) will be followed. - Prior to starting construction activities, all construction personnel should attend a preconstruction meeting that discusses human remains and cultural resources and protection requirements for human remains and cultural resources.	
GEOLOGY AND SOILS			
Impact 3.6-1: The proposed project may expose people or structures to potential substantial adverse effects involving strong seismic ground shaking or seismic related ground failure	PS	Mitigation Measure 3.6-1: Implement Caltrans Seismic Design Criteria, and County and City General Plan standards, as appropriate, in project design to minimize the potential for fault rupture hazards on individual improvements.	LS
Impact 3.6-2: Implementation of the RTP may result in substantial soil erosion or the loss of topsoil	PS	Mitigation Measure 3.6-2: Prior to approval of RTP projects, the implementing agency should ensure projects will adequately address grading, erosion, sediment, and pollution control requirements of the Regional Water Quality Control Board (RWQCB). If one acre or more of land will be disturbed, the implementing agency should submit a Notice of Intent (N.O.I.) with appropriate fees and a Storm Water Pollution Prevention Plan (SWPPP) to the RWQCB. Mitigation Measure 3.6-3: During construction, the implementing agency should ensure that control measures and practices are implemented, properly installed, and maintained during the construction of a project. The implementing agency should inspect the project area to verify that SWPPPs are being implemented. The implementing agency should develop and implement record keeping and data	LS

CC – cumulatively considerable

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2010 EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
Impact 3.6-3: Individual RTP projects may be located on a geologic unit or soil that is unstable, or that would become unstable as a result of project implementation, and potentially result in liquefaction	PS	management procedures for evaluation of SWPPP compliance and reporting. Mitigation Measure 3.6-4: Prior to approval of RTP projects, the implementing agency should assess the geologic risk associated with the project and if necessary retain a licensed geotechnical engineer to evaluate geologic conditions, including: liquefaction, lateral spreading, landslide, and expansion potential. For areas found to contain these conditions, the soil should be removed (i.e., over excavated) and/or stabilized prior to the placement and compaction of fill. Final soil engineering techniques should be developed by a licensed geotechnical engineer or engineering geologist.	LS
Impact 3.6-4: Individual RTP improvements may be located on expansive soils creating substantial risks to life or property	PS	Implement Mitigation Measure 3.6-4	LS
GREENHOUSE GASES AND CLIMATE CHANGE			
Impact 3.7.1: Cumulative Effects on Climate Change and Global Warming	PS	Mitigation Measure 3.7-1: The SCRTPA should coordinate with local and regional agencies to assist in efforts to develop local and regional CAPs (Climate Action Plans) that address climate change and greenhouse gas emissions. Local and regional CAPs should include the following components: • Baseline inventory of GHG emissions from community and municipal sources. • A target reduction goal consistent with AB 32. • Policies and measures to reduce GHG emissions. • Quantification of the effectiveness of the proposed policies and measures. • A monitoring program to track the effectiveness and implementation of the CAP(s). SCRTPA's role in the development of local and regional CAPs should include: • Assistance in seeking and securing funding for the development of local and regional CAPs. • Collaboration with local and regional agencies throughout their respective	SU

CC – cumulatively considerable

LCC – less than cumulatively considerable

LS – less than significant

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ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
		planning processes. Mitigation Measure 3.7-2: Assist local agencies with the development of an Alternative Fuel Vehicle and Infrastructure Policy. The policy should include provisions that address best practices, and standards related to saving energy and reducing GHG emissions through AFV use, including: • A procurement policy for using AFV by franchisees of these cities, such as trash haulers, green waste haulers, street sweepers, and curbside recyclable haulers. Such AFVs should have GHG emissions at least 10 percent lower than comparable gasoline- or diesel- powered vehicles. • A fleet purchase policy to increase the number of AFVs (i.e., vehicles not powered strictly by gasoline or diesel fuel) for municipally owned fleets. • A public education policy to encourage the use of alternative fuel vehicles and development of supporting infrastructure. Mitigation Measure 3.7-3: Develop a Sustainable Communities Strategy (SCS) in compliance with SB 375 and building off of the work completed during the ShastaFORWARD>> blueprint planning process. During the development of the SCS explore the feasibility of a transportation pricing policy with the transit system and selected portions of the road network to encourage people to drive less and increase use of transit, walking and bicycling modes. Such a policy may include: free or reduced transit fares during high pollution days; fare-free zones on the transit system; transit vouchers; days on which transit is free; congestion pricing options for portions of the road system, such as tolls on freeways and highways; and parking fees to park in certain high-traffic areas served by public transit (e.g., downtown Redding). The SCS should also consider incorporating a complete streets policy with a strong focus on identifying opportunities to create more active transportation within the region (i.e. bike and pedestrian facilities).	
HAZARDS AND HUMAN HEALTH			
Impact 3.8-1: Potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous	LS	None required.	--

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2010 EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
materials.			
Impact 3.8-2: Potential hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LS	None required.	--
Impact 3.8-3: Potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LS	None required.	--
Impact 3.8-4: Impact from being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5	PS	Mitigation Measure 3.8-1: Prior to approval of RTP projects, the implementing agency should perform a Phase 1 Environmental Site Assessment that includes a review of all known databases of contaminated sites. If it is determined that a project is located on or near a contaminated site a Phase II Environmental Site Assessment should be performed to sample the soils/groundwater and further investigate the extent of the contamination. Based on the results of the Phase I Environmental Site Assessment I, the implementing agency should devise a remediation plan or avoid disturbance of contaminated areas, in compliance with appropriate regulatory agency requirements. All work should be conducted under a work plan approved by the regulatory oversight agency and should be conducted by a registered environmental assessor (pursuant to 22 CCR 69200).	LS
Impact 3.8-5: Impact to people residing or working within two miles of a public airport, public use airport, or private airstrip.	B	None required.	--
Impact 3.8-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency	B	None required.	--

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ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
evacuation plan.			
Impact 3.8-7: Expose people or structures to a risk of loss, injury or death from wildland fires.	B	None required.	--
HYDROLOGY AND WATER QUALITY			
Impact 3.9-1: Violate any water quality standards or waste discharge requirements	PS	Implement Mitigation Measure 3.6-2 and 3.6-3 <i>Mitigation Measure 3.9-1: Before discharging any dewatered effluent to surface water, the implementing agency should obtain an Dewatering Permit, NPDES permit and Waste Discharge permit from the RWQCB. Design and implement measures as necessary so that discharge limits identified in relevant permits are met.</i>	LS
Impact 3.9-2: Depletion of groundwater supplies or interfere substantially with groundwater recharge.	LS	None required.	--
Impact 3.9-3: Alter the existing drainage pattern in a manner which would result in substantial erosion, siltation, flooding, or polluted runoff.	PS	<i>Mitigation Measure 3.9-2: Prior to construction, the lead agency should implement source and treatment control measures contained in their applicable Stormwater Management Plans. General site design control measures incorporated into the project design can include conserving natural areas, protecting slopes and channels, and minimizing impervious areas. Treatment control measures may include use of vegetated swales and buffers, detention basins, wet ponds, or constructed wetlands; infiltration basins, and other measures. Selection and implementation of these measures should occur on a project-by-project basis depending on project size and stormwater treatment needs.</i>	LS
Impact 3.9.4 Otherwise substantially degrade water quality.	PS	Implement Mitigation Measure 3.6-2 and 3.6-3	LS
Impact 3.9.5 Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance	LS	None required.	--

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2010 EXECUTIVE SUMMARY

<i>ENVIRONMENTAL IMPACT</i>	<i>LEVEL OF SIGNIFICANCE WITHOUT MITIGATION</i>	<i>MITIGATION MEASURE</i>	<i>RESULTING LEVEL OF SIGNIFICANCE</i>
Rate Map or other flood hazard delineation map.			
Impact 3.9.6 Place within a 100-year flood hazard area structures which would impede or redirect flood flows.	LS	None required. Implementing agency will be required to design per floodplain standards and obtain necessary permits for construction.	--
Impact 3.9.7 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, seiche, tsunami, or mudflow.	LS	None required.	--
LAND USE AND PLANNING			
Impact 3.10-1: Physical Division of an Established Community	B	None required.	--
Impact 3.10-2: Conflicts with Applicable Land Use Plan, Policy, or Regulation Adopted to Avoid or Mitigate an Environmental Effect	LS	None required.	--
Impact 3.10-3: Conflicts with Any Applicable Habitat Conservation Plan or Natural Community Conservation Plan	LS	None required.	--
Impact 3.10-4: Induce Substantial Population Growth in an Area	PS	<i>Mitigation Measure 3.10-1: The SCRTPA should coordinate planning efforts with local and regional agencies to ensure that transportation and land use plans complement each other. The SCRTPA should engage local and regional agencies, as well as the general public, in the development of a Sustainable Communities Strategy (SCS) in compliance with SB 375 and building off of the work completed during the ShastaFORWARD>> blueprint planning process.</i>	SU (w/ numerous beneficial impacts)

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ES-16

Draft Master Environmental Impact Report – Shasta County 2010 RTP

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
Impact 3.10-5: Displace Substantial Numbers of People or Existing Housing, Necessitating the Construction of Replacement Housing Elsewhere	LS	None required.	--
NOISE			
Impact 3.11-1: Grading and Construction Activities Would Intermittently and Temporarily Generate Noise Levels Above Ambient Background Levels.	PS	<i>Mitigation Measure 3.11-1: The RTP projects should be designed and implemented to reduce adverse construction noise and vibration impacts to sensitive receptors, as feasible. Measures to reduce noise and vibration effects should be consistent with the FHWA standards for federally funded projects (i.e. federal soundwall standards), or consistent with local standards for locally sponsored projects. Measures may include, but are not limited to:</i> <i>Construction of temporary sound barriers to shield noise-sensitive land uses.</i> <i>Location of noise-generating stationary equipment (e.g., power generators, compressors, etc.) at the furthest practical distance from nearby noise-sensitive land uses.</i> <i>Phase demolition, earth-moving and ground-impacting operations so as not to occur in the same time period.</i> <i>Use of equipment noise-reduction devices (e.g., mufflers, intake silencers, and engine shrouds) in accordance with manufacturers' recommendations.</i> <i>Substituting noise/vibration-generating equipment with equipment or procedures that would generate lower levels of noise/vibration. For instance, in comparison to impact piles, drilled piles or the use of a sonic or vibratory pile driver are preferred alternatives where geological conditions would permit their use.</i> <i>Limit noise-generating construction activities, excluding those that would result in a safety concern to workers or the public, to the least noise-sensitive daytime hours or within the timeframe specified by the local General Plan.</i> <i>Other specific measures as they are deemed appropriate by the implementing agency to maintain consistency with adopted policies and regulations regarding</i>	SU

CC – cumulatively considerable

LCC – less than cumulatively considerable

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PS – potentially significant

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SU – significant and unavoidable

2010 EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT	LEVEL OF SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURE	RESULTING LEVEL OF SIGNIFICANCE
		<i>noise.</i>	
Impact 3.11-2: Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise.	PS	Implement Mitigation Measure 3.11-1.	SU
Impact 3.11-3: Grading and Construction Activities Would Intermittently and Temporarily Expose Sensitive Receptors to Groundborne Vibration Levels.	PS	Implement Mitigation Measure 3.11-1.	SU
TRANSPORTATION AND CIRCULATION			
Impact 3.12-1: 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) or Exceed, either Individually or Cumulatively, a Level of Service Standard Established by the County Congestion Management Agency for Designated Roads or Highways	B	None required.	--
Impact 3.12-2: Result in a Change in the Air Traffic Patterns, including either an Increase in Traffic Levels or a Change in Location that Results in Substantial Safety Risks	LS	None required.	--
Impact 3.12-3: Substantially Increase Hazards Due to Design Features (e.g. sharp curves or	B	None required.	--

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ES-18

Draft Master Environmental Impact Report – Shasta County 2010 RTP

<i>ENVIRONMENTAL IMPACT</i>	<i>LEVEL OF SIGNIFICANCE WITHOUT MITIGATION</i>	<i>MITIGATION MEASURE</i>	<i>RESULTING LEVEL OF SIGNIFICANCE</i>
dangerous intersections) or Incompatible Uses			
Impact 3.12-4: Interfere Substantially with Implementation of any Adopted Non-Motorized Transportation Plan	B	None required.	--
Impact 3.12-5: Result in Inadequate Emergency Access	LS	None required.	--
Impact 3.12-6: Result in Inadequate Parking Capacity	B	None required.	--
CUMULATIVE IMPACTS			
Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region	PS	Implement mitigation measures 3.1-1 and 3.1-2.	CC and SU
Impact 4.2: Cumulative Impact on Agricultural Land and Uses	PS	Implement mitigation measure 3.2-1.	CC and SU
Impact 4.3: Cumulative Impact on the Region's Air Quality	LCC	None required.	--
Impact 4.4: Cumulative Loss of Biological Resources Including Habitats and Special Status Species	PS	Implement mitigation measures 3.3-1 and 3.3-2.	CC and SU
Impact 4.5: Cumulative Impacts on Known and Undiscovered Cultural Resources	PS	Implement mitigation measure 3.5-1.	LCC
Impact 4.6: Cumulative Impacts related to Geology and Soils	PS	Implement mitigation measure 3.6-1 through 3.6-4	LCC

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2010 EXECUTIVE SUMMARY

<i>ENVIRONMENTAL IMPACT</i>	<i>LEVEL OF SIGNIFICANCE WITHOUT MITIGATION</i>	<i>MITIGATION MEASURE</i>	<i>RESULTING LEVEL OF SIGNIFICANCE</i>
Impact 4.7: Increased Transportation Greenhouse Gas Emissions May Contribute to Climate Change	PS	Implement mitigation measure 3.7-1 through 3.7-4	CC and SU
Impact 4.8: Cumulative impacts from hazardous materials and human health risks.	PS	Implement mitigation measure 3.8-1	CC and SU
Impact 4.9: Cumulative impacts from to Hydrology and Water Quality.	PS	Implement mitigation measure 3.9-1 through 3.9-5	LCC
Impact 4.10: Cumulative Impact on Communities and Local Land Uses	LCC	None required.	--
Impact 4.11: Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise	PS	Implement mitigation measure 3.11-1	CC and SU
Impact 4.12: Cumulative Impact on the Transportation Network	LCC	None required.	--

CC – cumulatively considerable

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1.1 SHASTA COUNTY RTPA

The Shasta County Regional Transportation Agency (SCRTPA) is the federally designated Metropolitan Planning Organization (MPO) and the state designated Regional Transportation Planning Agency (RTPA) for Shasta County, including the Cities of Anderson, Redding, and Shasta Lake. The MPO and RTPA's planning and programming efforts secure transportation funding for the region's highways, transit, streets and roads, pedestrian, and other transportation system improvements throughout the region.

The California Government Code requires each RTPA in the state to adopt and submit a Regional Transportation Plan (RTP) to the California Transportation Commission (CTC) and Caltrans. The RTP is a long-range, 20-year minimum, comprehensive transportation plan for all modes including: highways, local streets and roads, transit, bicycle, aviation, rail and goods movement. The purpose of the RTP is to serve as a foundation for the development of the shorter "action" plans called the Regional Transportation Improvement Program (RTIP), which satisfies California transportation planning requirements, and the federal counterpart referred to as the Federal Transportation Improvement Program (FTIP) for all transportation projects that require federal approval.

The SCRTPA updated and adopted the current RTP on July 27th, 2004 and intends to prepare the 2010 Shasta County RTP Update (hereinafter "2010 RTP" or "proposed project") to fulfill the state requirements using specific guidance from the CTC RTP Guidelines, as recently amended. The most relevant guideline changes potentially affecting this project include broader environmental and consultation requirements included in SAFETEA-LU legislation, as well as air quality requirements in AB 32 and SB 375. The SCRTPA is the lead agency for the environmental review of the proposed project evaluated herein and has the principal responsibility for approving the project.

1.2 2010 SHASTA COUNTY RTP - VISION AND FUNCTION

The proposed project is intended to function as a blueprint for the systematic development of a balanced, comprehensive, multi-modal transportation system, including: roadways, transit, aviation, goods movement, bikeways, pedestrian facilities, transportation systems management, and intelligent transportation systems. The proposed project is action-oriented and pragmatic, considering both the short-term and long-term periods. Additionally, the proposed project focuses on those improvement projects that currently have funding in place or that are projected to have funding in the future.

An overall transportation vision for the proposed project is to provide a safe, balanced, coordinated, and cost effective transportation system that conserves energy and preserves air quality, serves the needs of the local metropolitan areas and region, and is consistent with and helps implement local agencies' general plans. An underlying, yet primary goal, of the proposed project is to highlight the financial shortfalls facing the region and to present the significant backlog of transportation projects where funding is not available. As such, the proposed project will serve as a foundation for the development of the RTIP and the FTIP.

In addition to providing a vision, the proposed project has many specific functions including: Steps needed to resolve regional mobility issues; Document the region's transportation goals, policies, and objectives for current and future transportation systems; Identify specific actions to address the region's mobility needs; Identify the transportation improvements needed for the development of the RTIP, FTIP, and STIP; Identify the financial resources needed for transportation projects; Promote consistency between the Federal, State, and local transportation planning efforts; and Inform the public of the transportation planning process.

1.3 PURPOSE OF THE EIR

The SCRTPA, as lead agency, determined that the proposed project is a "project" within the definition of CEQA. CEQA requires the preparation of an environmental impact report (EIR) prior to approving any project, which may have a significant impact on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]).

An EIR must disclose the expected environmental impacts, including impacts that cannot be avoided, growth-inducing effects, impacts found not to be significant, and significant cumulative impacts, as well as identify mitigation measures and alternatives to the proposed project that could reduce or avoid its adverse environmental impacts. CEQA requires government agencies to consider and, where feasible, minimize environmental impacts of proposed development, and an obligation to balance a variety of public objectives, including economic, environmental, and social factors.

1.4 TYPE OF EIR

This EIR has been prepared as a Master Environmental Impact Report (MEIR). CEQA describes requirements related to a MEIR in California Public Resources Code Section 21157, while CEQA Guidelines Sections 15175 through 15179 describes these requirements in more detail. According to CEQA Guidelines Section 15175(a):

The MEIR procedure is an alternative to preparing a project EIR, staged EIR, or program EIR for certain projects which will form the basis for later decision making. It is intended to streamline the later environmental review of projects or approval included within the project, plan or program analyzed in the MEIR. Accordingly, an MEIR shall, to the greatest extent feasible, evaluate the cumulative impacts, growth inducing impacts, and irreversible significant effects on the environment of subsequent projects. Public Resources Code Section 21157(a)(7) and CEQA Guidelines Section 15175 (b) (8) states that an MEIR may be prepared for an RTP.

1.5 REQUIREMENTS OF A MASTER EIR

The master-level analysis considers the broad environmental effects of the proposed project. This MEIR will be used to evaluate subsequent projects and activities under the proposed project. When individual projects or activities included in the RTP are proposed for implementation, the SCRTPA would be required to examine the projects or activities to determine whether their effects were adequately analyzed in the MEIR (CEQA Guidelines Section 15177). If the projects or activities would have no effects beyond those analyzed in this MEIR, no further CEQA action would be required. If the projects or activities have effects not analyzed in the MEIR, a subsequent CEQA document may be required, such as a focused EIR or a mitigated negative declaration (CEQA Guidelines Section 15178). The MEIR analysis also addresses the cumulative impacts of the proposed project, and analyzes a reasonable range of alternatives. The CEQA Guidelines Section 15176 states that the following shall be included in an MEIR (text in *italics* identifies where in this MEIR the information is located):

1. A detailed discussion as required by CEQA Guidelines Section 15126. The discussion must include the following subjects:
 - *"Significant environmental effects of the proposed project."* Each technical section of this MEIR contains a discussion of potential impacts and their significance.
 - *"Significant environmental effects that cannot be avoided if the proposed project is implemented."* Impacts considered "significant and unavoidable" are identified in each technical section of this MEIR where appropriate.
 - *"Significant irreversible environmental changes that would be involved in the proposed project should it be implemented."* Section 4.0, Other Sections Required by CEQA, identifies significant irreversible environmental changes.
 - *"Growth-inducing impacts of the proposed project."* Section 4.0, Other Sections Required by CEQA, identifies growth-inducing impacts.
 - *"Mitigation measures proposed to minimize the significant effects."* Each technical section of this MEIR provides mitigation measures for each significant environmental effect identified, where appropriate and feasible.
 - *"Alternatives to the proposed project."* Section 5.0, Project Alternatives, describes alternatives to the proposed project evaluated in this MEIR.
2. A description of anticipated subsequent projects that are within the scope of the MEIR, including information with regard to the kind, size, intensity, and location of the subsequent projects. This includes, but is not limited to, the following:
 - *"The specific type of project anticipated to be undertaken such as a road widening, bridge construction/replacement, overlays, bike/pedestrian facilities, transit or other activities".* Section 2.0, Project Description, identifies types of subsequent projects anticipated to be undertaken.
 - *"The maximum and minimum intensity of any anticipated subsequent project, such as the anticipated capacity."* Section 2.0, Project Description, describes anticipated subsequent projects.
 - *"The anticipated location for any subsequent projects, and, consistent with the rule of reason set forth in Section 15126.6(f), alternative locations for any such projects".*

Given the characteristics of existing transportation facilities and the project objectives as stated in *Section 2.0, Project Description*, alternative locations for these projects are not feasible.

- *"A capital outlay or capital improvement program, or other scheduling or implementing device that governs the submission and approval of subsequent projects, or an explanation as to why practical planning considerations render it impractical to identify any such program or scheduling or other device at the time of preparing the MEIR."* Section 2.0 describes implementation of the proposed project and the process for reviewing subsequent projects.
3. A description of potential impacts of subsequent projects for which there is not sufficient information reasonably available to support a full assessment of potential impacts in the MEIR. This description shall not be construed as a limitation on the impacts which may be considered in a focused EIR. Section 3 identifies potential impacts for which there is not information to fully assess for each environmental topic.
 4. Where an MEIR is prepared in connection with an RTP, the anticipated subsequent projects included within an MEIR may consist of later planning approvals, including project-specific approvals, consistent with the overall planning decision for which the MEIR has been prepared. Such subsequent projects shall be adequately described for purposes of CEQA Guidelines Section 15175(b) or of Section 15176. Section 3 describes anticipated subsequent projects in detail.

1.6 INTENDED USES OF THE MEIR

The SCRTPA, as the lead agency, has prepared this MEIR to provide the public and responsible and trustee agencies with an objective analysis of the potential environmental impacts resulting from adoption of the proposed project ("2010 RTP") and subsequent implementation of projects identified in the proposed project. The environmental review process enables interested parties to evaluate the proposed project in terms of its environmental consequences, to examine and recommend methods to eliminate or reduce potential adverse impacts, and to consider a reasonable range of alternatives to the project. While CEQA requires that consideration be given to avoiding adverse environmental effects, the lead agency must balance adverse environmental effects against other public objectives, including the economic and social benefits of a project, in determining whether a project should be approved.

This MEIR will be used as the primary environmental document to evaluate all subsequent planning and permitting actions associated with the proposed project. Subsequent actions that may be associated with the proposed project are identified in Chapter 2.0, Project Description.

1.7 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

The term "Responsible Agency" includes all public agencies other than the Lead Agency that have discretionary approval power over the project or an aspect of the project (CEQA Guidelines Section 15381). For the purpose of CEQA, a "Trustee" agency has jurisdiction by law over natural resources that are held in trust for the people of the State of California (CEQA Guidelines Section 15386). While no Responsible Agencies or Trustee Agencies are responsible for approvals

associated with adoption of the RTP, implementation of projects identified in the RTP will require permits and approvals from Lead, Trustee, and Responsible Agencies, which may include the following:

- Shasta County
- City of Anderson
- City of Redding
- City of Shasta Lake
- Native American Tribal Governments
- Redding Area Bus Authority
- Shasta County Air Quality Management District
- California Transportation Commission
- California Department of Transportation (Caltrans)
- California Department of Fish and Game
- California Department of Conservation
- Regional Water Quality Control Board
- State Water Resources Control Board
- Native American Heritage Commission
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

1.8 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the MEIR has involved, or will involve, the following general procedural steps:

NOTICE OF PREPARATION AND INITIAL STUDY

The SCRTPA circulated a Notice of Preparation (NOP) of an EIR for the proposed project and an Initial Study on September 23rd 2008 to trustee and responsible agencies, the State Clearinghouse (SCH# 2008092090), and the public. A scoping meeting was held on November 20th 2008 at 3:30 PM in the City of Redding. Those present at the scoping meeting included representatives from the following: SCRTPA, Shasta County Planning Commission, California Department of Transportation, California Department of Fish and Game, Pit River Tribe, City of Anderson, City of Redding, De Novo Planning Group, and David Evans and Associates. The meeting notes are included in **Appendix A**. Concerns raised in response to the NOP were considered during preparation of the Draft EIR and are included in the Appendix. The NOP, Initial Study, and Scoping Meeting Notes are presented in **Appendix A**.

DRAFT MEIR

This document constitutes the Draft MEIR. The Draft MEIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives, identification of significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. This Draft MEIR identifies issues determined to have no impact or a less than significant impact, and provides detailed analysis of potentially significant and significant impacts. Comments received in response to the NOP were considered in preparing the analysis in this MEIR. Upon completion of the Draft MEIR, the SCRTPA will file the Notice of Completion (NOC) with the State Clearinghouse of the Governor's Office of Planning and Research to begin the public review period.

PUBLIC NOTICE/PUBLIC REVIEW

Concurrent with the NOC, the SCRTPA will provide a public notice of availability for the Draft MEIR, and invite comment from the general public, agencies, organizations, and other interested parties. Consistent with CEQA requirements, the review period for this Draft MEIR is forty-five (45) days. Public comment on the Draft MEIR will be accepted both in written form and oral form. All comments or questions regarding the Draft MEIR should be addressed to:

Dan Little, AICP
Executive Director
Shasta County RTPA
1855 Placer Street
Redding, CA 96001

RESPONSE TO COMMENTS/FINAL MEIR

Following the public review period, a Final MEIR will be prepared. The Final MEIR will respond to written comments received during the public review period and to oral comments during such review period.

CERTIFICATION OF THE MEIR/PROJECT CONSIDERATION

The SCRTPA will review and consider the Final MEIR. If the SCRTPA finds that the Final MEIR is "adequate and complete", the SCRTPA Board may certify the Final MEIR in accordance with CEQA. The rule of adequacy generally holds that an MEIR can be certified if:

- 1) The MEIR shows a good faith effort at full disclosure of environmental information; and
- 2) The MEIR provides sufficient analysis to allow decisions to be made regarding the proposed project in contemplation of environmental considerations.

Upon review and consideration of the Final MEIR, the SCRTPA Board may take action to approve, revise, or reject the project. A decision to approve the proposed project, for which this MEIR identifies significant environmental effects, must be accompanied by written findings in accordance with State CEQA Guidelines Sections 15091 and 15093. A Mitigation Monitoring Program, as described below, would also be adopted in accordance with Public Resources Code Section 21081.6(a) and CEQA Guidelines Section 15097 for mitigation measures that have been incorporated into or imposed upon the project to reduce or avoid significant effects on the environment. This Mitigation Monitoring Program will be designed to ensure that these measures are carried out during project implementation, in a manner that is consistent with the MEIR.

1.9 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the State CEQA Guidelines identify the content requirements for Draft and Final MEIRs. An MEIR must include a description of the environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. Discussion of the environmental issues addressed in the Draft MEIR was established through review of environmental and planning documentation developed for the project, environmental and planning documentation prepared for recent projects located within Shasta County, and responses to the Notice of Preparation (NOP). This Draft MEIR is organized in the following manner:

EXECUTIVE SUMMARY

This Executive Summary summarizes the characteristics of the proposed project, known areas of controversy and issues to be resolved, and provides a concise summary matrix of the project's environmental impacts and possible mitigation measures. This chapter identifies alternatives that reduce or avoid at least one significant environmental effect of the proposed project.

CHAPTER 1.0 – INTRODUCTION

Chapter 1.0 briefly describes the purpose of the environmental evaluation, identifies the lead, trustee, and responsible agencies, summarizes the process associated with preparation and certification of an MEIR, identifies the scope and organization of the Draft MEIR, and summarizes comments received on the NOP.

CHAPTER 2.0 – PROJECT DESCRIPTION

Chapter 2.0 provides a detailed description of the proposed project, including the location, intended objectives, background information, the physical and technical characteristics, including the decisions subject to CEQA, subsequent projects and activities, and a list of related agency action requirements.

CHAPTER 3.0 - ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Chapter 3.0 contains an analysis of environmental topic areas as identified below. Each subchapter addressing a topical area is organized as follows:

Environmental Setting. A description of the existing environment as it pertains to the topical area.

Regulatory Setting. A description of the regulatory environment that may be applicable to the project.

Impacts and Mitigation Measures. Identification of the thresholds of significance by which impacts are determined, a description of project-related impacts associated with the environmental topic, identification of appropriate mitigation measures, and a conclusion as to the significance of each impact. The following environmental topics are addressed in this section:

- Aesthetics
- Agricultural Resources
- Air Quality and Climate Change
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Population
- Noise
- Transportation and Circulation

The Initial Study determined that there would be no impact or a less-than-significant impact to the following environmental issue areas: mineral resources, population and housing (except growth inducement), public services, recreation, and utilities (except drainage). These issues are not discussed in Chapter 3; the basis for the no impact or less than significant determination for each of these topics is described in the Initial Study (Appendix A).

CHAPTER 4.0 – OTHER CEQA-REQUIRED TOPICS

Chapter 4.0 evaluates and describes the following CEQA required topics: impacts considered less-than-significant, significant and irreversible impacts, growth-inducing effects, cumulative, and significant and unavoidable environmental effects.

CHAPTER 5.0 - ALTERNATIVES TO THE PROJECT

Chapter 5.0 provides a comparative analysis between the merits of the proposed project and the selected alternatives. State CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project, which could feasibly attain the basic objectives of the project and avoid and/or lessen any significant environmental effects of the project.

CHAPTER 6 - REPORT PREPARERS

Chapter 6.0 lists all authors and agencies that assisted in the preparation of the MEIR, by name, title, and company or agency affiliation.

APPENDICES

This section includes all notices and other procedural documents pertinent to the MEIR, as well as technical material prepared to support the analysis.

1.10 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The SCRTPA received several comment letters on the NOP. A copy of each letter is provided in Appendix A of this Draft MEIR and the comments are summarized below.

United States Environmental Protection Agency (USEPA). The USEPA acknowledged the requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). They encouraged the SCRTPA to utilize data and the results of the Shasta FORWARD process in the development of the RTP. They encourage the SCRTPA to first avoid, then minimize, and finally mitigate environmental impacts. They are particularly concerned with: 1)

projects in urbanized and heavily impacted resource areas; 2) development in rapidly growing areas with large and/or remnant intact ecosystems; and 3) projects at the urban fringe with potential to impact resources. The USEPA stated that construction-related impacts to air quality should be addressed, as well as regional land use and transportation policies, such as increased investment in public transit and incentives for compact, mixed-use development, and the link that those projects have to improving air quality and reducing greenhouse gas emissions. The letter acknowledged the requirements of the Global Warming Solutions Act of 2006 and Executive Order S-3-05 and recommended that the EIR identify the cumulative contributions to greenhouse gas emissions, including the indirect land use impacts associated with transportation projects and any induced growth from transportation projects. The USEPA recommends the integration of "smart" land use strategies in the RTP, and a discussion of the potential impacts of climate change, including mitigation measures. The USEPA concludes with a recommendation to consult with other agencies to develop innovative and "state of the art" design features that avoid or minimize impacts.

State of California Department of Justice – Attorney General. The Attorney General's letter acknowledged the California Global Warming Solutions Act of 2006 and Executive Order S-3-05, and addressed the State's need to substantially reduce its total GHG emissions by mid-century in order to stabilize atmospheric concentrations of greenhouse gases at a level that will avoid the most dangerous effects of climate change. The Attorney General iterated that CEQA documents must thoroughly address the opportunities to reduce GHG emissions from the transportation sector, which account for over a third of California's GHG emissions. The Attorney General urged the SCRTPA to embrace the opportunity it has to show its leadership in this area by identifying a comprehensive transportation strategy that will reduce greenhouse gases that cause global warming.

Native American Heritage Commission (NAHC). NAHC identified steps to determine the potential for the project to impact an archaeological resource, including contacting the appropriate information center, information that should be included in a final professional report, appropriate Native American contacts, and measures to mitigate potential impacts in the event an unknown resource is discovered during project implementation. NAHC indicated that no sacred sites were identified for the project.

Shasta County Department of Public Health (SCPH). SCPH noted that there has been an increase in awareness on how land use and transportation planning can positively or negatively impact human health. Examples presented include the positive effects associated with increased active transportation (i.e. bicycling and walking) as a result of design strategies that promote mixed use development and choices in transportation. The SCPH acknowledged their support for several policies and also provided several recommended policy suggestions.

Central Valley Flood Protection Board (CVFPB). CVFPB identified that the proposed project is located within the jurisdiction of the CVFPB and that any construction activities within the tributaries or distributaries of the Sacramento River or designated floodways will require a permit from the CVFPB.

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The proposed project is the 2010 Regional Transportation Plan (2010 RTP or RTP) for Shasta County (County). This section describes the primary components of the 2010 RTP project and provides the following information: (1) The location and boundaries of the proposed project on a regional map; (2) A statement of objectives sought by the proposed project; (3) A general description of the project's technical, economic and environmental characteristics; and (4) A statement briefly describing the intended uses of the EIR. Figures referenced throughout this section are located at the end of the section. The full 2010 RTP is available for review at the SCRTPA website (www.scrtpa.org).

2.1 PROJECT LOCATION

Shasta County is located at the geographical center and transportation crossroads of northern California. It is situated at the north end of the Sacramento Valley, 150 miles from Sacramento, and 110 miles south of the Oregon border. Shasta County's 3,788 square miles range in elevation from 425 feet in the Sacramento Valley, to 3,300 feet in the Fall River Valley, to more than 10,000 feet in Lassen Volcanic National Park. Figure 2.1-1. illustrates the regional location.

The County's three incorporated cities (Redding, Anderson, and City of Shasta Lake), and the town centers of Cottonwood and Palo Cedro, all lay in the south-central, non-mountainous portion of Shasta County - referred to as the South Central Region or SCR. The SCR contains about 335 square miles or about 8.8 percent of the county's area, yet it is home to about 85 percent of the county's total population. Outside of the SCR, there are two more town centers located in Burney/Johnson Park and Fall River Mills/McArthur, which are both located in the mountains of northeastern Shasta County. Figure 2.1-2. illustrates the project vicinity.

Shasta County is home to two federally recognized tribes. These include the Pit River Tribal Council and Redding Rancheria.

2.2 PROJECT GOALS AND OBJECTIVES

The purpose of the 2010 RTP is to provide a clear vision of the regional transportation goals, objectives, and policies in Shasta County. The 2010 RTP provides short-term and long-term strategies for implementation, which includes realistic and fiscally constrained alternatives. The following goals and objectives have been identified for the 2010 RTP.

PUBLIC TRANSPORTATION

Prioritize transportation services for funding and implementation, with an emphasis on the transportation needs of the transit-dependent.

SHORT-RANGE (2010-2020)

- O-1 Continue implementation strategies addressed in the 2007 Shasta County Coordinated Human Transportation Plan.
- O-2 Increase public awareness of transit through outreach and marketing.

- O-3 Continue distribution of the “Need a Ride” brochure.
- O-4 Improve coordination of transportation services through agency participation.
- O-5 Support and participate in mobility-management programs, such as California 211.
- O-6 Provide mobility-management information to populations that require specialized transportation in efforts to reduce dependency on heavily subsidized paratransit services.
- O-7 Obtain maximum transit and paratransit system efficiency by continuously monitoring transit needs, performance, funding, and capital requirements.
- O-8 Continue to work with local land-use planning agencies to further coordinate development with transit.
- O-9 Work in conjunction with transit advocacy groups to address legal ramifications for transit providers involved in coordination efforts.
- O-10 Pursue grants and other funding resources to improve and provide interconnectivity between transportation providers and neighboring counties.
- O-11 Research opportunities for volunteer driver programs.

LONG-RANGE (2020-2030)

- O-12 Provide the highest feasible level of transit service within the region consistent with TDA and FTA revenue sources.
- O-13 Invest in infrastructure and land-use patterns to create transit friendly communities.
- O-14 Consolidation of operations and services into one mobility-management center or centralized dispatch center.

STREETS AND ROADS ---

Maintain a safe and efficient road system within the limits of existing and projected funding constraints.

Short-Range (2010-2020)

- O-1 Develop more cost-effective methods to maintain the existing road network.
- O-2 Identify anticipated street and road problems before they become critical in order to program preventive measures.
- O-3 Plan for and reserve necessary road right-of-way for future expansion prior to development occurring.
- O-4 Maximize the number of persons that can use the existing transportation system.

LONG-RANGE (2020-2030)

- O-5 Develop a safe, sustainable street and highway system that can be maintained within the projected available funding and will meet automobile, truck, and transit needs.

GOODS MOVEMENT

Maintain an efficient goods movement industry within the region with the least adverse impact possible on the transportation system.

SHORT-RANGE (2010-2020)

- O-1 Maximize use of the existing goods movement infrastructure of the region.
- O-2 Protect the transportation infrastructure from deterioration.
- O-3 Minimize conflicts between trucks and other vehicles. Obtain data to determine the locations that need to be improved.
- O-4 Reduce truck and rail accidents by supporting proposals for grade separation improvements, crossing arms, and railroad crossing upgrades of gates and warning devices (lights and bells).
- O-5 Continue to work on the Buckhorn Grade Project to improve the horizontal and vertical alignment on SR 299.
- O-6 Continue to work with the trucking industry to identify funding sources for intermodal freight facilities and rail spurs.

LONG-RANGE (2020-2030)

- O-6 Improve or increase goods movement modes available in the county.
- O-7 Support the increasing need for regional truck parking areas by supporting attempts to identify funding.

AVIATION

Maintain efficient accessible air service in a safe and convenient manner.

SHORT-RANGE (2010-2020)

- O-1 Prevent deterioration of the airport facilities within the county.
- O-2 Enhance the passenger service at Redding Municipal Airport.
- O-3 Continue to apply for state and federal grants to make needed improvements at the three airports in the county and acquire funds to update plans.
- O-4 Acquire property north and south of the Redding Municipal Airport, to enhance runway approach protection and to provide land for future expansion. In 2003 and 2004, the City of Redding acquired over 140 acres towards this objective.

LONG-RANGE (2020-2030)

- O-4 Encourage airport operators (Shasta County and City of Redding) to develop projects that enhance the safety, capacity, and security of regional aviation facilities.
- O-5 Provide economical and frequent passenger service at Redding Municipal Airport connecting with surrounding major cities.

- O-6 Support implementation of the Shastec Redevelopment Project.

RAIL ---

Make rail service convenient to Shasta County citizens when economically feasible

SHORT-RANGE (2010-2020)

- O-1 Maintain existing railroad right-of-way and railroad services within the county.
- O-2 Maintain feeder bus service to connect with rail service south.
- O-3 Obtain more convenient daytime passenger rail service at the Redding station.
- O-4 Maximize opportunities to study, plan, and install grade separations between rail and roadways.

LONG-RANGE (2020-2030)

- O-5 If transit corridors are developed, provide for the eventual use by rail or other fixed-guideway systems.
- O-6 Consider the feasibility of construction of a new rail line between Eureka and Redding.

NON-MOTORIZED ---

Create a transportation environment that encourages non-motorized alternatives.

SHORT-RANGE (2010-2020)

- O-1 Strive to eliminate barriers to bicycle/pedestrian traffic.
- O-2 Integrate non-motorized transportation into development throughout the region.
- O-3 Keep bicycle/pedestrian lanes in a usable condition through a continued maintenance program.
- O-4 Mark the road as to where a bicycle should be placed to trip all new traffic signals.
- O-5 At fixed-time traffic signals, where feasible, make all new walk/don't walk signals automatic so they go to walk without having to push the button. This is considered an ITS application for pedestrian crossing detection information.

LONG-RANGE (2020-2030)

- O-6 Strive to provide an interconnected bicycle/pedestrian network throughout the county.
- O-7 Mark all signaled intersections as to where to place a bicycle to trip signal.
- O-8 Encourage the public to use non-motorized transportation facilities.

LAND USE

Provide a Regional Transportation Plan that is supportive of the land use goals of the cities and county general plans and focuses transportation investments along major transportation corridors to encourage infill development within the urbanized area.

SHORT-RANGE (2010-2020)

- O-1 Focus residential growth and commercial uses near transit corridors and design them for efficient, convenient transit use.
- O-2 Promote developments designed to encourage non-motorized trips by providing efficient, convenient, and safe pedestrian and bicycle facilities.
- O-3 Encourage increased non-motorized accessibility by placing residential development, employment, and commercial uses near each other.
- O-4 Ensure that transportation improvements necessary for development are fiscally constrained.
- O-5 Perform a periodic review of traffic impact fees developed by the agencies.
- O-6 Encourage the agencies to keep the RTPA in the loop at the onset of an application process.

LONG-RANGE (2020-2030)

- O-7 Integrate land use planning with supporting transportation programs to stabilize and, over time, reduce trip length.

AIR QUALITY

Reduce harmful air emissions in Shasta County and maintain a level that meets or exceeds minimum state and federal health standards

SHORT-RANGE (2010-2020)

- O-1 Prepare for Shasta County being designated a nonattainment area for federal air quality standards.
- O-2 Reduce emissions of inhalable particulate matter (PM10) and emissions contributing to ozone production to, at a minimum, meet state ambient air quality standards.
- O-3 Reduce emissions of greenhouse gases.

LONG-RANGE (2020-2030)

- O-4 Reduce emissions of inhalable particulate matter and emissions contributing to ozone production to a level that assures compliance with state ambient air standards.

ENVIRONMENTAL RESOURCES

Minimize the negative environmental effects of transportation projects.

SHORT-RANGE (2010-2020)

- O-1 Minimize environmental impacts, project delays, and added costs through early, continued resource agency consultation and public involvement.
- O-2 Streamline administration of the NEPA and CEQA process to avoid duplication of efforts.

LONG-RANGE (2020-2030)

- O-3 As NEPA and CEQA reviews become more common for regional and corridor studies, develop standardized methods for content, format, and coordination of these documents to facilitate tiering (referring to prior applicable studies, rather than regenerating them) for later projects.

FINANCIAL ELEMENT

Provide the best multimodal transportation system possible with available funds.

SHORT-RANGE (2010-2020)

- O-1 Address the maintenance deficit for streets and roads faced by the cities and county to prevent further deterioration of the existing transportation system.
- O-2 Obtain funding to expand non-motorized transportation opportunities.
- O-3 Continue to refine a system to prioritize projects for utilizing Regional Improvement Program funds.

LONG-RANGE (2020-2030)

- O-4 Identify a stable long-term source of funding for construction and maintenance of a multimodal transportation system.

2.3 PROJECT DESCRIPTION

The proposed project is the adoption and implementation of the Shasta County 2010 RTP. The 2010 RTP has been prepared to fulfill the state requirements of AB 402 (Government Code Title 7, Chapter 2.5, Sections 65080-65082) using specific guidance from the California Transportation Commission Regional Transportation Plan Guidelines (adopted September 2007). More specifically, the 2010 RTP is a comprehensive transportation plan for all modes including: highways, local streets and roads, transit, bicycle, aviation, rail and goods movement. The 2010 RTP embodies three elements: Policy Element, Action Element, and Financial Element. These elements are described in the following paragraphs. There are no specific improvement designs or approvals at the individual project level in the 2010 RTP.

The Policy Element

The purpose of the Policy Element is to identify legislative, planning, financial and institutional issues and requirements, as well as any areas of regional consensus. The Policy Element presents guidance to decision-makers of the implications, impacts, opportunities, and foreclosed options that will result from implementation of the 2010 RTP. The Policy Element is a resource for providing input and promoting consistency of action among State, regional and local agencies. California statutes state that each RTP shall (Government Code Section 65080 (b)) include a Policy Element that:

- Describes the transportation issues in the region;
- Identifies and quantifies regional needs expressed within both short and long range planning horizons (Government Code Section 65080(b)(1)); and,
- Maintains internal consistency with the Financial Element and fund estimates.

Policies, goals and objectives approved by the SCRTPA Board for each mode of transportation are detailed in the 2010 RTP.

PUBLIC TRANSPORTATION POLICIES

- P-1 Periodically review and update transit development plans. Encourage consideration of transit/multimodal options during updates of cities and counties general plans.
- P-2 Monitor the required farebox ratio and performance criteria for transit operators.
- P-3 Provide adequate funding to maintain the existing transit fleet and fleet expansion consistent with TDA regulations.
- P-4 Control the cost of providing mandatory demand-response to maximize overall transit service consistent with TDA regulations.
- P-5 Make potential transit users more aware of available services through public outreach and marketing programs.
- P-6 Continuously monitor and evaluate transit needs and allocate funding to extend transit service to areas where unmet needs have been identified that are reasonable to meet.

- P-7 Maximize the efficiency of private non-profit paratransit providers and support services which would otherwise need to be provided by public transit at substantially higher costs.
- P-8 Encourage the cities and county to identify, protect, and enhance transit corridors on the existing roadway system.
- P-9 Encourage local jurisdictions to require mitigation of project traffic impacts to include operational support for transit within the long-range period.
- P-10 Maximize intermodal connections by continuing to provide for bicycle transport on transit vehicles.
- P-11 Consider all available sources of funding as sources of meeting transit for both capital and operation needs.
- P-12 Seek funding programs for rural transit providers as they become available.
- P-13 Update the Coordinated Human Transportation Plan, as needed.

STREET AND ROADS POLICIES

- P-1 Use the Shasta County Traffic Model as a tool to monitor circulation and determine improvement needs on key road segments.
- P-2 Reserve adequate road right-of-way as outlined in the local agencies' general plans to the extent that funding can be reasonably expected to be available.
- P-3 Retain existing right-of-way needed to serve future planned development.
- P-4 Continue to provide funding for implementation of the road system and bridge inventory program to identify existing and projected levels of deterioration and to determine present and future road repair and maintenance needs.
- P-5 Pace the growth of maintained miles of streets, roads, and highways to match the projected availability of maintenance funds.
- P-6 Support efforts to create stable, local funding sources for streets and roads, and oppose state and federal proposals that reduce local funding.
- P-7 Conduct special studies for selected corridors, road segments, and key locations, as needed to evaluate safety concerns, project alternatives, estimate costs, and assign priorities.
- P-8 Develop plans and programs that emphasize reconstruction and improvement projects on existing roads that will enhance safety, circulation, and traffic flow.
- P-9 TSM alternatives should be studied for corridors developing unacceptable congestion and also studied in any analysis conducted as part of a major investment study for major transportation projects.

GOODS MOVEMENT POLICIES

- P-1 Encourage the establishment of a rail-to-truck intermodal freight container facility in the SCR. Consider set-aside or rezoning of suitable parcels for a future container transfer facility and work to maintain existing rail spurs.
- P-2 Encourage the local jurisdictions to support a wide variety of modes of goods movement.

- P-3 Review and develop recommendations on any legislation that would increase the size and axle weight of trucks in California.
- P-4 Maintain and improve ground access to the Redding Municipal Airport in support of airfreight transfer to local surface transportation.
- P-5 Local agencies should address the issue of truck accessibility and maneuverability during the review of commercial and industrial development proposals.
- P-6 Support attempts to identify funding for improvements of SR 299 West at the Buckhorn Summit.
- P-7 Continue to explore uses of Intelligent Transportation System (ITS) technology to improve truck movements and traveler information.

AVIATION POLICIES

- P-1 Give the highest priority to funding maintenance of the airport runways and supporting facilities.
- P-2 Encourage airport sponsors to broaden the economic base by pursuing revenue enhancements to help finance airport operations, maintenance, and capital improvements.
- P-3 Use airport master plans and the Regional TIP to identify and prioritize aviation projects which best support the aviation goal and objectives.
- P-4 Implement airport capital improvement plans developed in airport master plans.
- P-5 Encourage and support the improvement of traffic circulation and surface access to Redding Municipal Airport.
- P-6 Assist the Caltrans Division of Aeronautics to develop the Northern California Aviation System Plan.
- P-7 Maintain a strong land use program to assure compatibility with airport operations. Update the airport land use compatibility plans for both City of Redding airports.

RAIL POLICIES

- P-1 Consider reservation of right-of-way for intracounty rail when it is part of a multiple-use transit corridor and would not compromise the establishment of the corridor.
- P-2 Support the development of daylight Amtrak service to Redding.
- P-3 Reassess intercity rail feasibility at the end of the short-range planning period.
- P-4 Support legislation that preserves or enhances rail service without competing with funding sources for existing services.

NON-MOTORIZED POLICIES

- P-1 Encourage each city and the county to maintain an updated bikeway plan.
- P-2 Implement the Shasta County Regional Bikeway Plan including, where appropriate, street and highway improvements that accommodate non-motorized traffic by utilizing widened shoulders, bike paths, or lanes that serve non-motorized transportation.

- P-3 Provide bicycle lanes and pedestrian walkways on the Sacramento River bridges in Redding and Anderson to allow for better non-motorized traffic flow. The bridges on SR 44, Cypress Avenue, and Airport Road/North Street are currently being upgraded to provide bicycle and pedestrian facilities.
- P-4 Support continued development of the Sacramento River Trail and feeder trails.
- P-5 Encourage pedestrian and bicycle transportation as mitigation for regional transportation impacts.
- P-6 Encourage the inclusion of bike lanes and pedestrian facilities in road construction and improvement projects, where appropriate.
- P-7 Eliminate non-motorized barriers to comply with the American Disabilities Act.
- P-8 Encourage sweeping of shoulders on all feeder and arterial routes on a frequent schedule to improve conditions for bicyclists.

LAND USE POLICIES

- P-1 Conduct a land use analysis as part of a major investment study for large capacity-increasing transportation projects.
- P-2 Coordinate local land use planning with the RTP.
- P-3 Address capital and operating fiscal issues when proposing to expand the transportation system as a result of land use changes.
- P-4 Include functional mixed-use provisions and design standards that reduce use of the single-occupant automobile in local general plans and zoning ordinances.
- P-5 Consider neighborhood commercial uses during the design of infill and redevelopment projects in residential areas.
- P-6 Identify and designate transit corridors in each locality.
- P-7 Impacts to transportation facilities must be identified at the time of local development approval and methods for funding/implementing necessary mitigation identified.
- P-8 Encourage information sharing and communication among local agencies and the RTPA on regionally significant land use applications.

AIR QUALITY POLICIES

- P-1 Support and encourage measures that would result in a reduction of vehicle miles traveled in Shasta County.
- P-2 Support and encourage programs to pave existing dirt and gravel roads throughout the county.
- P-3 Support and encourage the implementation of measures to reduce emissions contributing to ozone production and climate change in Shasta County.
- P-4 Support such additional reasonable measures as the Air Quality Management District may recommend for the improvement of air quality in Shasta County.

- P-5 Monitor effective measures developed in other nonattainment areas and support the implementation of similar measures in Shasta County.

ENVIRONMENTAL RESOURCES POLICIES

- P-1 Before programming a project in the FTIP, the sponsoring agency should consult with the appropriate resource agencies.
- P-2 Communication and cooperation should be maximized between state and federal agencies, the local sponsoring agency, and the RTPA when developing NEPA and CEQA documents.
- P-3 The RTPA should be used to house all transportation-related studies within the region for use in subsequent studies.
- P-4 When feasible, the minimum legal public notification requirements should be exceeded to encourage public participation.

FINANCIAL POLICIES

- P-1 Private/public partnerships should be explored as a method of funding for large- scale transportation projects.
- P-2 Support efforts at the state and federal level to establish a broader funding base beyond fuel taxes to fund transportation.
- P-3 Zones of benefit should be established to fund localized transportation projects, such as interchange improvements.
- P-4 Continue to support optional management systems to generate information to establish priorities for allocation of transportation funds.
- P-5 Grants should be pursued to fund non-motorized transportation projects.
- P-6 Develop systems for prioritizing the allocation of major capital project funding through a collaborative process that involves the major stakeholders and the general public.

The Action Element

The Action Element identifies programs and actions to implement the 2010 RTP in accordance with the goals, objectives, and policies set forth in the Policy Element. The Action Element consists of short-term and long-term activities that address regional transportation issues and needs. All transportation modes (highways, local roads, bridges, transit, bicycle, aviation, and rail) are addressed. The Action Element must be consistent with the financial constraints identified in the Financial Element, and must conform to the State Implementation Plan. Regionally significant projects are listed below by transportation mode.

PUBLIC TRANSPORTATION ACTION PLAN

The primary public transportation provider in Shasta County is the Redding Area Bus Authority (RABA). RABA provides fixed-route and demand-response transit service in the urbanized area and some unincorporated areas of Shasta County. Fixed-route and demand-response service is not available outside of the urban boundary. Many social service and non-profit agencies transport

clients to and/or from services or programs they offer. These agencies, in coordination with transit agencies and private transportation providers, make up the landscape of special needs transportation.

Tables 2-1 and 2-2 identify the primary funding sources for transit capital and operating expenditures for both the short and long term horizons of the 2010 RTP. Following these tables are the short term and long term actions for the public transportation action plan.

TABLE 2-1: SHORT TERM TRANSIT MAINTENANCE, OPERATIONS AND CAPITAL FUNDING (IN DOLLARS)

RABA, SHASTA COUNTY, AND CTSA	2009 /10	2010 /11	2011 /12	2012 /13	2013 /14	2014 /15	2015 /16	2016 /17	2017 /18	2018 /19	SHORT RANGE 10 YR TOTAL
REVENUE	8,661	8,756	8,533	7,551	9,150	8,651	8,194	8,202	8,193	8,221	\$84,113
MAINTENANCE & OPERATIONS	6,780	7,020	7,210	7,406	7,577	7,314	6,856	6,954	7,027	7,081	\$69,081
CAPITAL IMPROVEMENTS	1,881	1,736	1,323	145	1,574	1,336	1,338	1,248	1,166	1,140	\$12,888

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-2: LONG TERM TRANSIT MAINTENANCE, OPERATIONS AND CAPITAL FUNDING (IN DOLLARS)

RABA, SHASTA COUNTY, AND CTSA	2019 /20	2020 /21	2021 /22	2022 /23	2023 /24	2024 /25	2025 /26	2026 /27	2027 /28	2028 /29	LONG RANGE 10 YR TOTAL
REVENUE	8,261	8,365	8,470	8,576	8,684	8,794	8,904	9,017	9,130	9,245	\$87,446
MAINTENANCE & OPERATIONS	7,118	7,207	7,297	7,389	7,482	7,576	7,671	7,768	7,865	7,964	\$72,798
CAPITAL IMPROVEMENTS	1,143	1,158	1,172	1,187	1,202	1,218	1,233	1,249	1,265	1,281	\$12,108

SOURCE: SHASTA COUNTY RTPA, 2009

Short-Range (2010-2020)

REDDING AREA BUS AUTHORITY (FROM RABA'S SHORT-RANGE TRANSIT PLAN)

- Operate an efficient and effective system that maximizes cost impacts (P2, P4, P5, P7, P11)
 - o Minimize operating costs
 - o Maximize use of transit funding
 - o Increase transit usage
 - o Utilize technology to improve real-time service
- Provide safe, reliable, and high quality transportation (P3, P11)
 - o Maintain a minimum of 50,000 miles between preventable collision accidents
 - o Maintain a 90% on-time performance
 - o Maintain less than one-percent of monthly missed trips
 - o Maintain less than five-percent monthly missed transfers
 - o Maintain FTA required spare vehicle ratio
 - o Complete regularly scheduled maintenance service within 500 miles or five-days of scheduled service
- Serve the transportation needs of the community (P1, P6, P7)
 - o Maximize accessibility by providing equal coverage throughout the local tax base area

- o Mark all transit vehicles and stops appropriately for ADA accessibility
- Evaluate, monitor, and improve transit service on an on-going basis (P1, P7)
 - o Update short-range transit plan at intervals of no greater than five years
- Undertake effective marketing, outreach, and public participation (P1, P5, P8, P13)
- Coordinate transit-system development with community planning, development efforts, and land-use policy (P1, P9, P10, P11)
- Continue to maximize the use of federal funds for operations (P3, P11, P12)
- Attempt to meet the RTPA established farebox ratio requirement of 19% by fiscal year 2014/15 (P2, P4)
- Caltrans Division of Research and innovation (DRI) has indicated that RABA can seek Congressional support for a ITS Application of Efficient Deployment of Advanced Public Transportation Systems (EDAPTS) for the following (P-4):
 1. Automatic Vehicle Location (AVL) using the Global Positioning Satellite (GPS) system.
 2. Dynamic Messaging Sign (DMS) for real time bus arrival information at bus stops.
 3. Solar power option for the DMS to allow mounting at remote, un-powered bus stops.
 4. Central dispatch software and Internet web page showing current bus locations and schedule adherence data.
 5. Silent emergency alarm for situations requiring police/emergency intervention.
 6. Radio Frequency (RF) modem for transmission of digital data over the voice radio link.
 7. Mobile Data Terminal (MDT) to monitor bus data sources, calculate and display information to drivers, and route relevant bus data information to the RF modem.
 8. Card-reader input for magnetic or electronic fare media.
 9. Keypad entries from the bus driver.
 10. Time of day using GPS time base.
 11. These components will be available as off-the-shelf products in the near future.
- RABA and the RTPA will provide comments on environmental documents regarding the need to mitigate transit impacts. This is usually limited to EIRs and further coordination is needed. (P-9, P-10)

REGIONAL TRANSPORTATION PLANNING AGENCY

- The RTPA performs annual unmet transit needs assessments to evaluate transit demand, existing transit performance, and system efficiency. Currently, all the areas in the region with substantial identified transportation disadvantaged populations are being served by public transit. As the area grows in population and the demographics change, it may become necessary to add transit services. (P2, P3, P6, P7, P12, P13)
- The RTPA provides supplemental funds to the CTSA. These funds provide transit services to seniors and persons with disabilities living outside of the RABA service area. Through the CTSA, there is at least a minimum level of transit service available to seniors and transit dependent populations in rural areas. (P7, P11, P13)

- The RTPA will work with federal, state, and local agencies to improve mobility-management throughout the region. (P1, P6, P8, P9, P10, P12)
- The RTPA, CTSA, and Social Services Transportation Advisory Council will continue to address strategies in the Shasta County Coordinated Human Transportation Plan. The CHTP is scheduled to be updated in 2011. (P13)

CONSOLIDATED TRANSPORTATION SERVICE AGENCY (CTSA)

- The Consolidated Transportation Service Agency holds regular meetings to coordinate the resources of the various social service transportation providers. This action will lead to more efficient use of resources by social service agencies involved in transportation. (P-7, P13)
- The CTSA should continue to meet performance criteria established by the RTPA. (P2, P3, P4, P7, P12, P13)

Long Range (2020-2030)

REDDING AREA BUS AUTHORITY

- RABA should continue with a capital replacement plan following the Federal Replacement Threshold of 12-years/500,000 miles for heavy-duty vehicles, and 7-years/200,000 for medium-duty vehicles in the fleet. (P3, P11)
- A long-range operating budget has been established for RABA, which is adjusted annually. This provides guidance to local decision makers of the impact of their decisions in the long run. It is also a tool to ensure that any system expansions can be financially sustained into the future. (P3, P11).

STREETS AND ROADS ACTION PLAN

The Streets and Roads Action Plan consists of short-term and long-term projects and activities that reduce traffic delays and congestion, improve safety, and improve overall mobility on both the State Highway System and local roads in Shasta County over the short-term and long-term horizon.

Short-Range (2010-2020)

CALTRANS

Caltrans utilizes the State Highway Operation and Protection Program (SHOPP) to maintain the safety and integrity of the State Highway system. Typical projects in the SHOPP include: pavement rehabilitation and preservation, safety, bridge replacement and rehabilitation, traffic operational improvements, mandated projects, facility improvements, and information technology. The current adopted SHOPP projects are listed below in Table 2-3.

Projects for the SHOPP are nominated by each Caltrans District office and are sent to Caltrans Headquarters for programming on a competitive basis statewide. Final project determinations are subject to CTC review. Individual districts are not guaranteed any minimum level of funding.

Table 2-3 describes projects that are programmed in the four-year programming cycle (2010-2014) in Caltrans, District 2. Table 2-4 describes projects that are not programmed in the four-year

programming cycle of the SHOPP at this time, but are being considered as future short-range SHOPP projects (2014-2020).

TABLE 2-3: SHORT-RANGE (2010-2014) SHOPP PROJECTS PROGRAMMED-CALTRANS (DISTRICT 2)

RTE	BEG PM*	END PM	PROJECT LOCATION	TYPE OF WORK	CONST. COST X (\$1,000)	CONSTRUCTION YEAR
5	56.7	56.7	Near Lakehead	Slope Stabilization	\$ 400	2008
5	1.9	61.8	Various Locations from North Cottonwood Undercrossing to Sweetbrier Avenue.	Rehabilitate Bridges	\$ 10,400	2012
5	8.5	12.1	In and Near Redding	Median Cable Barrier	\$ 1,400	2009
5	R15.0	R15.8	In Redding at the Central Redding Interchange from Cypress to 0.1 miles north of Hilltop OC	Collector Distributor SB	\$ 12,000	2010
5	16.0	17.0	In Redding 0.1 miles south of Hilltop to 0.3 miles south of Rte. 5/299 separation.	Tree Planting and Temp. Irrigation	\$ 147	2010
5	R28.9	R29.3	Near Shasta Lake from 0.4 miles south of and to Turntable Bay Overcrossing	Increase in curve radii - Operational Improvement	\$ 2,000	2010
5	R39.5	R40.8	Near Lakehead	Replace Antlers Bridge	\$239,800	2009
5	R43.1	R43.1	At the SB Lakehead Rest Area	Rehabilitate Southbound Rest Area	\$ 3,819	2010
5	Sta #	L5713	North of Lakehead at the Gibson Maintenance Station	Renovate Existing Crew Room and Equipment Building	\$ 700	2009
44	L0.1		In Redding at Pine Street	ADA Curb Ramp Upgrades	\$ 86	2009
44	46.9	48.3	Near Viola from 2.5 to 1.1 miles west of the Lassen Park entrance.	Curve Improvement and Extend Climbing Lane	\$ 6,700	2010
44	69.0	69.8	Near Old Station from 3.6 miles east of Plum Valley Road to 1.6 miles west of Shasta/Lassen County Line	Shoulder Widening	\$ 1,530	2010
89	3.5	11.5	From 0.4 miles south of Hat Creek Bridge to 0.4 miles north of Doty Road	Culvert Extensions	\$ 400	2010
273	5.7	5.7	In Anderson at Hayes Street	Close Median	\$ 146	2009
273	6.4	6.4	In Anderson at Alexander Street	Install Signals	\$ 856	2010
273	15.4	15.4	In Redding at Grange Street	Install Signals	\$ 650	2010
299	3.0	4.3	West of Redding from 3.0 to 4.3 miles east of Trinity County	Increase in curve radii - Widen Shoulders	\$ 10,700	2011
299	4.5	4.8	West of Redding from 4.5 to 4.8 miles east of Trinity County	Widen Lanes and add Shoulders	\$ 718	2011
299	4.8	5.0	West of Redding from 4.8 to 5.0 miles east of Trinity County	Widen Lanes and add Shoulders	\$ 825	2010
299	23.7	23.7	In Redding at Eleventh Street	Install Signals	\$ 630	2010
299	24.2		Various Locations	Upgrade Signal Lights at Various Locations	\$ 101	2009
299	40.7	60.0	At and near Montgomery Creek from 0.3 miles west of Backbone Ridge to Big Bend Road	Preventive Maintenance Asphalt Overlay	\$ 20,400	2011
299	41.1	41.3	Near Ingot from 0.1 miles to 0.3 miles east of Backbone Ridge Road	Add Shoulders EB	\$ 210	2009
299	70.6		Near Burney at 1.0 miles west of Sawmill Road	Install Rockfall Fencing	\$ 50	2009

*PM MEANS POST MILE.

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-4: SHORT-RANGE (2010-2014) SHOPP PROJECTS NOT PROGRAMMED

RTE	BEG PM*	END PM	PROJECT LOCATION	TYPE OF WORK	CONST. COST X (\$1,000)	CONSTRUCTION YEAR
5	0.0	67.0	Various Locations	New CCTV's, HAR, RWIS at Various Locations in Shasta County	\$ 13,000	TBD
5	44.0	58.0	Near Lakehead from 0.5 miles south of Dog Creek Bridge to 0.6 north of Sims U.C.	Preventive Maintenance Asphalt Overlay	\$ 30,000	TBD
89	26.3	30.7	Near Burney Falls at Lake Britton	Replace Lake Britton Bridge	\$ 70,000	TBD
273	0.0	9.9	In and from Anderson to Happy Valley Road	Roadway Rehabilitation	\$ 35,000	TBD
273	9.9	14.9	From Happy Valley Road to Wyndam Road	Roadway Rehabilitation	\$ 22,000	TBD
299	30.3	40.7	Near Bella Vista from 0.3 miles east of Intermountain Drive to 0.3 miles west of Backbone Ridge Road	Roadway Rehabilitation	\$ 36,300	TBD
299	77.8	79.6	Near Johnson Park	Preventive Maintenance Asphalt Overlay	\$ 6,000	TBD

*PM MEANS POST MILE.

SOURCE: SHASTA COUNTY RTPA, 2009

REGIONAL TRANSPORTATION PLANNING AGENCY

- The RTPA will maintain “performance measures”. (O-2, P-7)
- Identify projects to optimize traffic control, traffic signal performance, reduce traffic congestion, and improve air quality. (P-5, P-9)
- Identify advanced technologies to improve traffic flows and system efficiency. (P-5, P-9)
- Improve its ability to model the network using the Travel Demand Model, and continue to calibrate the model to increase its overall usefulness. (P-5, P-9)

SHASTA COUNTY

Most of the county's effort will continue to be concentrated on replacing or rehabilitating (including seismic retrofits) deficient bridges (see Table 2-5-through 2-7); and sealing, overlaying, or rehabilitating selected road segments; safety projects; and guard rails at various locations, as funds are available.

The Shasta County General Plan proposes a few new roads (mostly in the SCR) to improve circulation at build out. Most of the cost of these proposed roads will be borne by the developers who will be required to build them along approved alignments to required minimum standards. Shasta County's budget limitations prevent the construction of new routes in any other manner.

TABLE 2-5: SHASTA COUNTY BRIDGE REPLACEMENT PLAN (20-YEAR FORECAST - YEARS 2009-2016) (IN \$1000s)

BRIDGE	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Swede Creek Road @ Swede Creek	\$ 835						
East Fork Road @ Clear Creek	\$1,310						
Buzzard Roost Road @ Cedar Creek		\$1,070					
Swede Creek Road @ Little Cow Creek		\$2,285					
Old Oasis Road @ Churn Creek		\$ 870					
Spring Creek Road @ Fall River			\$2,122				
Cassel Fall River Road @ Pit River			\$6,238				
Smith Bottom Road @ ACID Canal			\$ 750				
Inwood Road @ South Fork Bear Creek				\$710			
White House Road @ ACID Canal				\$420			
Soda Creek Road @ Soda Creek				\$940			
Soda Creek Road @ SFk Soda Creek					\$620		
Island Road @ Little Tule River					\$530		
Ponderosa Way @ NFk Bear Creek					\$830		
Ponderosa Way @ Snow Creek						\$ 730	
Bear Mtn. Road @ Deep Hole Creek						\$ 920	
Lower Gas Pt Road @ NFk Cottonwood Creek						\$2,280	
Old 44 Drive @ Oak Run Creek							\$1,450
La Moine Road @ Slate Creek							\$2,350
Holiday Rd @ Spr. Branch Stillwater Creek							\$ 620
TOTALS (IN THOUSANDS):	\$2,145	\$4,225	\$9,110	\$2,070	\$1,980	\$3,930	\$4,420

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-6: SHASTA COUNTY BRIDGE REPLACEMENT PLAN (20-YEAR FORECAST - YEARS 2016-2023) (IN \$1000s)

BRIDGE	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Platina Road @ Arbuckle Gulch	\$ 950						
Adobe Road @ Anderson Creek	\$2,460						
Oak Run Road @ Oak Run Crk, 6C-188	\$1,170						
Lakeshore Road @ Doney Crk		\$7,830					
Parkville Road @ Ash Creek		\$ 710					
Main Street @ Castle Creek		\$2,000					
Lakeshore Road @ Charley Crk			\$6,480				
Ponderosa Way @ Snow Creek			\$ 830				
Pittville Road @ Pit River			\$3,530				
Riverside Road @ Sacramento River				\$2,120			
Fern Road East @ Glendenning Creek				\$1,050			
Ash Creek Road @ Sacramento River overflow				\$2,610			
Gibson Road @ Boulder Creek					\$2,600		
Jackrabbit Flat Rd @ Burney Creek					\$1,130		
Churn Creek Rd @ Churn Creek 6C-86					\$3,780		
Bland Road @ NF Wilson Creek						\$ 680	
Westside Road @ Squaw Creek						\$1,520	
Platina Road @ Huling Creek						\$ 540	
Bland Road @ SF Wilson Creek							\$ 950
Mineral Road @ Bailey Creek							\$ 490
Phillips Road @ Little Cow Crk							\$1,210
TOTALS (IN THOUSANDS):	\$4,580	\$10,540	\$10,840	\$5,780	\$7,510	\$2,740	\$2,650

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-7: SHASTA COUNTY BRIDGE REPLACEMENT PLAN (20-YEAR FORECAST - YEARS 2023-2030) (IN \$1000s)

BRIDGE	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Rock Creek Road @ Bailey Creek	\$910						
Sunny Hill Road @ Duckett Creek	\$720						
Trinity Mountain Road @ French Gulch	\$670						
Ponderosa Way @ SFk Cow Creek		\$1,630					
Dersch Road @ Lack Creek, 6C-131		\$1,770					
Mountain Meadow Road @ Battle Creek		\$ 740					
Clark Creek Road @ Burney Creek			\$ 760				
Statton Road @ Salt Creek			\$1,070				
Churn Creek Rd @ Churn Creek 6C-128			\$6,690				
Gas Point Road @ Antelope Creek				\$1,890			
Tamarack Road @ Burney Creek				\$1,570			
Mears Ridge Road @ Mears Creek				\$2,490			
Nelson Creek Road @ Nelson Creek					\$1,840		
Meyers Road @ Dry Creek					\$1,480		
Soda Creek Road @ Soda Creek, 6C-139					\$1,180		
Platina Road @ NFk Cottonwood Creek						\$1,590	
Gas Point Road @ Dry Creek						\$1,720	
Soda Creek Road @ Sacramento River						\$3,510	
Cline Gulch @ Clear Creek							\$ 3,470
Lower Gas Point Road @ Brad Creek							\$ 730
Deschutes @ overhead Barney and SPRR							\$10,180
TOTALS (IN THOUSANDS):	\$2,300	\$4,140	\$8,520	\$5,950	\$4,500	\$6,820	\$14,380

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF ANDERSON

- Anderson will concentrate on rehabilitation, maintenance, widening, and installing new traffic signals. (P-5, P-9)

CITY OF REDDING

- Redding will concentrate on maintenance, rehabilitation, and operational improvements, such as new signals, signal improvement, and road widening.(P - 5, P - 9)
- The City's general plan has requirements similar to the county's, by which the City will have most of the new roads constructed and paid for by developers as direct costs or through contributions to overall City traffic impact fees to construct specific projects of regional benefit. (P-5, P-9)
- Redding produced a street master plan in 1991 and the Urban Area Transportation Study in January 2002. A variety of potential improvements aimed at addressing the capacity problems of critical intersections and corridors were analyzed in these reports. These improvements range from intersection revisions, street widening, grade-separated interchanges, and extensions of parallel roadways. (P-5, P-9)
- To improve east/west circulation, the Redding Redevelopment Agency plans to consider the building of a new bridge over the Sacramento River at Parkview Avenue. (P-5, P-9)
- There are several improvement projects being contemplated for the interchange area at Cypress, Hilltop, and I-5 to help relieve heavy congestion. They include widening ramps, signalization, and other improvements.
- Miscellaneous road widening and intersection improvements.
- Adoption of a Traffic Impact Fee Program is intended to assist the construction of the highest-priority growth-related road projects and the signalization of intersections.

TABLE 2-8: SUMMARY OF BRIDGE PROJECTS SHORT-TERM-REDDING AREA

STATE BRIDGE #	LOCATION	COST	PROJECT TYPE
06C0033	Lake Blvd @ SPRR	\$5,000,000	Rehabilitation
06C0047	Locust St @ ACID Canal	\$1,000,000	Rehabilitation
06C0057	Twin View Blvd @ Boulder Creek	\$5,000,000	Rehabilitation
06C0106	Hartnell Ave @ Churn Court	\$5,000,000	Rehabilitation
06C0106	Hilltop Dr @ I-5	\$10,000,000	Rehabilitation
06C0070	Westside Rd @ Oregon Gulch	\$1,000,000	Rehabilitation
06C0071	Westside Rd @ Canyon Cr	\$1,000,000	Rehabilitation
06C0078	Westside Rd @ ACID Canal	\$1,000,000	Rehabilitation
06C0085	Eastside Rd @ Canyon Cr	\$1,000,000	Rehabilitation
06C0088	Old Oregon Trail @ W. Fork Stillwater Creek	\$5,000,000	Rehabilitation
<i>TOTAL</i>		<i>\$35,000,000</i>	

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF SHASTA LAKE

- Emphasis will be on bringing existing street pavement to an acceptable level of maintenance. The City has approximately 50 miles of paved streets, of which approximately 10-15 percent are at an acceptable level of maintenance. The city has an additional 15 miles of unpaved streets. (P-5, P-9)

RECREATION AREAS

- Whiskeytown Recreation Area – Project needs for this facility include the following:
 - o New entrance stations on Kennedy Memorial Drive and Oak Bottom Road.
 - o Redesign intersection on Kennedy Memorial Drive at Whiskeytown Dam
 - o Up to four designated parking areas adjacent to the lake to allow for proper entrance and exit lanes to resolve possible safety hazards
 - o Add designated bike lane or trail adjacent to Highway 299
- Lassen Volcanic National Park – Transportation improvement needs include:
 - o Improve traffic controls and signs outside of the Park to notify travelers of current road conditions in the park. The Park and/or Caltrans need to be able to change the message from remote locations.
 - o Improve asphalt concrete condition and drivability on SR 89 from SR 36 East to the southern boundary of the Park.
 - o Widen 500 feet of road shoulder section on Lassen Park Highway (SR 89) between the south entrance monument and the new visitor center.
- California State Parks - Improvements for the following parks are needed:
 - o McArthur-Burney Falls Memorial State Park
 - o Replace Lake Britton Bridge and realign road (in conjunction with Caltrans project in Table 5-13 on page 5-34)
 - o New park entrance road and entrance kiosk. Redesign of abandoned section of Highway 89 into park perimeter road.
- Castle Crags State Park
 - o New entrance parking lot to facilitate day use and vehicles during camping registration.
 - o Shasta State Historic Park
 - o Construct parking lot for day use visitors and school busses. (This project will alleviate some of the parking that occurs on Highway 299.)

Long-Range (2020-2030)*CALTRANS*

Present and future budgetary limitations at all government levels dictate a continued emphasis on maintaining and rehabilitating existing streets and highways, rather than investing in new routes to serve new areas. Long-range SHOPP projects are shown in Table 2-9.

TABLE 2-9: LONG-RANGE (2020-2030) SHOPP PROJECTS NOT PROGRAMMED

<i>RTE</i>	<i>BEG PM*</i>	<i>END PM</i>	<i>PROJECT LOCATION</i>	<i>TYPE OF WORK</i>	<i>CONST. COST X (\$1,000)</i>	<i>ANTICIPATED BEGIN CONSTRUCTION YEAR</i>
5	0.0	44.0	Interstate 5	Preventive Maintenance Asphalt Overlay	\$ 88,000	TBD
5	28.14	28.14	Pit River Bridge	Replace Bridge	\$500,000	TBD
5	57.41	57.41	Sims Road UC	Replace Deck	\$ 2,700	TBD
5	66.80	66.80	Crag View Dr. UC	Replace Deck	\$ 3,600	TBD
5	58.0	67.0	Interstate 5	Preventive Maintenance Asphalt Overlay	\$ 20,000	TBD
44	59.62	59.62	Route 44	Replace Deck	\$ 5,280	TBD
44	15.43	15.43	Redding Central Interchange	Vertical Clearance	\$ 8,000	TBD
44	0.0	71.4	Route 44	Preventive Maintenance Asphalt Overlay	\$ 40,000	TBD
89	0.0	21.72	Route 89	Preventive Maintenance Asphalt Overlay	\$ 16,000	TBD
273	17.08	17.08	Sacramento River Bridge	Replace Bridge	\$ 60,000	TBD
273	14.9	20.0	Route 273	Preventive Maintenance Asphalt Overlay	\$ 15,000	TBD
299	0.0	7.2	Route 299	Preventive Maintenance Asphalt Overlay	\$ 7,500	TBD
299	7.2	30.3	Route 299	Preventive Maintenance Asphalt Overlay	\$ 40,000	TBD
299	60.0	77.8	Through Burney on Route 299	Preventive Maintenance Asphalt Overlay	\$ 20,000	TBD
299	79.6	99.4	Route 299	Preventive Maintenance Asphalt Overlay	\$ 21,000	TBD

*PM MEANS POST MILE.

SOURCE: SHASTA COUNTY RTPA, 2009

Planned Street and Road Improvements

As required by Government Code (Sections 65085 et seq.) and to show fiscal constraint, the long range “future development” list of capacity increasing projects for the years 2020 through 2030 identifies and prioritizes the projects that could be completed. The following tables include fundable and non-fundable projects.

TABLE 2-10: SUMMARY OF CAPACITY PROJECTS-CALTRANS

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE / INTENT	EXPECTED FUNDING SOURCES
1	Liberty Street Imp to SR 44 (Dana to Downtown)	\$78,943,000		(2010-2020)	Capacity Increase / (1, 2, 3, 5)	STIP
2	Add Lanes to I-5 - S Bonneyview Road (exit 675) to Central Redding Interchange (exit 678 A,B)	\$29,000,000		(2010-2020)	Capacity Increase / (1, 2, 3, 5)	STIP
3	Add Lanes to I-5 - 4th Street Overcrossing (exit 664) to Deschutes OC in Anderson (exit 667) (AKA Cottonwood Hills Truck Climbing Lanes)	\$25,000,000		(2010-2020)	Capacity Increase / (1, 2, 3, 5)	Prop 1B/STIP
4	\$\$ -Add Lanes to I-5 - Riverside Ave Overcrossing (exit 670) to S Bonneyview Road (exit 675)	\$38,100,000		(2010-2020)	Capacity Increase / (1, 2, 3, 5)	STIP
TOTAL SHORT TERM NEEDS =		\$171,043,000				
5	Add Lanes to I-5 - Central Redding Interchange (exit 678) to N Redding Interchange		\$34,290,000	(2020-2030)	Capacity Increase / (1, 2, 3, 5)	STIP
6	Add Lanes to I-5 - SR 273 (exit 667) in Anderson to Riverside Av Overcrossing (exit 670)		\$69,850,000	(2020-2030)	Capacity Increase / (1, 2, 3, 5)	STIP
7	Add Lanes to I-5 - Shasta County Border to 4th Street Overcrossing		\$22,225,000	(2020-2030)	Capacity Increase / (1, 2, 3, 5)	STIP
8	Add Lanes to I-5 - SR 151 to Mtn Gate Overcrossing		\$22,860,000	(2020-2030)	Capacity Increase / (1, 2, 3, 5)	STIP
9	Highway 44 - Stillwater Project		\$64,000,000	(2020-2030)	Capacity Increase / (1, 2, 3, 5)	STIP
10	Reconfigure I-5/44 Interchange (Central Redding) Exit 678 A,B,C		\$50,000,000	(2020-2030)	Interchange/ (1,2,3,5,7)	SHOPP
TOTAL LONG TERM FUNDABLE NEEDS		\$263,225,000				

Project Intent Legend

- 1) Reduce Congestion
- 2) Increase Mobility
- 3) Economic Development
- 4) Improve Access
- 5) Reduce Pollutants

- 6) Connectivity
- 7) Collision Reduction
- 8) Improve Bike/Ped Access
- 9) Transit Improvements

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

SHASTA COUNTY

TABLE 2-11: SUMMARY OF SAFETY PROJECTS-SHASTA COUNTY

	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Old Oregon Trail Bike Lanes, SR 299 to Old Alturas	\$3,000,000		(2010-2020)	Safety (2,6,7,8)	BTA/Road Fund
2	Canyon Road Bike Lanes, Valley View Rd to China Gulch	\$600,000		(2010-2020)	Safety (2,6,7,8)	BTA/Road Fund
3	Whitmore Road Shoulder Widening, 0.3 Miles WO Fern Rd to Old Cow Cr Rd	\$1,050,000		(2010-2020)	Safety (7,8)	HSIP/Road Fund
4	Union School Road Shoulder Widening, Tierra Oaks Dr to Old Oregon Tr	\$880,000		(2010-2020)	Safety (7,8)	HSIP/Road Fund
5	Olinda Road Shoulder Widening, Sammy Lane to Red Leaf Lane	\$1,100,000		(2010-2020)	Safety (7,8)	HSIP/Road Fund
6	Hawthorne Ave Shoulder Widening, Happy Valley Rd to Dixieland Lane	\$750,000		(2010-2020)	Safety (7,8)	HSIP/Road Fund
7	Olinda Road Shoulder Widening, Anderson City Limit to Sammy Lane	\$1,050,000		(2010-2020)	Safety (7,8)	HSIP/Road Fund
8	Canyon Road Bike Lanes, SR 273 to Valley View Rd	\$650,000		(2010-2020)	Safety (2,6,7,8)	BTA/Road Fund
9	Lake Boulevard at Pine Grove Avenue Roundabout/Signal	\$500,000		(2010-2020)	Intersection (1, 2, 3, 4, 6, 7)	HFL
10	Happy Valley Road Shoulder Widen and Realign, Palm Avenue to Warwick St,	\$1,875,000		(2010-2020)	Safety (7,8)	HSIP/BTA/TIF/Road Fund
TOTAL SHORT TERM NEEDS		\$11,455,000				
11	Dry Creek Road Shoulder Widening, Deschutes Rd to Project Funding Limits		\$1,000,000	(2020-2030)	Safety (7, 8)	HSIP/Road Fund
12	Old Alturas Road, Shoulder Widen and Realign, Old Oregon Tr to Stillwater Ck		\$490,000	(2020-2030)	Safety (2,6,7,8)	HSIP/Other
13	Placer Road, Shoulder Widen and Realign, Muletown Rd to Leaning Pine Rd		\$650,000	(2020-2030)	Safety (7,8)	HSIP/Other
14	Churn Creek Road, Shoulder Widen from Rancho to Knighton		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
15	Churn Creek Road, Shoulder Widen from Knighton to Airport		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
16	4th Street Median Lane, Main Street to Balls Ferry Road		\$1,000,000	(2020-2030)	Capacity/Safety (1, 2, 3, 4, 7)	HSIP/Other
17	Clear Creek Road Shoulder Widen, 273 to Honey Bee		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
18	Old 44 Drive Shoulder Widen from COR to Deschutes Road		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
19	Old 44 Drive, Shoulder Widen and Realign, Silver Bridge Rd to Oak Run Rd		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
20	Bear Mountain Road - Shoulder Widen and Improve Alignment		\$1,000,000	(2020-2030)	Safety (7,8)	HSIP/Other
21	Swasey Drive Shoulder Widening, SH 299 to Placer		\$3,090,000	(2020-2030)	Safety (7,8)	HSIP/Other
22	Lower Springs Road Shoulder Widening, SH 299 to Swasey Drive		\$1,000,000	(2020-2030)	Safety (2,6,7,8)	HSIP/Other
23	Old Alturas/Boyle Roads, Shoulder Widening, Stillwater Ck to Deschutes Rd		\$1,000,000	(2020-2030)	Safety (2,6,7,8)	HSIP/Other
24	Placer Road at Swasey Drive, Roundabout		\$500,000	Unfundable /Unknown	Safety (2,6,7,8)	Unfunded or Developer
25	Canyon Road at China Gulch Drive		\$500,000	Unfundable	Intersection	Unfunded

	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
	Roundabout/Signal			/Unknown	(1, 2, 3, 4, 6, 7)	or Developer
26	Old Oregon Trail at Old Alturas Roundabout/Signal		\$500,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
27	Deschutes Road at Boyle and Old Deschutes Rd Roundabout/Signal		\$500,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
28	Cottonwood - Fourth Street and Locust Street Roundabout/Signal		\$500,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
29	Quartz Hill and Keswick Dam Roads, Roundabout/Signal		\$500,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
30	Cottonwood - Happy Valley at Gas Point Road Roundabout/Signal		\$500,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
31	Deschutes Rd @ SR 44 Ramps and Old 44 Dr, Roundabouts/Signals		\$2,000,000	Unfundable /Unknown	Intersection (1, 2, 3, 4, 6, 7)	Unfunded or Developer
TOTAL LONG TERM NEEDS		\$13,230,000				

Project Intent Legend

1) Reduce Congestion	6) Connectivity
2) Increase Mobility	7) Collision Reduction
3) Economic Development	8) Improve Bike/Ped Access
4) Improve Access	9) Transit Improvements
5) Reduce Pollutants	

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-12: SUMMARY OF CAPACITY INCREASING PROJECTS-SHASTA COUNTY

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Gas Point Road from New N-S to Rhonda - Widen to 4 lanes	\$2,731,000		(2010-2020)	Capacity Increase (1, 2, 3, 4, 5, 6)	TIF/Other
2	Old Oregon Trail, Widen to 3 Lanes Big League Dreams to N.O. Columbia School	\$2,150,000		(2010-2020)	Capacity/Safety (1, 2, 3, 4, 5, 7)	TIF/Other
TOTAL SHORT TERM NEEDS =		\$4,881,000				
3	\$\$ -I-5 Main St Interchange Exit 665 - Connect to Rhonda, add roundabouts		\$9,781,000	Unfundable /Unknown	Interchange (1, 2, 3, 4, 5, 6)	Unfunded or Developer
4	Rhonda Road Gas Point - I-5 Main New realigned 3 lane road		\$3,920,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
5	New N-S Road - First St to New E-W Construct to 3 lanes		\$4,687,600	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
6	New E-W Road -New N-S to Rhonda Construct 3 lane road		\$2,357,200	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
7	Reconfigure Knighton Road Over-Crossing at Interchange Exit 673		\$23,000,000	Unfundable /Unknown	Interchange (1, 2, 3, 4, 6)	Unfunded or Developer
8	Churn Ck Rd, Hartmeyer to Huntington, Widen, Realign,		\$3,200,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
9	Deschutes Road Widen to 3-Lanes, Old 44 Drive to Boyle Road		\$2,815,000	Unfundable /Unknown	Capacity/Safety (1, 2, 3, 4, 5, 7)	Unfunded or Developer
10	I-5 Gas Point Interchange Improvements exit 664		\$12,235,000	Unfundable /Unknown	Interchange (1, 2, 3, 4, 5, 6)	Unfunded or Developer
11	First Street Widen from 2 to 5 lanes, N/S Arterial to Overcrossing		\$562,800	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
12	New N-S Road - New E-W to Rhonda		\$7,275,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
13	Deschutes Road Widen to 3-Lanes, Palo Cedro to Dersch Road		\$5,000,000	Unfundable /Unknown	Capacity/Safety (1,3,7,8,9)	Unfunded or Developer
14	Cottonwood - Front, Magnolia, Pine and Chestnut St Roundabouts		\$500,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
15	Dry Creek Road Shoulder Widening, Deschutes Rd to Bear Mtn Rd		\$4,250,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
16	Knighton Road West		\$29,000,000	Unfundable /Unknown	New Facility (1,2,3,4,6)	Unfunded or Developer
17	Improve SR 299 Old Oregon Trail Interchange - Exit 143		\$2,500,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4, 5, 6)	Unfunded or Developer
18	Intermountain Road, SR 299 to Bear Mtn Road		\$7,090,000	Unfundable /Unknown	New Facility (1,2,3,4,6)	Unfunded or Developer
19	East Stillwater Way, Shoulder Widen and Extend to Bear Mtn Road		\$5,060,000	Unfundable /Unknown	New Facility (1,2,3,4,6)	Unfunded or Developer
20	Oasis Road Widen to 4-Lanes, Randolph to Old Oasis		\$950,000	Unfundable /Unknown	Capacity Increase (1, 2,	Unfunded or

2.0 PROJECT DESCRIPTION 2010

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
					3, 4, 5, 6)	Developer
21	Black Ranch Road Extension		\$2,350,000	Unfundable /Unknown	New Facility (1,2,3,4,6)	Unfunded or Developer
TOTAL LONG TERM FUNDABLE NEEDS		\$126,533,600				

Project Intent Legend

1) Reduce Congestion	6) Connectivity
2) Increase Mobility	7) Collision Reduction
3) Economic Development	8) Improve Bike/Ped Access
4) Improve Access	9) Transit Improvements
5) Reduce Pollutants	

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF ANDERSON

Anderson's project needs are included in Tables 2-13 and 2-14. The City of Anderson is in the process of studying how to provide better access to its commercial area adjacent to Interstate 5. One of the alternatives outlined in the Shasta County Interchange Improvement Study Final Report needs to be implemented in order to address the access problems at Deschutes Road.

TABLE 2-13: SUMMARY OF SAFETY PROJECTS-CITY OF ANDERSON

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE (INTENT)	EXPECTED FUNDING SOURCES
1	SR 273 @ North Street - Intersection Improvements	\$1,500,000		(2010-2020)	Capacity Increase / Safety (1,2,4, 6,7,8)	HSIP
2	SR 273 @ South Street - Intersection Improvements	\$1,500,000		(2010-2020)	Capacity Increase / Safety (1,2,4, 6,7,8)	HSIP
TOTAL SHORT TERM NEEDS =		\$3,000,000				
3	Reconfigure I-5 Riverside Interchange. Widen and signals		\$17,200,000	Unfundable/ Unknown	Interchange (1), (2), (3), (5), (7)	Safety, TIF, SHOPP
4	Little Street - Realignment		\$700,000	Unfundable/ Unknown	Safety (3,4,7,8)	HSIP
5	Alexander St - Widening		\$500,000	Unfundable/ Unknown	Safety (3,4,7,8)	HSIP
TOTAL LONG TERM NEEDS =			\$18,400,000			

Project Intent Legend

- 1) Reduce Congestion
- 2) Increase Mobility
- 3) Economic Development
- 4) Improve Access
- 5) Reduce Pollutants

- 6) Connectivity
- 7) Collision Reduction
- 8) Improve Bike/Ped Access
- 9) Transit Improvements

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-14: SUMMARY OF CAPACITY INCREASING PROJECTS-CITY OF ANDERSON

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	North Street - Ravenwood to Sharon - Widening	\$900,000		(2010-2020)	Capacity Increase (1, 2, 3, 4,7,8)	Redevelopment
TOTAL SHORT TERM FUNDABLE =		\$900,000				
2	\$\$ Deschutes/I-5 Interchange, Phase 1 - (See Note 3)		\$6,680,000	Unfundable /Unknown	Interchange/ (1, 2, 3, 7)	Partially funded w/TIF
3	McMurray Drive - North of Ganyon Drive - Widening		\$500,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
4	Gateway Drive - From Balls Ferry South - Widen		\$1,193,750	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
5	East Street - North of Willow Glen Dr. - Extension		\$1,662,500	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
6	Reconfigure I-5 Central Anderson Interchange (North Street)		\$3,100,000	Unfundable /Unknown	Interchange/ (1, 2, 3, 7)	Unfunded or Developer
7	Pleasant Hills SR 273 Vineyards construct 2 lane road extension		\$3,323,946	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
8	Gateway Drive - Balls Ferry to Deschutes - Construct 2 lane road		\$6,500,000	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
9	Rhonda Road - Factory Outlets Drive to Pleasant Hills - Intersection Reconstruction		\$2,286,875	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
10	Deschutes/I-5 interchange phase 2		\$10,500,000	Unfundable /Unknown	Interchange/ (1, 2, 3, 7)	Unfunded or Developer
11	Anderson Hills Parkway -W of Pleasant Hills - Construct 4 lane road		\$4,980,000	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
12	Anderson Hills Parkway Pleasant to Rhonda - Construct 4 lane road		\$3,000,000	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
13	Anderson Hills Parkway - Rhonda to Locust - Construct 4 lane road		\$2,659,157	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
14	Emily Drive - Widening		\$738,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
15	Ox Yoke Rd. - SR 273 to Riverside Av - Widening to 5 lanes		\$2,000,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
16	Riverside Avenue - Ox Yoke to North St. - Widening to 5 lanes		\$7,000,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
17	Balls Ferry Rd. - From Stingy Lane to the City Limits - Widening		\$1,193,750	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
18	South Street - SR 273 west to City Limits - Widening		\$3,750,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
19	Stingy Lane - North St. to Balls Ferry - Widening		\$13,500,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
20	Gateway Drive - From Existing Improvements to Deschutes - Widen		\$5,621,463	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
21	Fairgrounds Drive - 1st St. to 3rd St. - Widening		\$1,100,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
22	Third Street - SR 273 to Fairgrounds Dr. - Widening		\$1,800,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer
23	Auto Mall - Extend to North Street - Extension		\$3,800,000	Unfundable /Unknown	Capacity Increase (1, 2, 3, 4,7,8)	Unfunded or Developer

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
24	South County Extension - Ronda Rd to Anderson Hills - Extension		\$5,500,000	Unfundable /Unknown	New Facility (2, 3, 8)	Unfunded or Developer
TOTAL LONG TERM NEEDS		\$69,429,244				

Project Intent Legend

- 1) Reduce Congestion
- 2) Increase Mobility
- 3) Economic Development
- 4) Improve Access
- 5) Reduce Pollutants
- 9) Transit Improvements

- 6) Connectivity
- 7) Collision Reduction
- 8) Improve Bike/Ped Access
- 9) Transit Improvements

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF REDDING

Redding's project needs are included in Tables 2-15 and 2-16. The City of Redding plans to develop a number of arterials to serve planned development within the city. These facilities will have to rely on local sources of funding, with the exception of those projects prioritized to address the Interstate 5 corridor.

TABLE 2-15: SUMMARY OF SAFETY PROJECTS-CITY OF REDDING

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	\$\$ Parkview Avenue Street Improvements - Cape Seal and Restripe to 2 lane	\$825,000		(2010-2020)	Safety / (4,5,7,8)	Redevelopment
2	\$\$ Signal: Victor Avenue - Old Alturas	\$300,000		(2010-2020)	Intersection / (1,7,8)	TIF
3	\$\$ Signal: Lake Blvd - Keswick Dam Road	\$250,000		(2010-2020)	Intersection / (1,7,8)	TIF
5	Roundabout: Shasta View Drive - Old Alturas	\$1,200,000		(2010-2020)	Intersection / (1,7,8)	TIF - Developer
6	Signal: Cypress Avenue - Beverly/Rosemary	\$400,000		(2010-2020)	Intersection / (1,7,8)	TIF
7	Signal: Court Street - Eleventh Street	\$400,000		(2010-2020)	Intersection / (1,7,8)	TIF
8	Oasis at Old Oregon Trail/Akrich - Intersection Improvements	\$900,000		(2010-2020)	Intersection / (1,7,8)	HSIP
TOTAL SHORT TERM NEEDS		\$4,275,000				
8	Signal: East Street - South Street		\$400,000	(2010-2020)	Intersection / (1,7,8)	Developer
9	Signal: Churn Creek - Maraglia Street		\$400,000	(2010-2020)	Intersection / (1,7,8)	TIF
10	Signal: West Street - Placer Street		\$400,000	(2010-2020)	Intersection / (1,7,8)	TIF
11	Signal: Victor Avenue - Galaxy Way		\$400,000	(2010-2020)	Intersection / (1,7,8)	TIF
12	Signal: Alta Mesa Drive - Hartnell Avenue		\$400,000	(2010-2020)	Intersection / (1,7,8)	TIF
13	Signal: Shasta View Drive - Simpson Blvd		\$400,000	(2010-2020)	Intersection / (1,7,8)	Developer
14	Signal: Airport Road - Fig Tree Lane		\$400,000	(2010-2020)	Intersection / (1,7,8)	RRA
15	Signal: SR44 and Shasta View Dr (WB Ramp)		\$400,000	(2010-2020)	Intersection / (1,7,8)	Developer
16	Signal: Placer Road - Wisconsin Avenue		\$400,000	(2010-2020)	Intersection / (1,7,8)	TIF
17	Churn Creek Road/Rancho Road/Victor Avenue - Construct Roundabout		\$1,500,000	Unfundable /Unknown	Safety / (4,5,7,8)	Unfunded or Developer
18	Old Oregon Trail 2 lane Realignment - Midland Drive to Frontier Road		\$4,420,000	Unfundable /Unknown	Safety / (4,5,7,8)	Unfunded or Developer
19	Signal: Court Street - Schley Avenue		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
20	Signal: Court Street - Riverside Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
21	Signal: Park Marina Drive - Locust Street		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
22	Signal: Airport Road - Meadowview Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
						Developer
23	Signal: Victor Avenue - Vega Street		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
24	Signal: Victor Avenue - Marlene Avenue		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
25	Signal: Lake Boulevard - Panorama Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
26	Signal: Placer - O'conner Avenue		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
27	Signal: Twin View - Caterpillar		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
28	Signal: Hilltop Drive - Sand Point Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
29	Signal: Churn Creek/Hawley Road - Collyer Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
30	Signal: Churn Creek Road - Palacio Drive		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
31	Signal: Shasta View Drive - College View		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
32	Signal: Victor Ave - El Vista Street		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
33	Signal: Lake Boulevard - Santa Rosa Way		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
34	Signal: Hartnell Avenue - Lawrence Road		\$400,000	Unfundable /Unknown	Intersection / (1,7,8)	Unfunded or Developer
LONG TERM FUNDABLE NEEDS			\$10,820,000			

Project Intent Legend

1) Reduce Congestion	6) Connectivity
2) Increase Mobility	7) Collision Reduction
3) Economic Development	8) Improve Bike/Ped Access
4) Improve Access	9) Transit Improvements
5) Reduce Pollutants	

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-16: SUMMARY OF CAPACITY INCREASING PROJECTS-CITY OF REDDING

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	\$\$ Oasis Interchange - Add SB Loop On-ramp and Widen NB Off-ramp	\$3,598,000		(2010-2020)	Interchange / (1,3,4,5,7,8)	NRTBD
2	Oasis Road Widening - Northbound I-5 Ramps to Gold Hills Drive	\$11,608,800		(2010-2020)	Interchange / (1,3,4,5,7,8)	NRTBD/Developer
3	\$\$ Buenaventura Blvd Widening - Railroad Ave to Hwy 273	\$750,000		(2010-2020)	Capacity Increase (1,5,7,8) /	RRA/HSIP
4	\$\$ Placer Street Widening - Airpark Drive to Buenaventura Blvd	\$1,800,000		(2010-2020)	Capacity Increase (1,5,7,8) /	TIF
5	\$\$ Placer Street Widening - Buenaventura Blvd to Boston Ave	\$2,000,000		(2010-2020)	Capacity Increase (1,5,7,8) /	TIF
6	** Stillwater Business Park Improvements - Phase 1 & 2	\$15,000,000		(2010-2020)	New Facility / (3,4)	Other
7	\$\$ Victor Ave Widening - Hartnell Avenue to E. Cypress Avenue	\$4,100,000		(2010-2020)	Capacity Increase (1,4,5,7,8) /	TIF
8	Churn Creek Road Widening - Boulder Creek to SR 299E	\$3,120,000		(2010-2020)	Capacity Increase (1,4,5,7,8) /	TIF
9	Hilltop Drive Widening - Lake Boulevard to I-5	\$1,400,000		(2010-2020)	Capacity Increase (1,4,5,7,8) /	TIF
10	Quartz Hill Road Widening - Snow Lane to Top of the Hill	\$800,000		(2010-2020)	Capacity Increase (1,5,7,8) /	TIF
11	Shasta View Drive Widening - Atrium Way to Old Alturas	\$400,000		(2010-2020)	Capacity Increase (1,4,5,7,8) /	TIF/Developer
12	Victor Avenue Widening - Vega Street to Hartnell	\$ 4,750,000		(2010-2020)	Capacity Increase (1,5,7,8) /	TIF
TOTAL SHORT TERM NEEDS =		\$49,326,800				
15	Churn Creek Road Widening - Browning St. to Boulder Creek		\$3,468,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
16	Hilltop Drive Overcrossing - Widen over I-5		\$8,100,000	2020-2030	Capacity Increase (1,5,8,9) /	TIF
17	Churn Creek Road Widening - City Limits east to Victor Avenue		\$2,816,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
18	Railroad Avenue Widening - Sheridan Street to Grandview Avenue		\$2,320,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
19	Victor Avenue Widening - E.Cypress Avenue to Mistletoe Lane		\$4,675,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
20	Victor Avenue Widening - SR44 to Old Alturas Road		\$2,800,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
21	Shasta View Drive Widening - SR 299E to Palacio Drive		\$3,785,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
22	Shasta View Drive Widening - Hemmingway Drive to Atrium Way		\$4,992,000	2020-2030	Capacity Increase (1,4,5,7,8) /	TIF
23	Hartnell Avenue Widening - Victor Avenue to Shasta View Drive		\$6,000,000	2020-2030	Capacity Increase /	TIF

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
					(1,4,5,7,8)	
24	Quartz Hill Road Widening - Top of Hill to City Limits		\$4,200,000	2020-2030	Capacity Increase / (1,4,5,7,8)	TIF
25	Oasis Road & I-5 Interchange Exit 682 - Reconstruction and Widening		\$20,700,000	Unfundable /Unknown	Interchange / (1,3,4,5,7,8)	Unfunded or Developer
26	Oasis Road Widening - Randolph Road to Old Oasis Road		\$3,500,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
27	Airport Road Widening - SR 44 to Rancho Rd.		\$6,121,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
28	Browning Street Reconfigure to 4 Lane - Hilltop Drive to Old Alturas		\$400,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
29	\$\$ Cascade Blvd Realignment- North and South of Oasis Road		\$8,713,400	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
30	Caterpillar Road - George Drive to SR273 Widen Roadway and Signal		\$1,700,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
31	Cypress Ave Connection - Victor Avenue to Shasta View Drive		\$17,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
32	Hilltop Drive Extension - Lake Boulevard to Twin View		\$1,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
33	Old Alturas Road Widening - Victor Avenue to Shasta View Drive		\$8,550,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
34	Palacio Drive Connection - Churn Creek to Cornell Place		\$8,500,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
35	Shasta View Drive Extension - 2 Lane Widening - Collyer Drive to Manzanook Drive		\$6,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
36	Shasta View Drive Widening - Hartnell Avenue to Goodwater Drive		\$5,819,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
37	South Bonnyview & I-5 Interchange Exit 675 - Improvements		\$10,000,000	Unfundable /Unknown	Interchange / (1,3,4,5,7,8)	Unfunded or Developer
38	Twin View Blvd & I-5 Interchange Exit 681 - Improvements		\$4,000,000	Unfundable /Unknown	Interchange / (1,3,4,5,7,8)	Unfunded or Developer
39	Airport Road & SR44 Interchange Exit 5 - Improvements		\$15,000,000	Unfundable /Unknown	Interchange / (1,3,4,5,7,8)	Unfunded or Developer
40	Airport Road Widening - Sacramento River to Rancho Road		\$35,000,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
41	Buenaventura Blvd Reconfigure to 4 lane - Summit Drive to Railroad Avenue		\$300,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
42	Buenaventura Blvd Widening - Starlight Boulevard to Placer Road		\$1,500,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
43	Court Street Widening - 11th Street to Riverside Drive		\$500,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
44	Hartnell Avenue at Airport Road		\$7,925,000	Unfundable	Capacity	Unfunded

2.0 PROJECT DESCRIPTION 2010

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
	Widening and Realignment			/Unknown	Increase / (1,5,7,8)	or Developer
45	Oak Mesa Lane Extension - Tarmac Road to Candlewood Drive		\$1,125,825	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
46	Oasis Road Widening - Gold Hills Drive to Shasta View Drive		\$2,000,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
47	Old Alturas Road Widening - Shasta View Drive to City Limits		\$4,585,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
48	Old Oregon Trail Widening - Old Highway 44 to Viking Way		\$4,000,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
49	Parkview Ave Widening - ACID Canal to Park Marina		\$925,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
50	Rancho Road Widening - Goodwater to Airport Road		\$6,750,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
51	Shasta View Drive Extension - Manzanoaks Drive to Oasis Road		\$4,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
52	Shasta View Drive Extension - Rancho Road to Airport Road		\$5,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
53	Stillwater Business Park Improvements - Phase 3		\$5,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
54	Tarmac Road Extension to Old Oregon Trail		\$5,974,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
55	Twin View Road Realignment - North and South of Oasis Road		\$6,483,064	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
56	Westside Road Frontage Extension - Glengary Drive to Clear Creek Road		\$1,304,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
57	Beltline Road Extension - Oasis Rd to Ashby Rd		\$4,725,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
58	Buenaventura Blvd Extension - Eureka Way to Keswick Dam Road		\$10,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
59	Cedars Road Extension - El Reno Lane to Buenaventura Boulevard		\$900,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
60	Creekside Drive Extension - Sacramento Street to Bonnyview Road		\$1,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
61	Cypress Ave & I-5 Interchange Exit 677 - Reconstruction		\$13,028,000	Unfundable /Unknown	Interchange / (1,3,4,5,7,8)	Unfunded or Developer
62	Cypress Avenue Reliever Project - Industrial Street Extension Over crossing of I-5		\$5,738,000	Unfundable /Unknown	Capacity Increase / (1,5,7,8)	Unfunded or Developer
63	Eastside Road Extension - Girvan Road to Southern City Limits		\$5,650,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
64	George Drive Extension - North Terminus to Oasis Road		\$1,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
65	Kenyon Drive Extension - West Terminus to Placer Road		\$10,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
66	Loma Vista Drive Extension - Churn Creek Road to Victor Avenue		\$6,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
67	Palacio Drive Extension - Shasta View Drive to Old Oregon Trail		\$3,500,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
68	S. Bonnyview Road @ SR273 - Grade Separation		\$30,000,000	Unfundable /Unknown	Intersection/ (7)	Unfunded or Developer
69	Santa Rosa Avenue Extension - Quartz Hill Road to Lake Boulevard		\$2,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
70	Shasta View Drive Extension - 4 Lane Widening - Collyer Drive to Manzanoaks Drive		\$7,000,000	Unfundable /Unknown	Capacity Increase	Unfunded or Developer
71	Shasta View Drive Extension - College View Drive to Collyer Drive - SR299 OC		\$10,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
72	Shasta View Drive Extension - Oasis Road to North City Limits		\$4,000,000	Unfundable /Unknown	New Facility / (3,4)	Unfunded or Developer
73	South Street Railroad Crossing- Grade Separation		\$9,450,000	Unfundable /Unknown	Intersection/ (7)	Unfunded or Developer
TOTAL LONG TERM NEEDS			\$376,522,289			

Project Intent Legend

- 1) Reduce Congestion
- 2) Increase Mobility
- 3) Economic Development
- 4) Improve Access
- 5) Reduce Pollutants

- 6) Connectivity
- 7) Collision Reduction
- 8) Improve Bike/Ped Access
- 9) Transit Improvements

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF SHASTA LAKE

The City of Shasta Lake General Plan defines in its circulation element four areas of interest. New construction per the plan includes the extension of Black Canyon Road, extension of Cascade Boulevard and the extension of Shasta Gateway Drive. The Pine Grove extension and interchange improvement is the most significant project in the city. The Shasta Dam Boulevard at Interstate 5 interchange and the streets in the vicinity of Shasta Dam Boulevard and Cascade Boulevard will need improvements. (P-5, P-9)

TABLE 2-17: SUMMARY OF SAFETY AND CAPACITY INCREASING PROJECTS-CITY OF SHASTA LAKE

#	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
4	Reconstruct Lake Blvd. N/O SR 151	\$3,000,000		(2010-2020)	Capacity and Safety / (2), (8)	TE, TIF, RDA
TOTAL SHORT TERM NEEDS =		\$3,000,000				
1	Reconfigure Pine Grove Interchange East Exit 684		\$3,875,000	Unfundable /Unknown	Interchange / (1), (2), (4)	Unfunded or Developer
2	Cabello Extension - Vallecito to Pine Grove Ave.		\$2,025,000	Unfundable /Unknown	New Facility / (1), (2), (6)	Unfunded or Developer
3	Improve Mountain Gate Interchange Exit 687		\$2,000,000	Unfundable /Unknown	Interchange / (1), (2), (4)	Unfunded or Developer
5	Shasta Gateway Dr. Extension to Cascade		\$11,200,000	Unfundable /Unknown	New Facility / (2), (3), (4), (6)	Unfunded or Developer
6	Cascade Ave. Extension - North of Union School		\$4,000,000	Unfundable /Unknown	New Facility /	Unfunded or Developer
7	Improve Shasta Dam Blvd Interchange Exit 685		\$4,000,000	Unfundable /Unknown	Interchange / (1), (2), (4)	Unfunded or Developer
8	Cascade Blvd Realignment, SR 151 to South City Limit		\$2,650,000	Unfundable /Unknown	Capacity Increase / (1), (2), (4), (6)	Unfunded or Developer
9	Ashby Rd. widening, sidewalks - SR 151 to Pine Grove Ave.		\$7,000,000	Unfundable /Unknown	Capacity Increase and Safety/ (1), (2), (4), (6), (8)	Unfunded or Developer
10	Pine Grove Avenue Extension to Akrich		\$4,500,000	Unfundable /Unknown	New Facility/ (4)	Unfunded or Developer
TOTAL LONG TERM NEEDS			\$41,250,000			

Project Intent Legend

1) Reduce Congestion	6) Connectivity
2) Increase Mobility	7) Collision Reduction
3) Economic Development	8) Improve Bike/Ped Access
4) Improve Access	9) Transit Improvements
5) Reduce Pollutants	

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : \$\$ = Project is Partially funded at this time

SOURCE: SHASTA COUNTY RTPA, 2009

GOODS MOVEMENT ACTION PLAN

Short-Range (2010-2020)*CALTRANS*

- Participation in a study of new technological approaches to assist travelers/goods movement in rural Northern California and Southern Oregon.
- Installation of video camera surveillance and radar changeable message signs. (See maps in Chapter 5 - "Streets and Roads")
- Installation of additional changeable message signs on I-5 to improve traveler information.
- Installation of a "Super" Highway Advisory Radio system to further improve traveler information with up to the minute road and weather conditions.

REGIONAL TRANSPORTATION PLANNING AGENCY

- Participation with Caltrans in the Rural Intelligent Transportation System study.

ALL AGENCIES

- Chapter 5, Streets and Highways, includes actions to implement goods movement objectives.

Long-Range (2020-2030)*SHASTEC REDEVELOPMENT PROJECT*

- The 1996 Shastec Redevelopment Project, a cooperative effort by the City of Redding, Shasta County, and the City of Anderson, proposes improvements of the following roads and bridges in the area near the Redding Municipal Airport:
 - o Airport Road
 - o Rancho Road
 - o Hartnell Avenue
 - o State Route 44
 - o North Street
 - o Riverside Drive
 - o North Street Bridge across the Sacramento River
 - o Rancho Road across Stillwater Creek
 - o Sylvia Lane Bridge across Clover Creek
 - o Freeman Way Bridge across Clover Creek
 - o Riverside Drive overcrossing of Interstate 5

If carried out, many of these projects could be developed by 2020. This would improve ground access to the airport and increase options for air/ground goods movement.

AVIATION ACTION PLAN

Short-Range (2010-2020)*REGIONAL TRANSPORTATION PLANNING AGENCY*

- Conduct workshops with aviation community stakeholders to develop plans that identify and address airport-related noise and safety issues for airport neighbors. Then, in coordination with the City of Redding Airport Manager and the Shasta County Airport Manager, address identified needs with available funding. (P-6)

SHASTA COUNTY

- Fall River Mills Airport: A variety of improvements, programmed for the next ten years, include: expansion of the apron, upgrading of lighting, hangar construction, and installation of an All Weather Operating System (AWOS). (P-1, P-3)
- Shasta County Airports Master Plan (AMP) for both Fall River Mills and Shingletown was completed in 1991. The Airport Layout Plan for Fall River Mills was completed in March 2003, the related Environmental Assessment was filed with the FAA at the same time. The AMP, which is included in this plan by reference, contains comprehensive capital improvement programs for both airports. (P-3, (P-4)

CITY OF REDDING

- Redding Municipal Airport: As funding becomes available, projects programmed for airport improvements include apron reconstruction, runway and taxiway extensions, helicopter facilities, air cargo apron, lighting and capacity improvements, land acquisition, and maintenance and rehabilitation of existing facilities. A good portion of this work is in preparation for a required shift of small aircraft facilities to the east. These projects have been prioritized and programmed in the RTIP. As air traffic at Redding Municipal Airport increases, small aircraft will gradually be shifted from the main runway to the parallel runway on the east side of the airport. A 2004 Airport Master Plan was developed for the Redding Municipal Airport in 2005. Other recent projects completed include the reconstruction of both runways, the second phase of the passenger terminal remodel, security enhancements, taxiway refurbishment, construction of a new Aircraft Rescue and Firefighting (ARFF) facility, and taxiway A & B reconstruction.
- Over the next several years, additional improvements expected are apron reconstruction, land acquisition, emergency systems upgrades, environmental review for a third runway, construction of a cargo apron, and the construction of a new taxiway. (P-4)
- Benton Airport: Benton has seen the reconstruction of the eastside taxiway and parking apron, a master plan update, and drainage improvements over the past several years. The FAA has not only funded those projects, but will fund others that include reconstruction of its runway and the west side taxiway, a second phase of the drainage enhancements, and runway safety area enhancements. (P-4)

Long-Range (2020-2030)*SHASTA COUNTY*

The Shasta County Airports Master Plan, 1990-2010, recommended the following steps:

- Use the Master Plan as county policy for development on and next to the Fall River Mills Airport; (P-3)
- Apply to the Federal Aviation Administration and State of California for construction grants for facility expansion at Fall River Mills Airport; (P-4)
- Implement Stage 1 development at the Fall River Mills Airport with initial emphasis on land acquisition for runway and terminal expansion, instrument approach capabilities, and runway extensions; (P-4)
- Develop increased revenue-producing facilities at Fall River Mills airport, including county hangar development and expanded fueling facilities to generate matching funds for future airport development and maintenance grants; and (P-2)

CITY OF REDDING

The Redding Municipal Airport Area Specific Plan and Environmental Impact Report outline a 20-year expansion plan for the airport, which includes:

- Continued use of the main runway, with a programmed 2,000-foot extension to the north, throughout the period; (P-4)
- Development of highway commercial uses, including restaurants, motels, offices, car rental agencies, and aviation services on leasehold sites on airport property on the east frontage of Airport Road. (P-2)

RAIL ACTION PLAN

Short-Range (2010-2020)*REDDING AREA BUS AUTHORITY*

- RABA's intermodal passenger transfer facility in central Redding opened in August 1996. Located on the rail line next to the Amtrak station, the facility is intended to be the hub for major bus routes.
- RABA and Caltrans should continue to negotiate with AMTRAK and UPRR to provide rail passenger services at the intermodal facility. (P-2)

Long-Range (2020-2030)*REGIONAL TRANSPORTATION PLANNING AGENCY*

- Resolution No. 10-96, Supporting Passenger Rail Service, states: "The Shasta County Regional Transportation Planning Agency supports the concept of more convenient and frequent passenger rail service for Shasta County; and will continue to seek a long-term funding source other than Transportation Development Act funds, will continue to monitor passenger rail

needs, and will continue to support such services where cost effective and consistent with the Shasta County Regional Transportation Plan.”

NON-MOTORIZED ACTION PLAN

Short-Range (2010-2020)

CALTRANS AND REGIONAL TRANSPORTATION PLANNING AGENCY

- TE funds will remain available for use in constructing/improving non-motorized facilities.(P-1, P-2, P-11)

SHASTA COUNTY

- The county adopted a bikeway plan in 2003. It emphasizes safety and focuses on class II and III bike lanes adjacent to selected roadways. (P-2)
- Due to low construction and maintenance costs and higher commuter usage of Class II and III facilities, Shasta County is focusing on this type of facility for improvement of its bicycle corridors. (P-2)
- The Safe Routes to School Program provided funding in 2003 for improvements Happy Valley Elementary School.

CITY OF ANDERSON

- The City of Anderson Bicycle Transportation Plan was adopted October of 2007. It emphasizes coordination with the bicycling facilities of local agencies and linking major activity centers. The City currently has about 7.5 miles of Class 1 to Class 3 bicycle facilities, including about 2.5 miles in the Anderson River Park. The Plan proposes to add an additional 9.9 miles of bikeways. (P-1)
- The Safe Routes to School Program (SRTS) provided funding in 2003 for improvements to South Street. In 2009, Anderson was awarded a SRTS grant of \$242,650 to install new curbs, sidewalks, and other improvements at the intersection of SR 273 and North Street.

CITY OF REDDING

- The City of Redding has identified various potential bikeways and paths that are expected to be built by land developers as part of their requirements. Several feeder routes to the Sacramento River Trail are planned, allowing access from adjacent residential areas. (P-2, P-4)
- The City of Redding has completed a Safe Routes to School Study that identifies existing routes and needs for bicycle and pedestrian access to public schools. (P-2)
- The City of Redding Bikeway Plan, recertified in October of 2009, emphasizes safety and the creation of an integrated bikeway system. (P-1)

CITY OF SHASTA LAKE

- The City of Shasta Lake adopted a new Bicycle Transportation Plan (BTP) in July of 2009. Adoption of the plan qualifies the city to apply for Bicycle Transportation Account funding. The City has about seven miles of existing bikeways. The BTP proposes to construct an additional 16.5 miles of bikeways. (P-1).

- The Safe Routes to School Program provided funding in 2003 for improvements to the narrow Vallecito Street Corridor near Shasta Lake Middle School. In 2009, Shasta Lake was awarded a SRTS grant of \$757,350 to install new curbs, gutters, crosswalks, bike paths, and sidewalks along Cabello Avenue from Shasta Dam Boulevard to Vallecito Street.

Long-Range (2020-2030)

REGIONAL TRANSPORTATION PLANNING AGENCY

- The RTPA will pursue funding for non-motorized facilities and coordinate bikeway planning efforts. (P-11)

Planned Non-motorized facilities

TABLE 2-18: SHASTA COUNTY BIKEWAYS

ROAD SEGMENT	FROM	TO	MILES
<i>CLASS 2 – BIKE LANES</i>			
Gas Point Road	I-5/Cottonwood	Happy Valley Road	6.44
Happy Valley Road	Gas Point Road	Hawthorne Avenue	6.58
Canyon Road	Hawthorne Avenue	Highway 273	2.18
Balls Ferry Road	Anderson Limit	Deschutes Road	1.03
Deschutes Road	Balls Ferry Road	Highway 299 East	13.80
Placer Road	Redding Limit	Cloverdale Road	7.64
Texas Springs Road	Placer Road	Branstetter Road	4.60
Oasis Road	I-5/Redding	Old Oregon Trail	1.72
Union School Road	I-5/Shasta Lake	Old Oregon Trail	1.73
Old Oregon Trail	I-5/Mountain Gate	Highway 299 East	7.34
Old Oregon Trail	Highway 299 East	Highway 44	4.37
Airport Road	Highway 44	Anderson Limit	6.40
Cloverdale Road	Placer Road	Oak Street	5.78
Oak Street	Cloverdale Road	Palm Avenue	1.57
Palm Avenue	Oak Street	Happy Valley Road	2.54
Olinda Road	Happy Valley Road	Anderson Limit	5.20
Old Alturas Road	Redding Limit	Old Oregon Trail	0.45
Dersch Road	Airport Road	Deschutes Road	2.79
Swasey Drive	Highway 299 West	Placer Road	4.06

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-19: CITY OF ANDERSON BIKEWAYS

ROAD SEGMENT	FROM	TO
<i>CLASS 1 - BIKEWAYS</i>		
SR 273	South Street	South city limit
<i>CLASS 2 - BIKE LANES</i>		
South Street	SW city limit	SR 273
North Street		
Balls Ferry Road	South Street	SE city limit
East Street	Alexander Ave.	Balls Ferry Road
Dodson Lane	Balls Ferry Road	Rupert Road
Stingy Lane	North Street	Balls Ferry Road
Riverside Avenue	North Street	Ox Yoke Road
McMurray Drive	North Street	Balls Ferry Road
Ventura Street	North Street	Balls Ferry Road
Freeman Street	North Street	South Street
Fairgrounds Drive	1st Street	3rd Street
3rd Street	Fairgrounds Drive	SR 273
Marx Way	SR 273	Barney Road
Pinon Avenue	SR 273	To west
<i>CLASS 3 - BIKE ROUTES</i>		
Ferry Street	ACID canal	Ventura Atreet
Barney Road	South Street	SR 273
Alexander Avenue & Little Street	SR 273	Riverside Avenue
1st Street & Briggs Street	Fairgrounds Drive	SR 273

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-20: CITY OF REDDING BIKEWAYS

ROAD SEGMENT	FROM	TO	MILES
<i>CLASS I - BIKEWAYS (PATHS)</i>			
SR 44	Dana Drive	Sundial Bridge Drive	1.10
<i>CLASS II - BIKE LANES</i>			
Airport Rd	State Route 44	North Street Bridge	5.86
Bechelli Ln	Cypress Av	Hartnell Av	0.50
Browning St	Canby Rd	Old Alturas Rd	0.76
College View Dr	Bodenhamer Blvd	Old Oregon Trail	2.15
Court St	Quartz Hill Rd	Shasta St	0.87
Cypress Av (future alignment)	Ishi Dr	Goodwater Av	0.42
Hartnell Av	Victor Av	Airport Rd	2.17
Hilltop Dr	Cypress Av	Maraglia St	0.27
Keswick Dam Rd	Sacramento River Trail	North City Limits	2.13
Loma Vista Dr	Bechelli Ln	Churn Creek Rd	0.50
Old Oregon Trail	Oasis Rd	State Route 44	6.83
Pleasant St.	Shasta St	Placer St	0.20
Quartz Hill Rd	Lake Blvd	West City Limits	0.55
Quartz Hill Rd	Keswick Dam Rd	North City Limits	0.52
South Bonnyview Rd	Bechelli Ln	Churn Creek Rd	0.31
<i>CLASS III - BIKE ROUTES</i>			
Bechelli Ln	Hartnell Av	Cheryl Dr South	1.17
Benton Dr	Quartz Hill Rd	North Market St	1.00
Cedars Rd	El Reno Ln	South Bonnyview Rd	1.54
Churn Creek Rd	State Route 44	Rancho Rd	4.13
Churn Creek Rd	State Route 299E	State Route 44	2.38
Cypress Av	Churn Creek Rd	Ishi Dr	1.03
Cypress Av	Civic Center Dr	Hartnell Av	0.66
Hilltop Dr	Interstate 5	Browning St	0.24
Hilltop Dr	Lake Blvd	Interstate 5 Fwy	1.57
Keswick Dam Rd	North City Limits	Lake Blvd	0.83
North Market St	Lake Blvd	Benton Dr	0.80
Oasis Rd	Interstate 5	East City Limits	1.80
Oasis Rd	Lake Blvd	Interstate 5	2.33
Old Alturas Rd	Churn Creek Rd	Old Oregon Trail	2.45
Parkview Av	Akard Ave	Cypress Av	0.47
Placer Rd	West City Limits	Wisconsin Av	0.80
Quartz Hill Rd	West City Limits	Benton Dr	1.82
Railroad Av	South St	Schley Ave/Court St	0.44
Rancho Rd	Churn Creek Rd	Airport Rd	1.73
Shasta View Dr	State Route 44	Rancho Rd	2.69
Shasta View Dr	College View Dr	State Route 44	3.28
Twin View Blvd/Mountain View Dr	Hawley Rd	Oasis Rd	1.86
Victor Av	State Route 44	Rancho Rd	3.12
Victor Av	Old Alturas Rd	State Route 44	0.57
Airpark Dr	Placer St	Gold St	0.16
California St	Trinity St	Tehama St	0.24
Churn Creek Rd	Rancho Rd	Airport Rd	5.77
Civic Center Dr	Locust St	Cypress Av	0.14
Clear Creek Rd	Honeybee Rd	West City Limits	0.32
Collyer Dr	Mountain View Dr	Hawley Rd	0.67
Dersch Rd	Airport Rd	Stillwater Creek Trail	1.77
East St	South St	Locust St	0.21
El Reno Ln	Cedars Rd	Westside Rd	0.14
Ellis St	Polk St	Anita St	0.12
Foothill Blvd	Lakeside Dr	Knolls Trail	0.64
Gold St	Airpark Dr	West St	0.52
Highway 273	Girvan Rd	Ox Yoke -Riverside Av	2.76
Honey Bee Rd	Texas Springs Rd	Clear Creek Rd	0.73
Lake Blvd	The Shasta Dam	North City Limits	2.87

ROAD SEGMENT	FROM	TO	MILES
Lakeside Dr	Buenaventura Blvd	Foothill Blvd	0.14
Locust St	East St	Civic Center Dr.	0.32
Manzanita Hills Av	Knolls Trail	Shasta St	0.20
Meadow View Dr	Churn Creek Rd	Airport Rd	1.29
Placer Rd	Tower View Rd	West City Limits	0.98
Quartz Hill Rd	Keswick Dam Rd	Lake Blvd	2.33
Radio Ln	Eastside Rd	South Bonnyview Rd	1.58
Shasta St	Pleasant St	Manzanita Hills	0.13
South Market St	Placer St	South St	0.11
South St	West St	Park Marina Dr	1.43
Tehama St	California St	Oregon St	0.13
Texas Springs Rd	West City Limits	Honey Bee Rd	0.77
Tower View Rd	Rattlesnake Ln	Placer Rd	0.42
West St	Shasta St	Gold St	0.44
Westside Rd	Buenaventura Blvd	El Reno Ln	0.35
Westside Rd	Cedars Rd	Girvan Rd	1.13

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-21: CITY OF SHASTA LAKE BIKEWAYS

ROAD SEGMENT	FROM	TO
<i>CLASS I - BIKEWAYS (PATH)</i>		
Ashby Road	Pine Grove Ave	El Cajon Ave
Pine Grove Ave	Ashby Rd	Cascade Blvd
Along Churn Creek	Pine Grove Ave	South city limits
Shasta Way (future road)	Grand Avenue	Mountain Gate Blvd
Future Rd	Shasta Way (future road)	Black Canyon Blvd
<i>CLASS II - BIKE LANES</i>		
Ashby Rd/Shasta Gateway Dr and future road	Pine Grove Ave	Cascade Blvd
Future road/Cabello/Black Ranch Rd	Pine Grove Ave	Shasta Way (future road)
Cascade Blvd	South city limit	Shasta Dam Blvd
Grand Coulee	Shasta Dam Blvd	Cascade Blvd
Twin View Blvd	South city limit	Pine Grove Ave east
Shasta Way (future road)	Grand Ave	Mountain Gate Blvd
<i>CLASS III - BIKE ROUTES</i>		
Lake Blvd	Shasta Dam Blvd	North city limit
SR 151	Lake Blvd	West city limit
Flanagan Road	Lake Blvd	West city limit
Hill Street	Lake Blvd (S)	Lake Blvd (N)
Toyon Ave	Lake Blvd	Sacramento Ave
Future road	Pine Grove Ave	South city limit
Montana St	Vallecito Ave	Red Bluff Ave
Vallecito Ave	Montana St	Washington Ave
Washington Ave	Vallecito Ave	Shasta Way
Shasta Way	Washington Ave	Shasta Dam Blvd
Fort Peck St	Montana Ave	Shasta Way
Red Bluff Ave	Montana Ave	Mussel Shoals Ave
Mussel Shoals Ave	Shasta Dam Blvd	Black Canyon Rd
Grand Ave	Mussel Shoals Ave	Shasta Way

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 2-22: FUTURE MULTIPLE-USE TRAILS IN THE REDDING AREA

TRAIL NAME	FROM	TO	MILES	ACRES	YEAR
ACID Trail	Butte St	Cypress Av	0.89	5.38	2012
Boulder Creek Trail	SR 299E Bikeway	Churn Creek	1.69	10.24	2015
Candlewood Trail	Highway 44	Candlewood Dr	0.55	3.32	2009
Canyon Creek Trail Extension	Placer St	Blazingwood Dr	2.13	12.93	2010
Churn Creek Trail	Minder Park	Churn Creek Rd	4.03	24.42	2007-2020
Clear Creek Trail	SR 273S Bridge	Cascade Park	1.66	10.06	2012
Clover Creek Trail	Sports Park	Sacramento River	8.30	50.32	2007-2020
Dana To Downtown Bikeway	Sundial Bridge Drive Overpass	Mt. Shasta Mall	1.00	6.06	2011
Jenny Creek Trail	Eureka Way	Mary Lake	0.62	3.78	2011
Lema - Nash Trail	Shasta View Dr	Old Oregon Trail	0.98	5.94	2015
Linden Creek Trail	Placer St	MLK, Jr. Park	1.64	9.94	2012
Little Churn Creek Trail	Hartnell Av	Churn Creek	1.07	6.48	2012
Manzanita Trail	Manzanita Hills Av	Almond Av	0.27	1.63	2012
Middle Creek Trail	Old Shasta / SR 299W	Sacramento River Trail	1.86	11.28	2009-2012
Old 99 Spur Trail*	Lake Blvd	North Market St	0.96	4.61	2010
Palisades Trail	Hilltop Dr	North Bechelli Ln	1.43	8.67	2012
Riverside Trail	Sacramento River Trail	Center St	0.38	2.31	2015
Sac. River Trail - Future Expansion	Cypress Av	Anderson River Park	11.50	69.72	2018-2020
Sac. River Trail - Hatchcover Spur	Hemstead Dr	Cypress Av	0.29	1.74	2010
Sac. River Trail - Park Marina Trail	State Route 299W	Cypress Av	2.12	12.87	2015
Sac. River Trail - Turtle Bay West Extension	Convention Center	State Route 44	1.00	6.06	2007
Stillwater Creek Trail	Old Oregon Trail	Sacramento River	15.45	93.63	2020
Stillwater Plant Trail	State Route 44	Dersch Rd	1.85	11.21	2020
Sulphur Creek Trail -South	North Market St	Arboretum Perimeter Trail	0.38	2.30	2010
Upper Churn Creek Trail	Pine Grove Av	Oasis Rd	1.75	10.62	2020
Wentz Creek Trail	Mistletoe School	Cypress Av	0.55	3.34	2020
China Dam Trail	Placer Rd	Texas Springs Rd	2.43	14.75	2012
Mercedes Trail	Arboretum Perimeter Trail	Mercedes Ln	0.21	1.26	2015
Olney Creek Trail	Texas Springs Rd	Cascade Park	3.67	22.22	2016
Ridgeview Trail	Ridgeview Park	Blue Gravel Mine Trail	0.65	3.91	2012
Salt Creek Trail	Lower Springs Rd	Sacramento River Trail	2.00	12.12	2010
Sulphur Creek Trail - North	Quartz Hill Rd	North Market St	3.30	20.02	2012
Greenwood Trail	Walnut Ave	Sonoma St	0.83	5.03	2010
Avalon Trail	Shasta View Dr	Old Oregon Trail	1.00	6.06	2015

SOURCE: SHASTA COUNTY RTPA, 2009

LAND USE ACTION PLAN

Short-Range (2010-2020)*ALL JURISDICTIONS*

- Shasta County, Redding, and Anderson have recently updated the air quality element of their general plans. These elements are primarily aimed at land use policies and lessening vehicle miles traveled.
- Utilize RTPA TAC meetings as a forum to discuss current land uses/issues in the region.
- Encourage the cities and county to provide a list of pending land use applications and/or hearing notices to the RTPA and adjacent cities, to enhance interagency communication and coordination.

REGIONAL TRANSPORTATION PLANNING AGENCY

- Prepare a sustainable communities strategy for the 2014 update of the RTP.

Long-Range (2020-2030)*ALL JURISDICTIONS*

- Land use and air quality elements of the county and city general plans will continue to be monitored, evaluated for effectiveness, and updated as necessary.

REGIONAL TRANSPORTATION PLANNING AGENCY

- It is anticipated that certain segments of highways may become congested with traffic during the long-range period. For these road segments, a plan will need to be developed to ease congestion that will include land use strategies.

AIR QUALITY ACTION PLAN**Short-Range (2010-2020)***SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT*

- A Transportation Control Measures (TCM) plan was developed for the RTPA by a consultant in 1991 to assist in meeting the goals of the Clean Air Act. The plan includes an assessment of the potential effectiveness of a variety of “reasonably available control measures” in reducing air pollution. The measures are used to mitigate air quality impacts identified in area development projects. The TCMs will be updated, prior to non-attainment designation, to better reflect any traffic and road changes that have occurred. (P-2, P-3)
- The Air Quality Management District has provided funding from the Motor Vehicle Registration Surcharge Funding program (AB 2766) for projects that help to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary for the implementation of the California Clean Air Act. Projects included a revision of the air quality elements for the general plans of the local jurisdictions, land use planning programs aimed at reducing the impact of development on air quality, and various public education programs. The projects are intended to provide a closer linkage between land use, air quality, and transportation planning. (P-4)
- Countywide educational programs are provided through the Community Education Section, which includes presentations and public service announcements. (P-4)

SHASTA COUNTY

- In order to reduce the amount of small suspended particulate matter (PM10) in the air, county road policies and standards require that all new roads in the county be paved, and prohibit the creation of new parcels unless they are served by a paved road. In addition, development of existing parcels not served by a paved road are required to pay a dust mitigation fee, which help to fund road paving projects. (P-2)

REGIONAL TRANSPORTATION PLANNING AGENCY

- The RTPA will prepare a “sustainable communities strategy” (or alternative planning strategy), as required by state law (SB 375).

Long-Range (2020-2030)*REGIONAL TRANSPORTATION PLANNING AGENCY*

- The RTPA will continue to refine the Shasta County Travel Demand Model to produce projections that can be used in analyzing the impact of transportation projects on air quality. (P-1, P-5)

SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT

- Shasta County Air Quality Management District will continue to support the “Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.”

The Financial Element

The Financial Element identifies the current and anticipated revenue sources and financing techniques available to fund the planned transportation investments described in the Action Element. The purpose of the Financial Element is to:

- Inventory existing and potential funding sources from federal, state and local perspectives.
- Summarize costs to operate and maintain the current transportation system.
- Summarize street and road candidate projects with both available funding and potential funding shortfalls and the cost to build the projects.
- Summarize deferred maintenance for the region and the resulting shortfall.

The Financial Element of the 2010 RTP describes anticipated revenues over the life of the Plan, including a discussion of the potential for other revenue sources. Tables 2-23 through 2-27 provide a summary of the funding for projects in Shasta County, Anderson, Redding, Shasta Lake, and those being sponsored directly by Caltrans.

*CALTRANS***TABLE 2-23: PROJECT FUNDING SUMMARY - CALTRANS**

DESCRIPTION	SHORT (2010-2020)	LONG (2020-2030)	TOTAL
Funding Needed By Short and Long Range Bands	\$171,043,000	\$263,225,000	\$434,268,000
Recap of Expected/Estimated/Unknown Resources			
State Transportation Improvement Program Current/Programmed	81,943,000		\$81,943,000
State Transportation Improvement Program Future	54,860,000	54,860,000	\$109,720,000
State Highway Operations and Protection Program			
Local			
Prop 1B	\$22,000,000		\$22,000,000
Total Funding Reasonably Available	\$158,803,000	\$54,860,000	\$213,663,000
TOTAL UNFUNDED NEEDS	\$(12,240,000)	\$(208,365,000)	\$(220,605,000)

SOURCE: SHASTA COUNTY RTPA, 2009

*SHASTA COUNTY***TABLE 2-24: PROJECT FUNDING SUMMARY -SHASTA COUNTY**

DESCRIPTION	SHORT (2010-2020)	LONG (2020-2030)	TOTAL
<i>SAFETY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$11,455,000	\$13,230,000	\$24,685,000
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	187,500	\$509,000	\$696,500
Projects currently programmed w/various sources (HRR/HSIP,etc)	7,380,000		\$7,380,000
Expected funding from HSIP	1,000,000	\$4,750,000	\$5,750,000
Expected funding from Bicycle Trans Act (BTA)	\$1,839,500	\$1,881,000	\$3,720,500
Local/Other/ Road Match	\$548,000	\$548,000	\$1,096,000
Highways For Life (HFL)	\$500,000	\$500,000	\$1,000,000
Total Funding Reasonably Available	\$11,455,000	\$8,188,000	\$19,643,000
<i>TOTAL UNFUNDED NEEDS</i>		<i>\$(5,042,000)</i>	<i>\$(5,042,000)</i>
<i>CAPACITY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$4,881,000	\$126,533,600	\$131,414,600
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	3,700,000	3,500,000	\$7,200,000
Redevelopment Fee			
ARRA			
Local/Other	\$1,181,000		\$1,181,000
HSIP			
Total Funding Reasonably Available	\$4,881,000	\$3,500,000	\$8,381,000
<i>TOTAL UNFUNDED NEEDS</i>		<i>\$(123,033,600)</i>	<i>\$(123,033,600)</i>

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF ANDERSON

TABLE 2-25: PROJECT FUNDING SUMMARY-CITY OF ANDERSON

DESCRIPTION	SHORT (2010-2020)	LONG (2020-2030)	TOTAL
<i>SAFETY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$3,000,000	\$18,400,000	\$21,400,000
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee			
Redevelopment Fees			
HSIP	\$3,000,000	\$1,200,000	\$4,200,000
Local/Other			
STIP			
Total Funding Reasonably Available	\$3,000,000	\$1,200,000	\$4,200,000
<i>TOTAL UNFUNDED NEEDS</i>		<i>\$(17,200,000)</i>	<i>\$(17,200,000)</i>
<i>CAPACITY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$900,000	\$ 69,429,244	\$70,329,244
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	500,000	\$500,000	\$1,000,000
Redevelopment Fee	900,000		\$900,000
ARRA			
Local/Other			
Carry Over from Prior Period		\$500,000	
Total Funding Reasonably Available	\$1,400,000	\$1,000,000	\$ 2,400,000
<i>TOTAL CARRY OVER AND/OR UNFUNDED NEEDS</i>	<i>\$500,000</i>	<i>\$(68,429,244)</i>	<i>\$(67,929,244)</i>

SOURCE: SHASTA COUNTY RTPA, 2009

CITY OF REDDING

TABLE 2-26: PROJECT FUNDING SUMMARY-CITY OF REDDING

DESCRIPTION	SHORT (2010-2020)	LONG (2020-2030)	TOTAL
<i>SAFETY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$4,275,000	\$10,820,000	\$15,095,000
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	2,550,000	\$3,600,000	\$6,150,000
Redevelopment Fee	825,000		\$825,000
HSIP	900,000		\$900,000
Local/Other			
Total Funding Reasonably Available	\$4,275,000	\$3,600,000	\$7,875,000
<i>TOTAL UNFUNDED NEEDS</i>		<i>\$(7,220,000)</i>	<i>\$(7,220,000)</i>
<i>CAPACITY PROJECTS</i>			
Funding Needed By Short and Long Range Bands	\$49,326,800	\$376,522,289	\$425,849,089
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	18,370,000	\$43,156,000	\$61,526,000
Redevelopment Fees	12,358,800		\$12,358,800
ARRA =	3,598,000		\$3,598,000
Local/Other =	\$15,000,000		\$15,000,000
Total Funding Reasonably Available	\$49,326,800	\$43,156,000	\$92,482,800
<i>TOTAL UNFUNDED NEEDS</i>		<i>\$(333,366,289)</i>	<i>\$(333,366,289)</i>

SOURCE: SHASTA COUNTY RTPA, 2009

*CITY OF SHASTA LAKE***TABLE 2-27: PROJECT FUNDING SUMMARY-CITY OF SHASTA LAKE**

DESCRIPTION	SHORT (2010-2020)	LONG (2020-2030)	TOTAL
Funding Needed By Short and Long Range Bands	\$3,000,000	\$41,250,000	\$44,250,000
Recap of Expected/Estimated/Unknown Resources			
Traffic Impact Fee	200,000	\$200,000	\$400,000
Redevelopment Fee	2,800,000		\$2,800,000
ARRA			
Local/Other			
Total Funding Reasonably Available	\$3,000,000	\$200,000	\$3,200,000
TOTAL UNFUNDED NEEDS		\$(41,050,000)	\$(41,050,000)

SOURCE: SHASTA COUNTY RTPA, 2009

2.4 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following direct and indirect approvals and permits associated with adoption and implementation of the 2010 RTP.

SHASTA COUNTY REGIONAL TRANSPORTATION AGENCY

The SCRTPA is the lead agency for the 2010 RTP. The 2010 RTP will be presented to SCRTPA's Board for comment, review, and recommendations. The SCRTPA Board has the sole discretionary authority to adopt the 2010 RTP. In order to approve the 2010 RTP, the SCRTPA Board would consider the following actions:

- Certification of the 2010 Regional Transportation Plan EIR;
- Adoption of required CEQA findings for the above action;
- Adoption of a Mitigation Monitoring and Reporting Program; and
- Adoption of the 2010 Regional Transportation Plan.

Subsequent Use of the EIR

This EIR provides a review of environmental effects associated with implementation of the 2010 RTP. Agencies considering approval of subsequent activities under the 2010 RTP project would utilize this EIR as the basis in determining potential environmental effects and the appropriate level of environmental review of a subsequent activity.

The SCRTPA and jurisdictions within the SCRTPA's jurisdiction, including Caltrans District 2, Shasta County, the cities of Anderson, Redding, and Shasta Lake, and the Native American Tribal Governments may perform or consider the following subsequent activities to implement the 2010 RTP:

- Further focused feasibility, planning and design studies;
- Various fee and financing programs; and

- Carrying out various infrastructure improvement projects.

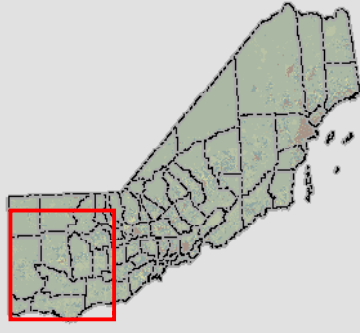
OTHER GOVERNMENTAL AGENCY APPROVALS

The SCRTPA approval of the 2010 RTP would not require any actions by other public agencies. Subsequent infrastructure projects and other actions to support implementation of the 2010 RTP would require actions, including permits and approvals, by other public agencies that may include, but are not necessarily limited to:

- California Department of Fish and Game (CDFG) approval of potential future streambed alteration agreements, pursuant to Fish and Game Code. Approval of any future potential take of state-listed wildlife and plant species covered under the California Endangered Species Act.
- California Department of Transportation (Caltrans) approval of projects and encroachment permits for projects affecting state highway facilities.
- Central Valley Flood Protection Board (CVFPB) approval for any construction activities within the tributaries or distributaries of the Sacramento River or designated floodways.
- Regional Water Quality Control Board (RWQCB) approval for National Pollution Discharge Elimination System compliance, including permits and Storm Water Pollution Prevention Plan approval and monitoring.
- Shasta County Air Quality Management District (SCAQMD) finding of RTP conformance with the State Implementation Plan if Shasta County becomes non-attainment for federal air quality standards, as well as approval of dust control plans and other permits for subsequent projects.
- U.S. Army Corps of Engineers (USACE) approval of any future wetland fill activities, pursuant to the Clean Water Act.
- U.S. Fish and Wildlife Service (USFWS) approvals involving any future potential take of federally listed wildlife and plant species and their habitats, pursuant to the Federal Endangered Species Act.

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Draft EIR Shasta County 2010 RTP



Legend

-  US highway
-  State highway or Major road

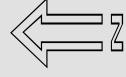
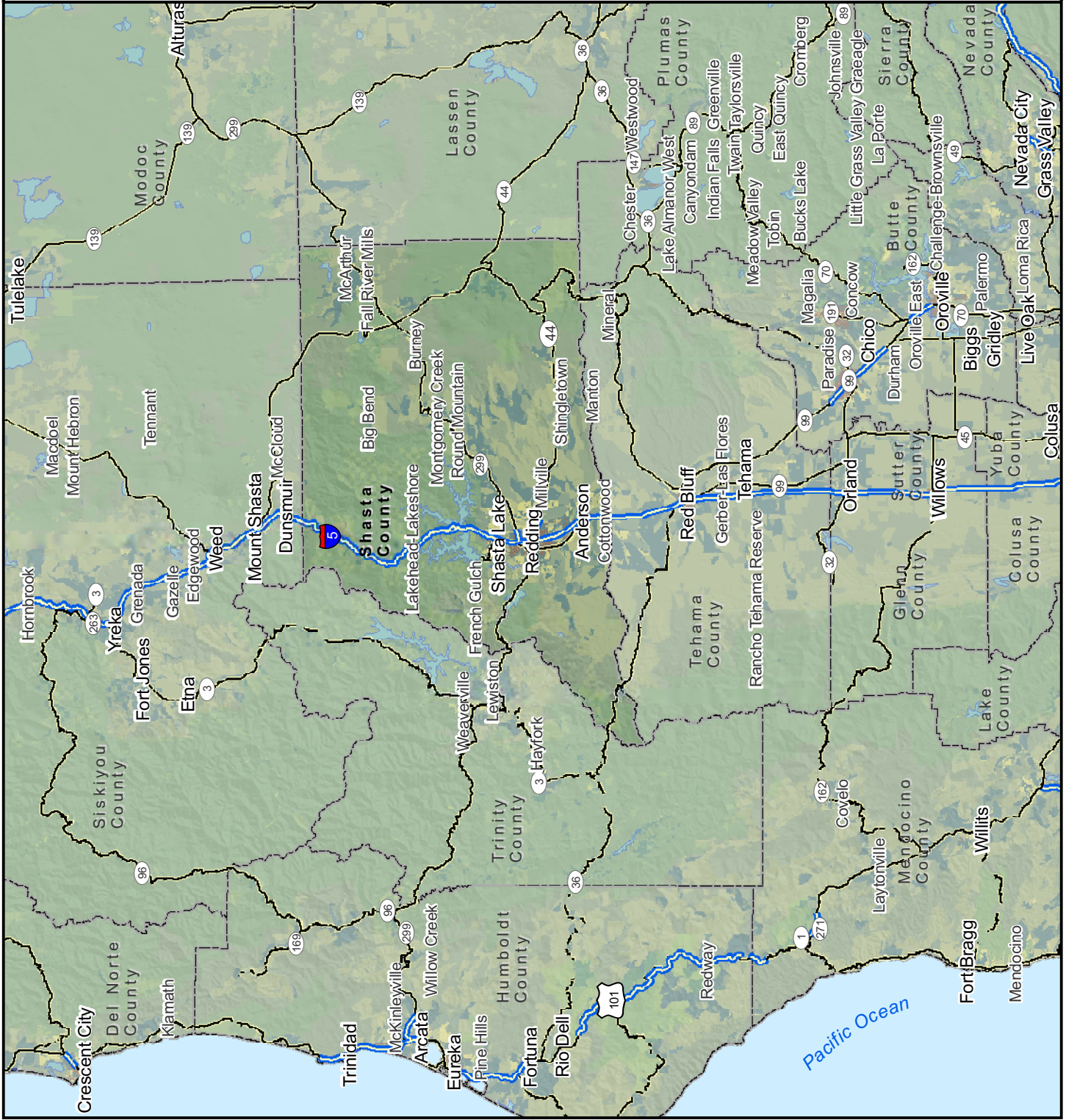


Figure 2.1-1

REGIONAL LOCATION MAP



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Draft EIR Shasta County 2010 RTP

Legend

-  US highway
-  State highway
-  Major Road
-  National Park or State Park
-  Developed Area
-  Water body

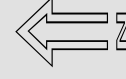
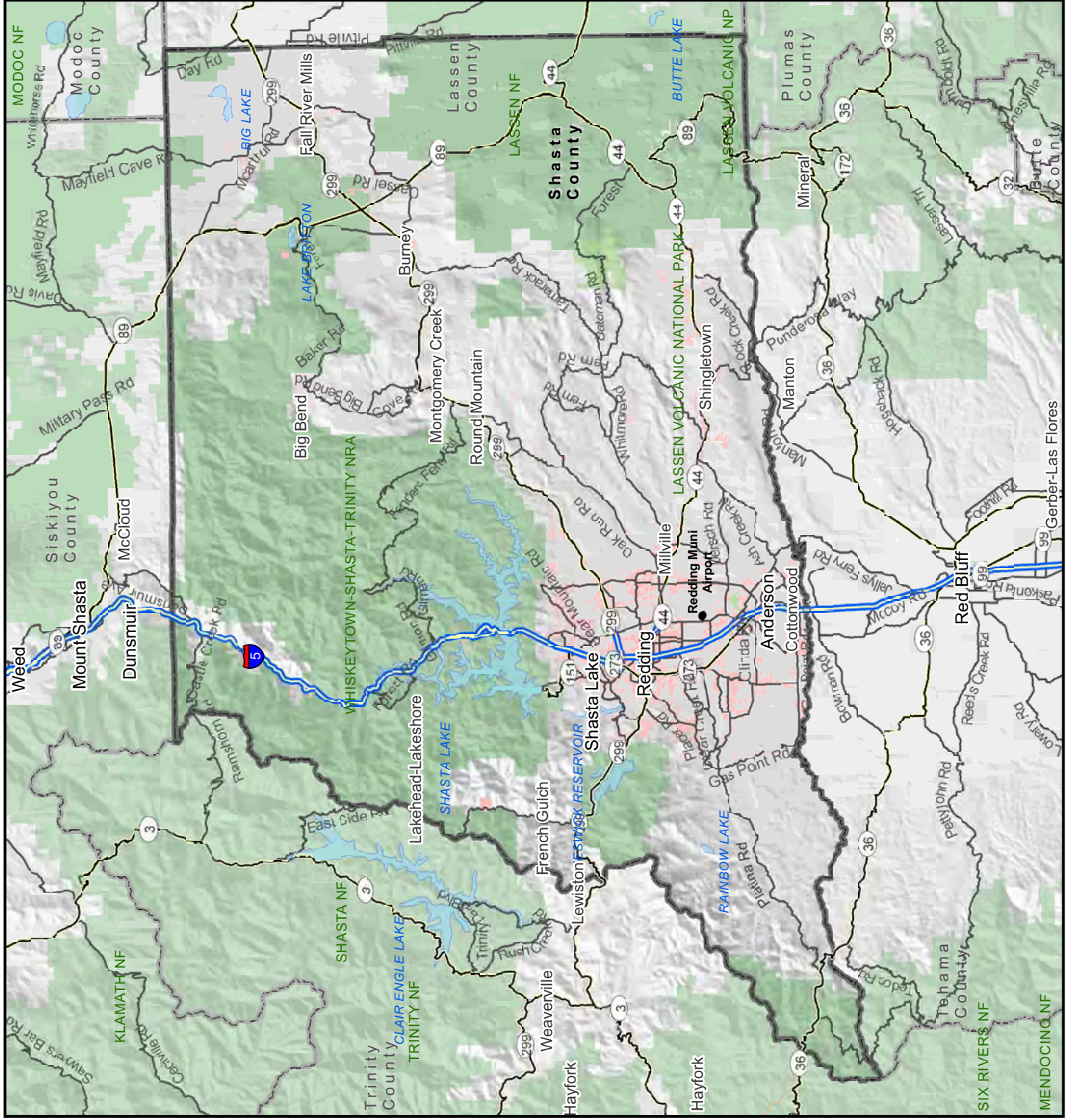


Figure 2.1-2

VICINITY MAP



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This section provides an overview of the visual character, scenic resources, views, scenic highways, and sources of light and glare that are encountered throughout Shasta County and the incorporated cities. This section concludes with an evaluation of the impacts and recommendations for mitigating impacts. No comments were received during the public review period or scoping meetings for the Notice of Preparation regarding this topic. Information in this section is derived primarily from the following:

- Shasta County General Plan Background Report (As amended through September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan (Diaz Associates, June 1999)

3.1.1 ENVIRONMENTAL SETTING

EXISTING GEOGRAPHIC ENVIRONMENT

Shasta County is situated where the Central Valley of California meets the convergence of the Klamath and Coastal Mountain Ranges to the northwest and west, with the Cascade Mountain Range to the northeast and east. Elevations in the Central Valley area of Shasta County range between 400 and 700 feet. The Cascade Range divides the Central or Sacramento Valley region of the County from the Modoc Plateau situated in its northeast corner. The Modoc Plateau is also referred to as the Fall River Valley. Approximate elevation of this valley is 3,300 feet.

Based on 2000 U. S. Census information, approximately 84 percent of the County's population lives in the Sacramento Valley area of the County in a north-south band of urban and suburban communities that include the City of Shasta Lake, the City of Redding, the City of Anderson, and the unincorporated community of Cottonwood. Combined, the Sacramento Valley area and the northeast portion of the County account for approximately 90 percent of the County's population.

Scenic Views and Resources

Visual resources are generally classified into two categories: scenic views and scenic resources. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually mid-ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements.

Most scenic views and resources within the region are located along highways where viewers can see water bodies, meadows, river canyons, rolling hills, mountains, and forests. Other scenic views and resources include historic structures that are reminiscent of the region's heritage. Because Shasta County contains two major river valleys, the Sacramento and the Fall; and three major mountain ranges, the Coast, Klamath, and Cascade; its scenic resources are both varied and remarkable.

SCENIC RESOURCES

Shasta Lake. Shasta Lake forms the core of the Shasta-Whiskeytown-Trinity Unit and offers recreationists a variety of outdoor activities including: boating, water-skiing, swimming, fishing, camping, picnicking, hiking, hunting, and mountain biking.

Sacramento River. The Sacramento River runs adjacent to the I-5 corridor where it feeds into Shasta Lake. From there, it flows through the City of Redding as it continues south toward the San Francisco Bay Delta. The River provides a wide variety of recreational and scenic opportunities to both local residents and tourists from out of the area.

Castle Crags. This park is named for its 6,000-foot tall glacier-polished crags, a portion of which is visible from the I-5 corridor. The park features 28 miles of hiking trails, including a 2.7 mile access trail to Castle Crags Wilderness in the Shasta-Trinity National Forest.

Whiskeytown Lake. Located 8 miles west of Redding, Whiskeytown Lake is part of the Whiskeytown National Recreation Area. Whiskeytown Lake provides 36 miles of shoreline and 3,200 surface acres for recreation. Its placid surface is excellent for swimming, scuba diving, kayaking, rowing and fishing. Sailing, water skiing and boating are also popular.

Lassen Volcanic National Park. Mount Lassen, one of the prominent features of the Park, is visible from most highways and major thoroughfares in Shasta County. The Main Park Road provides incredible views of the Cascades and High Sierra, as well as access to mountain lakes and active hydrothermal areas.

Scenic Highways and Corridors

SCENIC HIGHWAYS

A scenic highway is generally defined by Caltrans as a public highway that traverses an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

The status of a proposed state scenic highway changes from eligible to officially designated when the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated a Scenic Highway. As presented in Tables 3.1-1, 3.1-2, and 3.1-3, within Shasta County there is currently one Officially Designated State Scenic Highway, one Officially Designated County Scenic Highway, and four Eligible State Scenic Highways. Figure 3.1-1 illustrates the scenic highways within Shasta County.

TABLE 3.1-1: OFFICIALLY DESIGNATED STATE SCENIC HIGHWAY – SHASTA COUNTY

HIGHWAY	DESCRIPTION	LOCATION	LENGTH
State Route 151	This road curves along the slope of a ridge, providing views of the Sacramento River, Shasta Lake and distant hills.	From Shasta Dam to near Summit City.	3 miles

SOURCE: CALIFORNIA SCENIC HIGHWAY MAPPING SYSTEM, 2009

TABLE 3.1-2: OFFICIALLY DESIGNATED COUNTY SCENIC HIGHWAY – SHASTA COUNTY

ROADWAY	LOCATION	LENGTH
Lake Blvd.	Within Whiskeytown-Shasta-Trinity National Recreational Area.	15 miles

SOURCE: CALIFORNIA SCENIC HIGHWAY MAPPING SYSTEM, 2009

TABLE 3.1-3: ELIGIBLE STATE SCENIC HIGHWAY – SHASTA COUNTY

HIGHWAY	LOCATION
SR 299	Interstate 5 westward to the Shasta County line.
SR 299	SR 89 eastward to the Shasta County line.
SR 44	Interstate 5 eastward to SR 89.
SR 89	Entire length from Lassen National Park north to the Shasta County line.

SOURCE: CALIFORNIA SCENIC HIGHWAY MAPPING SYSTEM, 2009

Interest has been shown for obtaining a scenic highway designation for the stretch of Interstate 5 north of Shasta Lake to the Oregon border. This corridor is considered by some to be one of the most spectacular scenic routes in Northern California. This corridor presents outstanding views of Shasta Lake, the Sacramento River Canyon, Castle Crags, and Mount Shasta. Continuing efforts may be made to incorporate this segment of Interstate 5 into the State's Scenic Highway Programs.

SCENIC CORRIDORS

A scenic corridor is the view from the road that may include a distant panorama and/or the immediate roadside area. A scenic corridor encompasses the outstanding natural features and landscapes that are considered scenic. It is the visual quality of the man-made or natural environments within a scenic corridor that are responsible for its scenic value. Commonly, the physical limits of a scenic corridor are broken down into foreground views (zero to one quarter mile) and distant views (over one quarter mile). In addition to distinct foreground and distant views, the visual quality of a scenic corridor is defined by special features, which include:

- Focal points - prominent natural or man-made features which immediately catch the eye.
- Transition areas - locations where the visual environment changes dramatically.
- Gateways - locations which mark the entrance to a community or geographic area.

VALUE OF SCENIC HIGHWAYS AND CORRIDORS

Scenic corridors make major contributions to the quality of life enjoyed by the residents of Shasta County. The development of community pride, the enhancement of property values, and the protection of aesthetically-pleasing open spaces reflecting a preference for the rural lifestyle are all ways in which scenic corridors are valuable to County residents.

Scenic highways and their associated corridors also strengthen the tourist industry of Shasta County. For many visitors, highway corridors will provide their only experience of Shasta County. Enhancement and protection of these corridors ensures that the tourist experience continues to be a positive one and, consequently, provides support for the tourist-related activities of the County's economy.

Scenic Water Resources and Wild and Scenic Rivers

Water resources are important visual resources that draw tourists to the area for recreational opportunities. The most visually significant water bodies in the region are Shasta Lake, Whiskeytown Lake and the Sacramento River. Other recognized water bodies include Keswick Lake, Lake McCloud, and Big Lake. There are also approximately 325 smaller reservoirs throughout the County.

A multitude of rivers and streams are present within the region, which drain precipitation and snowmelt from the Sierra Nevada and Cascades ranges. The Central Valley and its southward flowing Sacramento River provide the drainage for all the major streams in the County - Squaw, Clear, Cow, Cottonwood, Battle, Clover, Bear, and Hat Creeks, and the Pit, Fall, and McCloud Rivers.

WILD AND SCENIC RIVERS

A large portion of Shasta County is under the jurisdiction of the federal government. Federal agencies have jurisdiction, under the Wild and Scenic Rivers Act, to designate rivers or river sections to "be preserved in free-flowing condition and protected for the benefit and enjoyment of present and future generations." There are no rivers in Shasta County designated under the National Wild and Scenic Rivers System.

NATIONWIDE RIVERS INVENTORY

The Nationwide Rivers Inventory (NRI) is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable values" (ORVs)—natural or cultural—judged to be of more than local or regional significance. Under a 1979 Presidential directive, and related Council on Environmental Quality procedures, all federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments. The NRI is a source of information for statewide river assessments and federal agencies involved with stream-related projects. For any group concerned with ecosystem management, the inventory can provide the location of the nearest naturally functioning system which might serve as a reference for monitoring activities. It also serves as a listing of plant and animal species for

restoration efforts on a similar section of river. For the recreationalist, it provides a listing of free-flowing, relatively undisturbed river segments. Table 3.1-4 provides a list of all river reaches within Shasta County that are documented within the National Rivers Inventory.

TABLE 3.1-4: NATIONAL RIVERS INVENTORY – SHASTA COUNTY

<i>RIVER</i>	<i>REACH</i>	<i>YEAR, POTENTIAL CLASSIFICATION, ORVs</i>	<i>DESCRIPTION</i>
Battle Creek	5 miles: Ponderosa Way Bridge to Sacramento River	1993; Recreational (scenery, recreation, fish, wildlife, history, other)	Anadromous fish spawning. Float tubing. Classic old-growth riparian ecosystem in Sacramento River flood plain.
Bear Creek	4 miles: North and South Forks of Bear Creek to State Highway 44 bridge crossing	1993; Wild, Scenic (recreation)	Secluded, undeveloped, physically demanding primitive types of outdoor experiences.
Beegum Creek	4 miles: Trinity National Forest boundary to Highway 36	1993; Wild (scenery, recreation)	Natural primitive type of outdoor experience to hiker willing to scramble over rugged terrain in canyon bottom.
Clear Creek	NRA boundary to Clear Creek Road bridge crossing	1993; Scenic; (scenery, recreation)	Unspoiled, primitive type of outdoor experience obtained by hiking or floating along the creek.
Cottonwood Creek, Middle Fork	6 miles: Trinity National Forest boundary downstream to Platina Road crossing	1993; (scenery, recreation)	Middle segment is secluded, undeveloped, and physically demanding. Excellent for primitive outdoor experience.
Cottonwood Creek, North Fork	2 miles: Misslebeck Dam to Platina Highway Bridge	1993; Scenic (scenery, recreation)	Unspoiled, primitive setting in bottom of canyon, suitable for rugged backcountry hiking and expert kayaking.
Fall River	21 miles: Pit River intake dam to source.	1982; (fish)	The Fall River is noted as one of the State's and Nation's outstanding trophy wild trout fisheries and is managed by the State as a wild trout stream. The river flows through a pastoral setting with views of Mt. Shasta, Mt. Lassen, and other volcanic formations.
McCloud River	27 miles: McCloud Reservoir to source.	1982; (recreation, fish)	Upper reaches meander through a gentle forest plateau with interspersed meadows and several popular campgrounds; then descends into a heavily forested canyon below a series of picturesque waterfalls; Big Springs, a unique geological feature, increases river flow tenfold below falls; excellent opportunities for camping and picnicking and some swimming above falls; premium trout stream.
McCloud River	24 miles: Lake Shasta to McCloud Dam.	1982; (scenery, fish, history, cultural)	One of most natural looking streams in northern California; flows through beautiful old growth Douglas fir forests in a series of riffles, pools and rapids; State designated Wild Trout Stream; only known population of Dolly Varden Trout (bull trout) in State; excellent rainbow trout fishery with eggs shipped all over world beginning in 1872 for 65 years; numerous well preserved Indian Village sites and a National Historic District occur along the river.
McCloud River	18 miles: Bartle in Sec. 3, T.39 N., R.1 E., to National Forest	1982, 1993; Recreational; (scenery, geology, fish)	High quality trout fishing. Seg. 1 meanders through gently sloping volcanic terrain. Downstream are numerous waterfalls, including Upper and Middle Falls.

<i>RIVER</i>	<i>REACH</i>	<i>YEAR, POTENTIAL CLASSIFICATION, ORVs</i>	<i>DESCRIPTION</i>
	boundary near Lower Falls in Sec. 12, T.39 N., R.2 W.		
McCloud River	5 miles: Lower Falls downstream to confluence with Angel Creek	1982, 1993; Scenic; (scenery, geology, fish)	See initial comments
McCloud River	2 miles: Angel Creek confluence to confluence with Huckleberry Creek, at northern tip of McCloud Reservoir	1982, 1993; Recreational (scenery, geology, fish)	See initial comments

SOURCE: US DEPT. OF INTERIOR, NATIONAL PARK SERVICES, 2009

3.1.2 REGULATORY SETTING

FEDERAL

U.S. Forest Service

The USFS prepared the Shasta-Trinity Forest Plan in 1995 to guide the management of the Shasta and Trinity National Forests. The primary goals of this Plan are to integrate a mix of management activities that allow use and protection of forest resources, meet the needs of guiding legislation, and address local, regional, and national issues. The plan includes adopted Visual Quality Objectives (VQOs) for State scenic highways and National Recreation Areas within the planning area(s).

Bureau of Land Management

The Bureau of Land Management (BLM) is responsible for ensuring that the scenic values of public lands under their jurisdiction are considered before allowing uses that may have negative visual impacts. BLM developed the Visual Resource Management (VRM) system as a means to provide a systematic approach to evaluating a proposed project and to determine whether the project conforms to the approved VRM objectives. It also provides a means to identify mitigation measures that can be taken to minimize adverse visual impacts. The VRM system helps to ensure that the actions taken on public lands today will benefit the landscape and adjacent communities in the future.

BLM's 1992 Redding Resource Management Plan (RMP) identifies the direction for the management of public lands and Federal mineral estate administered by the Bureau of Land Management (BLM) within the Redding Resource Area of north central California. The Redding Resource Area encompasses approximately 247,500 acres of public land and 142,400 acres of Federal mineral estate within Butte, Shasta, Siskiyou, Tehama, and Trinity counties. Public lands administered by BLM comprise roughly 2.5% of the entire land mass within the Redding Resource Area.

STATE

California Scenic Highway Program

The intent of the California Scenic Highway Program is “to protect and enhance California’s natural scenic beauty and to protect the social and economic values provided by the State’s scenic resources.” Caltrans administers the program, which was established in 1963 and is governed by the California Streets and Highways Code (§260 et seq.). The goal of the program is to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of the adjacent land. Caltrans has compiled a list of state highways that are designated as scenic and county highways that are officially designated or eligible for designation as scenic. As presented in Tables 3.1-1, 3.1-2, and 3.1-3, within Shasta County there is currently one Officially Designated State Scenic Highway, one Officially Designated County Scenic Highway, and four Eligible State Scenic Highways.

Scenic highway designation can provide several types of benefits to the region. Scenic areas are protected from encroachment of inappropriate land uses, free of billboards, and are generally required to maintain existing contours and preserve important vegetative features. Only low density development is allowed on steep slopes and along ridgelines on scenic highways, and noise setbacks are required for residential development.

LOCAL

Shasta County General Plan

The Shasta County General Plan includes a Scenic Highways Element, which is intended to establish and protect highways with scenic value, be they State or County roads. The element includes the following objectives and policies related to land use.

OBJECTIVES

- Protection of the natural scenery along the official scenic highways of Shasta County from new development which would diminish the aesthetic value of the scenic corridor.
- New development along scenic corridors of the official scenic highway should be designed to relate to the dominant character of the corridor (natural or natural and man-made contrast) or of a particular segment of the corridor. Relationships shall be achieved in part through regulations concerning building form, site location, and density of new development.
- Recognition that the management practices of agriculture, timber, and other resource-based industries which may cause some degradation of the visual quality of the scenic corridor are inevitable but their impacts are temporary.

POLICIES

To protect the value of the natural and scenic character of the official scenic highway corridors and the County gateways dominated by the natural environment, the following provisions, along with the County development standards, shall govern new development:

- setback requirements
- regulations of building form, material, and color
- landscaping with native vegetation, where possible
- minimizing grading and cut and fill activities

Additional policies include:

- requiring use of adequate erosion and sediment control programs
- siting of new structures to minimize visual impacts from highway
- regulation of the type, size, and location of advertising signs
- utility lines shall be underground wherever possible; where undergrounding is not practical, lines should be sited in a manner which minimizes their visual intrusion.
- Official scenic highways should include vista sites, turnouts, restrooms, picnic grounds, travel information, and other related facilities/services.

City of Redding General Plan

The Visual Section of the City of Redding General Plan includes the following visual and scenic goal:

Goal: Improve the visual attractiveness of the city's arterial and collector streets.

In order to achieve this goal, it is the City's policy to determine priorities and establish a program to retrofit existing arterial streets to include median and street-side landscape.

City of Anderson General Plan

The Open Space and Conservation Element presents community goals to protect environmental resources, open space, and scenic resources and identifies scenic resources as predominant physical characteristics of the community.

Goal: Enhance the City's natural resources by managing their use, protection, and maintenance consistent with community goals. (Open Space and Conservation Element)

Policy SRP-1 Encourage preservation and enhancement of views of the Sacramento River and Mount Shasta and Mount Lassen to the extent possible.

City of Shasta Lake General Plan

The Open Space, Parks and Recreation Element includes the objective to establish, integrate, and maintain "natural" and "man-made" greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, bike and trail systems.

3.1.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have significant impact on aesthetics if it will:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings;
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

IMPACTS AND MITIGATION MEASURES

Impact 3.1-1: Substantial Adverse Effects on Scenic Vistas and Resources or Substantial Degradation of Visual Character (less than significant with mitigation)

Views of scenic resources, including Mount Shasta, Mount Lassen, Castle Crags the Sierra Nevada and Cascade Ranges, scenic water resources, and other scenic resources in the county are available from highways and roadways, including scenic roads and corridors, throughout the county. Improvements to existing infrastructure, such as roadway widening, bridge replacements, signal installation, road rehabilitation, runway resurfacing, and runway extensions, may result in modification of the foreground of the various scenic viewsheds throughout the county. There is also potential for the RTP projects, such as new roadways and bridges, to affect scenic vistas and resources or degrade the visual character of the area. Examples would include RTP projects that are located adjacent to a broad viewshed such as the mountain ranges, valleys, ridgelines, or water bodies along roadways, or adjacent to the focal point of the forefront of the broad viewshed, such as visually important trees, rocks, or historic buildings. An impact would occur if a project would change the view to the middle ground or background elements of the broad viewshed, or remove the visually important trees, rocks, or historic buildings in the foreground.

While RTP projects are not anticipated to significantly disrupt mid-ground or backdrop views of scenic vistas, they have not yet been designed and may involve features, such as soundwalls, grading, or structures that may disrupt views. The RTP projects may involve removal of trees or other visually significant features, or may result in development that would cause an intermittent interruption in views to users of the highways, roadways, and other components of the transportation system. The RTP projects could also convert areas of open space to developed uses, resulting in a permanent change in views.

While each jurisdiction in which the improvements may be located has policies related to the protection of scenic resources and views, the potential remains for removal of scenic features,

particularly those that would be in the foreground of scenic viewsheds and vistas. This impact is potentially significant. Mitigation Measure 3.1.1 requires projects to include design measures to avoid or reduce removal of scenic features and scenic views. Implementation of Mitigation Measure 3.1.1 would reduce impacts to scenic resources to **less than significant**.

MITIGATION MEASURE

Mitigation Measure 3.1.1 Prior to the design approval of RTP projects, the implementing agency should assess whether the project would remove any significant visual resources in the project area, which may include trees, rock outcroppings, and historical buildings, and should also assess whether the project would significantly obstruct views of scenic resources, such as views of Mount Shasta, Mount Lassen, the Sierra Nevada and/or Cascade Ranges, or scenic water features.

If it is determined that the RTP project would remove significant visual resources, the implementing agency should consider alternative designs that seek to avoid and/or minimize impacts from removal of significant visual resources to the extent feasible. Project-specific design measures may include revisions to the plans to retain trees, rocks, and historic buildings, or replanting of trees, and/or the relocation of scenic features.

If it is determined that the RTP project would significantly obstruct scenic views, the implementing agency should consider alternative designs that seek to avoid and/or minimize obstruction of scenic views to the extent feasible. Project-specific design measures may include reduction in height of improvements or width of improvements to reduce obstruction of views, or relocation of improvements to reduce obstruction of views.

Impact 3.1-2: Light and Glare Impacts (less than significant)

There is a potential for RTP projects to create new sources of light and glare near sensitive receptors. Examples would include projects that require the new roadway lighting, lit signs, and/or construction lighting. While the county and incorporated communities have policies regarding visual resources, there is not a consistent approach to restrictions on sources of lighting and glare. As a result, RTP projects may result in increased lighting and glare. This impact is potentially significant. Mitigation Measure 3.1.2 would require lighting that is directed downward and away from adjacent sensitive land uses, installation of shields to avoid light spillage, installation of dense landscaping to block light from sensitive land uses where necessary. Implementation of Mitigation Measure 3.1.2 would reduce impacts associated with lighting and glare to **less than significant**.

MITIGATION MEASURE

Mitigation Measure 3.1.2 The RTP projects should be designed to avoid spillover lighting to sensitive uses and should be designed to avoid sources of glare. Design measures should include the following:

- Exterior lighting features should be directed downward and shielded in order to confine light to the boundaries of the subject project. Where more intense lighting is necessary for safety purposes, the design should include landscaping to block light from sensitive land uses, such as residences.*

Legend

Scenic Highways

- Connecting Federal Highway
- Eligible State Scenic Highway - Not Officially Designated
- Officially Designated State Scenic Highway

Scenic Highways

Federal Highway

Officially Designated

State Scenic Highway

Scenic



Recreational

Wild

555

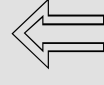
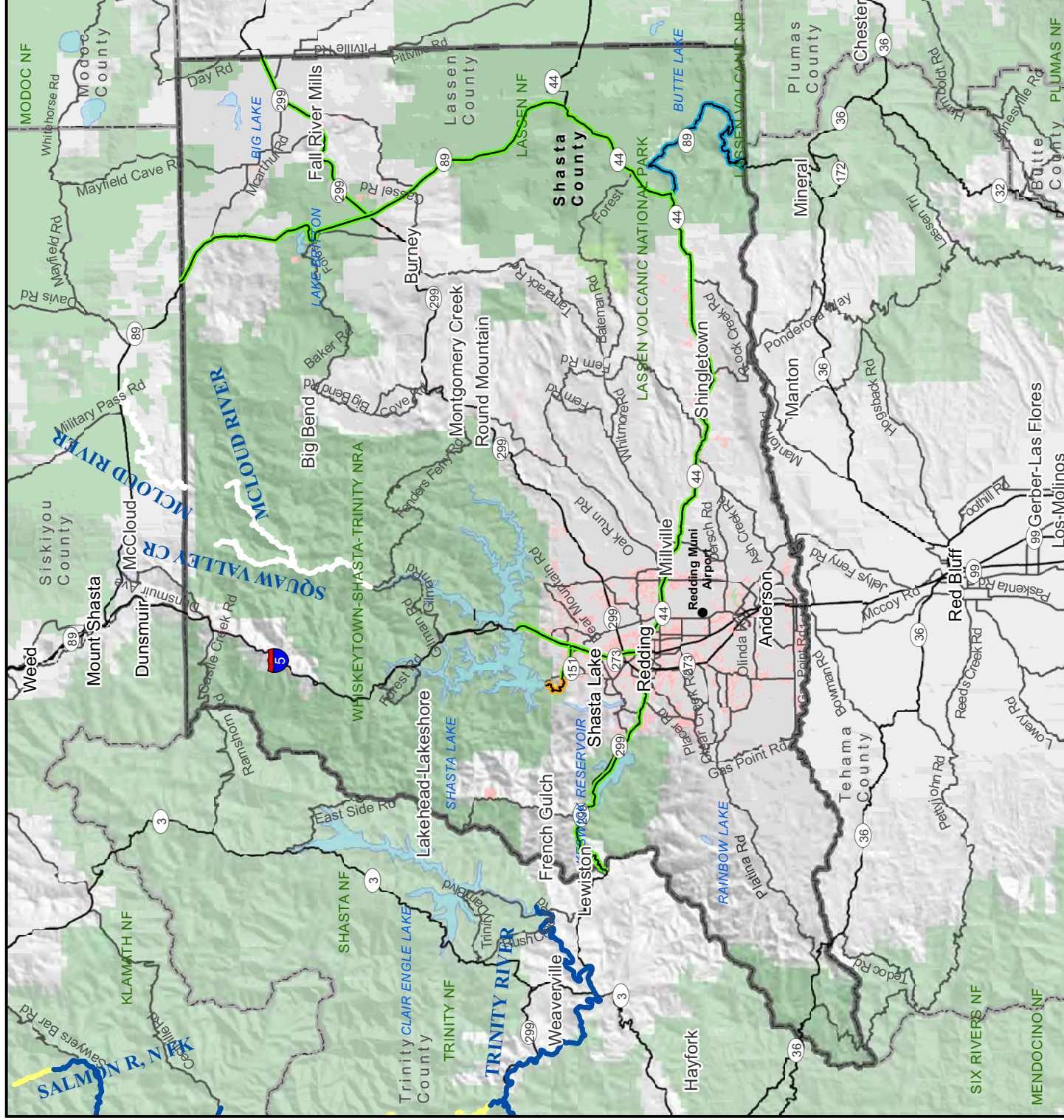


Figure 3.1-1

SCENIC RESOURCES MAP



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This section provides an overview of the agricultural economy, production and values, soils, and the important farmland mapping program. This section concludes with an evaluation of the impacts and recommendations for mitigating impacts. There were not any comments received during the public review period or scoping meetings for the Notice of Preparation regarding this topic. Information in this section is derived primarily from the following:

- Shasta County General Plan Agriculture and Land Use Elements (As amended through September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- 2007 Crop & Livestock Report (Shasta County Dept. of Agricultural Weights & Measures)
- California Important Farmlands 2006 Map (California Department of Conservation, March 2009)

3.2.1 ENVIRONMENTAL SETTING

AGRICULTURAL CONTRIBUTION TO SHASTA COUNTY

Agricultural land uses are a major component of Shasta County's resource land base. They are also a major element in defining the quality of life available to the residents of Shasta County. The County's total land area in farms was 333,828 acres in 2002. Agriculture is not a dominant industry in Shasta County, but it does account for an important segment of the County's economic base. In 2002 the total market value of farm products was \$52,197,800, a slight increase from the \$51,691,000 million produced in 2001. Minor increases in the annual production value of orchard crops and apiary products accounted for this increase. Field crops accounted for nearly 40 percent of this total with livestock sales providing nearly one-third (32.1 percent) of the County's total agricultural production value.

Total employment in farming operations in 2001 approximated 1,551 persons or 2 percent of the total employment for Shasta County as reported in the 2003 publication "Historical, Comparative Economic Analysis for Shasta County" prepared by Policom Corporation. This study also reported that primary industry earnings from the "Farm" sector accounted for 1.1 percent of the total primary industry earnings for Shasta County in 2000. Shasta County ranked 42nd among the 58 California counties in 2002 in the value of total agricultural production as reported by State Department of Food and Agriculture.

Approximately 62 percent or 206,743 acres of the farmland in the County is devoted to pastureland and/or rangeland. This number represents approximately an 8.7 percent reduction in this category for numbers reported in 1997. Cropland represents approximately 21.1 percent of the farmland.

Agriculture in Shasta County has contributed significantly to the economic prosperity of the region. According to the 2007 Shasta County Livestock and Crop Summary, total production value was \$74.5 million, excluding timber. Timber and other forest products added an additional \$67.3

million for a total agricultural production value of approximately \$142 million. Table 3.2-1 presents a summary comparison of production values from 2004 through 2007.

TABLE 3.2-1: SUMMARY COMPARISON OF CROP VALUES

PRODUCT	2007	2006	2005	2004
Livestock	\$21,155,200	\$21,345,800	\$22,894,300	\$21,096,700
Livestock Products	\$1,008,500	\$768,200	\$885,000	\$873,000
Apiary Products	\$5,565,200	\$5,572,000	\$3,568,300	\$3,329,000
Field Crops	\$33,509,100	\$26,855,900	\$22,826,600	\$22,253,100
Nursery Stock	\$10,817,200	\$9,288,900	\$11,774,200	\$9,994,800
Orchard Crops	\$2,488,400	\$2,396,600	\$2,255,600	\$2,076,100
Timber	\$43,948,866	\$40,460,525	\$43,469,158	\$29,827,785
Other Forest Products	\$23,456,000	\$23,006,700	\$20,889,700	\$14,453,100
Grand Total	\$141,858,466	\$139,694,625	\$128,562,858	\$103,903,585

SOURCE: 2007 SHASTA COUNTY CROP & LIVESTOCK REPORT (2007)

Agricultural Production and Value

The leading field crops in Shasta County are wild rice and alfalfa hay, with over \$6.1 million and \$5.3 million generated in 2007, respectively. Mint, walnuts and fruit & nut crops also provide significant crop production value, collectively producing over \$3.2 million in 2007. Shasta County also has a substantial apiary program, with honey bees and related products generating over \$5.5 million in 2007. Table 3.2-1 lists all crops that generated over a million dollars in 2007.

Agricultural Regions

Shasta County is divided into three types of agricultural areas and subunits within each area, as follows:

- Valleys (Sacramento River and tributaries, Fall and Pit Rivers)
- Foothills (Western Uplands, Eastern Uplands)
- Large Mountain Meadows (Goose Valley, Burney Creek Valley, Cayton Valley, Hat Creek Valley)

The valleys of the Sacramento River and its tributaries, including Churn, Cottonwood, Anderson, Stillwater, Cow, Bear, Battle and Clover Creeks, contain some of the most productive agricultural land in the County. The foothills located in the portion of Shasta County known as the Western Upland contain some of the best rangelands available in the County. The County's largest mountain meadows, located above the 3,000-foot elevation in the northeast region of the County,

include the Goose, Cayton, Burney Creek, and Hat Creek Valleys. These meadows are irrigated and are used for grazing and growing crops.

The valley region contains all of the agricultural land that is classified as prime farmlands, unique farmlands or farmlands of statewide importance. Unfortunately, all of these lands are subject to urbanization pressures. Urban services such as community sewer and water and paved roads are or could be made available to most of these lands. The classic example is the Churn Creek Bottom area which lies south of the Redding City limits and is traversed by Interstate 5 and Churn Creek Road. There have been ongoing development proposals in the Churn Creek Bottom which could result in a nonagricultural character.

There are a limited number of agricultural parcels that are under a Williamson Act contract. This may be a result of the agricultural parcel's proximity to urbanization, the 100-acre minimum limit currently in effect for Williamson Act contracts in Shasta County, or both. Even so, 11 ranches comprising 8,456 acres on the central valley floor were enrolled in Williamson Act contracts in 1997. This represents approximately 5 percent of the 169,127 total acres in Williamson Act contracts in Shasta County. The current primary agricultural uses of these lands are field crops, orchard crops, strawberry nursery stock, and irrigated pasture.

In addition to the high quality of their soils, agricultural lands in this area enjoy a long growing season ranging from 172 to 205 days. Water from either the Anderson-Cottonwood Irrigation District, Clear Creek Community Service District, surface diversions of streams, or groundwater is available. Excellent transportation access exists.

The Fall and Pit River Valleys contain highly productive agricultural lands. The value of these lands is reflected to some degree by their enrollment in Williamson Act contracts, none of which have filed a notice of nonrenewal. There are 57 ranches in the "Intermountain Area" which total 42,282 acres enrolled in a Williamson Act contract. This represents approximately 25 percent of the lands enrolled in contract throughout the County.

The current primary uses of these agricultural lands are field crops, strawberry nursery stock, and irrigated pasture. In comparison to agricultural lands located in the Sacramento River Valley, lands in the Fall and Pit River Valleys experience a shorter growing season and less precipitation. These factors determine the productivity and economic return of these lands, which in turn impact their ability to cover the costs of production. A production cost which is becoming increasingly significant in the Fall and Pit River Valleys is energy required for pumping irrigation water. A final factor is transportation of the agricultural products, since the Fall and Pit River Valleys are less accessible to the population centers than in the Sacramento Valley.

Important Farmlands

The Farmland Mapping and Monitoring Program (FMMP) is a farmland classification system administered by the California Department of Conservation. Important farmland maps are based on the Land Inventory and Monitoring criteria, which classify a land's suitability for agricultural production based on both the physical and chemical characteristics of soils, and the actual land use. The system maps five categories of agricultural land, which include important farmlands

(prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance) and grazing land, as well as three categories of non-agricultural land, which include urban and built-up land, other land, and water area.

In 2006, the FMMP classified approximately 25,727 acres (2.5 percent) of land in Shasta County as Important Farmland and an additional 409,616 (40.1 percent) as grazing land. Of the Important Farmlands, 13,282 acres were classified prime farmland, 3,444 acres were classified farmland of statewide importance, 488 acres were classified as unique farmland, and 8,513 acres were classified farmland of local importance. The remaining lands in the County were classified as non-agricultural types of land. Acreages of land use categories are summarized in Table 3.2-2 and each of the eight categories are described below. Figure 3.2-1 illustrates the location of the important farmlands in Shasta County.

TABLE 3.2-2: SHASTA COUNTY FARMLANDS AND OTHER LANDS BY LAND USE CATEGORY

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED		NET ACREAGE CHANGE
	2004	2006	
Prime Farmland	14,846	13,282	-1,564
Farmland of Statewide Importance	4,058	3,044	-614
Unique Farmland	763	488	-275
Farmland of Local Importance	9,171	8,513	-658
IMPORTANT FARMLAND SUBTOTAL	28,838	25,727	-3,111
Grazing Land	408,927	409,616	689
AGRICULTURAL LAND SUBTOTAL	437,765	435,343	-2,422
Urban and Built-up Land	35,524	36,525	1,001
Other Land	524,029	543,470	1,421
Water Area	5,875	5,875	0
TOTAL AREA INVENTORIED	1,021,213	1,021,213	0

SOURCE: CA DEPARTMENT OF CONSERVATION, FARMLAND MAPPING AND MONITORING PROGRAM, 2009

PRIME FARMLAND

Prime farmland is farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

FARMLAND OF STATEWIDE IMPORTANCE

Farmland of statewide importance is farmland with characteristics similar to those of prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

UNIQUE FARMLAND

Unique farmland is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

FARMLAND OF LOCAL IMPORTANCE

Farmland of local importance is land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee. Although a formal definition for this category has not been developed for Shasta County, the County General Plan states that agricultural land uses are a major element in defining the quality of life available to the residents of Shasta County. In addition to its economic contribution, the agriculture industry is in large part responsible for the rural character of the County. Farming necessitates a close relationship between the farmer and the land, fosters close relationships with family and community, and encourages self-reliance and independence. These characteristics define a way of life which tends to be assumed by those living in agricultural areas, even though they are not directly engaged in agriculture.

GRAZING LAND

Grazing land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

URBAN AND BUILT-UP LAND

Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

OTHER LAND

Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

WATER

Water is considered perennial water bodies with an extent of at least 40 acres.

3.2.2 REGULATORY SETTING

FEDERAL

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that, to the extent practicable, federal programs are compatible with state and local units of government as well as private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for crop production. In fact, the land can be forest land, pastureland, cropland, or other land but does not include water bodies or land developed for urban land uses (i.e., residential, commercial, or industrial uses).

The Natural Resource Conservation Service (NRCS) administers the Farmland Protection Program. NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of Federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The assessment is completed on form AD-1006, Farmland Conversion Impact Rating. The sponsoring agency completes the site assessment portion of the AD-1006, which assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural use.

STATE

Williamson Act

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was established based on numerous State legislative findings regarding the importance of agricultural lands in an urbanizing society. Policies emanating from those findings include those that discourage premature and unnecessary conversion of agricultural land to urban uses and discourage discontinuous urban development patterns, which unnecessarily increase the costs of community services to community residents.

The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year, unless the property owner requests a non-renewal or the

contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.

The Shasta County Board of Supervisors has codified regulations for administration of the County's Williamson Act program. Shasta County regulations require a minimum of 100 acres for farms to be enrolled in Williamson Act Contracts. Approximately 51 percent of the total land in farms is enrolled in Williamson Act Contracts. Eleven ranches comprising 8,456 acres on the central valley floor were enrolled in Williamson Act contracts in 1997. This represents approximately 5 percent of the 169,127 total acres in Williamson Act contracts in Shasta County. In comparison, there are 57 ranches in the "Intermountain Area" of the fall and Pit River Valleys, which total 42,282 acres enrolled in Williamson Act contract. This represents approximately 25 percent of the lands enrolled in contract throughout the County. The Western and Eastern Upland regions have about 118,000 acres or approximately 70 percent of the total lands in contract throughout the County. Figure 3.2-1 illustrates the location of the Williamson Act lands in the County.

Farmland Security Zones

In 1998 the state legislature established the Farmland Security Zone (FSZ) program. FSZs are similar to Williamson Act contracts, in that the intention is to protect farmland from conversion. The main difference however, is that the FSZ must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The term of the contract is a minimum of 20 years. The property owners are offered an incentive of greater property tax reductions when compared to the Williamson Act contract tax incentives; the incentives were developed to encourage conservation of prime farmland through FSZs. The non-renewal and cancellation procedures are similar to those for Williamson Act contracts.

Land Evaluation and Site Assessment Model

The California Department of Conservation has developed the California Agricultural Land Evaluation and Site Assessment (LESA) model to evaluate agricultural quality of specific sites to assist in determining the significance of agricultural lands. The LESA model considers six different factors. Two Land Evaluation factors are based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds.

LOCAL

Shasta County General Plan

The Agricultural Lands Element of the Shasta County General Plan includes the following objectives:

- Preservation of agricultural lands at a size capable of supporting full-time agricultural operations in order to allow the continuation of such uses and to provide opportunities for the future expansion and/or establishment of such uses.
- Preservation of agricultural lands at a size capable of supporting part-time or second income, but not full-time, agricultural operations in order to allow the continuation of such uses and to provide opportunities for the future expansion and/or establishment of such uses.
- Recognition by Shasta County residents that the preservation of agricultural lands for agricultural uses, both large and small scale, is in the public interest because it preserves local and regional food supplies and is an important contributing industry to the Shasta County economy.
- Recognition by Shasta County residents that preservation of agricultural lands, both large and small-scale, provides privately maintained open-space, facilitates a rural lifestyle, and requires Countywide understanding of the problems facing ranchers and farmers.
- Protection of agricultural lands from development pressures and or uses which will adversely impact or hinder existing or future agricultural operations.
- Protection of water resources and supply systems vital for the continuation of agriculture.

The Land Use Element of the General Plan identifies policies to guide development in a pattern that will respect the natural resource values of County lands and their contributions to the County's economic base. It goes further to recommend developing specific plans for the Burney, Cottonwood, and Palo Cedro areas. It also recommends developing a specific plan for the Churn Creek Bottom area with emphasis on maintaining and preserving a variety of long-range agricultural options for the area.

City of Redding General Plan

The City of Redding's General Plan identifies the goal of promoting the economic viability of agriculture in those areas suited for agricultural use. Policies are provided to implement this goal, including protecting existing prime agricultural soils adjacent to freeway interchange areas, discouraging the cancellation of Williamson Act contracts, and minimizing agricultural impacts from urban development.

City of Anderson General Plan

The City of Anderson's General Plan provides for the preservation of agricultural lands by encouraging low-impact, high-value agricultural crops such as herbs, fruits and vegetables, nuts and wine grapes on smaller parcels. These agricultural areas help to preserve the traditional "small town" character of the community, maintain open space, and reduce congestion within the City.

Policies related to this include encouraging urban development within city limits, avoiding conflicts between agriculture and urbanization within the City's area of influence, protecting and retaining

areas suitable for supplemental farming, promoting community gardens, herb gardens, or tree nurseries on vacant lots in developed areas, and encouraging the promotion and marketing of locally grown agricultural products.

3.2.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the agricultural resources if it will:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmlands), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: Conversion of Farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance, to Non-Agricultural Uses (less than significant with mitigation)

RTP projects have the potential to result in the conversion of farmlands, including important farmlands, and land currently enrolled in Williamson Act contracts, to nonagricultural uses. The majority of the RTP projects would occur within or adjacent to existing rights-of-way, which would result in a negligible, if any impact, to important farmland located adjacent to these improvements. Some RTP projects, such as roadway extensions, park-n-ride facilities, and extension of airport runways, would occur outside of existing rights-of-way, which may result in impacts to important farmlands. The 2010 RTP is a long range planning document, therefore the RTP projects have not been designed and the precise location and development footprint of some facilities have not yet been determined. As such, the precise amount of important or significant farmlands that may be converted from farmland use to the region's transportation system cannot be quantified at this early planning stage.

The percent of land converted from agricultural from RTP projects would not be substantial relative to the county's total agricultural acreage. Most converted land would be in the form of narrow bands adjacent to roadways (lane improvements or modifications), not large, contiguous parcels. Because of the extent of farmland throughout the county, some of the RTP projects may require conversion of farmland due to site constraints and the infeasibility of fully avoiding farmlands through site design and engineering. If an RTP project has the potential to impact farmland the implementing agency will be required to perform a land evaluation and site

assessment (LESA) to establish a farmland conversion impact rating score. This process is required by the NRCS for all Federally funded and assisted projects, and is also used by the California Department of Conservation for state and locally funded projects.

Mitigation Measure 3.2.1 would minimize the amount of farmland converted, and require protection of comparable farmlands or improvement of farmlands in order to off-set the impact associated with the conversion of important or significant farmlands. Implementation of Mitigation Measure 3.2.1 would reduce this impact to a **less than significant** level.

MITIGATION MEASURES

Mitigation Measure 3.2.1: Prior to the design approval of RTP projects, the implementing agency should assess the project area for agricultural constraints. For federally funded projects, the implementing agency should complete a form AD-1006 to determine the Farmland Conversion Impact Rating in compliance with the Farmland Protection Policy Act. The AD-1006 should be submitted to the NRCS for approval. For non-federally funded projects, the implementing agency should assess the project for the presence of important farmlands (prime farmland, unique farmland, farmland of statewide importance), and if present, perform a Land Assessment and Site Evaluation (LESA).

If significant agricultural are identified within the limits of the project, the implementing agency should consider alternative designs that seek to avoid and/or minimize impacts to the agricultural resources. Design measures may include, but are not limited to, reducing the proposed roadway width or relocating/realigning the improvement to avoid important and significant farmlands. If the improvement cannot be designed without complete avoidance of important or significant farmlands, the implementing agency should compensate for unavoidable conversion impacts in accordance with the Farmland Protection Policy Act and local and regional standards.

Impact 3.2-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract (less than significant)

RTP projects, such as roadway and highway widening, roadway extensions, bridge replacements, runway rehabilitation and extension, and transportation facilities, such as park-n-ride lots. Improvements to the transportation systems throughout the county are designed to facilitate the Circulation Elements of the applicable General Plans. Transportation improvements are typically compatible with agricultural land uses, including those designated for agricultural uses. Agricultural operations throughout the county would benefit from improved movement of their commodities from the farm to the marketplace as a result of the improvements to the transportation systems.

Implementation of the RTP projects would not convert existing farming operations into nonagricultural uses, nor would it result in a need for land use changes or rezoning that accommodate uses other than agricultural. These improvements would not conflict with the allowed uses under the existing General Plan or Zoning Ordinance in the County or Cities, and there would be no need for a cancellation or the filing of a notice of non-renewal of a Williamson Act contract. This impact is considered **less than significant**.

Prime Farmland	Farmland of State Import.	Unique Farmland	Irrigated Farmland	Nonirrigated Farmland	Farmland of Local Import.	Farmland of Local Potential	Grazing Land	Confined Animal Agriculture	Natural Vegetation	Disturbed Land	Other Land	Rural Residential Land	Urban and Built-Up Land	Water Area	Out of Survey Area	Williamson Act Lands

Figure 3.2-1

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This section describes the regional air quality, current attainment status of the air basin, local sensitive receptors, emission sources, and impacts that are likely to result from project implementation. Following this discussion is an assessment of consistency of the proposed project with applicable policies and local plans. The climate change and GHG analysis is located in Section 3.7. There was one written comment letter submitted on the Notice of Preparation related to air quality and climate change (Attorney General, October 22, 2008). Additionally, there was one verbal comment at the scoping meeting related to air quality and climate change (Department of Fish and Game, November 20, 2008). These comments are provided in Appendix A and they are addressed throughout Section 3.3 Air Quality and 3.7 Green House Gases and Climate Change. Information in this section is derived primarily from the following:

- 2010 Shasta County Regional Transportation Plan Update (Shasta County Regional Transportation Planning Agency, 2010)
- Shasta County 2004 Regional Transportation Plan (Shasta County, July 2004)
- Shasta County General Plan (September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan (Diaz Associates, June 1999)
- Northern Sacramento Valley Planning Area 2006 Air Quality Attainment Plan (Northern Sacramento Valley Planning Area Districts, 2006)
- Meteorology Today: An Introduction to Weather, Climate, & the Environment (C Donald Ahrens, 2006)
- Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report (California Energy Commission, 2006)

3.3.1 EXISTING SETTING

SACRAMENTO VALLEY AIR BASIN

Shasta County is located within the Sacramento Valley Air Basin (SVAB). The SVAB is the northern half of California's Great Valley and is bordered on three sides (west, north, and east) by mountain ranges, with peaks in the eastern range above 9,000 feet. Figure 3.3-1 delineates the boundary of the SVAB. The SVAB is approximately 13,700 square miles and essentially a smooth valley floor with elevations ranging from 40 to 500 feet. The rolling valley is interrupted by the Sutter Buttes, an area of 80 square miles in northern Sutter County, which rise abruptly to more than 2,100 feet above the valley floor.

The SVAB consists of 13 counties and is split into two planning sections based on the degree of pollutant transport from one area to the other and the level of emissions within each area. The Shasta County area belongs to the Northern Sacramento Valley Air Basin (NSVAB), which is composed of the seven northern-most counties of the SVAB. These counties include Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba.

The NSVAB has been categorized as “moderately” non-attainment for ozone and particulate matter under the state standards. The City of Redding is located in the northern area of the Sacramento Valley, approximately 160 miles north of Sacramento. The air basin of the Sacramento Valley is about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the width of the valley floor only averages about 50 miles.

Shasta County Air Quality Management District

The County is under the jurisdiction of the Shasta County Air Quality Management District (SCAQMD), a regional agency responsible for regulating sources of air pollution in Shasta County. The SCAQMD endeavors to manage and enhance the air quality resources of Shasta County through a balanced program of environmental oversight and protection of public health.

The SCAQMD functions as professional staff to the Air Pollution Control Board regarding rule development and potential industrial and commercial development. It also processes commercial and industrial applications to construct emission devices and issues Permits to Operate which are renewed on an annual basis. The SCAQMD estimates releases of air contaminants and maintains an emission inventory to track emissions of all permitted devices. It also proposes mitigation strategies working cooperatively with affected emission sources, evaluates potential health risks, and adopts air pollution control measures and regulations that seek to attain federal and state ambient air quality standards.

The SCAQMD operates monitoring devices to obtain information regarding concentrations of particulate matter (PM₁₀) and ozone air pollutants that may have an impact on the health of the general public or may damage vegetation and other materials. It issues open burning permits for agricultural, forest management, land clearing, and hazard reduction burning projects.

Climate

Shasta County encompasses the northernmost portion of the Sacramento Valley and the surrounding mountainous areas, approximately 160 miles northwest of Sacramento. The area has a moderate year-round climate where the average daily temperature remains above freezing. The average annual temperature is approximately 62°F, and annual precipitation averages about 30 inches.

Air Movement

The Sacramento Valley portion of the air basin forms a bowl, bounded on the west by the Coast Ranges, on the north by the Cascade Range, and on the east by the Sierra Nevada. These mountain ranges reach heights exceeding 6,000 feet above sea level. During summer, the wide, flat expanse of the Sacramento Valley provides an ideal environment for the formation of photochemical smog. Moreover, the prevailing winds in the Sacramento Valley blow from south to north, driven by the marine air traveling through the Carquinez Strait. These winds can transport pollutants from the broader Sacramento area and from the San Francisco Bay Area to the Northern Sacramento Valley Air Basin. The mountain ranges that surround the Northern

Sacramento Valley Air Basin provide a physical barrier to continued movement of the air mass, significantly hindering the dispersal of pollutants.

Generally, the County experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time. This is, in large measure, due to the relatively stable atmosphere which acts to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to pollutants. In valley locations under 1,000 feet elevation such as the Redding Metropolitan area, they create a "lid" under which pollutants are trapped. Dust and other pollutants can become trapped within these inversion layers and will not disperse until atmospheric conditions become more unstable. This situation creates concentrations of pollutants at or near the ground surface which pose significant health risks for plants, animals, and people.

Inversions occur in the SVAB with great frequency in all seasons. The most stable inversions occur in late summer and fall. The summertime inversions are often the result of marine air pushing under an overlying warm air mass. These are termed "marine inversions" and are generally accompanied by brisk afternoon winds, which provide good air circulation.

In contrast, many autumn inversions are the result of warm air subsiding in a high-pressure cell where accompanying light winds do not provide adequate dispersion. Autumn inversions limit vertical mixing, creating a very stable layer of air with very light or calm winds. These inversions are usually present on clear cold nights during late fall and winter. In the morning, these ground based inversions are weakened and eventually eliminated by solar heating. As a result, they are strongest in the late night and early morning, when ground-level temperatures are coldest and solar radiation is low.

Seasonal Pollution Variations

Carbon monoxide, oxides of nitrogen, particulate matter, and lead particulate concentrations in the late fall and winter are highest when there is little interchange of air between the valley and the coast and when humidity is high following winter rains. This type of weather is associated with radiation fog, known as tule fog, when temperature inversions at ground level persist over the entire valley for several weeks and air movement is virtually absent.

Pollution potential in the Shasta County area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily very small particulates or PM₁₀) and ground-level ozone are of most concern to regional air quality officials.

Local carbon monoxide "hot spots" are important to a lesser extent. Ground-level ozone, the principal component of smog, is not directly emitted into the atmosphere but is formed by the reaction of reactive organic gases (ROG) and nitrogen oxides (NOx) (known as ozone precursor pollutants) in the presence of strong sunlight. Ozone levels are highest in Shasta County during late spring through early fall, when weather conditions are conducive and emissions of the precursor pollutants are highest.

Surface-based inversions that form during late fall and winter nights cause localized air pollution problems (PM₁₀ and carbon monoxide) near the emission sources because of poor dispersion conditions. Emission sources are primarily from automobiles. Conditions are exacerbated during drought-year winters.

CRITERIA POLLUTANTS

The United States Environmental Protection Agency (EPA) uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). Each criteria pollutant is described below.

Ozone (O₃) is a photochemical oxidant and the major component of smog. While O₃ in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O₃ at ground level are a major health and environmental concern. O₃ is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak O₃ levels occur typically during the warmer times of the year. Both VOCs and NO_x are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

The reactivity of O₃ causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O₃ not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to O₃ for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

Carbon monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks.

Nitrogen dioxide (NO₂) is a brownish, highly reactive gas that is present in all urban atmospheres. NO₂ can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O₃) and acid rain, and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO₂ in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO_x). NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O₃. NO_x forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

Sulfur dioxide (SO₂) affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO₂ is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO₂ results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

Particulate matter (PM) includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO₂ and VOCs are also considered particulate matter.

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO₂) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death.

Respirable particulate matter (PM₁₀) consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. Particulate matter is caused primarily by dust from grading and excavation activities, from agricultural uses (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM₁₀ causes a greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

Fine particulate matter (PM_{2.5}) consists of small particles, which are less than 2.5 microns in size. Similar to PM₁₀, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM₁₀, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the EPA created new Federal air quality standards for PM_{2.5}.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also soils and damages materials, and is a major cause of visibility impairment.

Lead (Pb) exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil or dust. Excessive Pb exposure can cause seizures, mental retardation and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Recent

studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease.

ODORS

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

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

NATURALLY OCCURRING ASBESTOS

The EPA Region 9 office is working in areas of California to address concerns about potential effects of naturally occurring asbestos. Naturally occurring asbestos can take the form of long, thin, separable fibers. Natural weathering or human disturbance can break naturally occurring asbestos down to microscopic fibers, easily suspended in air. There is no health threat if asbestos fibers in soil remain undisturbed and do not become airborne. When inhaled, these thin fibers irritate tissues and resist the body's natural defenses. Asbestos, a known carcinogen, causes cancers of the lung and the lining of internal organs, as well as asbestosis and other diseases that inhibit lung function.

Asbestiform minerals occur naturally in rock and soil as the result of natural geologic processes, often in veins near earthquake faults in the coastal ranges and the foothills of the Sierra Nevada mountains. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in bodies of ultramafic rock or along their boundaries. Asbestos is much less likely to be associated with non-ultramafic rock types.

Ultramafic rocks are igneous rocks that form in high temperature environments well below the surface of the earth. By the time they are exposed at the surface by uplift and erosion, ultramafic rocks may be partially to completely altered to serpentinite, a type of metamorphic rock. Asbestos is the generic term for the naturally occurring fibrous (asbestiform) varieties of six silicate minerals, including chrysotile which is found in serpentinite and is the most common in California.

Serpentinite is an ultramafic rock that has a greasy or waxy appearance and may be dark to light green, brown, yellow or white. Small amounts of chrysotile asbestos are common in serpentinite. Other forms of asbestos such as amphibole asbestos also occur with serpentinite, but such occurrences are less common than chrysotile asbestos.

Because of the correlation of asbestos and ultramafic rocks, the location of ultramafic rocks provides insight to the potential for naturally occurring asbestos in each county. The California Department of Conservation, Division of Mines and Geology mapped the location of ultramafic rocks within California, which is limited to the foothill regions of the Sierra Nevada, Coastal Range, and Cascade Range.

SENSITIVE RECEPTORS

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals and schools.

AMBIENT AIR QUALITY

Both the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant.

The federal and California state ambient air quality standards are summarized in Table 3.3-1 for important pollutants. The federal and state ambient standards were developed independently, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter between 2.5 and 10 microns in diameter (PM₁₀).

TABLE 3.3-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	FEDERAL PRIMARY STANDARD	STATE STANDARD
Ozone	1-Hour	--	0.09 ppm
	8-Hour	0.075 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	--	0.03 ppm
	1-Hour	0.53 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	--	0.25 ppm
PM10	Annual	--	20 ug/m3
	24-Hour	150 ug/m3	50 ug/m3
PM2.5	Annual	35 ug/m3	12 ug/m3
	24-Hour	15 ug/m3	--
Lead	30-Day Avg.	--	1.5 ug/m3
	3-Month Avg.	1.5 ug/m3	--

SOURCE: CALIFORNIA AIR RESOURCES BOARD, 2008

Notes: ppm = parts per million, ug/m3 = Micrograms per Cubic Meter

The U.S. Environmental Protection Agency established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The 1-hour ozone standard was phased out and replaced by an 8-hour standard of 0.075 PPM. Implementation of the 8-hour standard was delayed by litigation, but was determined to be valid and enforceable by the U.S. Supreme Court in a decision issued in February of 2001.

In 1997, new national standards for fine particulate matter diameter 2.5 microns or less (PM_{2.5}) were adopted for 24-hour and annual averaging periods. The current PM₁₀ standards were to be retained, but the method and form for determining compliance with the standards were revised.

The State of California regularly reviews scientific literature regarding the health effects and exposure to PM and other pollutants. On May 3, 2002, CARB staff recommended lowering the level of the annual standard for PM₁₀ and establishing a new annual standard for PM_{2.5}. The new standards became effective on July 5, 2003, with another revision on November 29, 2005.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within Shasta County and the entire NSVPA are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

It should be noted that Shasta County is subject to significant ozone transport from the Sacramento area. These factors, coupled with the region's climate and topography, have resulted in the air quality of the Shasta County area becoming "moderately" polluted with ozone and particulate matter.

Attainment Status

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone (O₃), carbon monoxide (CO), and nitrogen dioxide (NO₂) as "does not meet the primary standards," "cannot be classified," or "better than national standards." For sulfur dioxide (SO₂), areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

Shasta County has a national designation for either Unclassified or Attainments for all criteria pollutants. The County has a state designation as "moderately" non-attainment for ozone and PM₁₀. The County is designated either attainment or unclassified for the remaining state standards.

TABLE 3.3-2: STATE AND NATIONAL ATTAINMENT STATUS

CRITERIA POLLUTANTS	STATE DESIGNATIONS	NATIONAL DESIGNATIONS
8-Hour Ozone	Nonattainment	Unclassified/Attainment
PM ₁₀	Nonattainment	Unclassified
PM _{2.5}	Unclassified	Unclassified/Attainment
Carbon Monoxide	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	
Lead	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2010).

Air Quality Monitoring

SCAQMD and CARB maintain five air quality monitoring sites in Shasta County; North Street in Anderson, Health Department roof in Redding, Lassen Volcanic National Park – Manzanita Lake, Shasta Dam Boulevard at Lake Boulevard in Shasta Lake, and LaMesa Avenue in Shasta Lake. Four of these monitoring sites measure ozone 24 hours a day seven days a week, and three of them measure particulate matter once every six days. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. Data obtained from the monitoring sites over the last 3-year period is shown in **Tables 3.3-3 through 3.3-6**. It should be noted that the CARB statistical data does not include the Shasta Dam Boulevard monitoring data.

TABLE 3.3-3: AMBIENT AIR QUALITY MONITORING DATA (ANDERSON – NORTH STREET)

POLLUTANT	CAL.	FED.	YEAR	MAX CONCENTRATION	DAYS (SAMPLES) STATE/FED STANDARD EXCEEDED
	PRIMARY STANDARD				
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2006(A) 2007(A) 2008(A)	0.092 0.084 0.097	0 / * 0 / * 1 / *
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	2006(A) 2007(A) 2008(A)	0.080 0.080 0.091	7 / 1 19 / 3 24 / 11
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2006(A) 2007(A) 2008(A)	53.0 46.0 135.9	6.1 / 0 0 / 0 24.4 / 0
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	Not collected at this site.		

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2006, 2007, AND 2008.

TABLE 3.3-4: AMBIENT AIR QUALITY MONITORING DATA (REDDING – HEALTH DEPARTMENT ROOF)

POLLUTANT	CAL.	FED.	YEAR	MAX CONCENTRATION	DAYS (SAMPLES) STATE/FED STANDARD EXCEEDED
	PRIMARY STANDARD				
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2006(R) 2007(R) 2008(R)	0.107 0.089 0.090	2 / * 0 / * 0 / *
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	2006(R) 2007(R) 2008(R)	0.087 0.073 0.083	19 / 9 5 / 0 13 / 4
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2006(R) 2007(R) 2008(R)	54.0 36.0 236.2	6.1 / 0 0 / 0 32.7 / 6.6
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	2006(R) 2007(R) 2008(R)	31.0 18.6 200.2	* / 0 * / 0 * / 29.8

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2006, 2007, AND 2008.

TABLE 3.3-5: AMBIENT AIR QUALITY MONITORING DATA (SHASTA LAKE)

POLLUTANT	CAL.	FED.	YEAR	MAX CONCENTRATION	DAYS (SAMPLES) STATE/FED STANDARD EXCEEDED
	PRIMARY STANDARD				
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	Not collected at this site.		
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	Not collected at this site.		
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2006(S) 2007(S) 2008(S)	43.0 57.0 108.9	0 / 0 * / 0 19.5 / 0
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	Not collected at this site.		

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2006, 2007, AND 2008.

TABLE 3.3-6: AMBIENT AIR QUALITY MONITORING DATA (LASSEN NATL PARK)

POLLUTANT	CAL.	FED.	YEAR	MAX	DAYS (SAMPLES) STATE/FED STANDARD EXCEEDED
	PRIMARY STANDARD			CONCENTRATION	
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2006(L) 2007(L) 2008(L)	0.091 0.084 0.115	0 / * 0 / * 2 / *
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	2006(L) 2007(L) 2008(L)	0.078 0.079 0.104	17 / 1 11 / 4 14 / 8
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	Not collected at this site.		
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	Not collected at this site.		

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2006, 2007, AND 2008.

Notes:

ppm = parts per million.

Ug/m3 = microns per cubic meter.

NA= not applicable

* = There was insufficient (or no) data available to determine the value

(A)= data collected at Anderson-North Street Monitoring Station

(R)= data collected at Redding- Health Dept. Roof Monitoring Station

(L)= data collected at Lassen Volcanic National Park – Manzanita Lake Monitoring Station

(S)= data collected at Shasta Lake – 4066 La Mesa Avenue Monitoring Station

3.3.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards,

stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

The law recognizes the importance for each state to locally carry out the requirements of the FCAA, as special consideration of local industries, geography, housing patterns, etc. are needed to have full comprehension of the local pollution control problems. As a result, the EPA requires each state to develop a State Implementation Plan (SIP) that explains how each state will implement the FCAA within their jurisdiction. A SIP is a collection of rules and regulations that a particular state will implement to control air quality within their jurisdiction. CARB is the state agency that is responsible for preparing the California SIP.

Transportation Conformity Analysis

Transportation conformity requirements were added to the FCAA in the 1990 amendments, and the EPA adopted implementing regulations in 1997. See §176 of the FCAA (42 U.S.C. §7506) and 40 CFR Part 93, Subpart A. Transportation conformity serves much the same purpose as general conformity: it ensures that transportation plans, transportation improvement programs, and projects that are developed, funded, or approved by the United States Department of Transportation or that are recipients of funds under the Federal Transit Act or from the Federal Highway Administration (FHWA), conform to the SIP as approved or promulgated by EPA.

Currently, transportation conformity applies in nonattainment areas and maintenance areas. Shasta County is currently in attainment for federal air quality standards. Under transportation conformity, a determination of conformity with the applicable SIP must be made by the agency responsible for the project, such as the Metropolitan Planning Organization, the Council of Governments, or a federal agency. The agency making the determination is also responsible for all the requirements relating to public participation. Generally, a project will be considered in conformance if it is in the transportation improvement plan and the transportation improvement plan is incorporated in the SIP. If an action is covered under transportation conformity, it does not need to be separately evaluated under general conformity.

Transportation Control Measures

One particular aspect of the SIP development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs,

transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

STATE

CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the state. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, the CARB has adopted regulations which required auto manufacturers to phase in less polluting vehicles.

California Clean Air Act

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code (CH&SC) [§39606(b)], which are similar to the federal standards.

Air Quality Standards

NAAQS are determined by the EPA. The standards include both primary and secondary ambient air quality standards. Primary standards are established with a safety margin. Secondary standards are more stringent than primary standards and are intended to protect public health and welfare. States have the ability to set standards that are more stringent than the federal standards. As such, California established more stringent ambient air quality standards.

Federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates (PM₁₀) and lead. In addition, California has created standards for pollutants that are not covered by federal standards. The state and federal primary standards for major pollutants are shown in Table 3.3-1.

Local Air Quality Regulations

The Shasta County AQMD is the local agency with primary responsibility for compliance with both the federal and state standards and for ensuring that air quality conditions are maintained. They do this through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues.

Activities of the SCAQMD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air

pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

Air quality management districts and air pollution control districts within the Northern Sacramento Valley Planning Area work together to create a triennial attainment plan. The most recent NSVPA Air Quality Attainment Plan (AQAP) was developed in 2006. The 2006 Plan identifies those portions of the NSVPA designated as “nonattainment” for the State ambient air quality standards and discusses the health effects related to the various air pollutants. The Plan identifies the air pollution problems which are to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live now and in the future. Like the 1994, 1997, 2000, and 2003 Plans, the 2006 Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, and addresses public education and information programs. The 2006 Plan also addresses the effect that pollutant transport has on the ability of the NSVPA to meet and attain the State standards.

The SCAQMD assists in the administration of the *Integrated Land Use/Air Quality Program (ILU/AQP)* which addresses the development of strategies and mitigation measures to address air quality impacts created by emissions from indirect and/or mobile sources. This program is supported in part by funds generated by the AB 2766 Motor Vehicle Surcharge Funding Program. Fees from this program must be used exclusively by local Air Pollution Control Boards to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary for the implementation of the California Clean Air Act of 1988.

The SCAQMD has adopted emission thresholds to determine the level of significance of a project’s emissions. These thresholds, listed in Table 3.3-7 below, are applied when evaluating individual projects, but are not applicable to regional planning because of the much larger scale.

TABLE 3.3-7: SHASTA COUNTY AQMD AIR QUALITY EMISSIONS THRESHOLDS

LEVEL “A” THRESHOLDS		
Oxides of Nitrogen (NO _x)	Reactive Organic Gases (ROG)	Inhalable Particulate Matter (PM ₁₀)
25 lbs. per day	25 lbs. per day	80 lbs. per day
LEVEL “B” THRESHOLDS		
137 lbs. per day	137 lbs. per day	137 lbs. per day

SOURCE: SHASTA COUNTY GENERAL PLAN, 2004

3.3.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with air quality if it will:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Cause a violation of any air quality standard or contribute substantially to an existing or projected air quality violation;

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people.

IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Long-Term - Conflict with, or Obstruct, the Applicable Air Quality Plan, Cause a Violation of Air Quality Standards, Contribute Substantially to an Existing Air Quality Violation, or Result in a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area (less than significant)

ANALYSIS FOR NATIONAL STANDARDS

Transportation conformity is required under Clean Air Act section 176(c) (42 U.S.C. 7506 (c)) to ensure that federally supported highway and transit project activities are consistent with (“conform to”) the purpose of the State Implementation Plan (SIP). This ensures that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant national ambient air quality standards (NAAQS). However, transportation conformity only applies to areas that are designated non-attainment, and those redesignated to attainment after 1990 (“maintenance areas”). Transportation projects occurring within Shasta County are not subject to an air quality conformity determination because the national designation for each criteria pollutant is either attainment or unclassified. As such, the 2010 RTP will not conflict with, or obstruct the applicable Air Quality Plan, violate an air quality standard, or cumulative increase a criteria pollutant in a non-attainment area on a national level. This is considered a *less than significant* impact.

TABLE 3.3-8: NATIONAL ATTAINMENT STATUS

CRITERIA POLLUTANTS	NATIONAL DESIGNATIONS
8-Hour Ozone	Unclassified/Attainment
PM10	Unclassified
PM2.5	Unclassified/Attainment
Carbon Monoxide	Unclassified/Attainment
Nitrogen Dioxide	Unclassified/Attainment
Sulfur Dioxide	Unclassified

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2010).

ANALYSIS FOR STATE STANDARDS

This impact analysis is based primarily on the emissions estimates developed using the latest planning assumptions available for Shasta County. In order to determine emissions associated with the implementation of the 2010 RTP, two emissions models were used: the Shasta County

transportation model and EMFAC 2007 Version 2.3. An update of the Shasta County travel demand model was recently completed in December 2009. The Shasta County travel demand model was used to prepare the traffic model runs for the necessary analysis years. The Shasta County travel demand model produced forecasts of vehicle miles traveled (VMT), trip ends, speed distributions, lane miles, and other travel related data required for the emission models. The most current approved emissions model, EMFAC 2007 Version 2.3, was used to prepare the regional emissions analysis.

Attainment Status

It should be noted that the County has a state designation as “moderately” non-attainment for ozone and PM₁₀. The County is designated either attainment or unclassified for the remaining state standards.

TABLE 3.3-9: STATE ATTAINMENT STATUS

CRITERIA POLLUTANTS	STATE DESIGNATIONS
8-Hour Ozone	Nonattainment
PM ₁₀	Nonattainment
PM _{2.5}	Unclassified
Carbon Monoxide	Unclassified
Nitrogen Dioxide	Attainment
Sulfur Dioxide	Attainment
Sulfates	Attainment
Lead	Attainment
Hydrogen Sulfide	Unclassified
Visibility Reducing Particles	Unclassified

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2010).

Ozone Precursors and Carbon Monoxide

The regional emissions analysis and forecasts for ozone precursors (ROG and NO_x) and carbon monoxide are summarized in Table 3.3-10. The summary of emissions forecasts is derived from outputs of the EMFAC 2007 Version 2.3 model (Appendix B).

TABLE 3.3-10: ROG, CO, AND NO_x EMISSIONS (TONS PER DAY)

ANALYSIS YEAR	ROG EMISSIONS	CO EMISSIONS	NO _x EMISSIONS
1990	11.26	163.78	21.94
2010	3.32	44.73	16.6
2015	2.25	31.2	11.46
2020	1.58	22.56	8.01
2025	1.29	18.05	6.36
2030	1.19	16.63	5.82

SOURCES: DE NOVO PLANNING GROUP, EMFAC 2007 VERSION 2.3 (2010).

The results from the emissions outputs show that current and future emissions of the ozone precursors ROG and NO_x will be less than the 1990 emissions levels and continue trending downward through the 2030 analysis horizon. Additionally, current and future carbon monoxide emissions will be below the 1990 levels, and will continue trending downward through the 2030

analysis horizon. Although Shasta County is not required to provide a conformity analysis because of the attainment and/or classified status, the outputs show that Shasta County would satisfy the requirements of a “no-greater-than-2002” test for federal 8-hour ozone standard, and the “budget test” for carbon monoxide for the 80-tons-per-day budget.

Particulate Matter

The regional emissions analysis and forecasts for particulate matter emissions (PM_{10} and $PM_{2.5}$) are summarized in Table 3.3-11. It should be noted that Shasta County is currently designated nonattainment with respect to the state PM_{10} standard, but not for $PM_{2.5}$. The summary of emissions forecasts is derived from outputs of the EMFAC 2007 Version 2.3 model (Appendix B).

TABLE 3.3-11: PARTICULATE MATTER EMISSIONS (TONS PER DAY)

ANALYSIS YEAR	$PM_{2.5}$ EMISSIONS (TONS PER DAY)	PM_{10} EMISSIONS (TONS PER DAY)
1990	1.88	1.22
2010	0.48	0.52
2015	0.36	0.39
2020	0.28	0.30
2025	0.25	0.28
2030	0.26	0.28

SOURCES: DE NOVO PLANNING GROUP, EMFAC 2007 VERSION 2.3 (2010).

The results from the emissions outputs show that current and future emissions of the particulate matter will be less than the 1990 emissions levels and continue trending downward through the 2030 analysis horizon. For $PM_{2.5}$, an improvement to quality conditions that are already in attainment is considered a beneficial impact. While the region is designated as state nonattainment for PM_{10} , the decreasing trend is consistent with the applicable Air Quality Plan for the region.

Conclusion

The emission outputs reflect a decreasing trend of criteria pollutant emissions from 2010 through 2030. The results of the emission model reflects the fact that the state and federal EPA's vehicle and fuel regulations that are being phased into place over the study horizon will bring about significantly lower emission levels, which is particularly important for the reduction of emissions in nonattainment areas.

While the 2010 RTP provides improvements that will increase transportation system capacity, it should be noted that it does not control land development and population growth, rather, the General Plans for the incorporated and unincorporated communities control growth and development. This point is expressed in the Transportation Section, which shows that the 2030 No Project Alternative results in between 50,000 and 75,000 more VMT per year when compared to the 2030 Build alternatives. This additional VMT under the 2030 No Project alternative is significantly worse than the 2030 Build alternative in terms of air quality impacts. Implementation of the 2010 RTP will result in some beneficial air quality impacts as a result of the transportation system improvements.

Implementation of the 2010 RTP will not conflict with the Air Quality Plan, cause a violation of Air Quality Standards, contribute substantially to an existing air quality violation, or result in a cumulatively considerable net increase of a criteria pollutant in a nonattainment area. Therefore, this impact is considered **less than significant**.

Impact 3.3-2: Temporary - Conflict with, or Obstruct, the Applicable Air Quality Plan, Cause a Violation of Air Quality Standards, Contribute Substantially to an Existing Air Quality Violation, or Result in a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area (less than significant)

Shasta County is currently designated as “non-attainment” for ozone and PM₁₀. Construction activities associated with construction and implementation of the various roadway and other transportation improvement projects identified in the RTP would result in temporary short-term emissions associated with vehicle trips from construction workers, operation of construction equipment, and the dust generated during construction activities. These temporary and short-term emissions would generate additional ozone precursors (ROG and NO_x) as well as PM₁₀, which could exacerbate the County’s existing non-attainment status for these criteria pollutants.

Construction projects in Shasta County, including the construction of the roadway and other transportation improvements identified in the RTP, are required to receive a permit from the SCAQMD. SCAQMD has numerous existing rules and regulations in place to reduce construction related emissions and dust impacts. All future roadway and other transportation construction projects associated with implementation of the RTP would be subject to the existing SCAQMD requirements. Implementation of these measures requires the construction operators to take special precautions during construction, including grading, paving, and maintenance of roads and other improvements that would reduce emissions of particulate matter, ozone precursors, and other pollutants. Compliance with these pre-established rules will ensure that temporary air quality impacts are reduced to a **less than significant** level.

Impact 3.3-3: Create Objectionable Odors Affecting a Substantial Number of People (less than significant)

Implementation of the RTP would not directly create or generate objectionable odors. Persons residing in the immediate vicinity of proposed improvements may be subject to temporary odors typically associated with roadway construction activities (diesel exhaust, hot asphalt, etc.). However, any odors generated by construction activities would be minor and would be short and temporary in duration. This is considered a **less than significant** impact.

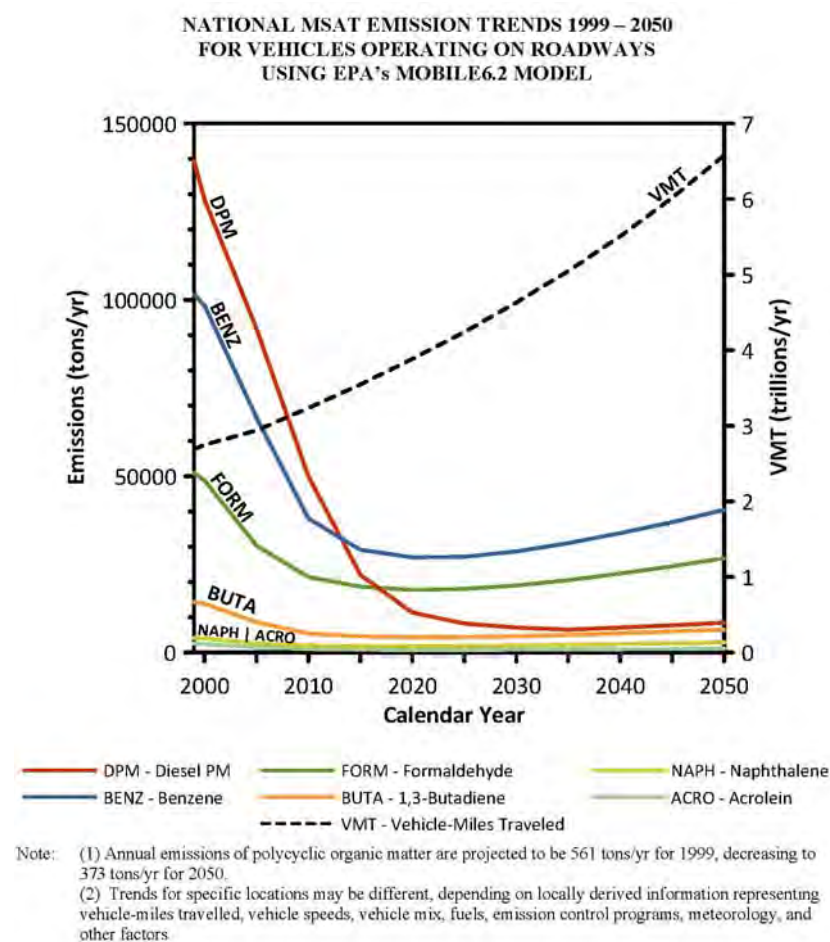
Impact 3.3-4: Contribute Substantially to, or Result in a Cumulatively Considerable Net Increase of Mobile Source Air Toxics(less than significant)

Mobile Source Air Toxics (MSAT) Background: Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress

mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources. In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment. These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.

The 2007 EPA rule requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (VMT) increases by 145 percent, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown below in Exhibit 3.3-1.

EXHIBIT 3.3-1: NATIONAL MSAT EMISSION TRENDS 1999 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING EPA'S MOBILE6.2 MODEL



Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and

techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making in the context of environmental review.

Nonetheless, air toxics concerns continue to be raised on highway projects during the environmental review process and the FHWA developed a tiered approach for analyzing MSAT in environmental documents, depending on specific project circumstances. The 2010 RTP is a program-level document rather than a project-level, therefore it was evaluated for air quality and traffic impacts in regard to Vehicle Miles Traveled (VMT) through the region. The analysis presents the roadway daily traffic volume for the alternatives. The forecasted traffic volumes through 2030 were generated using the Shasta County Transportation Demand Model.

TABLE 3.3-12: REGIONAL VEHICLE MILES TRAVELED COMPARISON

REGIONAL MEASURE	2010 EXISTING CONDITION	2030 NO PROJECT	2030 FINANCIALLY CONSTRAINED	2030 FINANCIALLY UNCONSTRAINED
Daily Vehicle Miles of Travel	5,944,900	8,317,300	8,246,000	8,227,500
Daily Vehicle Hours of Delay	3,730	17,620	9,870	7,820
Average Speeds				
- Freeways	63.0	58.7	62.9	62.9
- Rural Highways	48.6	48.4	48.5	48.7
- Arterials	36.3	33.3	35.0	36.0
- All Roads	42.2	40.1	41.7	42.1
Miles of Roads at LOS E/F	23	115	58	35

SOURCE: DOWLING ASSOCIATES, 2009

The amount of Mobile Source Air Toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the 2030 No Project Alternative is slightly higher than that for the other alternatives, because some improvements will result in a system that provides better and more direct connections for vehicles. This decrease in VMT means MSAT under the Build Alternatives would be lower than the No Build Alternative in the study area. There would also be indirect benefits of the Build alternatives associated with a decrease in the hours of delay, which is expected to eliminate emissions of evaporative MSAT (e.g., benzene) from idling cars/trucks.

The emissions from all alternatives are virtually certain to be lower than present levels in 2030 as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude

of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

Under the Build Alternatives in 2030 it is expected that there would be slightly lower MSAT emissions in the study area relative to the No Build Alternative due to decreased VMT. However, there could be increases in MSAT levels in a few localized areas where VMT increases. Based upon the regional nature of the RTP, development of detailed, site-specific information on this impact at an RTP planning level is not feasible. The implementing agency of each RTP project will conduct appropriate project-level assessments and will be responsible for consideration of mitigation measures for significant effects on the environment. The EPA's vehicle and fuel regulations will bring about significantly lower MSAT levels for the area in the future than today. Therefore, this is considered a **less than significant** impact.

Impact 3.3-5: Potential to release naturally occurring asbestos from earth movement or structural asbestos from demolition/renovation of existing structures (less than significant)

Because of the correlation of asbestos and ultramafic rocks, the location of ultramafic rock provides insight to the potential for naturally occurring asbestos in each county. As such, the California Department of Conservation, Division of Mines and Geology mapped the location of ultramafic rocks within California. These maps illustrate that this rock form is limited to the foothill regions of the Sierra Nevada, Coastal Range, and Cascade Range.

Within Shasta County, ultramafic rocks are limited to the northwestern part of the county (west of I-5) and a small area in the southwestern part of the county. The construction of individual transportation projects within areas that are known to have naturally occurring asbestos (NOA) could lead to the disturbance and release of asbestos fibers. Earthmoving and excavation of materials containing NOA requires monitoring to insure that they are not used as soil or fill materials.

In addition, asbestos is a material that has been used in a variety of transportation facilities, including bridges, walls, and road base. Demolition and excavation activities of facilities containing asbestos requires monitoring to insure that they are properly removed and disposed in accordance with local and state regulations.

Based upon the regional nature of the RTP, development of detailed, site-specific information on this impact at an RTP planning level is not feasible. The implementing agency of each RTP project will conduct appropriate project-level assessments and will be responsible for consideration of mitigation measures for significant effects on the environment. If asbestos is deemed present naturally, or in existing facilities, an Asbestos Hazard Dust Mitigation Plan would be prepared to ensure that adequate dust control and asbestos hazard mitigation measures are implemented during project construction. Implementation of the following mitigation measure would ensure that this potential impact is reduced to a **less-than-significant** level.

MITIGATION MEASURES

Mitigation Measure 3.3-1: Prior to construction of RTP projects, the implementing agency should assess the site for the presence of asbestos including naturally occurring asbestos, and asbestos from structures such as road base, bridges, and other structures. In the event that asbestos is present, the implementing agency should comply with applicable state and local regulations regarding asbestos, including ARB's asbestos airborne toxic control measure (ATCM) (Title 17, CCR § 93105 and 93106), to ensure that exposure to construction workers and the public is reduced to an acceptable level. This may include the preparation of an Asbestos Hazard Dust Mitigation Plan to be implemented during construction activities.

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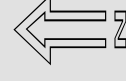
Legend



Air Basin



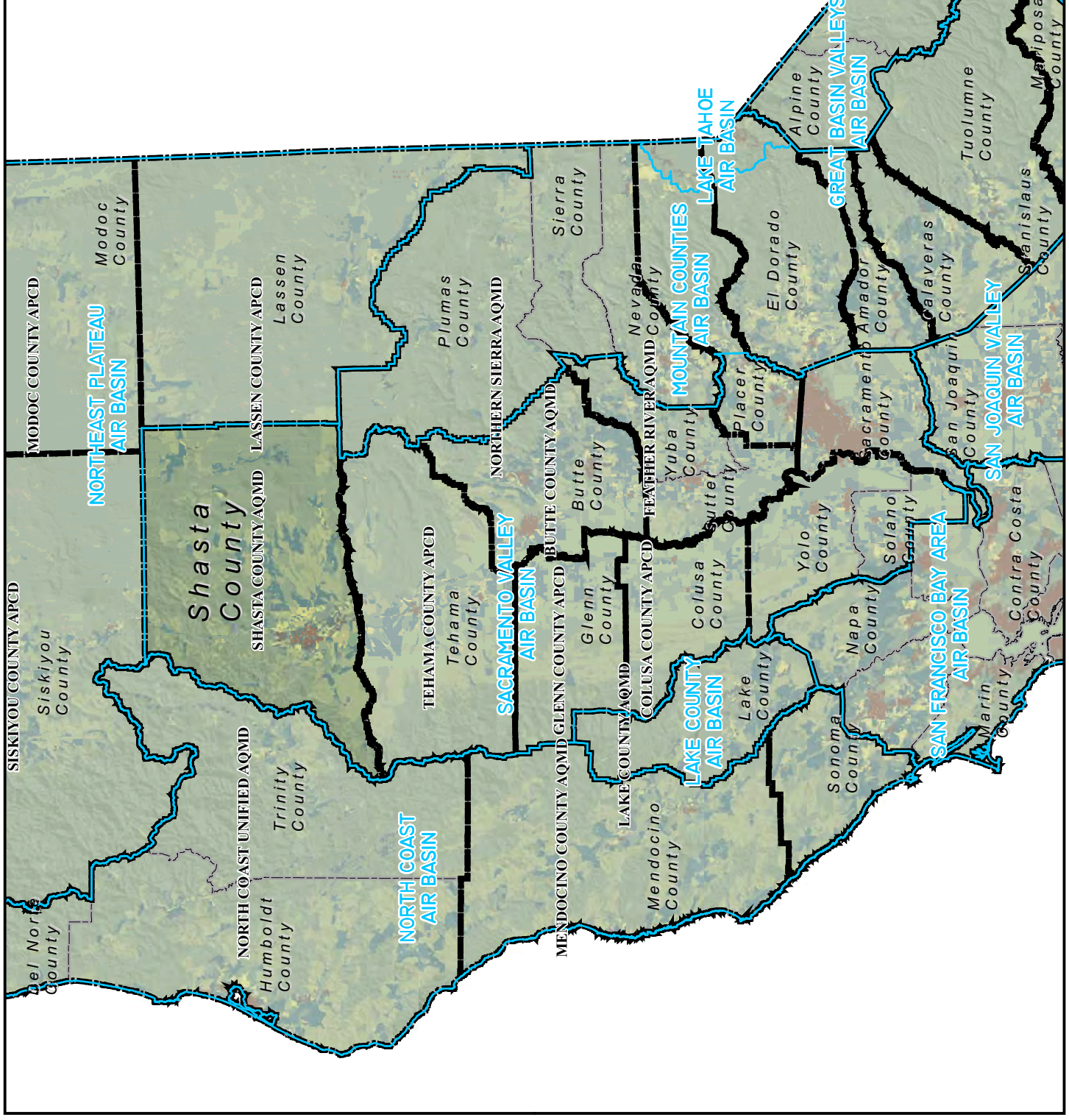
Air District



0 5 10 20
Miles

Figure 3.3-1

AIR BASINS AND AIR DISTRICTS



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This section describes the regulatory setting, regional biological resources, and biological resource impacts that are likely to result from project implementation. There were no NOP comments regarding biological resources received during the public review period. The Department of Fish and Game was present at the scoping meeting and provided verbal comments and suggestions. The scoping meeting minutes are attached in Appendix A. Information in this section is derived primarily from the following:

- Scoping Meeting, November 20, 2008 (California Department of Fish and Game);
- California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (Skinner, Mark W. and Bruce M. Pavlik, Eds. 2001);
- A Manual of California Vegetation (Sawyer, John and Todd Keeler-Wolf 1995);
- Terrestrial vegetation of California (Barbour and Major 1988);
- Jepson Manual: Higher Plants of California (Hickman, James C. 1993);
- "Special Plants List." Natural Diversity Database. (California Dept. of Fish and Game);
- "Special Animals List." Natural Diversity Database. (California Dept. of Fish and Game);
- "Special Vascular Plants, Bryophytes, and Lichens List." Natural Diversity Database. (California Dept. of Fish and Game).
- Army Corps of Engineers Wetland Delineation Manual. (ACOE 1987)

3.4.1 ENVIRONMENTAL SETTING

Shasta County encompasses approximately 3,785 square miles in north central California. The western part of the county is located in the northern Klamath Mountains, the eastern portion is in the Cascade Mountains and Modoc Plateau, and the south-central portion is in the Sacramento Valley. The climate varies by region, but generally the county has cool, wet winters and hot, dry summers. Precipitation is normally in the form of rain, with snow in the higher elevations, and ranges from approximately 20 to 80 inches per year.

GEOMORPHIC PROVINCES

California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Earth scientists recognize eleven provinces in California. Each region displays unique, defining features based on geology, faults, topographic relief and climate. These geomorphic provinces are remarkably diverse. They provide spectacular vistas and unique opportunities to learn about earth's geologic processes and history. Shasta County is located in portions of the Cascade Range, Klamath Mountains, Modoc Plateau, and Great Valley geomorphic provinces of California.

CASCADE RANGE. The Cascade Range, a chain of volcanic cones, extends through Washington and Oregon into California. It is dominated by Mt. Shasta, a glacier-mantled volcanic cone, rising 14,162 feet above sea level. The southern termination is Lassen Peak, which last erupted in the early 1900s. The Cascade Range is transected by deep canyons of the Pit River. The river flows through the range between these two major volcanic cones, after winding across interior Modoc Plateau on its way to the Shasta Lake.

KLAMATH MOUNTAINS. The Klamath Mountains have rugged topography with prominent peaks and ridges reaching 6,000-8,000 feet above sea level. In the western Klamath, an irregular drainage is incised into an uplifted plateau called the Klamath peneplain. The uplift has left successive benches with gold-bearing gravels on the sides of the canyons. The Klamath River follows a circuitous course from the Cascade Range through the Klamath Mountains. The province is considered to be a northern extension of the Sierra Nevada.

MODOC PLATEAU. The Modoc Plateau is a volcanic table land (elevation 4,000-6,000 feet above sea level) consisting of a thick accumulation of lava flows and tuff beds along with many small volcanic cones. Occasional lakes, marshes, and sluggishly flowing streams meander across the plateau. The plateau is cut by many north-south faults. The province is bound indefinitely by the Cascade Range on the west and the Basin and Range on the east and south.

GREAT VALLEY. The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). Great oil fields have been found in southernmost San Joaquin Valley and along anticlinal uplifts on its southwestern margin. In the Sacramento Valley, the Sutter Buttes, the remnants of an isolated Pliocene volcano, rise above the valley floor.

BIOREGIONS

The county is defined by three different bioregions including the Sacramento Valley, Klamath/North Coast, and Modoc. Figure 3.4-1 illustrates the boundaries of the bioregions within the region. A brief description of each bioregion is presented below.

SACRAMENTO VALLEY BIOREGION. The Sacramento Valley Bioregion is a watershed of the Sierra Nevada that encompasses the northern end of the great Central Valley, stretching from Redding to the southeast corner of Sacramento County. The bioregion is generally flat, and is rich in agriculture. The south-central portion of the County falls within this bioregion, which has a climate that is characterized by hot dry summers and cool wet winters. Oak woodlands, riparian forests, vernal pools, freshwater marshes, and grasslands provide the major natural vegetation of the bioregion. This bioregion is the most prominent wintering area for waterfowl, attracting significant numbers of ducks and geese to its seasonal marshes along the Pacific Flyway. Species include northern pintails, snow geese, tundra swans, sandhill cranes, mallards, grebes, peregrine falcons, heron, egrets, and hawks. Black-tailed deer, coyotes, river otters, muskrats, beavers, ospreys, bald eagles, salmon, steelhead, and swallowtail butterflies are some of the wildlife that are common in this bioregion.

KLAMATH/NORTH COAST. The Klamath/North Coast Bioregion in California's northwestern corner extends roughly one-quarter of the way down the 1,100-mile coast and east across the Coastal Range and into the Cascades. Much of this bioregion is covered by forest and is the state's wettest climate, with rainfall distribution varying widely from an average annual 38 to 80 or more inches. The western portion of Shasta County falls within this bioregion, which is considered "Inland" with

a climate that is drier with low rainfall in winter and hot, dry summers. Vegetation includes mixed conifer habitat of white fir, Douglas fir, ponderosa pine, Sierra lodgepole pine, incense cedar, sugar pine, red pine, Jeffrey pine, mountain hemlock, knobcone pine, western red cedar, red alder, redwood, tanoak, Pacific madrone, and chaparral. Wildlife in the bioregion includes deer, fox, black bear, mountain lion, California clapper rail, Aleutian Canada geese, Roosevelt elk, osprey, fisher, bank swallow, Coho salmon, king salmon, otis blue butterfly, bald eagle, Point Arena mountain beaver, Swainson's hawk, willow flycatcher, western sandpiper, and Oregon silverspot butterfly.

MODOC BIOREGION. The Modoc bioregion extends across California's northeast corner from Oregon to Nevada, and south to the southern border of Lassen County. Much of this sparsely populated bioregion is forests, mountains, high desert, valleys, piney woodlands, and volcanic uplands. The eastern portion of Shasta County falls within this bioregion. The climate features hot dry summers and cold moist winters with snow at higher elevations. Geography is varied in the Modoc Bioregion, with volcanic areas and wetlands to the west and high desert to the east. Juniper and sagebrush cover much of the eastern side of the Modoc Bioregion, while yellow and Jeffrey pine, white fir, mixed conifer, cedar, and aspen are common in the more mountainous and forested areas to the west. Wildlife include bald eagles, antelope, greater sandhill cranes, ospreys, Canada geese, black-crowned night herons, mule deer, muskrats, pronghorn, cinnamon teal, northern pintails, Swainson's hawks, sage grouse, rainbow trout, marmots, hummingbirds, great horned owls, black bears, coyotes, porcupine, Modoc sucker, goshawk, bank swallow, Shasta crayfish, sage grouse, and Lost River sucker. Rare plants include yellow arrowleaf, balsam root, long-haired star tulip, spiny milkwort, Ash Creek ivesia, Raven's lomatium, and woolly stenotus.

NATURAL COMMUNITIES

Natural communities provide the primary habitat for the biological resources in Shasta County. Agricultural communities also provides habitat for a variety of biological resources in the region. Sensitive habitats include those that are of special concern to resource agencies or those that are protected under CEQA, the Fish and Game Code, the Clean Water Act, or a conservation planning document/policy. Additionally, sensitive habitats are usually protected under specific policies from local agencies.

Shasta County is a biologically diverse part of the state. According to the California Wildlife Habitat Relationship System there are 43 wildlife habitat classifications in Shasta County out of 59 found in the state. These include: Alpine Dwarf-Shrub, Annual Grassland, Aspen , Barren , Bitterbrush, Blue Oak Woodland, Blue Oak-Foothill Pine, Chamise-Redshank Chaparral, Closed-Cone Pine-Cypress, Deciduous Orchard, Douglas Fir, Dryland Grain Crops, Eastside Pine, Eucalyptus, Fresh Emergent Wetland, Irrigated Grain Crops, Irrigated Hayfield, Irrigated Row and Field Crops, Jeffrey Pine, Juniper, Klamath Mixed Conifer, Lacustrine, Lodgepole Pine, Low Sage, Mixed Chaparral, Montane Chaparral, Montane Hardwood, Montane Hardwood-Conifer, Montane Riparian, Pasture, Perennial Grassland, Ponderosa Pine, Red Fir, Rice, Riverine, Sagebrush, Sierran Mixed Conifer, Subalpine Conifer, Urban, Valley Foothill Riparian, Valley Oak Woodland, Wet Meadow, and White Fir. Below is a brief description of each habitat that is found in Shasta County. Figure 3.4-2 illustrates the land cover types within Shasta County.

Conifer Forest

Closed-cone pine-cypress habitats are typically found on sites that are more rocky and infertile than the surrounding soils. Many stands are found on serpentine soils. Although, typically found at low elevations, due to the coastal distribution of much of this habitat type, interior stands may be found at elevations up to 6550 ft. Landforms are gentle to steep slopes where stands occur in interior California and coastal terraces or bluffs where distributed along coastal California.

Douglas fir habitat is typically found in hot, dry summers and cool, mild, wet winters. Temperatures range from 57-72 F in the summer to 32-46 F in the winter. Annual precipitation varies from 24-27 in, generally less than 15 percent falling during summer. Precipitation increases inland and at higher elevations. Snowfall ranges from 2 to 31 inches and rarely persists later than June. Topography is characterized by rugged, deeply dissected terrain and steep slopes, especially toward the south. Major soil types are sedimentary granitic, and Ultramafic parent materials of gabbro, peridotite, and serpentine.

Eastside pine habitat is found on coarse, well-drained basaltic soils, in a drier, colder setting than the Ponderosa pine habitat. All exposures are represented depending on elevation. Fine-textured soils favor pinyon-juniper habitats.

Jeffrey pine habitat occurs in a variety of physical settings throughout its extensive range. The tolerance of its dominant species to low temperatures allows the type to occupy the borders of topographic frost pockets and high cold ridges. It is commonly found on soils developed from granite and lava flows, but can also develop as a type on ultramafic soils. Its distribution in northern California west of the Sierra-Cascade crest is limited to such soils. Jeffrey pine is not restricted by aspect or slope.

Klamath mixed conifer habitat occupies a complex of mountain ranges in northern California which are characterized by rugged, deeply dissected terrain with steep slopes due to extensive glaciation. This area has a considerable amount of ultramafic parent material and soils with scattered areas of serpentinitic soils; it also overlays a very old and complex geological structure. Average slopes are 60 percent or more and valleys are narrow. Climatic conditions include warm, wet winters and hot dry summers with precipitation varying from 69 inches on the western (maritime) side to 24 inches on the eastern (continental) side. Snowfall is moderate, ranging from 2 to 60 in, with large amounts of snowfall occurring at the middle and high elevations where this habitat occurs.

Lodgepole pine habitat occupies an array of landscape units within its zone of adaptation. Areas of lodgepole pine in the red fir habitats are characterized by poor drainage and often a cooler microsite. Lodgepole pine is commonly associated with meadows, and it typically occupies areas with at least seasonally wet soils. Annual precipitation in the lodgepole pine zone averages from 30 to 40 inches annually, mostly as snow. The growing season is short, averaging 2 to 3 months.

Montane hardwood-conifer habitat generally occurs on coarse, well drained mesic soils, in mountainous terrain with narrow valleys. Slopes average approximately 57 percent with all aspects encountered. Winters are cool and wet; summers are hot and dry. Northern California

Montane Hardwood-Conifer sites have less rainfall and fog than Redwood or Mixed Conifer habitats. In southern California, this habitat is found at higher elevations, and in moist canyons. Average rainfall is 25 to 65 in, with some fog. The growing season is 7 to 11 months, with 200 to 300 frost-free days.

Ponderosa pine habitat is found on suitable mountain and foothill sites throughout California except in the immediate area of San Francisco Bay, in the north coast area, south of Kern County in the Sierra Nevada and east of the Sierra Nevada Crest. Ponderosa pine is found on all aspects, depending on soils and location within the local elevational range. Mean annual temperature is generally less than 55 F and precipitation is greater than 33 inches except in southern California. Less than one-third of the precipitation is snowfall.

Red fir habitats are found on frigid soils over a wide range of topography exclusive of very wet sites. Annual precipitation ranges from 40 to 50 inches per year, primarily as snow that forms packs up to 15 feet in winter. Summers are dry, limiting tree growth to seasonally available soil moisture.

Sierran mixed conifer habitat is found in varied soils, derived primarily from Mesozoic granitic, Paleozoic sedimentary and volcanic rocks, and Cenozoic volcanic rocks. Serpentine soils, found primarily in the northern mixed conifer zone, support a number of endemic plants. Soils are deep to shallow. Fissures and cracks in granitic parent material often support forest growth, even where soil development is shallow. Temperatures range from 40 to 96 F in summer and 10 to 60 F in winter and decrease with elevation. The growing season ranges between 90 and 330 days in the north with 40 to 200 frost-free days, and 180 to 365 days in the south with 180 frost-free days. Precipitation ranges from 30 to 90 inches per year, from October to May, with increasing snowfall as elevation increases.

Subalpine conifer habitat occupies extremely harsh environments. Soils are generally thin and of low quality coarse sand, gravel, volcanic debris, and rocks derived from decomposing parent material. Most stands of subalpine conifers are on dry, well-drained soils, although they can be found on rocky, moist moraines. Precipitation averages 30 to 50 inches. Heavy snow cover is usual. Mean summer temperatures range from 54 to 66 F, and winter temperatures range from 3 to 21 F. The growing season lasts only 7 to 9 weeks and killing frosts are possible during all months. Intense winds are characteristic of these habitats.

White fir habitats are found on a variety of soils developed from different parent material, including volcanic and igneous rocks, granitics, various metamorphics, and sedimentary material. Soils are coarse textured, well-drained, have poorly developed profiles, are often rocky, and are cold, with mean annual temperatures from 32 -50 F. Cooler north- and east-facing slopes are the most common sites throughout the state. Precipitation is between 30-70 inches mostly in the form of snow. Almost all precipitation falls between October and May.

Conifer Woodland

Juniper habitats occur on virtually all exposures and slopes but are common on level to gently rolling topography. Junipers may be found on soils ranging from rocky and well to drier or poorly

drained. Supporting soils may be from many parent materials; effective moisture is more important to junipers than soil type. Climates within the range of Juniper habitats are semi-arid with hot, dry summers and cold winters. Temperatures range from summer highs of 105 F with a mean July temperature of 66 F to lowest winter lows of 36 F. About 130 days per year are frost-free; generally, July and August are frost-free. Precipitation ranges from 10 to 20 inches. About two-thirds of the precipitation falls in winter as snow; the remainder falls as rain in spring and fall.

Hardwood Woodland

Blue oak-foothill pine habitat occurs in a typically Mediterranean climate with hot, dry summers and cool, wet winters. Most precipitation falls as rain from November through April, averaging 20 to 40 inches within the primary range of blue oak. The frost-free growing season ranges from 150 to 300 days, with winter temperatures averaging 30 F and summer temperatures averaging 90 F. Soils are from a variety of generally well-drained parent materials, ranging from gravelly loam through stony clay loam, with soils commonly rich in rock fragments.

Blue oak woodland habitat is usually associated with shallow, rocky, infertile, well-drained soils from a variety of parent materials. The climate is Mediterranean, with mild wet winters and hot dry summers. Average annual precipitation varies from 20 to 40 inches over most of the range, although extremes are noted from 10 to 60 inches. Mean temperatures range from 75-96 F in summer to 29-42 F in winter. The growing season ranges from 6 months in the north to the entire year in the south, with 175 to 365 frost-free days.

Eucalyptus habitats have been extensively planted throughout the state since their introduction in 1856. They are found in highly variable site characteristics, but generally on relatively flat or gently rolling terrain, occasionally in the foothills. Climatic conditions are typically Mediterranean, characterized by hot, dry summers and cool, mild winters. Precipitation ranges from approximately 12 to 24 inches. Temperature regimes range from a 43 F to 73 F.

Valley oak woodland habitat occurs in a wide range of physiographic settings but is best developed on deep, well-drained alluvial soils, usually in valley bottoms. Most large, healthy valley oaks are probably rooted down to permanent water supplies. Stands of valley oaks are found in deep sills on broad ridge-tops in the southern Coast Range. Where this type occurs near the coast, it is usually found away from the main fog zone. The climate is Mediterranean, with mild, wet winters and hot, dry summers.

Valley-foothill riparian habitats are found in valleys bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. They are generally associated with low velocity flows, flood plains, and gentle topography. Valleys provide deep alluvial soils and a high water table. The substrate is coarse, gravelly or rocky soils more or less permanently moist, but probably well aerated. Frost and short periods of freezing occur in winter (200 to 350 frost-free days). This habitat is characterized by hot, dry summers, mild and wet winters. Temperatures range from 75 to 102 F in the summer to 29 to 44 F in the winter. Average precipitation ranges from 6-30 inches, with little or no snow. The growing season is 7 to 11 months.

Hardwood Forest

Aspen stands occur at high elevations on a variety of sites and soils. A high water table during the early part of the growing season is required, and their presence is an indicator of moist conditions. Sites with permanent high water tables are occupied by willows, with which aspens may form ecotones. Soils range from shallow stony soils and loamy sands to heavy clays. Best development occurs on well-drained sandy to silt loam soils. The climate is rigorous long winters with heavy snows and very cold temperatures.

Montane hardwood habitat is found on a wide range of slopes, especially those that are moderate to steep. Soils are for the most part rocky, alluvial, coarse textured, poorly developed, and well drained. Soil depth ranges from shallow to deep. Summer temperatures vary between 68 and 77 F and in winter vary from 37 to 45 F. Frost-free days range from 160 to 230. Annual precipitation varies from 110 inches in the northern Coast Range to 36 inches in the mountains of southern California.

Montane Riparian areas are found associated with montane lakes, ponds, seeps, bogs and meadows as well as rivers, streams and springs. Water may be permanent or ephemeral. The growing season extends from spring until late fall, becoming shorter at higher elevations. Most tree species flower in early spring before leafing out.

Shrub

Alpine Dwarf-Shrub areas are found above timberline on all aspects, slopes, and ridge lines, so the physical environment tends to be cold, dry, and windy. In the northern portion of California, this habitat is cold with a brief summer growing season. This habitat is subject to intense solar radiation and freezing nights in summer. It is subject to severe winds and very low temperatures in winter on windward slopes, which are often blown clear of snow. Protected slopes often have persistent snowdrifts until midsummer or later. The substrate is quite rocky with little soil formation and excellent drainage. Plants in this habitat are subject to desiccation by midsummer after meltwater disappears.

Bitterbrush is found on flats and slopes with deep, well-drained, rapidly permeable soils having a slightly acid reaction. Precipitation in bitterbrush types varies from about 30 to 90 cm (12 to 35 in) and is mostly snow in the winter. Desert bitterbrush sites receive about 25 cm (10 in) or less and snow is important only at the northern end of the range and at higher elevations. For antelope bitterbrush the summers are warm and the winters very cold. For desert bitterbrush the summers are hot and the winters somewhat milder. Basins and lowlands that have restricted drainage or alkali give way to low sagebrush, silver sagebrush or one of the more moisture tolerant species.

Chamise-Redshank Chaparral is found where soils are thin with little accumulation of organic. Chamise may be a dominant shrub on some serpentine sites and is most common on south and west facing slopes, while redshank is found on all aspects. Chamise-Redshank Chaparral is found in a Mediterranean climate; rainfall is 38 to 63 cm (15 to 25 in), less than 20 percent of total precipitation falls in summer, and winters are mild. The predominant land forms are steep slopes and ridges.

Low Sage occurs in areas with cold, harsh winters and hot, dry summers. Precipitation generally ranges from 20 to 46 cm (8 to 18 in), falling mostly as snow from December through March. Mean summer maximum temperatures range from 28 to 35 C (83 to 95 F); mean winter minima range from 13 to 3 C (8 to 27 F). Stands of low sagebrush are usually found on shallow soils with impaired drainage in the transition zone between the wetter bottom and open timber on the mountainsides. The type also occurs on terraces with hardpan or heavy clay soils.

Mixed Chaparral occurs on all aspects, but at lower elevations, it generally is found on north-facing slopes. Generally, it occurs on steep slopes and ridges with relatively thin, well-drained soils. Soils can be rocky, sandy, gravelly or heavy. The Mediterranean climate is characterized by cool, wet winters and hot, dry summers. Total rainfall is 38 to 63 cm (15 to 25 in) with less than 20 percent falling during the summer.

Montane chaparral can be found on shallow to deep soils, on all exposures, and from gentle to relatively steep slopes. It may dominate on more xeric sites, but occurs locally throughout the coniferous forest zone. Generally, climate is like that associated with the coniferous forest zone, cold winter temperatures with substantial precipitation. Summers are typically hot and dry. In the northern portion of the state, montane chaparral is found between 914 to 2743 m (3000-9000 ft).

Sagebrush occurs at a wide range of middle and high elevations. It generally occupies dry slopes and flats from about 500 m (1600 ft) to 3200 (10,500 ft) in elevation. At lower elevations and on drier sites, it gives way to such species as saltbrush, greasewood, creosote bush, and winterfat. At mid-elevations and on more mesic sites the habitat meets bitterbrush, curlleaf mountain mahogany, and western serviceberry. At high elevations it intergrades with Ponderosa Pine and even with Aspen habitat types.

Herbaceous

Annual Grassland habitat occurs mostly on flat plains to gently rolling foothills. Climatic conditions are typically Mediterranean, with cool, wet winters and dry, hot summers. The length of the frost free season averages 250 to 300 days (18 to 21 fortnights). Annual precipitation is highest in northern California.

Perennial Grassland habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. The length of the frost free season averages 250 to 300 days (18 to 21 fortnights). Annual precipitation is highest in northern California.

Wet meadows occur where water is at or near the surface most of the growing season, following spring runoff. Hydrologically, they occupy lotic, sunken concave, and hanging sites. Lotic sites are those with main input flow (other than precipitation) from upstream sources; at least early in the growing season, water flows across them at depths of 4-8 inches. Downstream runoff is the principal output flow. Lotic sites are topographic basins but have a slight slope, which permits drainage of surface water. Percolation is nil due to the saturated or slowly permeable nature of underlying materials. Sunken concave sites also receive water input from upstream sources, but evapotranspiration is the main output flow. Percolation is slowed by heavy-textured soils and/or

shallow bedrock; however, in contrast to lotic and hanging sites, soil of sunken concave sites may dry to considerable depth by fall. Hanging sites are watered by hydrostatic flows as springs or seeps. They frequently occur on rather steep slopes, and downstream runoff is the main output flow. Surface flows, although constant, are usually no more than 0.4 inches deep.

Fresh emergent wetland habitats occur on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded. They are most common on level to gently rolling topography. They are found in various depressions or at the edge of rivers or lakes. Soils are predominantly silt and clay, although coarser sediments and organic material may be intermixed. In some areas organic soils (peat) may constitute the primary growth medium. Climatic conditions are highly variable and range from the extreme summer heat to winter temperatures well below freezing.

Pastures are planted on flat and gently rolling terrain. Flat terrain is irrigated by the border and check method of irrigation, except on sandy soils or where water supplies are limited. Pastures established on sandy soils or hills are sprinklered. Hilly lands also use wild flooding; that is, ditches that follow the grade along ridges and hillsides, where water is released at selected points along the ditch. Climate influences the length of growing season. For example, pastures at higher elevations or in the north have a shorter growing season.

Other

There are a variety of other habitat types documented with Shasta County. These include aquatic habitats such as lacustrine and riverine, and agricultural habitats such as deciduous orchard, dryland grain crops, irrigated grain crops, irrigated hayfields, irrigated row and field crops, and rice. Additionally, Shasta County contains areas that are barren, and/or classified as urban.

SALMON AND STEELHEAD TROUT FISHERIES

Salmon and steelhead trout are anadromous fish species that are present in the Sacramento River Basin. Anadromous fish are born in freshwater rivers and streams, and then migrate to the Pacific Ocean to grow and mature before returning to their place of origin to spawn. The Sacramento River system produces most of the Chinook salmon (*Oncorhynchus tshawytscha*) and a large percentage of the steelhead trout (*Oncorhynchus mykiss*) in California.

Anadromous fish resources once flourished naturally in the Sacramento River system, but as a result of habitat destruction from water storage/diversion projects, mining, sedimentation, and bank degradation, they are protected species under the Endangered Species Act. The Sacramento River system has historically supported steelhead trout and four distinct spawning runs of Chinook salmon: fall, late fall, winter, and spring. The salmon runs have declined since the late 1800s and are now characterized as episodic. The Central Valley steelhead was federally listed as threatened in 2003. The fall/late fall-run salmon is a federal and state species of concern, and a candidate species for federal listing. The spring-run Chinook salmon population is listed as threatened by both federal and state agencies. Winter-run Chinook salmon population is listed as a federally and state endangered species. Populations of Central Valley Steelhead and Chinook salmon are supported by hatcheries within the Sacramento River Basin.

Water remaining behind the dams by the start of the spawning run in October is often warmed by summer heat. Warm water and low water elevation are harmful to most coldwater anadromous fish species. Riparian vegetation is critical for the maintenance of high quality fish habitat. It provides cover, controls temperature, stabilizes stream banks, provides food, and buffers streams from erosion and impacts of adjacent land uses. Riparian vegetation also affects stream depth, current velocity, and substrate composition. The decline of riparian communities in California is a factor contributing to the loss of high quality fish habitat.

Coleman Nation Fish Hatchery

In 1942, the Coleman National Fish Hatchery was established near the town of Anderson on the north bank of Battle Creek approximately five miles east of the Sacramento River. Chinook Salmon and Steelhead Trout returning from the ocean, travel up the Sacramento River and Battle Creek where they are enticed by water flow into the fish hatchery. Eggs are collected, fertilized and incubated artificially until they hatch. The young fish are then raised in ponds at the hatchery until they are sufficient size to be released and return to the ocean. Long term production goals for Coleman NFH Complex are as follows: 12,000,000 Fall Chinook Salmon, 1,200,000 Late Fall Chinook Salmon, 1,500,000 Winter Chinook Salmon, and 600,000 Steelhead Trout annually.

Other Hatcheries

CRYSTAL LAKE STATE FISH HATCHERY was formerly named Burney Creek Hatchery, and was constructed by PG&E on the Burney Creek arm of Lake Britton, ½ mile downstream from Burney Falls. Hatchery operations began in 1927 with 100 troughs capable of raising a million fingerling trout. The hatchery was modernized in 1976 and today annually raises 1,500,000 fish weighing approximately 500,000 pounds.

MT. SHASTA STATE FISH HATCHERY was established in 1888 and is the oldest operating fish hatchery west of the Mississippi. The hatchery is located near the headwater springs of the Sacramento River and is one of three major broodstock hatcheries in the state. The hatchery produces five to 10 million trout a year and stocks Northern California's lakes and streams.

DARRAH SPRINGS STATE FISH HATCHERY was established in 1941 by the State of California on what was originally Simon Darrah's homestead. When built, it was the largest trout hatchery in California. The hatchery raises several varieties of trout, including rainbow, Lahonton, cut throat and Eagle Lake trout. The hatchery supplies an average of 430,000 lbs of trout annually to waters throughout the state of California. The brood fish are kept at the facility but are sent to Mt. Shasta Hatchery to spawn.

MIGRATORY DEER

Shasta County has ten deer winter ranges which support migratory deer herds as well as other associated flora and fauna species. Shasta County's deer include both resident and migratory populations. Although Columbian black-tailed deer (*Odocoileus hemionus columbianus*) and mule deer (*Odocoileus hemionus*) are not recognized as a special-status species, preserving deer habitat and migration corridors is of concern to the California Department of Fish and Game (CDFG) in

many foothill and mountainous regions of California currently experiencing urbanization. The CDFG has expressed concern regarding problems confronting the Day Bench deer herd. Based on a two-year study completed in 1989 of deer movement, migration corridors, fall and spring holding areas, summer ranges, and seasonal habitat requirements, the CDFG has developed land use recommendations for each of the three counties (Shasta, Lassen, Modoc) which support this large herd.

The Eastern Tehama deer herd is the largest migratory deer herd in the county and is considered the most extensive range in the state. The range includes portions of Tehama, Plumas, Lassen, Shasta, and Butte counties. Winter range is approximately 520,000 acres; migratory and summer ranges total approximately 920,000 acres and migration routes to and from seasonal ranges are the longest in the state, covering a distance of 50 to 100 miles.

Deer migration is a result of annual weather patterns. The first winter storms of the year will initiate the herd migration to a lower elevation. The herds will generally hold as high as possible until the first major snowstorm forces the deer to migrate lower. The deer migration reverses in late winter to early spring when weather conditions begin to warm and the snow begins to melt at higher elevations.

SPECIAL-STATUS SPECIES

The following discussion is based on a background search of special-status species that are documented in the California Natural Diversity Database (CNDDDB), the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants, and the U.S. Fish and Wildlife Service's (USFWS) endangered and threatened species lists. The background search was regional in scope and focused on the documented occurrences within the region.

The CNDDDB search revealed documented occurrences of the 155 special status species within the region, including: 85 plants, 30 invertebrates, five amphibians/reptiles, seven fish, nine birds, and 19 Mammals. Tables 3.4-1 provide a list of special-status species that are documented in the region, their habitat, and current protective status.

TABLE 3.4-1: SPECIAL STATUS SPECIES PRESENT OR POTENTIALLY PRESENT IN SHASTA COUNTY (CNDDDB)

<i>SPECIES</i>	<i>STATUS</i>	<i>HABITAT</i>
<i>Plants</i>		
<i>Ageratina shastensis</i> Shasta ageratina	--;;1B	CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST. ROCKY, SOMETIMES LIMESTONE. 400-1800M.
<i>Agrostis hendersonii</i> Henderson's bent grass	--;;3	VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS. LITTLE INFORMATION EXISTS; MOIST PLACES IN GRASSLAND OR VERNAL POOL HABITAT. 70-305M.
<i>Anisocarpus scabridus</i> scabrid alpine tarplant	--;;1B	UPPER MONTANE CONIFEROUS FOREST. OPEN STONY RIDGES, METAMORPHIC SCREE SLOPES OF MOUNTAIN PEAKS, AND CLIFFS IN OR NEAR RED FIR FOREST. 1650-2300M.
<i>Anomobryum julaceum</i> slender silver moss	--;;2	BROADLEAFED UPLAND FOREST, LOWER MONTANE CONIFEROUS FOREST, NORTH COAST CONIFEROUS FOREST. MOSS WHICH GROWS ON DAMP ROCKS AND SOIL; USUALLY SEEN ON ROADCUTS. 100-1000M.
<i>Arctostaphylos klamathensis</i> Klamath manzanita	--;;1B	CHAPARRAL (MONTANE), UPPER MONTANE CONIFEROUS FOREST, SUBALPINE CONIFEROUS FOREST. ROCKY OUTCROPS AND SLOPES, SOMETIMES ON SERPENTINE. 1600-2000M.
<i>Asarum marmoratum</i>	--;;2	LOWER MONTANE CONIFEROUS FOREST. UNDERSTORY OF CONIFEROUS FORESTS.

SPECIES	STATUS	HABITAT
marbled wild-ginger		200-1800M.
<i>Asplenium septentrionale</i> northern spleenwort	--;;2	CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST, SUBALPINE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOREST. FORMS GRASS-LIKE TUFTS IN GRANITIC ROCK CREVICES. 1615-3350M.
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	--;;1B	GREAT BASIN SCRUB, LOWER MONTANE CONIFEROUS FOREST, PINYON AND JUNIPER WOODLAND. VOLCANIC OR CLAY SOIL; OFTEN GRAVELLY OR ROCKY. 1300-1930M.
<i>Botrychium ascendens</i> upswept moonwort	--;;2	LOWER MONTANE CONIFEROUS FOREST. GRASSY FIELDS, CONIFEROUS WOODS NEAR SPRINGS AND CREEKS. 1500-2060M.
<i>Botrychium crenulatum</i> scalloped moonwort	--;;2	BOGS AND FENS, MEADOWS, LOWER MONTANE CONIFEROUS FOREST, FRESHWATER MARSH. MOIST MEADOWS, NEAR CREEKS. 1500-2670M.
<i>Botrychium minganense</i> mingan moonwort	--;;2	LOWER MONTANE CONIFEROUS FOREST. CREEKBANKS IN MIXED CONIFER FOREST. 1500-2275M.
<i>Botrychium montanum</i> western goblin	--;;2	LOWER MONTANE CONIFEROUS FOREST. CREEKBANKS IN OLD-GROWTH FOREST. 1500-1830M.
<i>Botrychium pinnatum</i> northwestern moonwort	--;;2	LOWER MONTANE CONIFEROUS FOREST, MEADOWS, UPPER MONTANE CONIFEROUS FOREST. CREEKBANKS. 1770-2010M.
<i>Botrychium virginianum</i> rattlesnake fern	--;;2	BOGS AND FENS. 1300M.
<i>Calochortus</i> <i>longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	--;;1B	MEADOWS, LOWER MONTANE CONIFEROUS FOREST. IN WET MEADOWS OR GRASSY AREAS ALONG DRAINAGES WITHIN FOREST. CLAY SOILS. 965-1900M.
<i>Calochortus syntrophus</i> Callahan's mariposa-lily	--;;3	CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST. 525M.
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning-glory	--;;1B	LOWER MONTANE CONIFEROUS FOREST. DRY, MOSTLY OPEN SLOPES. 600-1200M.
<i>Campanula shetleri</i> Castle Crags harebell	--;;1B	LOWER MONTANE CONIFEROUS FOREST. IN PROTECTED ROCK CREVICES IN GRANITE. 1210-1830M.
<i>Carex comosa</i> bristly sedge	--;;2	MARSHES AND SWAMPS. LAKE MARGINS, WET PLACES; SITE BELOW SEA LEVEL IS ON A DELTA ISLAND. -5-1005M.
<i>Carex lasiocarpa</i> woolly-fruited sedge	--;;2	BOGS AND FENS, MARSHES AND SWAMPS. SPHAGNUM BOGS, FRESHWATER MARSH, AND PROBABLY OTHER MOSS-DOMINATED HABITATS AS WELL. 1800-2100M.
<i>Carex scoparia</i> pointed broom sedge	--;;2	GREAT BASIN SCRUB. WET, OPEN PLACES. 130-1000M.
<i>Carex vulpinoidea</i> brown fox sedge	--;;2	MARSHES AND SWAMPS, RIPARIAN WOODLAND. WET PLACES. 30-1200M.
<i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> pink creamsacs	--;;1B	CHAPARRAL, MEADOWS AND SEEPS, VALLEY AND FOOTHILL GRASSLAND. OPENINGS IN CHAPARRAL OR GRASSLANDS. ON SERPENTINE. 20-900M.
<i>Clarkia borealis</i> ssp. <i>arida</i> Shasta clarkia	--;;1B	CISMONTANE WOODLAND. FLAT GROUND. 515M.
<i>Clarkia borealis</i> ssp. <i>borealis</i> northern clarkia	--;;1B	CISMONTANE WOODLAND. FLAT GROUND. 515M.
<i>Collomia larsenii</i> talus collomia	--;;2	ALPINE BOULDER AND ROCK FIELD, CLOSED CONE CONIFEROUS FOREST, SUBALPINE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOR. IN LOOSE VOLCANIC MATERIAL ON HIGH VOLCANIC PEAKS, RED RYOLITE SCARIA SCREE SLOPES, TALUS, LOOSE GRAVEL. 2195-3500M.
<i>Cordylanthus tenuis</i> ssp. <i>pallidus</i> pallid bird's-beak	--;;1B	LOWER MONTANE CONIFEROUS FOREST. GRAVELLY OPENINGS IN BRUSH PATCHES NEXT TO CONIFEROUS FOREST; ON VOLCANIC ALLUVIUM. 690-1600M.
<i>Cryptantha crinita</i> silky cryptantha	--;;1B	CISMONTANE WOODLAND, VALLEY FOOTHILL GRASSLAND, LOWER MONTANE CONIFEROUS FOREST, RIPARIAN FOREST, RIPARIAN WOODLAND.

3.4 BIOLOGICAL RESOURCES

2010

SPECIES	STATUS	HABITAT
		IN GRAVELLY STREAM BEDS. 85-220M.
<i>Draba aureola</i> golden alpine draba	--;;1B	ALPINE BOULDER AND ROCK FIELD, SUBALPINE CONIFEROUS FOREST. ON SERPENTINE OR VOLCANIC OUTCROPS. 2000-3355M.
<i>Drosera anglica</i> English sundew	--;;2	BOGS AND FENS, MEADOWS. 1300-2000M.
<i>Epilobium oreganum</i> Oregon fireweed	--;;1B	BOGS AND FENS, MEADOWS, LOWER MONTANE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOREST. IN AND NEAR SPRINGS AND BOGS; AT LEAST SOMETIMES ON SERPENTINE. 500-2610M.
<i>Epilobium siskiyouense</i> Siskiyou fireweed	--;;1B	SUBALPINE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOREST. ON SLOPES IN GRAVELLY, SERPENTINE SOILS. 1700-2500M.
<i>Eriastrum brandegeae</i> Brandegee's eriastrum	--;;1B	CHAPARRAL, CISMONTANE WOODLAND. ON BARREN VOLCANIC SOILS; OFTEN IN OPEN AREAS. 345-1000M.
<i>Erigeron nivalis</i> snow fleabane daisy	--;;2	ALPINE BOULDER AND ROCK FIELD, MEADOWS AND SEEPS, SUBALPINE CONIFEROUS FOREST. ON VOLCANIC ROCK OUTCROPS IN CRACKS AND CREVICES. 1955-2900M.
<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i> pyrola-leaved buckwheat	--;;2	ALPINE BOULDER AND ROCK FIELD. SANDY OR GRAVELLY SITES; ON PUMICE. 1675-3200M.
<i>Eriogonum ursinum</i> var. <i>erubescens</i> blushing wild buckwheat	--;;1B	LOWER MONTANE CONIFEROUS FOREST, MONTANE CHAPARRAL. ROCKY SITES INCLUDING SCREE AND TALUS. 1600-1900M.
<i>Erythronium citrinum</i> var. <i>roderickii</i> Scott Mountains fawn lily	--;;1B	LOWER MONTANE CONIFEROUS FOREST. SERPENTINE. 815-1220M.
<i>Erythronium klamathense</i> Klamath fawn lily	--;;2	UPPER MONTANE CONIFEROUS FOREST, MEADOWS AND SEEPS. 1200-1850M.
<i>Fritillaria eastwoodiae</i> Butte County fritillary	--;;3	CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST. USUALLY ON DRY SLOPES BUT ALSO FOUND IN WET PLACES; SOILS CAN BE SERPENTINE, RED CLAY, OR SANDY LOAM. 40-1500M.
<i>Gratiola heterosepala</i> Boggs Lake hedge- hyssop	--;CE;1B	MARSHES AND SWAMPS (FRESHWATER), VERNAL POOLS. CLAY SOILS; USUALLY IN VERNAL POOLS, SOMETIMES ON LAKE MARGINS. 5-2400M.
<i>Harmonia doris-nilesiae</i> Niles' harmonia	--;;1B	LOWER MONTANE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND. SERPENTINE BARRENS. 650-1660M.
<i>Harmonia stebbinsii</i> Stebbins' harmonia	--;;1B	CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST. ULTRAMAFIC SOILS, OFTEN ALONG ROADS. 400-1580M.
<i>Hierochloa odorata</i> nodding vanilla-grass	--;;2	MEADOWS AND SEEPS. WET SITES. 1500-1895M.
<i>Hulsea nana</i> little hulsea	--;;2	ALPINE BOULDER AND ROCK FIELD, SUBALPINE CONIFEROUS FOREST. ROCKY OR GRAVELLY SITES; ON VOLCANIC SUBSTRATES. 1920-3355M.
<i>Iliamna bakeri</i> Baker's globe mallow	--;;4	CHAPARRAL, PINYON-JUNIPER WOODLAND. ROCKY LOAM OR VOLCANIC SOILS. 1000-2500M.
<i>Ivesia longibracteata</i> Castle Crag ivesia	--;;1B	LOWER MONTANE CONIFEROUS FOREST. CREVICES IN GRANITIC CLIFFS. ABOUT 1365M.
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--;;1B	CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLANDS, VERNAL POOLS. VERNALLY MESIC SITES. SOMETIMES ON EDGES OF VERNAL POOLS. 30-1020M.
<i>Legenere limosa</i> legenere	--;;1B	VERNAL POOLS. MANY HISTORICAL OCCURRENCES ARE EXTIRPATED. IN BEDS OF VERNAL POOLS. 1-880M.
<i>Lewisia cantelovii</i> Cantelow's lewisia	--;;1B	BROADLEAFED UPLAND FOREST, LOWER MONTANE CONIFEROUS FOREST, CISMONTANE WOODLAND, CHAPARRAL. MESIC ROCK OUTCROPS AND WET CLIFFS, USUALLY IN MOSS OR CLUBMOSS; ON GRANITICS OR SOMETIMES ON SERPENTINE. 330-1340M.
<i>Limnanthes floccosa</i> ssp. <i>bellingiana</i> Bellinger's meadowfoam	--;;1B	MEADOWS AND SEEPS, CISMONTANE WOODLAND. VERNALLY WET SITES INCLUDING WET EDGES OF MEADOWS, AND DAMP, STONY FLATS. 285-1095M.

SPECIES	STATUS	HABITAT
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	--;;4	CHAPPARAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS. VERNALLY WET AREAS, DITCHES, AND PONDS. 60-1275M.
<i>Meesia triquetra</i> three-ranked hump moss	--;;4	BOGS AND FENS, MEADOWS AND SEEPS, UPPER MONTANE CONIFEROUS FOREST. MOSS GROWING ON MESIC SOIL. 1300-2500M.
<i>Mielichhoferia tehamensis</i> Lassen Peak copper moss	--;;1B	ALPINE BOULDER AND ROCK FIELD. MOSS ON VOLCANIC ROCK AND SOIL; MESIC SITES. 2500-2800M.
<i>Mimulus evanescens</i> ephemeral monkeyflower	--;;1B	GREAT BASIN SCRUB, LOWER MONTANE CONIFEROUS FOREST, PINYON-JUNIPER WOODLAND. GRAVELLY OR ROCKY SITES; VERNALLY MESIC. 1250-1700M.
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	--;;4	GREAT BASIN SCRUB, LOWER MONTANE CONIFEROUS FOREST, MEADOWS AND SEEPS, PINYON-JUNIPER WOODLAND. DAMP SITES IN MEADOWS, ALONG STREAMS AND ON MUDDY SOIL OF DESSICATING POOLS. VOLCANIC, CLAY SOILS. 500-1840M.
<i>Nemophila breviflora</i> Great Basin nemophila	--;;2	GREAT BASIN SCRUB, MEADOWS AND SEEPS, UPPER MONTANE CONIFEROUS FOREST. MESIC SITES. 1220-2410M.
<i>Neviusia cliftonii</i> Shasta snow-wreath	--;;1B	LOWER MONTANE CONIFEROUS FOREST, RIPARIAN WOODLAND. SHADED, NORTH-FACING, OR SHELTERED CANYONS. SOMETIMES ON LIMESTONE. MESIC AREAS. 300-500M.
<i>Orcuttia tenuis</i> slender orcutt grass	FT;CE;1 B	VERNAL POOLS. 30-1735M.
<i>Packera indecora</i> rayless mountain ragwort	--;;2	MEADOWS AND SEEPS. MESIC SITES. 1600-2000M.
<i>Parnassia cirrata</i> var. <i>intermedia</i> Cascade grass-of-Parnassus	--;;2	LOWER MONTANE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOREST, MEADOWS AND SEEPS, BOGS AND FENS. ROCKY SERPENTINE SOIL. 780-1980M.
<i>Paronychia ahartii</i> Ahart's paronychia	--;;1B	VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS, CISMONTANE WOODLAND. STONY, NEARLY BARREN CLAY OF SWALES AND HIGHER GROUND AROUND VERNAL POOLS. 30-510M.
<i>Penstemon filiformis</i> thread-leaved beardtongue	--;;1B	CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST, MEADOWS AND SEEPS. DRY STONY SITES, GRASSY OPENINGS, & MEADOWS, OFTEN ALONG TRAILS & LOGGING ROADS; SOMETIMES ON SERPENTINE. 450-2125M.
<i>Phacelia dalesiana</i> Scott Mountain phacelia	--;;4	LOWER MONTANE CONIFEROUS FOREST, MEADOWS, UPPER MONTANE CONIFEROUS FOREST, SUBALPINE CONIFEROUS FOREST. DRY MEADOWS OR OPENINGS IN CONIFEROUS FOREST COMMUNITY ON SERPENTINE SOIL. 1015-2105M.
<i>Phlox muscoides</i> squarestem phlox	--;;2	ALPINE BOULDER AND ROCK FIELD, SUBALPINE CONIFEROUS FOREST, GREAT BASIN SCRUB. OPEN ROCKY SLOPES. 1270-2700M.
<i>Picea engelmannii</i> Engelmann spruce	--;;2	UPPER MONTANE CONIFEROUS FOREST. SLOPES AND HILLSIDES, OFTEN ON ALLUVIAL TERRACE. 1060-2135M.
<i>Pogogyne floribunda</i> profuse-flowered pogogyne	--;;1B	VERNAL POOLS. HEAVY CLAY SOIL; SURROUNDING COMMUNITY OFTEN PINE/JUNIPER OR SAGEBRUSH SCRUB. 940-1745M.
<i>Potamogeton praelongus</i> white-stemmed pondweed	--;;2	MARSHES AND SWAMPS. DEEP WATER, LAKES. 1645-3000M.
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--;;2	MARSHES AND SWAMPS. PONDS, LAKES, STREAMS. 0-1860M.
<i>Potentilla newberryi</i> Newberry's cinquefoil	--;;2	MARSHES AND SWAMPS. RECEDING SHORELINES; DRYING MARSH MARGINS. 1290-2200M.
<i>Puccinellia howellii</i> Howell's alkali grass	--;;1B	MEADOWS AND SEEPS. MINERALIZED SOILS AROUND MINERAL SPRINGS AND SEEPS. ONE SITE KNOWN: 485M.
<i>Sagittaria sanfordii</i> Sanford's arrowhead	--;;1B	MARSHES AND SWAMPS. IN STANDING OR SLOW-MOVING FRESHWATER PONDS, MARSHES, AND DITCHES. 0-610M.
<i>Schoenoplectus</i>	--;;2	MARSHES AND SWAMPS. MONTANE LAKE MARGINS, IN SHALLOW WATER. 750-2335M.

SPECIES	STATUS	HABITAT
<i>subterminalis</i> water bulrush		
<i>Scutellaria galericulata</i> marsh skullcap	--;--;2	MARSHES AND SWAMPS, LOWER MONTANE CONIFEROUS FOREST, MEADOWS AND SEEPS. SWAMPS AND WET PLACES. 0-2100M.
<i>Sedum laxum</i> ssp. <i>flavidum</i> pale yellow stonecrop	--;--;4	BROADLEAFED UPLAND FOREST, CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST. SERPENTINE OR BASALT OUTCROPS. 755-2000M.
<i>Sedum paradisum</i> Canyon Creek stonecrop	--;--;1B	CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST, SUBALPINE CONIFEROUS FOREST, BROADLEAFED UPLAND FOREST. ROCK FACES, IN CREVICES OF EXPOSED GRANITE. 1060-1860M.
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> long-stiped campion	--;--;1B	CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST, UPPER MONTANE CONIFEROUS FOREST. 1000-2000M.
<i>Silene suksdorfii</i> Cascade alpine campion	--;--;2	ALPINE BOULDER AND ROCK FIELD, SUBALPINE CONIFEROUS FOREST. ROCKY, VOLCANIC SOILS. 2400-3100M.
<i>Smelowskia ovalis</i> var. <i>congesta</i> Lassen Peak smelowskia	--;--;1B	ALPINE BOULDER AND ROCK FIELD. STEEP LOOSE TALUS SLOPES. 2440-3100M.
<i>Smilax jamesii</i> English Peak greenbriar	--;--;1B	NORTH COAST CONIFEROUS FOREST, BROADLEAFED UPLAND FOREST?, LOWER MONTANE CONIFEROUS FOREST, MARSHES AND SWAMPS. ALONG STREAMS AND LAKE MARGINS. 665-1820M.
<i>Stachys palustris</i> ssp. <i>pilosa</i> hairy marsh hedge-nettle	--;--;2	GREAT BASIN SCRUB. MESIC SITES. 1200-1525M.
<i>Stellaria longifolia</i> long-leaved starwort	--;--;2	MEADOWS AND SEEPS, RIPARIAN WOODLAND. MOIST AREAS. 900-1830M.
<i>Stellaria obtusa</i> obtus starwort	--;--;4	UPPER MONTANE CONIFEROUS FOREST, LOWER MONTANE CONIFEROUS FOREST, RIPARIAN WOODLAND. STREAM- OR SEEP-SIDE IN CONIFER FOREST. 270-2365M.
<i>Thelypodium howellii</i> ssp. <i>howellii</i> Howell's thelypodium	--;--;1B	GREAT BASIN SCRUB, MEADOWS AND SEEPS. MOIST ALKALINE MEADOWS. 1200-1830M.
<i>Tuctoria greenei</i> Greene's tuctoria	--;--;1B	VERNAL POOLS, VALLEY AND FOOTHILL GRASSLAND. DRY BOTTOMS OF VERNAL POOLS IN OPEN GRASSLANDS. 30-1065M.
<i>Viburnum ellipticum</i> oval-leaved viburnum	--;--;2	CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST. 215-1400M.
Invertebrates		
<i>Anthicus antiochensis</i> Antioch Dunes anthicid beetle	--;CSC;--	EXTIRPATED FROM ANTIOCH DUNES BUT PRESENT IN SEVERAL LOCALITIES ALONG THE SACRAMENTO AND FEATHER RIVERS.
<i>Anthicus sacramento</i> Sacramento anthicid beetle	--;CSC;--	RESTRICTED TO SAND DUNE AREAS OF THE SACRAMENTO-SAN JOAQUIN DELTA. INHABIT SAND SLIPFACES AMONG BAMBOO AND WILLOW BUT MAY NOT DEPEND ON PRESENCE OF THESE PLANT SPECIES.
<i>Atractelmis wawona</i> Wawona riffle beetle	--;CSC;--	AQUATIC; FOUND IN RIFFLES OF RAPID, SMALL TO MEDIUM CLEAR MOUNTAIN STREAMS; 2000-5000 FT ELEV. STRONG PREFERCE FOR INHABITING SUBMERGED AQUATIC MOSSES
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	FT;--;--	ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS. INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.
<i>Colligyrus convexus</i> canary duskysnail	--;CSC;--	LIMNOCRENES & HYPORHEIC STREAMS IN THE PIT RIVER BASIN. MOST ABUNDANT ON THE UNDERSIDES OF COBBLES AND BOULDERS IN SHALLOW TO MODERATE DEPTHS.
<i>Cryptochia shasta</i> confusion caddisfly	--;CSC;--	CREEKS.
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	FT;--;--	OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA). PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.
<i>Ecclisomyia bilera</i>	--;CSC;--	NARROWLY DISTRIBUTED IN SPRINGS IN THE SIERRA NEVADA & CASCADES.

SPECIES	STATUS	HABITAT
Kings Creek ecclysiomyia caddisfly		
<i>Fluminicola seminalis</i> nugget pebblesnail	--;CSC;--	ORIGINALLY FROM NEAR MOUTH OF THE SACRAMENTO RIVER UPSTREAM INTO THE PIT RIVER. NOW EXTIRPATED FROM THE SACRAMENTO RIVER
<i>Gonidea angulata</i> western ridged mussel	--;CSC;--	PRIMARILY CREEKS & RIVERS & LESS OFTEN LAKES. ORIGINALLY IN MOST OF STATE, NOW EXTIRPATED FROM CENTRAL & SOUTHERN CALIF.
<i>Helisoma newberryi</i> Great Basin rams-horn	--;CSC;--	LARGER LAKES & SLOW RIVERS, INCLUDING LARGER SPRING SOURCES & SPRING-FED CREEKS. SNAILS BURROW IN SOFT MUD.
<i>Helminthoglypta hertleini</i> Oregon shoulderband	--;CSC;--	FOUND ON BASALTIC TALUS SLOPES; PARTIAL RIPARIAN ASSOCIATE. FOUND WHEREVER PERMANENT GROUND COVER/MOISTURE IS AVAILABLE. SOMEWHAT ADAPTED TO DRY CONDITIONS DURING A PORTION OF THE
<i>Hydroporus leechi</i> Leech's skyline diving beetle	--;CSC;--	AQUATIC.
<i>Juga acutiflosa</i> topaz juga	--;CSC;--	COLD, WELL-OXYGENATED, UNPOLLUTED WATER, GENERALLY WITH STABLE GRAVEL SUBSTRATE.
<i>Lanx patelloides</i> kneecap lanx	--;CSC;--	ENDEMIC TO UPPER SACRAMENTO RIVER SYSTEM. BREATH ENTIRELY THROUGH MANTLE, & ARE VERY SENSITIVE TO POLLUTED WATER. PREFERS FAST, COLD, WELL-OXYGENATED WATER AND COBBLE-BOULDER SUBSTRATE.
<i>Lavinia symmetricus</i> <i>mitrulus</i> Pit roach	--;CSC;--	FOUND IN THE UPPER PIT RIVER AND ITS TRIBUTARIES, AND TRIBUTARIES TO GOOSE LAKE. FOUND IN DEEP POOLS, BUT ALSO IN AREAS OF LOW FLOWS, MODERATE GRADIENTS, WARM TEMPERATURES AND MATS OF VEGETATION.
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	FE;--;--	INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER. POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.
<i>Linderiella occidentalis</i> California linderiella	--;CSC;--	SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS. WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TDS.
<i>Monadenia churchi</i> Klamath sideband	--;CSC;--	LIVES MOSTLY IN LIMESTONE OUTCROPS, CAVES, TALUS SLIDES, AND LAVA ROCKSLIDES, BUT ALSO OCCURS UNDER FOREST DEBRIS IN HEA
<i>Monadenia troglodytes</i> <i>troglydytes</i> Shasta sideband	--;CSC;--	ASSOCIATED WITH LIMESTONE TERRAIN IN SHASTA AND SISKIYOU COUNTIES. ASSOCIATED WITH PINE-OAK WOODLANDS.
<i>Pacifastacus fortis</i> Shasta crayfish	FE;CE;--	FOUND ONLY IN THE FALL AND HAT CREEK SUB-DRAINAGES OF THE PIT RIVER SYSTEM. INHABITS COOL, CLEAR WATER W/LOW GRADIENT AND TEMP VARIABILITY; SUBSTRATE IS VOLCANIC RUBBLE ON SAND/GRAVEL; LITTLE VEG.
<i>Parapsyche extensa</i> King's Creek parapsyche caddisfly	--;CSC;--	KNOWN ONLY FROM KING'S CREEK MEADOW, MT LASSEN NATIONAL PARK. HABITAT IN KING'S CREEK IS COBBLE, SAND, SMALL RUBBLE SUBSTRATUM, AND A GRASSY SHORELINE.
<i>Pyrgulopsis archimedis</i> Archimedes pyrg	--;CSC;--	SPRINGS AND STREAMS IN THE PIT AND KLAMATH BASINS. SNAILS TYPICALLY FOUND ON MUD SUBSTRATE.
<i>Pyrgulopsis rupinicola</i> Sucker Springs pyrg	--;CSC;--	ENDEMIC TO A SINGLE SITE IN THE PIT RIVER BASIN. FOUND IN A LARGE, COLD SPRING OUTFLOW WITH SLOW TO MODERATE CURRENT.
<i>Rhyacophila lineata</i> Castle Crags rhyacophilan caddisfly	--;CSC;--	CREEKS.
<i>Rhyacophila mosana</i> bilobed rhyacophilan caddisfly	--;CSC;--	KNOWN ONLY FROM CASTLE CRAGS STATE PARK, SHASTA COUNTY.
<i>Trilobopsis roperi</i> Shasta chaparral	--;CSC;--	FOUND WITHIN 100 METERS OF LIMESTONE OUTCROPPINGS AND TALUS SLOPES WITH SOME PROTECTIVE SHADE, OR CAVES WITH SHRUBS OR O
<i>Vespericola shasta</i> Shasta hesperian	--;CSC;--	PRIMARILY FOUND IN THE VICINITY OF SHASTA LAKE, UP TO 915 METERS ELEVATION. MOIST BOTTOM LANDS SUCH AS RIPARIAN AREAS, SPRINGS, SEEPS, MARSHES, AND IN THE MOUTHS OF CAVES.
Amphibians/Reptiles		
<i>Actinemys marmorata</i> <i>marmorata</i> northwestern pond	--;CSC;--	ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS. REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

3.4 BIOLOGICAL RESOURCES 2010

SPECIES	STATUS	HABITAT
turtle		
<i>Ascaphus truei</i> western tailed frog	--;CSC;--	OCCURS IN MONTANE HARDWOOD-CONIFER, REDWOOD, DOUGLAS-FIR & PONDEROSA PINE HABITATS. RESTRICTED TO PERENNIAL MONTANE STREAMS. TADPOLES REQUIRE WATER BELOW 15 DEGREES C.
<i>Hydromantes shastae</i> Shasta salamander	--;CT;--	COOL, WET RAVINES AND VALLEYS; DOMINANT VEGETATION IS OAK WOODLAND OR CHAPARRAL, ALSO PINE AND FIR; 100 TO 2550 FT ELEVATION. SEEKS COVER UNDER SURFACE OBJECTS SUCH AS LOGS, ROCKS, AND LIMESTONE SLABS OR TALUS, NEAR LIMESTONE FISSURES OR CAVES.
<i>Rana boylei</i> foothill yellow-legged frog	--;CSC;--	PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS. NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.
<i>Rana cascadae</i> Cascades frog	--;CSC;--	MONTANE AQUATIC HABITATS SUCH AS MOUNTAIN LAKES, SMALL STREAMS, AND PONDS IN MEADOWS; OPEN CONIFEROUS FORESTS. STANDING WATER REQUIRED FOR REPRODUCTION. HIBERNATES IN MUD ON THE BOTTOM OF LAKES AND PONDS DURING THE WINTER.
Fish		
<i>Cottus asperimus</i> rough sculpin	--;CT;--	RESTRICTED TO THE PIT RIVER ABOVE AND BELOW THE FALLS AT BURNEY, & THE HAT CREEK & FALL RIVER SUBDRAINAGES. FOUND MOSTLY ON THE MUDDY BOTTOMS OF LARGE STREAMS.
<i>Cottus klamathensis</i> <i>macrops</i> bigeye marbled sculpin	--;CSC;--	FOUND IN THE PIT RIVER SYSTEM & 3 TRIBUTARIES - HAT CREEK, BURNEY CREEK & THE FALL RIVER SYSTEM. LARGE, CLEAR, COOL SPRING-FED STREAMS, BUT SOMETIMES FOUND IN RESERVOIRS. PREFERS ABUNDANT VEGETATION & COARSE SUBSTRATE
<i>Mylopharodon conocephalus</i> hardhead	--;CSC;--	LOW TO MID-ELEVATION STREAMS IN THE SACRAMENTO-SAN JOAQUIN DRAINAGE. ALSO PRESENT IN THE RUSSIAN RIVER. CLEAR, DEEP POOLS WITH SAND-GRAVEL-BOULDER BOTTOMS & SLOW WATER VELOCITY. NOT FOUND WHERE EXOTIC CENTRARCHIDS PREDOMINANT
<i>Oncorhynchus mykiss</i> ssp. 2 McCloud River redband trout	--;CSC;--	LIVES IN SMALL SPRING FED TRIBUTARIES OF THE MC CLOUD RIVER. WATER TEMPERATURES ARE COLD (<15 C), FLOW IS 1-40 CFS.
<i>Oncorhynchus tshawytscha</i> spring-run chinook salmon	FT;CT;--	ADULT NOS. DEPEND ON POOL DEPTH & VOLUME, AMOUNT OF COVER, & PROXIMITY TO GRAVEL. WATER TEMPS >27 C IS LETHAL TO ADULTS FEDERAL LISTING REFERS TO POPS SPAWNING IN SACRAMENTO RIVER & TRIBUTARIES.
<i>Oncorhynchus tshawytscha</i> chinook salmon winter-run	FE;CE;--	SACRAMENTO RIVER BELOW KESWICK DAM. SPAWNS IN THE SACRAMENTO RIVER BUT NOT IN TRIBUTARY STREAMS. REQUIRES CLEAN, COLD WATER OVER GRAVEL BEDS WITH WATER TEMPERATURES BETWEEN 6 & 14 C FOR SPAWNING.
<i>Salvelinus confluentus</i> bull trout	FT;CE;--	IN CALIFORNIA, THEY WERE FOUND ONLY IN THE MC CLOUD RIVER IN SHASTA COUNTY. BOTTOM DWELLERS THAT REQUIRE DEEP POOLS IN COLD WATER RIVERS. NEED GRAVEL RIFFLES & LARGE VOLUME OF COLD WATER TO SPAWN.
Birds		
<i>Accipiter gentilis</i> northern goshawk	--;CSC;--	WITHIN, AND IN VICINITY OF, CONIFEROUS FOREST. USES OLD NESTS, AND MAINTAINS ALTERNATE SITES. USUALLY NESTS ON NORTH SLOPES, NEAR WATER. RED FIR, LODGEPOLE PINE, JEFFREY PINE, AND ASPENS ARE TYPICAL NEST TREES.
<i>Agelaius tricolor</i> tricolored blackbird	--;CSC;--	HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA. REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.
<i>Ardea herodias</i> great blue heron	-- ;MBTA;-	COLONIAL NESTER IN TALL TREES, CLIFFSIDES, AND SEQUESTERED SPOTS ON MARSHES. ROOKERY SITES IN CLOSE PROXIMITY TO FORAGING AREAS: MARSHES, LAKE MARGINS, TIDE-FLATS, RIVERS AND STREAMS, WET MEADOWS.
<i>Cypseloides niger</i> black swift	--;CSC;--	COASTAL BELT OF SANTA CRUZ & MONTEREY CO; CENTRAL & SOUTHERN SIERRA NEVADA; SAN BERNARDINO & SAN JACINTO MOUNTAINS. BREEDS IN SMALL COLONIES ON CLIFFS BEHIND OR ADJACENT TO WATERFALLS IN DEEP CANYONS AND SEA-BLUFFS ABOVE THE SURF; FORAG
<i>Empidonax traillii</i> willow flycatcher	--;CE;--	INHABITS EXTENSIVE THICKETS OF LOW, DENSE WILLOWS ON EDGE OF WET MEADOWS, PONDS, OR BACKWATERS; 2000-8000 FT ELEVATION REQUIRES DENSE WILLOW THICKETS FOR NESTING/ROOSTING. LOW, EXPOSED BRANCHES ARE USED FOR SINGING POSTS/HUNTING PERCHES.

SPECIES	STATUS	HABITAT
<i>Falco peregrinus anatum</i> American peregrine falcon	FD;CE;--	NEAR WETLANDS, LAKES, RIVERS, OR OTHER WATER; ON CLIFFS, BANKS, DUNES, MOUNDS; ALSO, HUMAN-MADE STRUCTURES. NEST CONSISTS OF A SCRAPE ON A DEPRESSION OR LEDGE IN AN OPEN SITE.
<i>Grus canadensis tabida</i> greater sandhill crane	--;CT;--	NESTS IN WETLAND HABITATS IN NORTHEASTERN CALIFORNIA; WINTERS IN THE CENTRAL VALLEY. PREFERS GRAIN FIELDS WITHIN 4 MI OF A SHALLOW BODY OF WATER USED AS A COMMUNAL ROOST SITE; IRRIGATED PASTURE USED AS LOA
<i>Haliaeetus leucocephalus</i> bald eagle	FD;CE;--	OCEAN SHORE, LAKE MARGINS, & RIVERS FOR BOTH NESTING & WINTERING. MOST NESTS WITHIN 1 MI OF WATER. NESTS IN LARGE, OLD-GROWTH, OR DOMINANT LIVE TREE W/OPEN BRANCHES, ESPECIALLY PONDEROSA PINE. ROOSTS COMMUNALLY IN WINTER
<i>Pandion haliaetus</i> osprey	--;MBTA;-	OCEAN SHORE, BAYS, FRESH-WATER LAKES, AND LARGER STREAMS. LARGE NESTS BUILT IN TREE-TOPS WITHIN 15 MILES OF A GOOD FISH-PRODUCING BODY OF WATER.
<i>Riparia riparia</i> bank swallow	--;CT;--	COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT. REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.
Mammals		
<i>Antrozous pallidus</i> pallid bat	--;CSC;--	DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING. ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	--;CSC;--	THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES. ROOSTS IN THE OPEN, HANGING FROM WALLS & CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.
<i>Euderma maculatum</i> spotted bat	--;CSC;--	OCCUPIES A WIDE VARIETY OF HABITATS FROM ARID DESERTS AND GRASSLANDS THROUGH MIXED CONIFER FORESTS. FEEDS OVER WATER AND ALONG WASHES. FEEDS ALMOST ENTIRELY ON MOTHS. NEEDS ROCK CREVICES IN CLIFFS OR CAVES FOR ROOSTING.
<i>Gulo gulo</i> California wolverine	--;CT;--	FOUND IN THE NORTH COAST MOUNTAINS AND THE SIERRA NEVADA. FOUND IN A WIDE VARIETY OF HIGH ELEVATION HABITATS. NEEDS WATER SOURCE. USES CAVES, LOGS, BURROWS FOR COVER & DEN AREA. HUNTS IN MORE OPEN AREAS. CAN TRAVEL LONG DISTANCES
<i>Lasionycteris noctivagans</i> silver-haired bat	--;CSC;--	PRIMARILY A COASTAL & MONTANE FOREST DWELLER FEEDING OVER STREAMS, PONDS & OPEN BRUSHY AREAS. ROOSTS IN HOLLOW TREES, BENEATH EXFOLIATING BARK, ABANDONED WOODPECKER HOLES & RARELY UNDER ROCKS. NEEDS DRINKING WATER.
<i>Lasiurus blossevillei</i> western red bat	--;CSC;--	ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS. PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.
<i>Lasiurus cinereus</i> hoary bat	--;CSC;--	PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING. ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.
<i>Lepus americanus</i> <i>klamathensis</i> Oregon snowshoe hare	--;CSC;--	ABOVE THE YELLOW PINE ZONE IN CANADIAN AND HUDSONIAN PROVINCES IN NORTHERN CALIFORNIA. ALDER & WILLOW THICKETS IN RIPARIAN ZONE, ALSO THICKETS OF YOUNG CONIFERS.
<i>Martes americana sierrae</i> Sierra marten	--;CSC;--	MIXED EVERGREEN FORESTS WITH MORE THAN 40% CROWN CLOSURE ALONG SIERRA NEVADA & CASCADE MTNS. NEEDS VARIETY OF DIFFERENT-AGED STANDS, PARTICULARLY OLD-GROWTH CONIFERS & SNAGS WHICH PROVIDE CAVITIES FOR DENS/NESTS.
<i>Martes pennanti</i> (<i>pacifica</i>) DPS Pacific fisher	FC;CSC;-	INTERMEDIATE TO LARGE-TREE STAGES OF CONIFEROUS FORESTS & DECIDUOUS-RIPARIAN AREAS WITH HIGH PERCENT CANOPY CLOSURE. USES CAVITIES, SNAGS, LOGS & ROCKY AREAS FOR COVER & DENNING. NEEDS LARGE AREAS OF MATURE, DENSE FOREST.
<i>Myotis evotis</i> long-eared myotis	--;CSC;--	FOUND IN ALL BRUSH, WOODLAND & FOREST HABITATS FROM SEA LEVEL TO ABOUT 9000 FT. PREFERS CONIFEROUS WOODLANDS & FORESTS. NURSERY COLONIES IN BUILDINGS, CREVICES, SPACES UNDER BARK, & SNAGS. CAVES USED PRIMARILY AS NIGHT ROOSTS.
<i>Myotis thysanodes</i> fringed myotis	--;CSC;--	IN A WIDE VARIETY OF HABITATS, OPTIMAL HABITATS ARE PINYON-JUNIPER, VALLEY FOOTHILL HARDWOOD & HARDWOOD-CONIFER. USES CAVES, MINES, BUILDINGS OR CREVICES FOR MATERNITY COLONIES AND ROOSTS.

SPECIES	STATUS	HABITAT
<i>Myotis volans</i> long-legged myotis	--;CSC;--	MOST COMMON IN WOODLAND & FOREST HABITATS ABOVE 4000 FT. TREES ARE IMPORTANT DAY ROOSTS; CAVES & MINES ARE NIGHT ROOSTS. NURSERY COLONIES USUALLY UNDER BARK OR IN HOLLOW TREES, BUT OCCASIONALLY IN CREVICES OR BUILDINGS.
<i>Myotis yumanensis</i> Yuma myotis	--;CSC;--	OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED. DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.
<i>Ochotona princeps schisticeps</i> gray-headed pika	--;CSC;--	MOUNTAINOUS AREAS, GENERALLY AT HIGHER ELEVATIONS, OFTEN ABOVE THE TREELINE UP TO THE LIMIT OF VEGETATION. AT LOWER ELEVATION. TALUS SLOPES, OCCASIONALLY ON MINE TAILINGS. PREFERS TALUS-MEADOW INTERFACE.
<i>Progne subis</i> purple martin	--;CSC;--	INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS-FIR, PONDEROSA PINE, & MONTEREY PINE. NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.
<i>Taxidea taxus</i> American badger	--;CSC;--	MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS. NEED SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREY ON BURROWING RODENTS. DIG BURROWS.
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	--;CT;--	FOUND FROM THE CASCADES DOWN TO THE SIERRA NEVADA. FOUND IN A VARIETY OF HABITATS FROM WET MEADOWS TO FORESTED AREAS. USE DENSE VEGETATION & ROCKY AREAS FOR COVER & DEN SITES. PREFER FORESTS INTERSPERSED W/ MEADOWS OR ALPINE FELL-FIELDS.

SOURCE: DFG CNDDDB 2009

Abbreviations:

FE	Federal Endangered	CE	California Endangered Species
FT	Federal Threatened	CT	California Threatened
FC	Federal Candidate	CR	California Rare (Protected by Native Plant Protection Act)
FPD	Federal proposed for delisting	CSC	CDFG Species of Special Concern
FPT	Federal proposed threatened	CC	State candidate for listing
FD	Federal delisted	1B	CNPS - Rare, Threatened, or Endangered
MBTA	Protected by Migratory Bird Treaty Act		

3.4.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the natural resources of the state and nation including the CDFG, USFWS, USACOE, and the National Marine Fisheries Service. These agencies often respond to declines in the quantity of a particular habitat or plant or animal species by developing protective measures for those species or habitat type. Federal and state agencies are increasingly involved with projects at the local level in Shasta County. The following is an overview of the federal, state and local regulations that are applicable to subsequent projects under the proposed project.

FEDERAL

Federal Endangered Species Act

The Federal Endangered Species Act (FESA), passed in 1973, defines an endangered species as any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Once a species is listed it is fully protected from a “take” unless a take permit is issued by the USFWS. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct, including modification of its habitat (16 USC 1532, 50 CFR 17.3). Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register.

Migratory Bird Treaty Act

To kill, possess, or trade a migratory bird, bird part, nest, or egg is a violation of the Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., §703, Supp. I, 1989), unless it is in accordance with the regulations that have been set forth by the Secretary of the Interior.

Clean Water Act – Section 404

Section 404 of the CWA regulates all discharges of dredged or fill material into waters of the U.S. Discharges of fill material includes the placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)].

Waters of the U.S. include lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 C.F.R. §328.3(b)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high water mark (OHWM). The OHWM is defined by the USACOE as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” [33 C.F.R. §328.3(e)].

The USACOE is the agency responsible for administering the permit process for activities that affect waters of the U.S. Executive Order 11990 is a federal implementation policy, which is intended to result in no net loss of wetlands.

Clean Water Act – Section 401

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant who is seeking a 404 permit to first obtain a water quality certification from the Regional Water Quality Control Board. To obtain the water quality certification, the Regional Water Quality Control Board must indicate that the proposed fill would be consistent with the standards set forth by the state.

Department of Transportation Act - Section 4(f)

Section 4(f) has been part of Federal law since 1966. It was enacted as Section 4(f) of the Department of Transportation (DOT) Act of 1966 and set forth in Title 49 United States Code

(U.S.C.), Section 1653(f). In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 U.S.C. Section 303. This law established policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites as follows:

It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States, in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities. The Secretary of Transportation may approve a transportation program or project (other than any project for a park road or parkway under section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the Federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if: a) There is no prudent and feasible alternative to using that land; and b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

STATE

Fish and Game Code §2050-2097 - California Endangered Species Act

The California Endangered Species Act (CESA) protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the State. CESA established that it is State policy to conserve, protect, restore, and enhance endangered species and their habitats.

CESA was expanded upon the original Native Plant Protection Act and enhanced legal protection for plants. To be consistent with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Under State law, plant and animal species may be formally designated by official listing by the California Fish and Game Commission.

Fish and Game Code §1900-1913 California Native Plant Protection Act

In 1977 the State Legislature passed the Native Plant Protection Act (NPPA) in recognition of rare and endangered plants of the state. The intent of the law was to preserve, protect, and enhance endangered plants. The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants. The NPPA includes provisions that prohibit the taking of plants designated as "rare" from the wild, and a salvage mandate for landowners, which requires notification of the CDFG 10 days in advance of approving a building site.

Fish and Game Code §3503, 3503.5, 3800 - Predatory Birds

Under the California Fish and Game Code, all predatory birds in the order Falconiformes or Strigiformes in California, generally called “raptors,” are protected. The law indicates that it is unlawful to take, possess, or destroy the nest or eggs of any such bird unless it is in accordance with the code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take. This generally includes construction activities.

Fish and Game Code §1601-1603 – Streambed Alteration

Under the California Fish and Game Code, CDFG has jurisdiction over any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any lake or stream. Private landowners or project proponents must obtain a “Streambed Alteration Agreement” from CDFG prior to any alteration of a lake bed, stream channel, or their banks. Through this agreement, the CDFG may impose conditions to limit and fully mitigate impacts on fish and wildlife resources. These agreements are usually initiated through the local CDFG warden and will specify timing and construction conditions, including any mitigation necessary to protect fish and wildlife from impacts of the work.

Public Resources Code § 21000 - California Environmental Quality Act

The California Environmental Quality Act (CEQA) identifies that a species that is not listed on the federal or state endangered species list may be considered rare or endangered if the species meets certain criteria. Under CEQA public agencies must determine if a project would adversely affect a species that is not protected by FESA or CESA. Species that are not listed under FESA or CESA, but are otherwise eligible for listing (i.e. candidate, or proposed) may be protected by the local government until the opportunity to list the species arises for the responsible agency.

Species that may be considered for review are included on a list of “Species of Special Concern,” developed by the CDFG. Additionally, the California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. List 1A contains plants that are believed to be extinct. List 1B contains plants that are rare, threatened, or endangered in California and elsewhere. List 2 contains plants that are rare, threatened, or endangered in California, but more numerous elsewhere. List 3 contains plants where additional information is needed. List 4 contains plants with a limited distribution.

Public Resources Code § 21083.4 - Oak woodlands conservation

In 2004, the California legislature enacted SB 1334, which added oak woodland conservation regulations to the Public Resources Code. This new law requires a County to determine whether a project, within its jurisdiction, may result in a conversion of oak woodlands that will have a significant effect on the environment. If a County determines that there may be a significant effect to oak woodlands, the County must require oak woodland mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands. Such mitigation alternatives include: conservation through the use of conservation easements; planting and maintaining an appropriate

number of replacement trees; contribution of funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and/or other mitigation measures developed by the County.

California Wetlands Conservation Policy

In August 1993, the Governor announced the "California Wetlands Conservation Policy." The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of State and federal wetland conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetland conservation and restoration.

The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

Regional Conservation Planning

A Habitat Conservation Plan (HCP) is a federal planning document that is prepared pursuant to Section 10 of the Federal Endangered Species Act (FESA). An approved HCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under FESA during development activities.

A Natural Community Conservation Plan (NCCP) is a state planning document administered by CDFG. An approved NCCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under CESA during growth and development activities.

Shasta County does not have an approved HCP or NCCP that is administered in the region.

3.4.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on biological resources if it will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- 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;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

IMPACTS AND MITIGATION

Impact 3.4-1: Direct or Indirect Effects on Candidate, Sensitive, or Special-Status Species including their Habitat or Movement Corridors (less than significant with mitigation)

The California Natural Diversity Data Base (CNDDB) search identified several documented special-status species within the County. All species are presumed present at any given time throughout their habitat range. Some species require localized micro-habitats, while others are highly mobile and may occur throughout the County. Many of the documented special-status species may be directly or indirectly affected by subsequent transportation improvements under the proposed project within the planning area if the improvements are to encroach on the species' habitat, or movement corridors. Below is a brief description of the special status species that are present in the region and their habitat requirements. Table 3.4-1 provides a detailed description of the species, habitat, and listing status.

Invertebrates. Several special-status invertebrates occur within the region. These include: the California linderiella, vernal pool fairy shrimp, and vernal pool tadpole shrimp, which requires vernal pools and swale areas within grasslands; the valley elderberry longhorn beetle, which is an insect that is only associated with blue elderberry plants, oftentimes in riparian areas and sometimes on land in the vicinity of riparian areas; the Antioch Dunes anthicid beetle and the Sacramento anthicid beetle, which are insects that are found in loose sandy areas of the Sacramento River; Wawona riffle beetle, confusion caddisfly, western ridged mussel, kneecap lanx, Leech's skyline diving beetle, topaz juga, Castle Crags rhyacophilan caddisfly, and Great Basin rams-horn, which are found in creeks, streams, or lakes; canary duskysnail, nugget pebblesnail, Pit roach, Archimedes pyrg, Sucker Springs pyrg, and Shasta crayfish, which are limited to the Pit River and/or Pit River basin area; Kings Creek ecclisomyian caddisfly and King's Creek parapsyche caddisfly, which are limited to springs and creeks in the Sierra Nevada and Cascades; Oregon shoulderband, Klamath sideband, Shasta sideband, and Shasta chaparral, which are limited to

limestone caves or talus slopes; bilobed rhyacophilan caddisfly, which is known only in the Castle Crags State Park; and Shasta Hesperian, which is present primarily in the vicinity of Shasta Lake.

Reptiles and Amphibians. Special-status reptiles and amphibians that occur within the region include: the Cascades frog, which is found in water and surrounding vegetation in mountain lakes, streams, and ponds up to timber line; the foothill yellow-legged frog, which occurs in partly shaded and shallow streams with rocky soils; the northwestern pond turtle, which requires aquatic environments located along ponds, marshes, rivers, and ditches; Shasta salamander, which requires cool, wet ravines and valleys with oak woodland or chaparral; and the western tailed frog, which requires riparian habitat along montane streams.

It should also be noted that while there are no documented observances of the California red-legged frog within the CNDDDB, Shasta County is within the historical range of this species, but not within the currently known range. Local literature indicates that this species has been observed twice in Shasta County. Once in 1911 within the current City of Redding boundary, and once in 1926 in Clear Creek south of the Redding area.

Fish. Special-status fish that occur within the region include: the spring-run Chinook salmon, and winter-run Chinook salmon, which are all found in the rivers, streams, and tributaries of the Sacramento River Basin; the McCloud River redband trout and bull trout, which are limited to the McCloud River and its tributaries; the rough sculpin, bigeye marbled sculpin, which are found in Hat Creek, Fall River, and/or Burney Creek; and the hardhead, which is found tributaries to the Sacramento River.

Birds. Special-status birds that occur within the region include: bank swallow, black swift, great blue heron, greater sandhill crane, willow flycatcher, tricolored blackbird, and osprey, which are associated with streams, rivers, lakes, wetlands, marshes, and other wet environments; the American peregrine falcon, bald eagle, and osprey, which require open water to forage for food, while they typically perch on cliffs, large trees, or snags; northern goshawk, which live in coniferous habitats; and raptors that are present in varying habitats throughout the planning area.

Mammals. Special-status mammals that occur within the region include: Pallid bat, spotted bat, Townsend's big-eared bat, silver-haired bat, western red bat, hoary bat, long-eared myotis bat, long-legged myotis, fringed myotis, and Yuma myotis bat, which occur in a variety of habitats, including grasslands, foothill woodlands, coniferous forest, caves, mines, and buildings; the California wolverine, Oregon snowshoe hare, Sierra marten, Pacific fisher, purple martin, and Sierra Nevada red fox, which occurs in forested habitats, the gray-headed pika, which is present in mountainous areas at higher elevations, and the American badger, which occurs in shrub, forest and herbaceous habitats where there is abundance burrowing rodents.

Plants. The region is composed of a very diverse range of habitat types. These include chaparral, woodland, forest, grassland, meadows, and riparian, among others. Within these broad habitat types, there are Alpine Dwarf-Shrub, Annual Grassland, Aspen , Barren , Bitterbrush, Blue Oak Woodland, Blue Oak-Foothill Pine, Chamise-Redshank Chaparral, Closed-Cone Pine-Cypress, Deciduous Orchard, Douglas Fir, Dryland Grain Crops, Eastside Pine, Eucalyptus, Fresh Emergent

Wetland, Irrigated Grain Crops, Irrigated Hayfield, Irrigated Row and Field Crops, Jeffrey Pine, Juniper, Klamath Mixed Conifer, Lacustrine, Lodgepole Pine, Low Sage, Mixed Chaparral, Montane Chaparral, Montane Hardwood, Montane Hardwood-Conifer, Montane Riparian, Pasture, Perennial Grassland, Ponderosa Pine, Red Fir, Rice, Riverine, Sagebrush, Sierran Mixed Conifer, Subalpine Conifer, Urban, Valley Foothill Riparian, Valley Oak Woodland, Wet Meadow, and White Fir. This diverse plant mosaic within the region allows for some of the most diverse plant communities within a single county. Within these plants communities there are numerous special status plants, many of which only occur in the region (endemic). A full list of the special status plants within the region is in Table 3.4-1.

Discussion. New transportation improvements have the potential to affect special status species that are present within the region. The design process for each RTP project will involve a level of field reconnaissance to precisely identify the potential for impacts to special status species and to identify project specific design measures that can be employed to avoid or lessen an impact.

Project specific design measures may include alternative designs to avoid habitats that are considered more sensitive and required for special status species. An impact would occur if a project would result in a take of a special status species or their habitat. If a project would in fact result in a take of a special status species or their habitat it may be required to go through a consultation process with the USFWS and/or CDFG for recommendations to avoid or lessen the impacts to these species and their habitats.

Permits may also be required from the USFWS and/or CDFG, and possibly by the local governments if a project design cannot avoid disturbance to special status species or their habitat. Permits are issued by regulatory agencies with conditions that are designed to mitigate the impact to the extent practicable. The proposed project does not directly cause an impact to special status species and the design process for individual RTP projects would require that each project be consistent with the policies that are established in the County and City General Plan for the purpose of protecting biological resources, including special status species that their habitat.

Consistency with the County and City policies as well as adopted federal and state regulations that protect special-status species, including their habitat and movement corridors, would ensure that appropriate design measures, including avoidance, if appropriate, are incorporated into the design of each RTP project. Because the proposed project is a planning document and thus, no physical changes will occur to the environment, adoption of the proposed project would not directly impact the environment. There is a reasonable chance that special status species will be impacted throughout the buildout of RTP projects due to the extent of special status species throughout the region. The following mitigation would ensure that any potential for impacts to special status species is reduced to a **less than significant** level.

MITIGATION MEASURES

Mitigation Measure 3.4-1: Prior to final design approval of RTP projects, the implementing agency should have a qualified biologist conduct a field reconnaissance of the limits of the project area in an effort to identify any biological constraints for the project, including special status plants,

animals, and their habitats, as well as protected natural communities including wetland and terrestrial communities. If the biologist identifies protected biological resources within the limits of the project area, the implementing agency should first, consider alternative designs that seek to avoid and/or minimize impacts to the biological resources. If the project cannot be designed without complete avoidance, the implementing agency should coordinate with the appropriate regulatory agency (i.e. USFWS, NMFS, CDFG, ACOE) to obtain regulatory permits and implement project-specific mitigation prior to any construction activities.

Impact 3.4-2: Adverse Effects on Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, Regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service, or on Federally Protected Wetlands as Defined by Section 404 of the Clean Water Act through Direct Removal, Filling, Hydrological Interruption, or Other Means (less than significant with mitigation)

The planning area contains sensitive natural communities, such as riparian, oak woodland, streams, rivers, wet meadows, and vernal pools. The planning area contains oak woodland habitat predominately in the foothills. California regulations require a lead agency to determine whether a project within its jurisdiction may result in significant effects to oak woodlands. If an agency determines that there may be a significant effect to oak woodlands as a result of a project, the agency must require oak woodlands mitigation alternatives to mitigate the significant effect. Such mitigation alternatives includes: conservation through the use of conservation easements; planting and maintaining an appropriate number of replacement trees; or the contribution of funds for the purpose of purchasing oak woodlands conservation easements.

Streams, rivers, wet meadows, and vernal pools (wetlands and jurisdictional waters) are of high concern because they provide unique aquatic habitat (perennial and ephemeral) for many endemic species, including special-status plants, birds, invertebrates, and amphibians. These aquatic habitats oftentimes qualify as protected wetlands or jurisdictional waters and are protected from disturbance through the CWA.

The planning area contains numerous aquatic habitats that qualify as federally protected wetlands and jurisdictional waters. Section 404 of the CWA requires any project that involves disturbance to a wetland or water of the U.S. to obtain a permit that authorizes the disturbance. If a wetland or jurisdictional water is determined to be present, then a permit must be obtained from the USACE to authorize a disturbance to the wetland. Although RTP projects may disturb protected wetlands and/or jurisdictional waters, the regulatory process that is established through Section 404 of the CWA ensures that there is “no net loss” of wetlands or jurisdictional waters. If, through the design process, it is determined that an RTP project cannot avoid a wetland or jurisdictional water, then the USACE would require that there be an equal amount of wetland created elsewhere to mitigate any loss of wetland.

Detailed plans of the individual RTP projects have not been developed. Consistency with the applicable County and City policies would ensure that appropriate design measures, including avoidance, if appropriate, are incorporated into the design of each RTP project. Additionally, compliance with a General Plan Conservation Element, USFWS Recovery Plan, HCP, or NCCP, once they are adopted or become available, would ensure that natural communities, including oak woodlands, wetlands and jurisdictional waters are protected to the extent feasible, and mitigation is incorporated as necessary. Because the proposed project is a planning document and thus, no physical changes will occur to the environment, adoption of the proposed project would not directly impact the environment. There is a reasonable chance that natural communities, including oak woodlands, wetlands and jurisdictional waters will be impacted throughout the buildout of RTP projects. Implementation of mitigation measure 3.4-1 would ensure that any potential for impacts to sensitive natural communities, including oak woodlands, wetlands, and jurisdictional waters is reduced to a **less than significant** level.

Impact 3.4-3: Interference with the Movement of Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites (less than significant with mitigation)

There are many native fish and wildlife species within the County that migrate or utilize movement corridors. The most notable for their protection status include the Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*). The Columbian black-tailed deer (*Odocoileus hemionus columbianus*) is a migratory wildlife species that is not recognized as a special-status species, but preserving deer habitat and migration corridors is of concern to the CDFG in many regions of California including Shasta County.

Salmon and Steelhead. Salmon and steelhead trout are anadromous fish species that are present in the San Joaquin and Sacramento River Basins. The Sacramento River system has historically supported steelhead trout and four distinct spawning runs of Chinook salmon: fall, late fall, winter, and spring. The Central Valley steelhead was federally listed as threatened in 2003. The fall/late fall-run salmon is a federal and state species of concern, and a candidate species for federal listing. The spring-run Chinook salmon population is listed as threatened by both federal and state agencies. Winter-run Chinook salmon population is listed as a federally and state endangered species. Populations of Central Valley Steelhead and Chinook salmon have been supported by hatcheries within the Sacramento River Basin.

The individual RTP projects have not been designed or approved. Each project will be designed consistent with the applicable County and City policies to ensure that appropriate design measures, including avoidance, if appropriate, are incorporated into the design of each RTP project. It will be important that implementing agency review each RTP project for the potential for impacts to riparian habitat, which is critical for the maintenance of high quality fish habitat. It provides cover, controls temperature, stabilizes stream banks, provides food, and buffers streams from erosion and impacts of adjacent land uses. Riparian vegetation also affects stream depth, current velocity, and substrate composition.

Because the proposed project is a planning document and thus, no physical changes will occur to the environment, adoption of the proposed project would not directly impact the environment. There is a chance that protected migratory species, including the four distinct salmon runs, and steelhead may be impacted throughout the buildout of RTP projects. Implementation of mitigation measure 3.4-1 would ensure that any potential for impacts to the four distinct salmon runs, and steelhead are reduced to a **less than significant** level.

Migratory Deer. There are ten deer winter ranges within Shasta Deer that remain in a restricted area on a year-round basis and are considered resident populations. The largest deer herd within Shasta County is the East Tehama migratory deer herd.

Linear transportation improvements can cause fragmentation of habitat where species can no longer easily move through an area. This may occur in cases where a linear transportation improvement includes a center barrier to be erected that suddenly affects the ability of a smaller animal, and sometimes, less mobile species, to cross the linear transportation corridor to areas that they previously frequented.

In addition, certain fence designs are barriers to deer movement, particularly to does and fawns. Deer-proof or deer-resistant fences around large acreages in winter range and across critical deer migration corridors result in a significant adverse impact on deer populations. Also, the creation of highways and roads are a source of deer mortality.

The proposed project is a planning document and thus, no physical changes will occur to the environment from adoption of the proposed project. There is a reasonable chance that native wildlife or wildlife corridors, including the migratory deer, will be impacted throughout the buildout of linear transportation improvements identified in the proposed project. The individual RTP projects have not been designed or approved. Each project will be designed consistent with the applicable County and City policies to ensure that appropriate design measures are incorporated into the design of each improvement project. Implementation of the following mitigation measure would ensure that any potential for impacts to wildlife or wildlife corridors, including the migratory deer, are reduced to a **less than significant** level.

MITIGATION MEASURES

Mitigation Measure 3.4-2: Prior to design approval of RTP projects, the implementing agency should incorporate economically viable design measures, as applicable and necessary, to allow wildlife to move through the transportation corridor. Such measures may include appropriately spaced breaks in a center barrier, or other measures that are designed to allow wildlife to move through the transportation corridor. If the project cannot be designed with these design measures (i.e. due to traffic safety, etc.) the implementing agency should coordinate with the appropriate regulatory agency (i.e. USFWS, NMFS, CDFG) to obtain regulatory permits and implement alternative project-specific mitigation prior to any construction activities.

Impact 3.4-4: Conflicts with an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, Recovery Plan, or Local Policies or Ordinances Protecting Biological Resources (less than significant)

There are no Habitat Conservation Plans or Natural Community Conservation Plans in effect in Shasta County. Each jurisdiction within the region has various policies and ordinances that protect biological resources. As specific RTP projects are designed, they will require a review of the project for consistency with the policies and ordinances for which the project is located. The implementing agency will be required to make findings of consistency prior to the approval of any future transportation projects. Implementation of the proposed project would have a **less than significant** impact on this environmental topic.

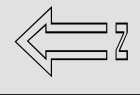
Draft EIR Shasta County 2010 RTP

Legend

- Vernal Pool
- Water body
- Fed Endangered Species
- Fed Threatened Species

Bioregions

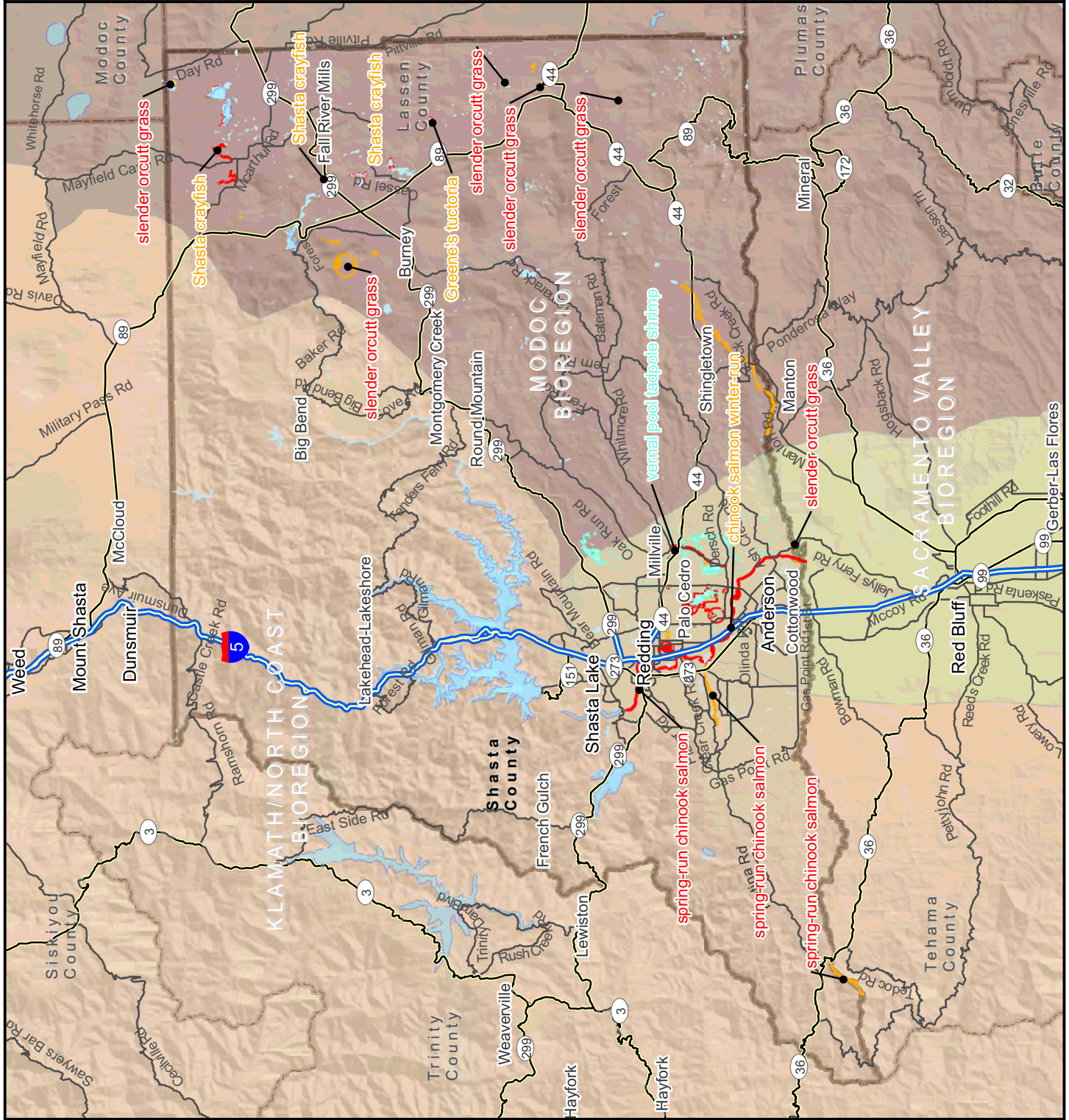
- KLAMATH/N. COAST
- MODOC
- SACRAMENTO VALLEY



Source: ESRI, CaSIL, BLM, USGS, CA FRAP, CDFG, and Caltrans

Figure 3.4-1

BIOREGIONS, THREATENED AND ENDANGERED SPECIES



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This map of Shasta County, California, displays a network of roads and geographical features. Major roads are shown as thick black lines, with state routes 99, 44, 36, 299, 151, 273, and 152 marked with their respective numbers in white circles. Local roads are shown as thinner black lines. The map includes labels for cities and towns such as Redding, Anderson, Cottonwood, Shingletown, Burney, Round Mountain, French Gulch, Weaverville, and Hayfork. Water bodies, including Shasta Lake, Keswick Reservoir, Whiskeytown Lake, Rainbow Lake, and several smaller lakes like Clair Engle Lake and Lake Britton, are shown in blue. The terrain is depicted with a color gradient from green (low elevation) to brown and tan (higher elevation). A scale bar in the bottom right corner indicates distances from 0 to 20 miles. A north arrow is located in the bottom right corner, pointing towards the top of the map.

Figure 3.4-2

LAND COVER TYPES

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This section provides a background discussion of the prehistoric period background, ethnographic background, historic period background, known cultural resources in the region, the regulatory setting, an impact analysis, and mitigation measures. The Native American Heritage Commission comments on the NOP identified steps to determine the potential for the project to impact an archaeological resource, including contacting the appropriate information center, information that should be included in a environmental document, appropriate Native American contacts, and measures to mitigate potential impacts in the event an unknown resource is discovered during project implementation.

3.5.1 ENVIRONMENTAL SETTING

Shasta County includes portions of the California Great Valley Geomorphic Province, the Southern Cascade Physiographic Province, the Modoc Plateau Province and by the Klamath Province. Lavas of the Tuscan and Tehama formations are the dominant rock throughout the county (Lydon and O'Brien 1974:9). These lavas were extruded during the Pliocene and early Pleistocene. The boundary between the Cascade and the Modoc Plateau provinces is indeterminate, since both areas have a similar geological history of volcanic activity (Hartman 1970). The western portion of Shasta County is in the Klamath Province, but in an area of mixing with Cascade formations.

The cities of Redding and Anderson are located in the northern portion of the Sacramento Valley, an extension of the California Great Valley Geomorphic Province that is characterized by a thick accumulation of alluvial and floodplain deposits. The alluvium and floodplain deposits which reach depths of as much as several thousand feet in thickness fill in an asymmetric trough approximately 40 miles wide by 400 miles in length.

The Cascade Range comprises a string of volcanoes, often rising conspicuously above the surrounding landscape. In the Southern Cascade Range, Mount Shasta and Mount Lassen are the most prominent peaks. To the northeast, the Medicine Lake Highland marks the eastern boundary of the Cascade Range. The Highland is surrounded by the Modoc Lava Plateau on the east, north, and south. The basement lavas of the Highland are andesitic in composition, while the more recent extrusions are lighter-colored lavas similar in composition to granite.

PREHISTORIC PERIOD

Archeological studies have been largely confined to two areas within Shasta County; the Sacramento River and adjoining areas and the Pit River in and around Lake Britten, east of Burney. Since it is necessary to discuss cultural events within a temporal framework, it is proposed to use a very simple chronology proposed by Farber and Neuenschwander (1984) based on results from the Squaw Creek site (see below). This chronology is used, as suggested by the authors, simply as a convenient division of time for this cultural area that does not imply acceptance of any particular theoretical view of regional prehistory. The chronology formulated by Fredrickson (1973) for the North Coast Ranges has also been applied to the region (c.f. Peak & Associates 1984). His periods are temporal events, but they are defined by a dominance of certain economies, subsistence practices and general aspects of the ordering of society. The periods are generally similar to those offered earlier by Willey and Phillips (1958) and have a wide area of applicability, however, as

pointed out by Farber and Neuenschwander, the latest prehistoric period defined by Fredrickson, the Emergent, implies aspects of cultural development that are not documented ethnographically or archaeologically in much of the Cascades region. The following chronology simply offers a basic temporal framework within which to assess the particular events that were transpiring in northeast California, with particular reference to the southern Cascades, during a certain period.

The periods advanced by Farber and Neuenschwander, with approximate dates in years before the present (B.P.) are given below. The present is defined as 1950, to conform with radiocarbon dating conventions.

Early Prehistoric Period	7600 B.P. - 5000 B.P.
Middle Prehistoric Period	5000 B.P. - 1450 B.P.
Late Prehistoric Period	1450 B.P. - 100 B.P.

There is some evidence of human presence in the region prior to the Early Period, but it is scarce. There are some flake-based industries from near Redding (Sundahl 1976), but none have been reported along the Pit River and its environs. Fluted points and long-stemmed versions of the Great Basin Stemmed series (such as Lind Coulees and Cougar Mountain points) have been reported from Goose Lake (Hughes 1977a) and Fall River Mills Valley (Peak 1979). Jensen and Farber (1982) have excavated an encampment north of the project area near Macdoel characterized by Great Basin Stemmed series points.

The Sacramento Canyon sites are located still farther west and provide comparison with archaeological sequences in Central California and the North Coast Ranges. The sequence labeled "Tehama County" was developed from the long term CSU, Sacramento, project directed by Jerald Johnson in the Dye Creek area east of Red Bluff.

Early Prehistoric Period

Within Shasta County, only Component I at Squaw Creek dates to the Early Prehistoric Period. At this time contacts with the North Coast Ranges and Central Valley are evident, with Borax Lake Wide Stems and other wide stem variant points present (Clewett 1977, Clewett and Sundahl 1983). Squaw Creek rises in the Klamath Mountains and flows south to the Pit River. Since Squaw Creek demonstrates North Coast and Valley influence, it is reasonable to expect that the influence was also present along the lower reaches of the Pit River. The Lorenzen site (Baumhoff and Olmsted 1963), far up the Pit River drainage, also contained Borax Lake points. The Borax Lake points are believed by Baumhoff and Olmsted to date later than their age at Squaw Creek, but this may be a measure of site disturbance or excavation techniques. Sixteen similar points have been reported from Sacramento Canyon sites (Goldberg and Raven 1983; Basgall and Hildebrandt 1987:170-175). Kowta (1984) sees some relationship between site location for this temporal period and Elk distribution in northern California. He believes that the people who used the wide stem points were highly mobile big game hunters who traveled in small bands.

Middle Prehistoric Period

The long time span assigned to Component II at Squaw Creek defines the Middle Prehistoric Period. This period stretches from the first intensive occupation of most sites in the southern Cascades through the introduction of the bow and arrow and generally features a population with less emphasis on big game hunting and more emphasis on vegetable food collecting and processing. Over time, these groups become increasingly adapted to their environment, in part by responding to long term changes in environmental conditions. This long time period is broken up into more than one major cultural phase in all of the archaeological sequences in the region, including Squaw Creek after reanalysis of Component II based on results from the Clickapudi Creek sites.

The earliest defined occupation phase from northern Shasta County is the Pollard Flat phase (Basgall and Hildebrandt 1987). The point forms characteristic of this period were familiar from the Squaw Creek report, but not named (other than the McKee point forms) until Basgall and Hildebrandt defined the Squaw Creek Contracting Stem and Pollard Diamond-shaped types. These points also characterize the early portion (through about 3,000 B.P.) of Component II at Squaw Creek and Component III at Clickapudi (Clewett and Sundahl 1979, 1980, 1981, 1982). All of these components are quite similar in that a wide variety of tool forms are present, including a relatively high frequency of non-utilitarian tools, reflecting a variety of activities at the site. Basgall and Hildebrandt (1987:445) interpret this as reflecting a rather stable version of a forager settlement/subsistence strategy wherein a group moves regularly from one base camp to another located in areas where resources are readily obtained near the base camp. They note that the number of non-utilitarian objects does not fit well with the standard definition of this system (Binford 1980) and suggest that the sites were occupied for relatively lengthy periods each year because a long-lasting warm-dry interval (West 1987:36-55) had created a favorable ecological situation.

The latter part of the Middle Prehistoric Period in this region is represented by the latter part of Component II at Squaw Creek, all of Component II at Clickapudi and the Vollmers phase in the Sacramento Canyon. This phase is characterized by Clickapudi Notched series projectile points. In all of the above areas this phase sees reduced intensity of occupation at individual sites and more diversity of artifact complement between sites. Basgall and Hildebrandt believe that this represents a shift to a fission-fusion adaptive strategy wherein the population gathered in large residential base camps in the fall and winter, but in the spring divided into small groups that moved regularly to favored collection areas; that is, followed a forager strategy for the rest of the year. The components noted above, therefore, would reflect the smaller, specialized, resource collection camps. Basgall and Hildebrandt (1987: 449-450) believe that the winter base camps related to the Sacramento Canyon sites are located on Clear Creek near Whiskeytown Dam, at sites previously thought to be later in time. These sites include well-developed middens with a diverse artifact assemblage and non-utilitarian artifacts are common.

It is reasonable to suppose that the time period was represented by more elaborate sites than are seen in the Sacramento Canyon in this period. For instance, on the Mendocino Coast during the same period, the obsidian is dominated by Medicine Lake sources (Peak and Noble 1983),

indicating an extended exchange system. Oddly, at this same time obsidian at Squaw Creek is predominantly derived from local (Tuscan) sources, even though Medicine Lake sources are favored in the preceding and succeeding periods at the same site. To further complicate matters, a recent study by Hamusek McGann (1993:164-168) found that obsidian from four sites on lower Squaw Creek showed a fairly even division between local Tuscan sources and Medicine Lake sources while sites on upper Squaw Creek produced a preponderance of obsidian derived from the Medicine Lake area.

It appears that Pollard Flat and Vollmers occupations in the Sacramento Canyon overlap in time, by as much as 1,800 years. This is, to say the least, an unusual situation that may reflect two groups using the area seasonally for different purposes. On the other hand, the Pollard Flat components seem to be substantial, if seasonal, occupations and it is difficult to see why they would leave the area just as some resource attractive to Vollmers phase people became available. There is some evidence of increasing hostility toward the end of the Pollard Flat phase (Basgall and Hildebrandt 1987:457) and the authors feel that a cultural boundary situation, with the exact location of the boundary shifting over time, is the most likely explanation.

At Lake Britton, within ethnographic Pit River Indian territory in the eastern portion of Shasta County, the earliest substantial occupation identified during extensive test excavations (Kelly, Nilsson and Cleland 1987) is at the beginning of the Middle Prehistoric Period. The age range for Component I, 5000-3300 B.P. conforms fairly well to the early Component II at Squaw Creek and Component II at Clickapudi. Most of the five Component I sites sampled during the study appear to date toward the latter part of this time period. There are surface finds of much older artifacts, such as a Great Basin Stemmed series point and a crescent (Peak & Associates 1984), but intact evidence of residential sites of the earlier periods is absent, to date.

The data from Lake Britton indicate a slow evolution of subsistence practices rather than sudden changes. The limited testing of a single site (Peak and Associates 1984:347-443) as well as the testing of 27 sites by Wirth and Associates (Kelly, Nilsson and Cleland 1987) indicates that freshwater mussel and salmon were exploited from the earliest occupations through the latest, with the intensity of the harvest increasing over time. Big game hunting, though always present, decreased in importance over time, although small game remained a relatively stable part of the diet. The acorn complex was present by the start of Period II, about 3300 B.P., and pine nuts became an important food source by the start of Component III, about 1200 B.P., and both increased in importance over time. There is evidence of steady population growth either driving these increases in the intensity of resource exploitation or made possible by development of the technologies needed to increase the exploitation.

The projectile points recovered from Lake Britton are generally Great Basin types, although there are numerous Gunther Series points from late contexts. Even in early components there is some relationship with Sierran cultures, since Sierra Side Notched points are present, though greatly outnumbered by Elko Series points. A similar situation pertains on the southern end of the Modoc plateau at Eagle Lake, where the Aspen Grove Phase demonstrates a strong Sierran influence dominated by Sierra Stemmed Triangular and Martis Contracting Stem points. The strong Sierran

influence on the southern end of the Modoc plateau demonstrates how widespread the Martis Complex influences were at this time.

The introduction of the bow and arrow marks the beginning of the Late Prehistoric Period. This is considered a prime temporal marker, since the appearance of smaller projectile points begins almost everywhere at this time *circa* 1700 B.P. to 1500 B.P. In some areas, its introduction is accompanied by a simple reduction in size of the projectile point forms currently used in the region. Elsewhere, the introduction of the bow and arrow apparently came as a package, that is, the style of the new, smaller point forms were completely different from the earlier forms.

Perhaps correlated with the results of the introduction of the bow and arrow, but occurring somewhat later in time depending on the region, was a widespread intensification of resource exploitation. For the southeast Great Basin, Bettinger and Baumhoff (1982) see this as a shift to resources requiring comparatively high energy to process but which are common (i.e., grass seeds), in comparison to those requiring less energy to process but are less common or are more widely distributed (i.e., deer). The shift in the Central Valley is clearly towards acorn processing and an anadromous fishing emphasis, seen in the Northern Valley as the Shasta Complex, which appears to coincide with the movement of the Wintu into the area. In the southern Cascades there appears to be a more conservative response, which Clewett and Sundahl (1983) term the Tehama Complex.

The Tehama Complex reflects a seasonal round similar to the ethnographic for the Yana, i.e., villages are seasonally occupied, there are diversified resource exploitation strategies, and seasonal settlements are located both on major rivers and their tributaries. This seasonal scheduling stands in contrast to that of the Shasta Complex is better correlated with the population increase and intensified resource exploitation characteristic of that period. The villages are permanent, located next to the major rivers, and there is heavy reliance upon anadromous fish and acorns. In the Sacramento Canyon the Mosquito Creek phase reflects this period. Like the preceding Vollmers phase, the sites are relatively small with a limited variety of artifacts, representing the specialized spring-summer camps similar to the Shasta Complex. However, Basgall and Hildebrandt (1987:450-451) are not convinced that these sites represent the Shasta Complex as exemplified in the Redding vicinity and they certainly do not reflect the Tehama Pattern. Farber (1985) also does not accept the Shasta/Tehama dichotomy and argues that the Tehama Complex is, basically, the Shasta Complex adapted to the differing environmental constraints of the foothills versus the valley. This conclusion is drawn from excavations of two sites near Redding (Farber and Neuenschwander 1984; Farber, Ritter and Jensen 1985) where mano and metate technology, absent in the Shasta Complex according to Sundahl (1982), appears with otherwise typical Shasta Complex materials.

The Late Prehistoric Period in the above areas is heralded by the appearance of the Gunther series, as well as small corner-notched and side-notched point forms believed to be smaller versions of dart point forms that preceded them in this region (Clewett and Sundahl 1983). The Tehama Complex is the earliest appearance of the period in this region and is replaced by the Shasta

Complex *circa* 1200 B.P., both in the lower Pit River and upper Sacramento Valley areas. Gunther series points only comprise part of the projectile point forms in the Tehama Complex, but they become dominant in the Shasta Complex. There is a strong southern Cascade influence demonstrated by the small side- and corner-notched point specimens. The relatively few Desert Side Notched and Cottonwood Triangular points are a measure of the lessened Great Basin influence, which clearly is not a major factor.

ETHNOGRAPHIC BACKGROUND

Shasta County was home to five major linguistically-related Native American tribes: the Wintu, Yana, Shasta, Achumawi and Atsugewi.

The Wintu are the northernmost dialectical groups of the Wintun, whose territory roughly incorporates the western side of the Sacramento Valley from the Carquinez Straits north to include most of the upper Sacramento River drainage, the McCloud River, and the lower reaches of the Pit River. The Wintun, a collective name, were subdivided into three sub-groups with the Southern, Central, and the Northern dialects known respectively as Patwin, Nomlaki, and Wintu. The area between Cow Creek and the Pit River up at least as far as the western survey parcels was attributed to the Stillwater Wintu (Du Bois 1935:6-9). However, their occupation of this area may be very recent (Dotta 1980:123-124).

Although economic subsistence was heavily weighted toward the acorn, the staple of the diet, the rich riverine resources of the Sacramento River supplied a large variety of foodstuffs. Hunting of game and small mammals augmented the diet with protein. Seasonal procurement of vegetable foods and the hunting of game occurred throughout the territory held by villages.

Villages were usually situated along rivers and streams or close to springs where reliable water supplies allowed a semi-permanent occupation. Major villages were located along the river banks, with locations oriented to higher spots on the natural levees. Smaller villages tended to be along the tributary streams and near springs. Cultural resources surveys in the region have demonstrated that there was very heavy use of tributary streams and other areas at a distance from the main river, while early ethnographies had emphasized the concentration of population along the Sacramento.

Perhaps Yana territory stretched from the Pit River to Rock Creek on the south and from the edge of the upper Sacramento Valley along the eastern tributaries of the Sacramento River to their headwaters. The main landmark in the Yana territory was the peak of Mount Lassen. In general, Yana territory was characterized by a series of volcanic mud flows that were incised by a series of small to medium size drainages. The soil is usually a thin mantle over the volcanic rock making it difficult for vegetation to thrive (Kroeber 1925:338).

The separation of the Yana into the Northern, Central, Southern, and Yahi divisions is based primarily on linguistic differences. While there are many cultural similarities between the Northern and Central divisions their differences from the Southern and Yahi groups were secondary in importance (Johnson 1978:361).

Numerous tribelets existed throughout Yana territory. In most cases, a tribelet consisted of a major village where the principal chief and assembly house were located, and several smaller allied villages. Most villages had their own chief whose status was attained through inheritance. A chief made speeches that were suggestive but not commanding and apparently lacked the power to control, impose his views, or command the obedience of others (Johnson 1978:365).

The Yana's relationship with their neighbors varied. The Yahi Yana people were the principal enemy of the Northern Maidu, but they were on good terms with the Wintu allowing them to hunt and camp in Yahi territory. The Stillwater and McCloud River Wintu, the Northern Maidu, and the Achumawi feared the Northern Yana and considered them aggressors. The Yana never formed large war parties but they would attack another group in reprisal for poaching and to avenge the abduction of women (Johnson 1978:363).

The food sources available to the Yana varied. The Yana usually hunted deer alone by using a deer head decoy and the bow and arrow, though group hunts also occurred. In addition to deer, the Yana snared rabbits and quail. Fishing was an important secondary food procuring activity but the most important food source was acorns. During good years the supply would last until the next harvest essentially becoming the staple during the lean winter months. Other food sources included roots, tubers, and bulbs as well as earthworms, grasshoppers, and salmon flies (Johnson 1978:364-65).

The Shastan peoples controlled the territory along much of the Klamath. In California, three main divisions are recognized; the Scott Valley band, the Shasta Valley band, and the Klamath River band (Silver 1978:211). The Klamath River band controlled the area along the Klamath from its junction with the Scott River in the west to near the present day community of Hornbrook.

The family was the basic social unit, with some villages composed of members from a single family (Silver 1978:214). Each village, and each of the bands, had a headman. The headman would adjudicate disputes, which were rectified by payments of property. If the offender could not pay, it was the responsibility of the headman to pay the settlement, so a certain level of personal wealth was required before one could become a headman.

Each village, and in some cases individual families within a village, had a specific territory where they could collect resources. This included fishing places along the Klamath River, as well as hunting areas, and areas where tobacco (*Nicotiana* spp.) was cultivated.

The Shastan peoples constructed rectangular-shaped, semi-subterranean dwellings for occupation during the winter months. During spring and summer, families moved into brush shelters. When acorns were ready to harvest, and during hunting expeditions, families and/or groups of men would construct bark houses, or would simply camp out (Silver 1978:214). Large villages also has an assembly house, similar in design to the winter occupied structures, and sweathouses, and in some cases a menstrual hut.

Deer meat was the staple of the Shastan people who also relied on the acorn and pine nut, bulbs, insects, and along the Klamath River, salmon. Fishing methods involved the use of nets, basket traps, weirs, hook and line, and spears (Silver 1978:216). In the spring, along the Klamath River, women and children also used to dive for mussels.

The Shasta word for “white people” is pa-stin, apparently derived from the Chinook word for Boston. Fur trappers as early as the 1820s and 30s entered their territory. A treaty between the federal government and headman of the California Shasta was agreed to in 1851, but never ratified by the US Congress. It established a reservation in Scott Valley (Quartz Valley). At the time of contact, it was estimated that there was approximately 2,000 Shasta (Dixon 1907:390), but by 1906, only 121 individuals identified themselves as Shasta within Siskiyou County (Kelsey 1971). Undoubtedly, the combination of introduced diseases for which they had no natural immunity, the influx of miners who occupied their former lands, and their involvement with the Rogue River wars was not positive for the Shasta peoples.

The Achumawi, along with the Atsugewi, are combined together to form the group more commonly known as the Pit River Indians. Although sometimes referred to as divisions (Kroeber 1925) or tribes (Merriam 1926; Garth 1953), the Pit River Indians were more accurately bands (Olmstead 1966). Nine of these bands, comprising the Achuwami segment, lived along the middle and upper courses of the Pit River. The total population of the Pit River Indians at the time of contact has been estimated at approximately 3,000 (Kroeber 1925:308). The tribelets were divided into different geographical areas that functioned as individual entities. The members of the individual bands, like each individual tribelet, functioned as an autonomous political unit, though socially they were connected by intermarriage and by consciousness that they spoke a common language not shared by their neighbors (Olmstead and Stewart 1978:230).

Each village functioned as an autonomous political unit. No overall tribal authority existed, though popular chiefs were influential far outside their own areas and could make decisions overriding those of lesser chiefs. Individuals within a village or village complex "owned" plots of land along the banks of rivers or along the sides of valleys. One man might own a pond used by geese. He also owned those geese, but allowed others to hunt them communally, with him in charge of the hunt. The plots were occupied by family groups who moved seasonally to take advantage of available natural resources such as spawning salmon or ripe berries, for example (Kniffen 1928).

Relationships between and among the Pit River Bands varied. The Atsugewi were normally on the best of terms with immediate neighbors and shared hunting and gathering resources. Unlike most of the Achumawi tribelets, the Atsugewi were on good terms with their non-Pit River neighbors. Groups of Atsugewi, some bands of Achumawi, Yana, and Maidu gathered for salmon harvesting on the Pit River and for acorns and roots in other areas. This fraternization led to frequent intertribal marriages, an important factor in intertribal bonds (Garth 1978:239).

The food sources for the tribelets were extensive. The river provided salmon, trout, and bass among other fish, the meadows provided food and vegetable fibers such as epos roots and camas, and the forests provided, fruits, berries, nuts, rabbits, birds and game animals. Another food

source they exploited was a variety of insects including larvae of yellow jackets, ants, bees, and hornets. Crickets, grasshoppers, and similar insects were also roasted for winter consumption.

Pit River Indian religion was closely connected with medical beliefs and practices. Shamans or doctors treated sick people with the assistance of an "interpreter" who let observers know what the doctor was saying during treatment. Pains or poisons were the causes of most illnesses and these were treated successfully by Shamans. Visible accidents were not treated as successfully (Dixon 1908:216).

HISTORIC PERIOD BACKGROUND

As a consequence of geographical isolation, the historic era began comparatively late in the Shasta area. Although Spanish explorers and missionaries settled in California in 1769, they remained on the coast, leaving the northeast corner of the state for later exploration. For more than half a century after the Spanish occupied California, Shasta County remained locked in its geographic isolation, a land unknown to all Euro-Americans. The common interests of the Spanish crown and the Franciscan missionaries joined in efforts to keep all Spanish California a protected, closed province, with occupation limited only to those coastal areas that could most easily be controlled by the small force of missionaries and military that represented Spanish authority.

When Mexico established its independence from Spain in 1821, California became a semi-independent colony of the new Mexican Republic; and the Franciscan rule in California began to give way to a new secular order, guided by a coalition of leading families that intended to end the religious order's virtual monopoly over land and Indian labor. Although the process took more than two decades to accomplish fully, these Californios succeeded in phasing out the Franciscan mission system, gaining control of mission lands, and freeing the surviving neophyte population from missionary rule. The leaders in this new order formed another sort of society, a kind of rural patriarchy based upon wealth in cattle, horses, and land, over which presided a closely linked alliance of family leaders, essentially a class of *hidalgos* that sought to expand their own privileges and powers like a frontier type of medieval lord.

This new class of Californio elite also found itself welcoming more and more foreigners to their once isolated communities. The accumulating wealth of these men made them more eager for trade in the fine goods and manufactured luxuries that could not be supplied by Mexico. British and American shipmasters, attracted to the Pacific Coast first for the sea otter trade, diversified and expanded into other industries by exchanging their manufactured goods for the Californios' cattle hides and rendered tallow--products that had a market in the shoe and candle industry in England and New England. By the 1830s, because of this activity, the Californios opened their country to an expanding system of commerce and trade that made it a lively, active outpost of mercantile capitalism on the Pacific Coast.

Initially, these activities did not immediately affect Shasta County, but they did have a distant, indirect impact. Northward, in the Oregon country, the British Hudson's Bay Company had secured its own commercial monopoly by 1821, establishing its headquarters at Fort Vancouver on the Columbia River. The company governor, Dr. John McLoughlin, directed a sophisticated

strategy that led his fur hunters to California. Because of his concern to preempt American competitors and secure the Northwest's premium beaver furs for his company, Dr. McLoughlin sent annual expeditions into the Snake River country--a vast region between the Rocky Mountains and the Great Salt Lake on the east and Oregon's Cascade Range on the west. Led by Peter Skene Ogden, after 1824, these Snake River brigades had orders to trap the beaver to exhaustion in the Snake River drainage and northern Great Basin. Hudson's Bay company men would make their profit and leave the Snake River country barren of furs; thus, giving the American fur hunters no reason to invade this part of the British company's domain (Cline 1974:62-64).

During his 1826-27 expedition with the Snake River brigade, Peter Skene Ogden became the first fur hunter to reach the Pit River. He named the waterway the Pit River because of the number of animal pit traps that the local Indians had constructed. Ogden's exploration opened the area to other trappers. The Americans entered the territory when Jedediah Smith took a southern route into California and trapped his way up the American River, eventually working his way northeast to Fort Vancouver.

As more trappers explored the area, they established several routes of travel. In 1846, by the onset of the war with Mexico, British and American fur traders and immigrants had carried out a substantial exploration of northern California, including the Upper Pit River country and Shasta County, where neither the Spanish nor the Mexican authorities had ventured. The various expeditions, mostly commercial in their objectives, had made clear the geographical outlines of the region, demonstrating among other points, that it was the only stream south of the Columbia River to pass through the Cascade-Sierra mountain barrier from the interior region. These same expeditions had also demonstrated that no resources of important commercial value could be found in the Upper Pit River country to attract immigrants into the region. No longer an unknown land, by 1846 this area still remained well beyond the periphery of development for the expanding Anglo-American civilization.

Pierson B. Reading came west in 1843 with the Chiles-Walker party. Reading passed through Shasta County before eventually arriving at Sutter's Fort. He worked for Sutter for a year, and with Sutter's help, was able to obtain a land grant of 26,000 acres from the Governor Micheltorena. The grant, Rancho Buena Ventura, was the most northerly land grant in California. A house was constructed for Reading's overseer of the rancho, in 1845 and the land was stocked with cattle. He later built an adobe on the west bank of the Sacramento River near its confluence with Cottonwood Creek, seven miles east of the community of Cottonwood.

Although Major Reading first discovered gold in Clear Creek in 1848, the area initially did not attract the hordes of miners that descended on Coloma and its environs. Reading's early discovery had proved the existence of profitable placer deposits in this region, making it certain others would also come crowding to sluice the gravels and pan the dark sands of the local rivers and streams.

Shasta County was established in 1850, one of the 27 original counties in California. At first it included all the territory that later became Modoc and Lassen counties, as well as portions of Plumas, Siskiyou and Tehama counties. The original County seat was located at Reading's Ranch.

From 1852 through the rest of the nineteenth century, mining became the first, most basic industry in the region. Mining has remained important to the local economy during the twentieth century as well, though periods of renewed productivity have alternated sharply with periods of decline or even the complete shutdown of mining operations. This pattern of alternating boom and bust, inherent within the precious metals mining industry throughout the American West and worldwide has been exaggerated in the project region by the geological characteristics of its mineral deposits. Predominantly, the mineral wealth of the Shasta area is in the form of copper in deposits of massive sulfide ore that also contains zinc, lead, silver, and gold, among other minerals. Quartz deposits which elsewhere have provided a more stable base for the gold mining economy, are rare within this region (Lydon and O'Brien 1974:17).

The second prominent industry of the Shasta region is lumbering. Like the mining industry, the lumber market was subject to outside influences. Initially, the lumber industry in the area supplied the settlers and miners in the region with wood for constructing houses, wagons, and flumes. The industry grew in spurts in the 1900s. The San Francisco earthquake of 1906 created a surge in the demand for lumber when people were rebuilding, but when San Francisco had been reconstructed, the demand for lumber waned (Lawson 1986:89-92).

The next surge in the lumber industry came with the United States' entry into WWI. The country needed lumber for the construction of barracks at training bases and California's resources helped supply that need. Once the army had constructed their barracks, however, the need for lumber subsided once again. WWII brought similar demands on the lumber industry but this demand continued after the war when soldiers returning to the United States wanted to purchase homes made affordable by loans available through the GI Bill. These fluctuations continued. Although there was a slight lull in the market in the 1950s, the 1960s and 1970s brought a rebound to the industry as the Baby Boomers--the children born in the late 1940s and 1950s--reached maturity and started their own families, driving up the demand for new housing. Adding to the demand for construction-grade lumber, some mills also manufactured Novoply, a new type of particleboard invented in the 1970s (Lawson 1986:89-92).

Shasta Lake

The City of Shasta Lake was formed in 1993 incorporating the former communities of Central Valley, Project City and Summit City. Settlement in this portion of Shasta County was largely the result of the U.S. Bureau of Reclamation's decision to construct the Shasta Dam in the late 1930s. Migrant workers, hoping for the project to start, flooded into the area, and their early camps, located as close as possible to the future dam site along Shasta Dam Boulevard, became the nucleus of the communities of Central Valley, Project City, and Summit City (Rooca n.d.).

Redding

The Rancho Buena Ventura lands included the future town of Redding. The area that was later to become Redding was originally known as Poverty Flats until the Southern Pacific Railroad built tracks through the future town site and renamed the area Redding, in honor of railroad man Benjamin P. Redding. Locals resisted the new name and in 1874 rechristened the town Reading in honor of the early pioneer. The Southern Pacific prevailed, and by 1880, the communities name was restored to Redding.

The town incorporated in 1887 and had 600 residents. The population by 1910 was 3,572 with many of the residents employed in the nearby copper and iron mines. A decline in these industries during the 1920s led to a decrease in population, but with the construction of the nearby Shasta Dam in the late 1930s, the population recovered and continues to increase to this day (Wikipedia n.d.).

Anderson

Elias Anderson purchased the American Ranch, as it had become to be known, in 1856, and on his land grew the nucleus of what is now the City of Anderson. The American Ranch was an early stopping place for travelers and traders on the old California-Oregon Road (Hoover, Rensch and Rensch 1970:485, 488).

By 1881, the town of Anderson had 225 residents, with two hotels, three blacksmith shops, a wagon shop, a harness shop, three saloons and a flour mill. A post office was established at American Ranch in 1855, and then was transferred to Anderson in 1878.

In 1872, Elias Anderson granted a right-of-way for the California and Oregon Railroad (now Southern Pacific Railroad) through his property (Gudde 1969:10).

KNOWN CULTURAL RESOURCES

According to the Northeast Information Center of the California Historical Resources Information system, as of August 2008, 4,471 cultural resources identified within Shasta County have been assigned primary identification numbers. This includes cultural resources that are assigned primary numbers only (isolated artifacts, resources that lack complete documentation, State Landmarks) and those resources that are more comprehensive in nature and have been documented to standards established by the Office of Historic Preservation. This second category receives both a permanent and primary number.

Site types present, or expected to exist, within Shasta County include prehistoric period occupation areas (both short and long term), burial areas, ceremonial areas, resource collection and processing sites, lithic scatters, quarries, rock art sites, trails, and isolated examples of prehistoric period artifacts.

For the historic period, cultural resources may include post-contact Native American occupation and ceremonial areas, trails, roads, railroads, small and large-scale mining features, logging

features, occupation areas (short and long term), buildings, structures, water conveyance features (ditches), quarries, Shasta Dam construction-related features, trash dumps, and cemeteries.

In general, prehistoric period cultural resources were situated in the most favored environmental settings—areas adjacent to permanent water sources such as the Sacramento and Pit rivers, with relatively level topography. This is also true of most historic period resources, with the exception of mining related features and settlements where the discovery of a mineral deposit did not always correspond with a favored environmental setting. It is important to note that a lower sensitivity area could still contain resources, and the review of all areas proposed for impact should always be indicated.

NATIVE AMERICAN CONCERNS

There are two independent Rancherias, Roaring Creek Rancheria and the Redding Rancheria and three others, Big Bend Rancheria, Lookout Rancheria, and Montgomery Creek Rancheria that are affiliated with the Pit River Tribe. The Pit River Tribe was federally recognized in 1976 and has eleven bands, each with a voting member (Pritzker, 2000).

The SCRTPA circulated a Notice of Preparation through the State Clearinghouse in September 2008, which included a copy delivered to the Native American Heritage Commission (NAHC). The NAHC responded to the Notice of Preparation for the proposed project on October 3, 2008 to John Strahan, SCRTPA. Attached with a series of recommendations by the NAHC was a list of 26 organizations and individuals in Shasta County who had requested that their names be provided to the project proponent when Notice of Preparations are circulated.

Letters explaining the scope and purpose of the project were sent to the 26 organizations and individuals on February 19, 2009. The following is the list of these groups and individuals. As of the publication of this environmental document, no replies have been received. Two of the letters were returned marked “unable to forward, return to sender” as indicated below. Appendix D provides a copy of the letters.

- Jessica Jim, Chairperson, Pit River Tribe of California
- Tracy Edwards, Chief Executive Officer, Redding Rancheria
- Roaring Creek Rancheria
- Cecelia Silvas, Illmawi Band, Pit River Indian Tribe
- Kelli Hayward, Wintu Tribe of Northern California
- Robert Burns, Wintu Educational and Cultural Council
- Vivian Martinez, Itsatawi Band, Cultural Resources
- Carol Cantrell, Madesi Band, Cultural Resources Representative
- Gloria Melton, Madesi Band, Cultural Resource Representative
- Hudgee Gemmill, Madesi Band Cultural Resource Representative (returned)
- Bill George, Atsugewi Band, Pit River Indians
- Laverna Jenkins, Atsugewi Band, Pit River Indians
- Reitha Amen, Itsawi Band, Cultural Resources
- William Rhoades, Isatawi Band, Cultural Resources
- Consuelo Farias, Aporige Band, Pit River Indians
- Harold Angelo O’Neil, Aporige Band, Pit River Indians (returned)

- Gerald Ivan O’Neil, Aporige Band, Pit River Indians
- Carol June Barnes, Aporige Band, Pit River Indians
- Ben Lego, Madesi Band, Pit River Indians
- Floyd Buckskin, Pit River NAGPRA
- Gloria Gomes, Chairperson, United Tribe of Northern California
- John Castro, Cultural Liaison, United Tribe of Northern California
- James Hayward Sr., Redding Rancheria, Cultural Resources Program
- Carol Sinclair
- Matthew Root
- Loretta Root

3.5.2 REGULATORY SETTING

FEDERAL

National Historic Preservation Act

The National Historic Preservation Act was enacted in 1966 as a means to protect cultural resources that are eligible to be listed on the National Register of Historic Places (NRHP). The law sets forth criterion that is used to evaluate the eligibility of cultural resources. The NRHP is composed of districts, sites, buildings, structures, objects, architecture, archaeology, engineering, and culture that are significant to American History.

Virtually any physical evidence of past human activity can be considered a cultural resource. Although not all such resources are considered to be significant and eligible for listing, they often provide the only means of reconstructing the human history of a given site or region, particularly where there is no written history of that area or that period. Consequently, their significance is judged largely in terms of their historical or archaeological interpretive values. Along with research values, cultural resources can be significant, in part, for their aesthetic, educational, cultural and religious values.

Department of Transportation Act - Section 4(f)

The Department of Transportation (DOT) Act of 1966, which was previously discussed in the Biological Resources section of this EIR, is set forth in Title 49 United States Code (U.S.C.). This law established that it is the policy of the United States Government to make a special effort to preserve historic sites. The Secretary of Transportation may approve a transportation program or project that requires the use of a historic site of national, state, or local significance only if: a) There is no prudent and feasible alternative to using that land; and b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

STATE

California Register of Historic Resources

The California Register of Historical Resources (CRHR) was established in 1992 and codified in the Public Resource Code §5020, 5024 and 21085. The law creates several categories of properties that may be eligible for the CRHR. Certain properties are included in the program automatically, including: properties listed in the NRHP; properties eligible for listing in the NRHP; and certain classes of State Historical Landmarks. Determining the CRHR eligibility of historic and prehistoric properties is guided by CCR §§15064.5(b) and Public Resources Code (PRC) §§21083.2 and 21084.1. NRHP eligibility is based on similar criteria outlined in Section 106 of the NHPA (16 U.S. Code [USC] 470).

Cultural resources, under CRHR and NRHP guidelines, are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. A cultural resource may be eligible for listing on the CRHR and/or NRHP if it:

- is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

If a prehistoric or historic period cultural resource does not meet any of the four CRHR criteria, but does meet the definition of a “unique” site as outlined in PRC §21083.2, it may still be treated as a significant resource if it is: an archaeological artifact, object or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- it contains information needed to answer important scientific research questions and that
- there is a demonstrable public interest in that information,
- it has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- it is directly associated with a scientifically recognized important prehistoric or historic event.

California Environmental Quality Act

CEQA Guidelines §15064.5 provides guidance for determining the significance of impacts to archaeological and historical resources. Demolition or material alteration of a historical resource, including archaeological sites, is generally considered a significant impact. Determining the CRHR eligibility of historic and prehistoric properties is guided by CCR §§15064.5(b) and Public Resources Code (PRC) §§21083.2 and 21084.1. NRHP eligibility is based on similar criteria outlined in Section 106 of the NHPA (16 U.S. Code [USC] 470).

CEQA also provides for the protection of Native American human remains (CCR §15064.5[d]). Native American human remains are also protected under the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.), which requires federal agencies and certain recipients of federal funds to document Native American human remains and cultural items within their collections, notify Native American groups of their holdings, and provide an opportunity for repatriation of these materials. This act also requires plans for dealing with potential future collections of Native American human remains and associated funerary objects, sacred objects, and objects of cultural patrimony that might be uncovered as a result of development projects overseen or funded by the federal government.

Assembly Bill 978

In 2001, Assembly Bill (AB) 978 expanded the reach of Native American Graves Protection and Repatriation Act of 1990 and established a state commission with statutory powers to assure that federal and state laws regarding the repatriation of Native American human remains and items of patrimony are fully complied with. In addition, AB 978 also included non-federally recognized tribes for repatriation.

LOCAL

Shasta County General Plan

The September 2004 Shasta County General Plan contains a Heritage Resources Element that intends to, “....identify and protect sites and structures of architectural, historical, archaeological, or cultural significance” (Shasta County General Plan 2004:6.10.1). The 2004 General Plan Heritage Resource Element has a sole objective; the protection of significant and historic cultural resources (Shasta County General Plan 2004:6.10.3). To accomplish this objective, Shasta County has adopted Policy HER-a, “Development projects in areas of known heritage shall be designed to minimize degradation to these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or non-disturbance zones, and building siting requirements” (Shasta County General Plan 2004:6.10.4).

City of Shasta Lake

The June 1999 City of Shasta Lake General Plan Heritage Resources section lists one objective (HER-1) “conserve and manage significant prehistoric and historic cultural resources.” City of Shasta Lake General Plan Policies (HER-a) state, “Development projects in areas containing known significant cultural resources shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures, which reduce such impacts, shall be implemented. Possible mitigation measures may include clustering, buffer zones, and building siting requirements” (City of Shasta Lake General Plan 1999:18).

Two Implementing Measures, HER-(a) and HER-(b), require a record search, field inspection of the proposed development area should the record search recommend it, and a mitigation plan and

monitoring plan to check the adequacy of the mitigation plan if unique resources under CEQA, are discovered (City of Shasta Lake General Plan 1999:18).

City of Redding

The City of Redding October 2000 General Plan Natural Resources Element NR12 stated goal is to, “protect and enhance historical and culturally significant resources within the planning area (City of Redding General Plan 2000:13).” Four policies are given in the general plan. The first (NR12A) is broad, simply stating, “Ensure protection of prehistoric, cultural, and archaeological resources during the development process.” The second (NR12B) requires that proposed projects conduct a record search through the Northeast Information Center of the California Historical Resources Information System. NR12C, the third policy seeks to...“Encourage public and private efforts to identify, preserve, protect and/or restore historic buildings, structures, landmarks, and important cultural resources.” The fourth policy measure, NR12D, says that the City of Redding should not approve any public or private project without first consulting the Northeast Information Center, having an archaeologist conduct a site evaluation (if recommended by the Northeast Information Center), and attempt to mitigate any adverse impact as recommended by the archaeologists and using CEQA, Appendix K as a guideline (City of Redding General Plan 2000:13).

City of Anderson

The May 2007 City of Anderson General Plan discusses cultural resources under their Open Space and Conservation Element. Under section 4.3.5, Cultural Resources, the city identifies a number of Cultural Resource Policies (CRP). CPR-1 simply states, “...Preserve areas that have identifiable and important archaeological or paleontological significance (City of Anderson General Plan 2007:80).” Policy CPR-2 requires consultation with the Native American Heritage Commission (NAHC) and consultation with NAHC identified tribal group or descendant in accordance with Senate Bill 18 guidelines.

To implement policies CRP-1 and CRP-2, a series of Cultural Resources Implementations (CRI) is presented by the City of Anderson. Policy CRI-1 asks the City of Anderson to assess development proposals for potential impacts to significant archaeological resources by requiring a study of the area by a professionally qualified archaeologist if the proposed project is located near a creek or identified archaeological site. Policy CRI-1 also states that if significant archaeological resources are identified, the City of Anderson should require that the significant resource be avoided or measures to mitigate the adverse effects of the project be developed (City of Anderson General Plan 2007:80).

Policy CRI-2 asks the City of Anderson to consult with local Indian tribes to monitor all development projects during grading and excavation and if cultural resources are identified, evaluate the significance of the find and develop mitigation measures. Policy CRI-3 states that if human remains are encountered, work in the immediate area of discovery should cease and the Shasta County coroner be contacted within 24 hours. If the coroner determines the remains are Native American, the NAHC should be contacted to determine the most likely descendant (MLD).

The MLD is asked to be involved with the disposition of the human remains after scientific analysis (City of Anderson General Plan 2007:80-81).

Historic Resources are discussed under section 4.3.6 of the City of Anderson General Plan Open Space and Conservation Element. Six policies (HP-1 through HP-6) are presented; (HP-1) seeks to protect and preserve historic resources; HP-2 promotes compatible development of new buildings with architectural and site development tools; and HP-3 seeks respect to the character of historic building exterior facades during remodeling or renovation. Policy HP-4 encourages the use of the State Historic Building Code. Policy HP-5 asks the City of Anderson to recognize the economic value of the historic resources. Policy HP-6 seeks to ensure the integrity of historic structures and parcels where they are located by implementing design, building, and fire codes that are compatible (City of Anderson General Plan 2007:85).

Five Historic Resources Implementation Programs (HI-1 through HI-5) are presented in the City of Anderson General Plan (2007:86). These five programs encourage owners of eligible historic properties to register their properties and to participate in tax incentive programs for restoration (HI-1), identify funding mechanisms to preserve, restore, and enhance unique sites (HI-2), assess development projects against potential impacts to significant historic resources (HI-3), develop an inventory of historic sites within the Old Town Core (HI-4) and, to work with property owners to preserve historic features (HI-5).

3.5.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project is considered to have a significant impact on cultural resources if it will:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5;
- Cause a substantial adverse change in the significance of archaeological resource pursuant to CEQA Guidelines §15064.5;
- Directly or indirectly destroy a unique paleontological resource;
- Disturb any human remains, including those interred outside of formal cemeteries.

IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Cause a Substantial Adverse Change to a Significant Historical or Archaeological Resource, or Directly or Indirectly Destroy or Disturb a Unique Paleontological Resource or Human Remains (Less than Significant with Mitigation)

Implementation of some of the individual RTP projects have the potential to adversely affect known historical, archaeological, or paleontological resources, or human remains either directly or indirectly. There is also the potential for individual improvements to adversely affect unknown

cultural resources (those that are buried or that are located in an area not previously surveyed) directly or indirectly.

As RTP projects are designed and reviewed by local jurisdictions, the RTP projects will undergo technical analysis to evaluate any potential impacts to cultural resources within their area of potential effect. However, while compliance with the policies contained in local general plans will help to avoid such effects, the local jurisdictions do not have consistent requirements for the identification and protection of historic resources and there is the potential for significant environmental impacts to cultural resources. Compliance with Mitigation Measure 3.5-1 will reduce potential effects to significant historical or archaeological resources, paleontological resources, or human remains to a **less than significant** level.

MITIGATION MEASURES

Mitigation Measure 3.5-1: Prior to the implementation of RTP projects, the implementing agency should take steps to avoid and/or to reduce impacts to cultural resources and human remains. Measures should include:

- *The implementing agency should retain a professional archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology to prepare a project specific cultural resources study (i.e., archaeological and historical investigations). The study should identify cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) in the project area, determine their eligibility for inclusion in the California Register of Historical Resources, and provide mitigation measures for any resources in the project area that cannot be avoided.*
- *The implementing agency should contact the Native American Heritage Commission (NAHC) for a check of the Sacred Lands files prior to the initiation of an RTP project and should contact all of the groups identified by the NAHC for consultation. Should Sacred Lands be present, coordination with the Native American community is required and the project should be designed to avoid the Sacred Lands or reduce impacts to the extent feasible.*
- *If cultural resources or Native American resources are identified, every effort should be made to avoid significant cultural resources, with preservation an important goal. If significant sites cannot feasibly be avoided, appropriate mitigation measures, such as data recovery excavations or photographic documentation of buildings, should be undertaken consistent with applicable state and federal regulations.*
- *Implementing agencies and the contractors performing the improvements should adhere to the following requirements:*
 - *If, during the course of construction cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) are discovered work should be halted in the area reasonably suspected to overlie the discovery. The implementing agency should retain a qualified archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology to determine the significance of the discovery.*

- o *If human remains are discovered, all work should be halted in the area reasonably suspected to overlie the discovery. The implementing agency must notify the County Coroner, according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) will be followed.*
- o *Prior to starting construction activities, all construction personnel should attend a preconstruction meeting that discusses human remains and cultural resources and protection requirements for human remains and cultural resources.*

The purpose of this section is to disclose and analyze the potential impacts associated with the geology of the project region and general vicinity, and to analyze issues such as the potential exposure of people and property to geologic hazards, landform alteration, and erosion.

Information in this section is derived primarily from the following:

- Shasta County General Plan (Shasta County, 2004);
- City of Anderson General Plan (City of Anderson, May 2007);
- City of Redding General Plan (EIP Associates, October 2000);
- City of Shasta Lake General Plan (Diaz Associates, June 1999);
- Literature prepared by the California Division of Mines and Geology;
- Information from the U.S. Natural Resources Conservation Service; and
- Mapping published by the U.S. Geologic Survey

3.6.1 ENVIRONMENTAL SETTING

REGIONAL GEOLOGY

Shasta County is perhaps the most geologically diverse county in California. Five of the eleven geomorphic provinces in California are present, including the Cascade Range, the Coast Range, the Great Valley, the Klamath Mountains, and the Modoc Plateau. These five provinces are considered the most complex provinces within the state. Below is a brief description of each of these geomorphic provinces.

Cascade Range Geomorphic Province

The Cascade Range, a chain of volcanic cones, extends through Washington and Oregon into California. It is dominated by Mt. Shasta, a glacier-mantled volcanic cone, rising 14,162 feet above sea level. The southern termination is Lassen Peak, which last erupted in the early 1920s. The Cascade Range is transected by deep canyons of the Pit River. The river flows through the range between these two major volcanic cones, after winding across interior Modoc Plateau on its way to the Sacramento River.

Coast Range Geomorphic Province

The Coast Range constitutes a barrier between the Pacific Ocean and the San Joaquin Valley which trends northwest from Point Conception to the border with Oregon. The province consists of mountain ranges and the corresponding valleys and basins. The SF Bay Area naturally subdivides the province into the North Coast Ranges and South Coast Ranges. The province is formed as an interaction between the North American and Pacific tectonic plates. The Pacific plate moves northwest relative to the North American plate with speed of about 35-38 mm/year, with the majority of motion occurring during large earthquakes, with some aseismic fault creep. The overlap of the plates is about 100 km wide and contains all major geologic faults of Northern California. The mountain ranges of the province are composed of late Mesozoic Cenozoic sedimentary strata.

Great Valley Geomorphic Province

The Great Valley is an alluvial plain, about 50 miles wide and 400 miles long, between the Coast Ranges and Sierra Nevada. The Great Valley is drained by the Sacramento and San Joaquin rivers, which join and enter San Francisco Bay. The eastern border is the west-sloping Sierran bedrock surface, which continues westward beneath alluvium and older sediments. The western border is underlain by east-dipping Cretaceous and Cenozoic strata that form a deeply buried synclinal trough, lying beneath the Great Valley along its western side. The southern part of the Great Valley is the San Joaquin Valley. Its great oil fields follow anticlinal uplifts that mark the southwestern border of San Joaquin Valley and its southern basin. To the north, the Sacramento Valley plain is interrupted by the Marysville Buttes, an isolated Pliocene volcanic plug about 2,000 feet high.

Klamath Mountains Geomorphic Province

The Klamath Mountains have rugged topography with prominent peaks and ridges reaching 6,000-8,000 feet above sea level. In the western Klamath, an irregular drainage is incised into an uplifted plateau called the Klamath peneplain. The Klamath River follows a circuitous course through the mountains. The uplift has left successive benches with gold-bearing gravels on the sides of the canyons. The province is considered to be a northern extension of the Sierra Nevada. Rocks include pre-Cretaceous metamorphic, abundant serpentinite, and granitic. Volcanic rocks of the Cascade Range lie to the east, Cretaceous sediments lie to the southeast, and Franciscan and younger Coast Range formations lie to the west.

Modoc Plateau Geomorphic Province

The Modoc Plateau is volcanic table land (elevation 4,000-6,000 feet above sea level) consisting of a thick accumulation of lava flows and tuff beds with many small volcanic cones. Occasional lakes, marshes, and sluggishly flowing streams meander across the plateau. The plateau is cut by many north-south faults. The province is bound indefinitely by the Cascade Range on the west and the Basin-Range on the east and south.

FAULTS AND SEISMICITY

Faults

A fault is a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. A fault trace is the line on the earth's surface defining the fault. Displacement of the earth's crust along faults releases energy in the form of earthquakes and in some cases in fault creep. Most faults are the result of repeated displacements over a long period of time. **Figure 3.6-1** illustrates the location of fault traces within Shasta County.

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures have been known to extend up to 50 miles with displacements of an inch to 20 feet. Fault rupture almost always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The State of California designates faults as active, potentially active, and inactive depending on how recent the movement that can be substantiated for a fault. **Table 3.6-1** presents the California fault activity rating system.

TABLE 3.6-1: FAULT ACTIVITY RATING

<i>FAULT ACTIVITY RATING</i>	<i>GEOLOGIC PERIOD OF LAST RUPTURE</i>	<i>TIME INTERVAL (YEARS)</i>
Active (A)	Holocene	Within last 11,000 years
Potentially Active (PA)	Quaternary	11,000-1.6 Million Years
Inactive (I)	Pre-Quaternary Greater than 1.6 Million	

Seismicity

The amount of energy available to a fault is determined by considering the slip-rate of the fault, its area (fault length multiplied by down-dip width), maximum magnitude, and the rigidity of the displaced rocks. These factors are combined to calculate the moment (energy) release on a fault. The total seismic energy release for a fault source is sometimes partitioned between two different recurrence models, the characteristic and truncated Gutenberg-Richter (G-R) magnitude-frequency distributions. These models incorporate our knowledge of the range of magnitudes and relative frequency of different magnitudes for a particular fault. The partition of moment and the weights for multiple models are given in the following summary.

Earthquakes are generally expressed in terms of intensity and magnitude. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. By comparison, magnitude is based on the amplitude of the earthquake waves recorded on instruments, which have a common calibration. The Richter scale, a logarithmic scale ranging from 0.1 to 9.0, with 9.0 being the strongest, measures the magnitude of an earthquake relative to ground shaking. **Table 3.6-2** provides a description and a comparison of intensity and magnitude.

TABLE 3.6-2: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES

<i>RICHTER MAGNITUDE</i>	<i>MODIFIED MERCALLI SCALE</i>	<i>EFFECTS OF INTENSITY</i>
0.1 – 0.9	I	Earthquake shaking not felt
1.0 – 2.9	II	Shaking felt by those at rest.
3.0 – 3.9	III	Felt by most people indoors, some can estimate duration of shaking.
4.0 – 4.5	IV	Felt by most people indoors. Hanging objects rattle, wooden walls and frames creak.
4.6 – 4.9	V	Felt by everyone indoors, many can estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle and glasses clink. Doors open, close and swing.
5.0 – 5.5	VI	Felt by all who estimate duration of shaking. Sleepers awaken, liquids spill, objects are displaced, and weak materials crack.
5.6 – 6.4	VII	People frightened and walls unsteady. Pictures and books thrown, dishes and glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	VIII	Difficult to stand. Waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers, and elevated tanks twist and fall.

7.0 – 7.4	IX	General fright as people are thrown down, hard to drive. Trees broken, damage to foundations and frames. Reservoirs damaged, underground pipes broken.
7.5 – 7.9	X	General panic. Ground cracks, masonry and frame buildings destroyed. Bridges destroyed, railroads bent slightly. Dams, dikes and embankments damaged.
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings. Pipelines destroyed, railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

The Fault Map of California (1975, Jennings, C.W., et al.) places Quaternary faults in the eastern and southern portion of Shasta County. Quaternary faults are those with the latest movement within the last two to three million years. The State of California (California Division of Mines and Geology) considers Quaternary faults to be potentially active. In the western portion of the County are older, inactive faults from which future movement is considerably unlikely.

Special Study Zones

The California Geologic Survey (CGS) evaluates the activity rating of a fault in fault evaluation reports (FER). FERs compile available geologic and seismologic data and evaluate if a fault should be zoned as active, potentially active, or inactive. If an FER evaluates a fault as active, then it is typically incorporated into a Special Studies Zone in accordance with the Alquist-Priolo Earthquake Hazard Act (AP). AP Special Study Zones are usually one-quarter mile or less in width and require site-specific evaluation of fault location and require a structure setback if the fault is found traversing a project site.

The California Division of Mines and Geology (CDMG) has prepared maps which identify Alquist-Priolo Earthquake Fault Zones in Shasta County. These maps were adopted in November 1991 by the CDMG and affect some rural areas in northeastern Shasta County which include generally the following areas:

- Portion of upper Butte Creek area north of Lassen Park. (southern McArthur Fault)
- Generally the Hat Creek Rim area including portions of Cassel. (Hat Creek Fault)
- Portions of the Day Bench area. (Pittville Fault)
- Eastern portions of Fall River Valley including eastern McArthur. (McArthur Fault)
- Portions of Long Valley north of Burney. (Rocky Ledge Fault)
- East of Johnson Park. (Rocky Ledge Fault)

SEISMIC HAZARDS

Seismic Ground Shaking

The potential for seismic ground shaking in California is present. As a result of the foreseeable seismicity in California, the State requires special design considerations for all structural improvements in accordance with the seismic design provisions in the California Building Code. These seismic design provisions require enhanced structural integrity based on several risk parameters.

Fault Rupture

A fault rupture occurs when the surface of the earth breaks as a result of an earthquake, although this does not happen with all earthquakes. These ruptures generally occur in a weak area of an existing fault. Ruptures can be sudden (i.e. earthquake) or slow (i.e. fault creep). The Alquist-Priolo Fault Zoning Act requires active earthquake fault zones to be mapped and it provides special development considerations within these zones.

Landslides

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as the geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides. One of the most common causes of landslides is construction activity that is associated with road building (i.e. cut and fill).

Landslides occur throughout Shasta County, although they have not been considered a major problem. Landslides are more prevalent in the eastern and northern portions of the County and are commonly related to the sedimentary and volcanic rocks in these vicinities. Landslides in the western portion of the County are not as widespread, but occur in areas of sedimentary and volcanic rocks. Seismically-induced landsliding is not considered a significant hazard in Shasta County.

Liquefaction

Liquefaction typically requires a significant sudden decrease of shearing resistance in cohesionless soils and a sudden increase in water pressure, which is typically associated with an earthquake of high magnitude. The potential for liquefaction is highest when groundwater levels are high, and loose, fine, sandy soils occur at depths of less than 50 feet.

Areas in Shasta County with the highest potential for liquefaction are located along the Sacramento River and its tributaries. The potential for an earthquake with the intensity and duration characteristics capable of promoting liquefaction is a possibility during the design life of a transportation facility.

Lateral Spreading

Lateral spreading typically results when ground shaking moves soil toward an area where the soil integrity is weak or unsupported, and it typically occurs on the surface of a slope, although it does

not occur strictly on steep slopes. Oftentimes, lateral spreading is directly associated with areas of liquefaction. Areas in Shasta County with the highest potential for lateral spreading are in the mountains and foothills.

Seiches

A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin that varies in size and period from a few millimeters to a few meters and from a few minutes to several hours, depending on the physical dimensions of the basin. Seiches chiefly arise as a result of sudden local changes in atmospheric pressure, aided by wind and occasionally tidal currents. Strong ground shaking can also trigger seiches as well as landslides entering the lake, reservoir, or bay.

Given the large holding capacity of Shasta Lake and Whiskeytown Lake, strong ground shaking could potentially generate seiches in both water bodies. In the case of Shasta Lake, the seiche would have to be over 20 meters in height in order to overtop Shasta Dam at full capacity. As flow is further regulated downstream from the dams, seiches are not considered a significant threat in Shasta County because the historical low level of seismicity.

NON-SEISMIC HAZARDS

Expansive Soils

Some soils have a potential to swell and shrink as they absorb water and then dry out. These expansive soils generally contain clays that expand when moisture is absorbed into the crystal structure. Most of Shasta County is characterized by moderately expansive soils with areas of low expansiveness in the south-central and southeastern portion of the County. Small scattered areas of highly expansive soils occur in the mountains of northeastern Shasta County.

Though expansive soils are not considered to pose a significant hazard within Shasta County, they are identifiable through standard soil tests and geotechnical reports. The hazards associated with expansive soils can be mitigated through proper geotechnical engineering, which is a requirement in Shasta County.

Erosive soils

Erosion naturally occurs on the surface of the earth as surface materials (i.e. rock, soil, debris, etc.) is loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The steepness of a slope is an important factor that affects soil erosion. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Loose soils can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover.

Excessive erosion will cause sedimentation and can damage or destroy waterway and riparian habitat, clog drainage structures, lakes and reservoirs, and floodplains. Activities by people, such as grading, frequently accelerate erosion and sedimentation. Shasta County places a special

concern for erosion in areas where the parent material is decomposed granite because once disturbed, decomposed granite soils are very difficult to restabilize and offer very poor nutritional support for reestablishment of vegetative cover. A significant band of decomposed granite soils is located west of the Redding area from west of Shasta Dam south to Clear Creek. Special development and erosion control practices are needed whenever soil disturbing activities are proposed in these areas.

Subsidence

Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is greatly accelerated) as a result of human activities. Common causes of land subsidence from human activity include: pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils. Subsidence is not considered to readily occur within Shasta County.

Volcanoes

Shasta County is at the southern end of the Cascade Range, an active volcanic chain that extends from Lassen Peak northward into British Columbia. The most recent volcanic activity in Shasta County was in 1914-1917, when eruption of Lassen Peak produced lava flows on the flank of the crater, numerous ash falls, and a large mudflow. The mudflow, a result from melting snow and ash, moved down Lost Creek and Hat Creek. Several days after the mudflow, a nuee ardente, or "hot cloud", which is a mass of incandescent ash and gas, flowed down the same creeks and covered a wider area. The only indications remaining of previous volcanic activity are hot springs and fumaroles (gas vents) and occasional small magnitude earthquake swarms below the mountain.

Hot springs and fumaroles are present on Mt. Shasta, though there is no evidence of recent historic volcanic activity. As with Lassen Peak, the danger from volcanic activity on Mt. Shasta may not necessarily be from an eruption but from mudflows. Historic mudflow maps indicate that some mudflows have traveled more than 18 miles down the flanks of Shasta. While the potential is there, it is doubtful that even a large mudflow from Mt. Shasta would endanger Shasta County, except in the case where a significant event occurred when Shasta Lake was completely full and spilling water for flood control.

Most of the eastern half of Shasta County is downwind from relatively active and explosive volcanoes and about 75 to 80 percent of ash from these volcanoes would be expected to fall within these areas. The U.S. Geological Survey and the State of California monitor activities at Lassen Peak and Mt. Shasta using seismometers and tiltmeters. With this system established, there should be sufficient warning of renewed volcanic activity.

3.6.2 REGULATORY SETTING

FEDERAL ---

Uniform Building Code (UBC)

The purpose of the Uniform Building Code (UBC) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. UBC standards address foundation design, shear wall strength, and other structurally related conditions.

STATE ---

The State of California has established a variety of regulations and requirements related to seismic safety and structural integrity, including the California Building Code, the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act.

California Building Code

The California Building Code (CBC) is included in Title 24 of the California Code of Regulations (CCR) and is a portion of the California Building Standards Code. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The CBC incorporates the Uniform Building Code, a widely adopted model building code in the United States. Through the CBC, the state provides a minimum standard for building design and construction. The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls and site demolition. It also regulates grading activities, including drainage and erosion control.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 sets forth the policies and Criteria of the State Mining and Geology Board, which governs the exercise of governments' responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones, as delineated on maps officially issued by the State Geologist. Working definitions include:

- Fault – a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side;
- Fault Zone – a zone of related faults, which commonly are braided and sub parallel, but may be branching and divergent. A fault zone has a significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles;
- Sufficiently Active Fault – a fault that has evidence of Holocene surface displacement along one or more of its segments or branches (last 11,000 years); and

- Well-Defined Fault – a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The geologist should be able to locate the fault in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

“Sufficiently Active” and “Well Defined” are the two criteria used by the State to determine if a fault should be zoned under the Alquist-Priolo Act.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

The State Geologist is required to delineate the various “seismic hazard zones.”

- Cities and Counties, or other local permitting authority, must regulate certain development “projects” within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.
- The State Mining and Geology Board provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.
- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

Caltrans Seismic Design Criteria

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC), which is an encyclopedia of new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis, and design practices for ordinary standard bridges. The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support, and Materials and Foundations. Memo20-1 outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively make up Caltrans’ seismic design methodology.

Surface Mining and Reclamation Act of 1975

The California Department of Conservation Surface Mining and Reclamation Act of 1975 (§ 2710), also known as SMARA, provides a comprehensive surface mining and reclamation policy that permits the continued mining of minerals, as well as the protection and subsequent beneficial use of the mined and reclaimed land. The purpose of SMARA is to ensure that adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition and readily adaptable for alternative land uses. The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, as well as aesthetic enjoyment. Residual hazards to public health and safety are eliminated. These goals are achieved through land use planning by allowing a jurisdiction to balance the economic benefits of resource reclamation with the need to provide other land uses.

If a use is proposed that might threaten the potential recovery of minerals from an area that has been classified MRZ-2, SMARA would require the jurisdiction to prepare a statement specifying its reasons for permitting the proposed use, provide public notice of these reasons, and forward a copy of the statement to the State Geologist and the State Mining and Geology Board (Cal. Pub. Res. Code Section 2762).

LOCAL

County and City General Plans

The seismic elements of the Cities of Anderson, Redding, and Shasta Lake and the County of Shasta contain goals, objectives, and policies aimed at reducing the seismic risk to people and property. Proponents of specific projects would be required to consult the applicable general plans and design the projects consistent with the applicable guidelines of the jurisdictions in which the projects are located.

Geotechnical Investigations

Each local jurisdiction within Shasta County regulates construction activities through a process that requires the preparation of a site-specific geotechnical investigation in order to assess the design limitations. The purpose of a site-specific geotechnical investigation is to provide a geologic basis for the development of appropriate construction design. Geotechnical investigations typically assess bedrock and Quaternary geology, geologic structure, soils, and the previous history of excavation and fill placement. Proponents of the individual RTP improvement projects may need to prepare geotechnical investigations prior to project design.

3.6.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on geology and soils if it will:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Strong seismic ground shaking; or
 - Seismic-related ground failure, including liquefaction;
- Result in substantial soil erosion or the loss of topsoil;
- 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 off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: The proposed project may expose people or structures to potential substantial adverse effects involving strong seismic ground shaking or seismic related ground failure (less than significant with mitigation)

Fault rupture has the potential to compromise the structural integrity of existing and new transportation improvements (including roadways, rail lines, streetcars, bridges, and other associated features) throughout Shasta County. Additionally, fault rupture could cause injury to construction workers and users of these improvements, depending on the design of such facilities.

Quaternary faults, which are considered potentially active, are mapped in the eastern and southern portion of Shasta County. In addition, the eastern portion of Shasta County has several areas that are mapped as an Alquist-Priolo Earthquake Fault Zone. These areas include: the upper Butte Creek area north of Lassen Park; the Hat Creek Rim area including portions of Cassel; portions of the Day Bench area; the eastern portions of Fall River Valley including eastern McArthur; portions of Long Valley north of Burney; and an area east of Johnson Park.

The highest risk of rupture is in the eastern and southern portions of the County, which are the less populated portions of the County. There will always be a chance that a fault located anywhere in the state (or region) could rupture and cause seismic ground shaking, although the relative risk to safety from the potential ground shaking within most of the County is considered low. Implementation of Mitigation Measure 3.6-1 would ensure that the proposed project has a **less than significant** impact.

MITIGATION MEASURES

Mitigation Measure 3.6-1: Implement Caltrans Seismic Design Criteria, and County and City General Plan standards, as appropriate, in project design to minimize the potential for fault rupture hazards on individual improvements.

Impact 3.6-2: Implementation of the RTP may result in substantial soil erosion or the loss of topsoil (less than significant with mitigation)

Grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas. Landslides (a form of erosion) occurs throughout Shasta County as a result of the natural characteristics of the region, although they have not been considered a major problem.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. However, each transportation improvement will include detailed project specific drainage plans that control storm water runoff and erosion, both during and after construction. The Regional Water Quality Control Board will require a project specific Storm Water Pollution Prevention Plan (SWPPP) to be prepared for each transportation improvement that disturbs an area one acre or larger. The SWPPPs will include project specific best management measures that are designed to control drainage and erosion. Implementation of the following mitigation measures would ensure that the RTP would have a **less than significant** impact from these issues.

MITIGATION MEASURES

Mitigation Measure 3.6-2: Prior to approval of RTP projects, the implementing agency should ensure projects will adequately address grading, erosion, sediment, and pollution control requirements of the Regional Water Quality Control Board (RWQCB). If one acre or more of land will be disturbed, the implementing agency should submit a Notice of Intent (N.O.I.) with appropriate fees and a Storm Water Pollution Prevention Plan (SWPPP) to the RWQCB.

Mitigation Measure 3.6-3: During construction, the implementing agency should ensure that control measures and practices are implemented, properly installed, and maintained during the construction of a project. The implementing agency should inspect the project area to verify that SWPPPs are being implemented. The implementing agency should develop and implement record keeping and data management procedures for evaluation of SWPPP compliance and reporting.

Impact 3.6-3: Individual RTP projects may be located on a geologic unit or soil that is unstable, or that would become unstable as a result of project implementation, and potentially result in liquefaction (less than significant with mitigation)

Liquefaction typically requires a significant sudden decrease of shearing resistance in cohesionless soils and a sudden increase in water pressure, which is typically associated with an earthquake of high magnitude. From a regional perspective, the soils located within the County are considered to

have a low potential for liquefaction. Areas in Shasta County with the highest potential for liquefaction are located along the Sacramento River and its tributaries. There is also potential for soil inclusions in other areas that have a higher liquefaction potential.

Lateral spreading typically results when ground shaking moves soil toward an area where the soil integrity is weak or unsupported, and it typically occurs on the surface of a slope, although it does not occur strictly on steep slopes. Oftentimes, lateral spreading is directly associated with areas of liquefaction. Areas in Shasta County with the highest potential for lateral spreading are in the mountains and foothills.

Landslides occur throughout Shasta County, although they have not been considered a major problem. Landslides are more prevalent in the eastern and northern portions of the County and are commonly related to the sedimentary and volcanic rocks in these vicinities. Landslides in the western portion of the County are not as widespread, but occur in areas of sedimentary and volcanic rocks. Seismically-induced landsliding is not considered a significant hazard in Shasta County.

The potential for an earthquake with the intensity and duration characteristics capable of promoting liquefaction, lateral spreading, and/or landslides is a possibility during the design life of a transportation facility. Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. Each RTP project would be required to have a specific geotechnical study prepared and incorporated into the improvement design. The geotechnical study would identify specific soil conditions, surface and subsurface drainage capability, slope steepness, and other factors that may contribute to liquefaction, lateral spreading, and landslide risk as well as soil inclusions that pose a higher risk of liquefaction. The geotechnical study would provide recommendations for mitigating any potential risk associated with site specific conditions. Implementation of project specific geotechnical engineering measures would reduce the safety risks of liquefaction, lateral spreading, and landslides to a reasonable level. Implementation of the following mitigation measure would ensure that the RTP would have a **less than significant** impact from these issues.

MITIGATION MEASURES

Mitigation Measure 3.6-4: Prior to approval of RTP projects, the implementing agency should assess the geologic risk associated with the project and if necessary retain a licensed geotechnical engineer to evaluate geologic conditions, including: liquefaction, lateral spreading, landslide, and expansion potential. For areas found to contain these conditions, the soil should be removed (i.e., over excavated) and/or stabilized prior to the placement and compaction of fill. Final soil engineering techniques should be developed by a licensed geotechnical engineer or engineering geologist.

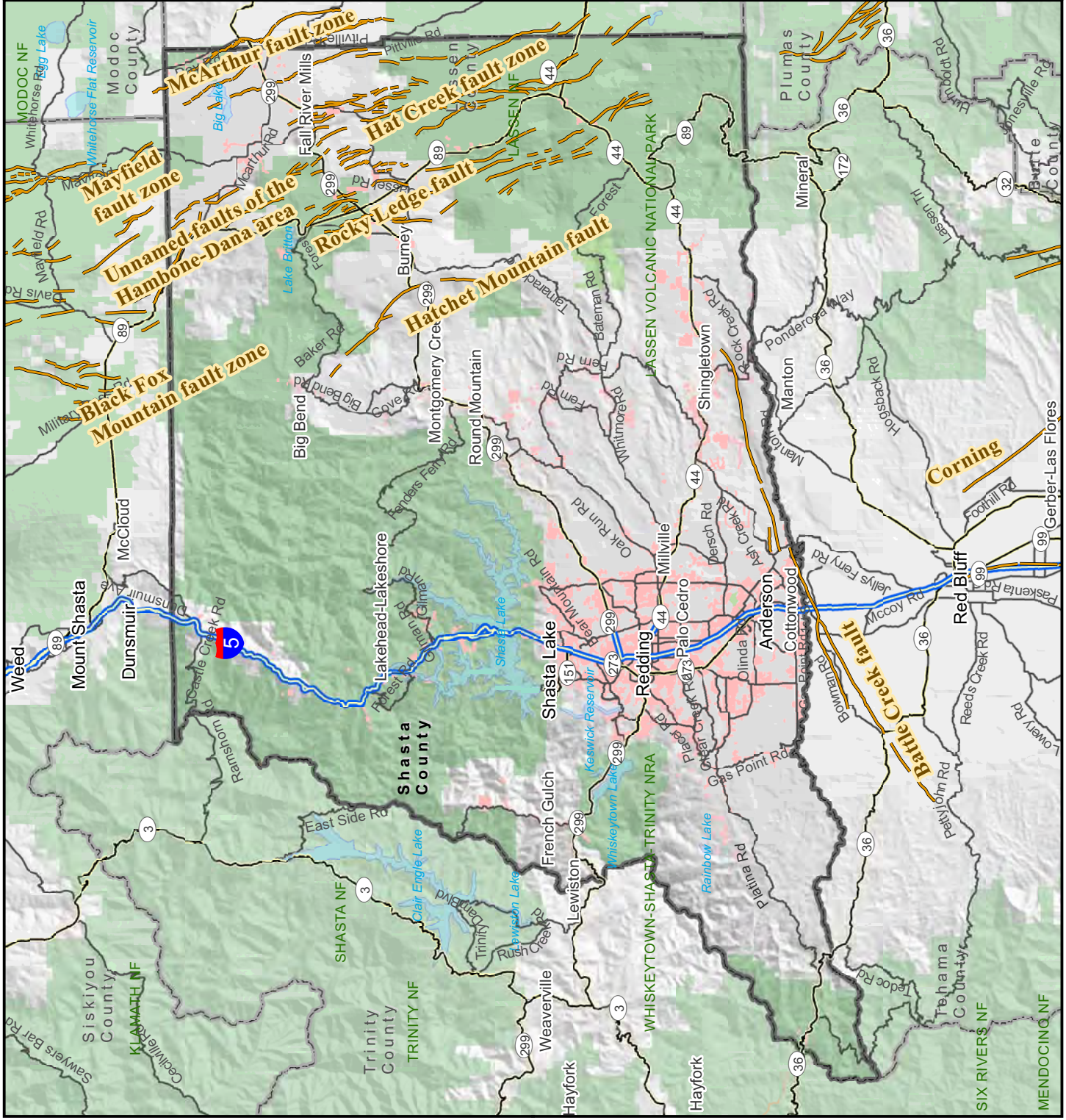
Impact 3.6-4: Individual RTP improvements may be located on expansive soils creating substantial risks to life or property (less than significant with mitigation)

Expansive soils are those that shrink or swell with the change in moisture content. The volume of change is influenced by the quantity of moisture, by the kind and amount of clay in the soil, and by the original porosity of the soil. Shrinking and swelling can damage roads and other structures unless special engineering design is incorporated into the project plans.

Most of Shasta County is characterized by moderately expansive soils with areas of low expansiveness in the south-central and southeastern portion of the County. Small scattered areas of highly expansive soils occur in the mountains of northeastern Shasta County. Expansive soils have the potential to compromise the structural integrity of existing and future facilities (including roadways, rail lines, streetcars, bridges, and other associated features).

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. Each RTP project would be required to have a specific geotechnical study prepared and incorporated into the improvement design. The geotechnical study would identify the specific soil conditions that may contribute to soil expansion. Based on specific findings at each locality, the geotechnical engineer will recommend detailed engineering measures that are necessary to reduce the risks associated with soil expansion. Implementation of project specific geotechnical engineering measures would reduce the risks from soil expansion to a reasonable level. Implementation of the following mitigation measure would ensure that the RTP would have a **less than significant** impact from expansive soils.

MITIGATION MEASURES*Implement Mitigation Measure 3.6-4*



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This section describes the regional green house gas (GHG) emissions, climate change, and impacts that are likely to result from project implementation. Following this discussion is an assessment of consistency of the proposed project with applicable policies and local plans. There was one written comment letter submitted on the Notice of Preparation related to air quality and climate change (Attorney General, October 22, 2008). Additionally, there was one verbal comment at the scoping meeting related to air quality and climate change (Department of Fish and Game, November 20, 2008). These comments are provided in Appendix A and they are addressed throughout Section 3.3 Air Quality and 3.7 Green House Gases and Climate Change. Information in this section is derived primarily from the following:

- 2010 Shasta County Regional Transportation Plan Update (Shasta County Regional Transportation Planning Agency, 2010)
- Shasta County 2004 Regional Transportation Plan (Shasta County, July 2004)
- Shasta County General Plan (September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan (Diaz Associates, June 1999)
- Northern Sacramento Valley Planning Area 2006 Air Quality Attainment Plan (Northern Sacramento Valley Planning Area Districts, 2006)
- Meteorology Today: An Introduction to Weather, Climate, & the Environment (C Donald Ahrens, 2006)
- Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report (California Energy Commission, 2006)

3.7.1 GREENHOUSE GASES AND CLIMATE CHANGE

ENVIRONMENTAL SETTING

Greenhouse Gases and Climate Change Linkages

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), ozone (O₃), water vapor, nitrous oxide (N₂O), and chlorofluorocarbons (CFCs).

Human-caused emissions of these GHGs, in excess of natural ambient concentrations, are responsible for enhancing the greenhouse effect (Ahrens 2003). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (California Energy Commission 2006a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (California Energy Commission 2006a).

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California is the 12th to 16th largest emitter of CO₂ in the world and produced 492 million gross metric tons of carbon dioxide equivalents in 2004 (California Energy Commission 2006a).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7% of total GHG emissions in the state (California Energy Commission 2006a). This category was followed by the electric power sector (including both in-state and out of-state sources) (22.2%) and the industrial sector (20.5%) (California Energy Commission 2006a).

Effects of Global Climate Change

The effects of increasing global temperature are far reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs is anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to a California Energy Commission report, the snowpack portion of the supply could potentially decline by 70% to 90% by the end of the 21st century (CEC 2006c). This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century and, according to the CEC report, it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels (CEC 2006c). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands (CEC 2006c). As the existing climate throughout California changes over times, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result. Under the emissions scenarios of the Climate Scenarios report (California Climate Change Center 2006), the impacts of global warming in California are anticipated to include, but are not limited to, the following.

PUBLIC HEALTH

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 to 35 percent under the lower warming range, to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

WATER RESOURCES

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages.

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25 percent of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by

as much as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70 to 90 percent. Under the lower warming scenario, snow pack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

AGRICULTURE

Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development will change, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk.

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

FORESTS AND LANDSCAPES

Global warming is expected to intensify this threat by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in

southern California are expected to increase by approximately 30 percent toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90 percent.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming.

RISING SEA LEVELS

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state's coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

3.7.2 REGULATORY SETTING

FEDERAL

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the United States (U.S.). Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the U.S. Environmental Protection Agency (EPA), was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992 (EPAct)

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of

alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPA requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPCA. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Federal Climate Change Policy

According to the EPA, “the United States government has established a comprehensive policy to address climate change” that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, “the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science.” The federal government’s goal is to reduce the greenhouse gas (GHG) intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012. In addition, the EPA administers multiple programs that encourage voluntary GHG reductions, including “ENERGY STAR”, “Climate Leaders”, and Methane Voluntary Programs. However, as of this writing, there are no adopted federal plans, policies, regulations, or laws directly regulating GHG emissions.

STATE

California Strategy to Reduce Petroleum Dependence (AB 2076)

AB 2076 (Chapter 936, Statutes of 2000) requires the CEC and the ARB to develop and submit to the Legislature a strategy to reduce petroleum dependence in California. The statute requires the strategy to include goals for reducing the rate of growth in the demand for petroleum fuels. In addition, the strategy is required to include recommendations to increase transportation energy efficiency as well as the use of non-petroleum fuels and advanced transportation technologies including alternative fuel vehicles, hybrid vehicles, and high-fuel efficiency vehicles.

The strategy, *Reducing California’s Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The strategy recommends that California reduce on-road gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

Bioenergy Action Plan – Executive Order #S-06-06

Executive Order #S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The executive order also calls for the state to meet a target for use of biomass electricity.

Governor's Low Carbon Fuel Standard (Executive Order #S-01-07)

Executive Order #S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of a Low Carbon Fuel Standard. The Low Carbon Fuel Standard shall be incorporated into the State Alternative Fuels Plan required by AB 1007 and is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to AB 32.

Senate Bill 97 (SB 97)

Senate Bill 97 was signed by the Governor on August 24, 2007. This bill would provide that in an environmental impact report, negative declaration, mitigated negative declaration, or other document required by CEQA for either transportation projects funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006, the failure to analyze adequately the effects of greenhouse gas emissions otherwise required to be reduced pursuant to regulations adopted under the Global Warming Solutions Act of 2006 does not create a cause of action for a violation of CEQA. The bill would provide that this provision shall apply retroactively for any of the above documents that are not final and shall be repealed on January 1, 2010.

The bill would require the Office of Planning and Research (OPR), by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. The OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the CARB pursuant to the California Global Warming Solutions Act of 2006.

Climate Action Program at Caltrans

In December 2006, the California Department of Transportation, Business, Transportation, and Housing Agency, issued a Climate Action Program. The goal of the Climate Action Program is to promote clean and energy efficient transportation, and provide guidance for mainstreaming energy and climate change issues into business operations. The overall approach to lower fuel consumption and CO₂ from transportation is twofold: (1) reduce congestion and improve efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems; and (2) institutionalize energy efficiency and GHG emission

reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

The reasoning underlying the Climate Action Program is the conclusion that “the most effective approach to addressing GHG reduction, in the short-to-medium term, is strong technology policy and market mechanisms to encourage innovations. Rapid development and availability of alternative fuels and vehicles, increased efficiency in new cars and trucks (light and heavy duty), and super clean fuels are the most direct approach to reducing GHG emissions from motor vehicles (emission performance standards and fuel or carbon performance standards).”

Assembly Bill 1493

In 2002, then Governor Gray Davis signed AB 1493. AB 1493 required the CARB to develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty truck and other vehicles determined by the ARB to be vehicles whose primary use is noncommercial personal transportation in the state.” To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California’s existing motor vehicle emission standards in 2004.

Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961), and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016. For passenger cars and light-duty trucks 3,750 pounds or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than the during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 pounds gross vehicle weight (GVW), GHG emissions are reduced approximately 24 percent between 2009 and 2016.

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufactures filed suit against the CARB to prevent enforcement of CCR 13 1900 and CCR 13 1961 as amended by AB 1493 and CCR 13 1961.1 (Central Valley Chrysler-Jeep et al., v. Catherine E. Witherspoon, in her official capacity as Executive Director of the California Air Resources Board et al.). The suit, being heard in the U.S. District Court for the Eastern District of California, contends that California’s implementation of regulations that in effect regulate vehicle fuel economy violates various federal laws, regulations, and policies. To date, the suit has not been settled, and the judge has issued an injunction stating CARB cannot enforce the regulations in question before receiving appropriate authorization from the EPA.

California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California’s GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state’s Climate Action Team.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

CARB, which is part of Cal-EPA, develops air quality regulations at the state level. The state regulations mirror federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988. In addition to developing regulations, CARB develops motor vehicle emission standards for California vehicles.

Senate Bill 375

SB 375 requires the ARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The 18 MPOs in California will prepare a "sustainable communities strategy" to reduce the amount of vehicle miles traveled (VMT) in their respective regions and demonstrate the ability for the region to attain ARB's targets. ARB would later determine if each region is on track to meet their targets. Builders also would get relief from certain environmental reviews under California Environmental Quality Act if they build projects consistent with the new sustainable community strategies. In addition, cities would get extra time -- eight years instead of five -- to update housing plans required by the state.

LOCAL

County and City General Plans

Shasta County and the cities of Anderson, Redding, and Shasta Lake have general plans that do not specifically include climate change elements or policies. However, some of these jurisdictions may have climate change policies at the time individual transportation projects within the RTP commence. Proponents of specific projects in the RTP would be required to consult the applicable General Plans and design the projects consistent with the guidelines of those General Plans in which the projects are located.

Shasta County Air Quality Management District

At the time this document was prepared, SCAQMD had not adopted specific thresholds of significance or a methodology for addressing climate change in CEQA documents. However, there is a readily accepted industry standard for analyzing GHG emissions in compliance with CEQA. The GHG impact methodology used in this EIR is described in greater detail below.

3.7.3 IMPACTS AND MITIGATION MEASURES

GHG THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY ---

Methodology

The Air Resources Board vehicle emissions model, EMFAC2007, was used in the analysis of CO₂ and fuel consumption impacts from on-road travel. This model assumes vehicle standards that have been implemented by state and Federal agencies, but does not assume standards that have been proposed but not implemented. Thus, the GHG emission standards are not included in the model's assumptions. The model assumes a relatively constant average miles per gallon through all forecast years.

The County-wide levels of GHGs associated with on-road vehicle travel were compared to County-wide population levels that existed upon adoption of the 2004 RTP to determine the 2004 per capita level of GHGs throughout the County. Per capita GHG levels associated with the 2010 RTP were calculated using the same methodology described above.

Thresholds of Significance

As described previously, the State Legislature and the global scientific community have found that global climate change poses significant adverse effects to the environment of California and the entire world. To mitigate these adverse effects the State Legislature enacted AB 32 which requires statewide GHG reductions to 1990 levels by 2020.

AB 32 and S-3-05 target the reduction of statewide emissions. It should be made clear that AB 32 and S-3-05 do not specify that the emissions reductions should be achieved through uniform reduction by geographic location or by emission source characteristics. For example, it is conceivable, although unlikely, that AB 32 goals could be achieved by new regulations that only apply to urban areas or that only apply to the transportation and/or energy sector.

For the purposes of this EIR, a GHG impact would be considered significant if implementation of the 2010 RTP does not assist in meeting the Statewide GHG reduction goals outlined in AB 32. It is important to note, however, that SCRTPA does not have land use planning authority within Shasta County. The land use patterns and development densities within the County and cities are regulated and planned for by Shasta County and the three incorporated cities, as outlined in their respective General Plans. Land use mixes and land use densities play a large role in generating vehicle trips and shaping transportation choices throughout Shasta County.

GHG IMPACTS AND MITIGATION MEASURES ---

Impact 3.7.1: Cumulative Effects on Climate Change and Global Warming (cumulatively considerable and significant and unavoidable)

SCRTPA's ability to address and mitigate climate change impacts is limited primarily to policy and funding decisions related to planned roadway and alternative transportation improvements. As

described above, the combustion of fossil fuels during vehicle operations is the primary source of GHG emissions in California. GHG emissions also result from the carbon dioxide, methane, and nitrous oxide that are released during the combustion of gasoline and diesel fuel in construction equipment, vehicles, buses, trucks, and trains; and the use of natural gas to power transit buses and other vehicles. As discussed previously, historical and current global GHG emissions are known by the State and the global scientific community to be causing global climate change, and future increases in GHG emissions associated with the proposed RTP could exacerbate climate change and contribute to the significant adverse environmental effects described previously. Furthermore, increased GHG emissions associated with the proposed RTP could impact implementation of the State's mandatory requirement under AB 32 to reduce statewide GHG emissions to 1990 levels by 2020.

CO2 emissions were projected from a baseline year of 1990 through the RTP buildout year of 2030 using EMFAC 2007 Version 2.3 model. Table 3.7-1 quantifies the projected CO2 emissions in tons per day using EMFAC data. The projection shows an increase in total emissions from 4630 tons per day to 6750 tons per day from 1990 to 2030. The trend is increasing for the study period; however, after 2010 the rate of CO2 emissions per day decreases from prior years through 2010, although total emissions per day still increases on an annual basis. In 2010 the emissions rate increases to a consistent rate through 2030, at which time, total CO2 Emissions are projected to be 6,750 tons per day.

TABLE 3.7-1: VMT, DAILY TRIPS, VEHICLES AND CO2 (1990 THROUGH 2030)

GHG EMISSION DATA						
Year	1990	2010	2015	2020	2025	2030
Total Daily VMT	3,886,000	5,663,000	6,582,000	7,632,000	8,678,000	9,823,000
Total Daily Trips	764,610	1,148,620	1,310,800	1,497,750	1,710,380	1,950,680
Vehicles	108,736	168,582	191,717	217,990	247,870	281,862
CO2 emissions (tons/day)	2,750	4,000	4,650	5,370	6,030	6,750

SOURCES: DE NOVO PLANNING GROUP, EMFAC 2007 VERSION 2.3 (2010).

The total VMT is projected to increase from 3,886,000 in 1990 to 9,823,000 in 2030, representing an increase of 152 percent over 40 years. The total daily trips are projected to increase from 764,610 trips in 1990 to 1,950,680 trips in 2030, representing an increase of 155 percent over 40 years. The total CO2 Emissions are projected to increase from 2,750 tons per day in 1990 to 6,750 tons per day in 2030, representing an increase of 145 percent over 40 years. It should be noted that this is likely an overestimate of VMT and CO2 emissions because the SCRTPA model is currently somewhat limited in its ability to capture a reduction in VMT and associated GHG's from increased transit ridership and smart growth-type developments due to the lack of calibrated transit mode share and calibrated 3D components in the traffic model. Calibrating and enabling these components in the future would provide more precise VMT and GHG estimations for the Shasta County region.

The regulatory and technological environment to implement the AB 32 reductions is in flux – no final implementing regulations for AB 32 have been adopted and thresholds of significance are not established. In this environment, SCRTPA has used the best available information to determine whether the proposed RTP is consistent with the State’s achievement of the AB 32 GHG emission reductions. Nevertheless, in light of the uncertainty in the regulatory and technological environment, the RTP incorporates all feasible mitigation measures, as set forth below, to reduce the impacts of the proposed project on global climate change. The RTP has also incorporated numerous policies, action items and funding priorities to develop and improve alternative modes of transportation throughout the County and the incorporated cities in Shasta County. The measures included in the RTP are consistent with the GHG mitigation approaches outlined by the California Attorney General’s Office in the May 21, 2008 report titled: *The California Environmental Quality Act, Addressing Global Warming Impacts at the Local Agency Level: Global Warming Measures*. The mitigation measures outlined below, and the policies and action items included in the RTP update are also consistent with the May 29, 2008 Addendum to the 2007 Regional Transportation Guidelines prepared by the California Transportation Commission: *Addressing Climate Change and Greenhouse Gas Emissions During the RTP Process*.

GHG emissions associated with implementation of the proposed RTP are primarily related to a projected increase in County-wide VMT as a result of projected growth in the unincorporated areas of Shasta County and the incorporated cities in the County. As described previously, SCRTPA does not have land use authority within the County or the incorporated Cities. Therefore, SCRTPA’s ability to mitigate for climate change impacts in this EIR and the RTP update is largely limited to improvements in alternative modes of transportation that may result in decreases in VMT throughout the County.

Between 2000 and 2009, U.S. Census data shows that Shasta County and its incorporated cities have experienced a wide range of development and population growth, ranging from 12.4 percent in Redding to 19.3% in Anderson over the nine year period. The unincorporated county experienced a relatively high rate of development and population growth at 30.8 percent over this same period. Shasta County as a whole has grown by 12.1 percent over this period, which is approximately one percent lower than the State average.

ShastaFORWARD>>Regional Blueprint Planning

Because of the increasing growth pressures in the Shasta County region, SCRTPA has been pursuing a multi-faceted planning process to help provide for a more informed land use and transportation decision-making process, and provide an improved environmental permitting process for future transportation and land use projects in the region.

In 2007, the SCRTPA started a regional blueprint planning program, called “ShastaFORWARD>>”. Funded by state grants, the program has involved an unprecedented public outreach effort to solicit input from as many residents of Shasta County as possible. The purpose of a blueprint is to explore planning options to create communities or nodes of development that are less dependent on the automobile. Air quality, traffic congestion, fiscal constraints, and quality of life concerns have all stimulated these efforts. Pedestrian and transit-oriented designs with mixed-use

development are being experimented within other communities. They show promise in addressing the land use/transportation link and other related issues.

PREFERRED GROWTH ALTERNATIVE

Many of the issues identified by the public in the ShastaFORWARD>> process coincide with land use/transportation link concepts, such as compact urban form and pedestrian- and transit-oriented design. In terms of raw survey responses, Scenario B (Urban Core & Corridors) was selected by nearly one-half (48.7%) of all survey participants. Scenario C (Distinct Cities & Towns) was nearly as popular, garnering over 40.5% of the vote. Based on a combined analysis of survey responses and open-ended comments, a melding of Scenario B and Scenario C is recommended to inform future implementation efforts. Scenario B and Scenario C are discussed below. The Final Report was approved by the SCRTPA Board in February 2010. The Final Report will be presented to the city councils and Board of Supervisors in Shasta County.

Scenario B -Urban Core & Corridors

'Scenario B' focuses on the benefits of urban living without sacrificing the closeness and accessibility of Shasta County's unique natural setting. Conceptually, this scenario resembles a 'hub and spoke' development pattern. Employment, commerce, and regional destinations are focused within an urban 'hub'. Radiating outward along a select number of transportation corridors or 'spokes', are linear communities containing a mix of multifamily housing, townhouses, neighborhood commercial, and traditional neighborhoods.

The area of developed land in the regional core stays about the same size as today, but previously passed over and underutilized land is filled in over time. Residents travel in and out of the urban core for work and regional shopping, but have access to routine goods and services close to home. Between urban corridors, a network of interconnected open space enhances the connection between urban and natural areas. A regional trails network provides access to open space and doubles as non-motorized transportation corridors to and from the urban core. By concentrating new development along select corridors, miles of additional new roadways are greatly reduced. More focused investments in public transportation, bicycling, and walking facilities along the urban corridors make transportation options more accessible and convenient to use. Public infrastructure is likewise combined along these key corridors to help reduce housing costs. Large lot development continues to occur, but is grouped together at the end of urban corridors.

Scenario C - Distinct Cities & Towns

'Scenario C' focuses on maintaining individual community identity and a strong sense of place. Rather than have Shasta County's cities and towns grow together into one large metropolitan area, individual communities focus their energies inward. Each 'micropolitan' area contains a well-defined, cohesive, and compact city or town built around an appropriately-scaled downtown and community gathering places. Surrounding open spaces serve as buffers between cities and towns and help meet the functional needs of the natural environment and nearby agriculture production.

The size of each city/town is based on a locally-defined 'build-out' area. Infill and redevelopment are used to knit respective communities together and take advantage of existing public

infrastructure and services. Transportation investments are used to link respective cities and towns as well as support a wide range of mobility choices within each individual community.

Local government policies and programs work in concert to encourage more 'complete' and economically self-sufficient communities; places where residents can live, work, and shop. Economic growth, population, and political clout are more evenly distributed throughout the region. Rural development is primarily located on the fringe of designated cities and towns, but clustered or grouped together in order to make the best use of infrastructure and avoid disruption to prime agricultural lands, open spaces, and environmentally sensitive areas.

SUSTAINABLE COMMUNITY STRATEGY

Although an adopted Sustainable Communities Strategy (SCS) is not required until the 2015 RTP update, SCRTPA is considering pursuing SCS development at this time to capitalize on the momentum generated by ShastaFORWARD>> and to allow the region to build and test an SCS under real-world conditions for several years prior to the requirement. Experience gained and lessons learned during this time will be utilized to address potential issues and to allow desired modifications prior to the SCS element's formal inclusion in the 2015 RTP.

Development of an SCS will involve; (1) the development of a Map-based 'Mobility Assessment Tool' (MAT) in order to objectively identify high priority locations for new development, and (2) the development of a community-driven 'Regional Priorities Compact' for uniform local agency consideration. This process will develop a strategy that has the highest degree of transportation system connectivity and the greatest potential for reducing vehicle miles traveled (VMT)

Existing Transit Systems in Shasta County

Public transportation in Shasta County is provided by the Redding Area Bus Authority (RABA) which provides rides to over 650,000 people each year, and has been serving the Redding, Anderson, and Shasta Lake communities since 1981. RABA provides both fixed route and demand response transit services. The fixed route service consists of 12 routes with more than 450 individual stops. The demand response service provides curb-to-curb transportation for individuals who, because of a mobility impairment, are not able to use a regular fixed route system. RABA's transportation system links residential, industrial, commercial, and retail centers within Shasta County. Rural services consist of Express routes (commuter) to Burney.

The following public and private entities also provide transportation within Shasta County:

- Far Northern Regional Center: Serves persons with developmental disabilities by providing transportation to day programs and work sites within Shasta County.
- Golden Umbrella, Inc.: Serves seniors within Redding City Limits to/from the Golden Umbrella Centers and to medical appointments.
- Pitt River Health Services: Serves Native Americans within Modoc, Lassen, Shasta, and Siskiyou Counties requiring health care services.

- Redding Rancheria Indian Tribe: Serves Native Americans with a variety of health services. Service area includes the western two-thirds (2/3) of Shasta County and all of Trinity County.
- Shascade Community Services, Inc.: Serves persons with developmental disabilities. Service area covers the south central region of Shasta County from Mountain Gate to Cottonwood and from Bella Vista and Palo Cedro to west Redding.
- Shasta College: Serves college students to/from remote portions of Shasta County and Tehama and Trinity Counties.
- Shasta County Lifeline Services (operated by: Shasta Senior Nutrition Programs, Inc.): Serves elderly and disabled persons with service to Redding from Burney, Johnson Park, Cottonwood, Bella Vista, Palo Cedro, Happy Valley and Lakehead.
- Shasta County Opportunity Center: Serves individuals with disabilities throughout Shasta County.
- Shasta County Superintendent of Schools: Serves students with special needs throughout Shasta County.
- Shasta Head Start: Serves low income families with children throughout south, central, and eastern Shasta County.
- Shasta Senior Nutrition Programs, Inc.: Serves persons 60 years of age and older. Service area includes: Greater Redding area north to Mountain Gate, west to Old Shasta, east to Stillwater Road, and south to Cottonwood; Eastern Shasta County - Burney, Johnson Park, Cassel, Pitville, McArthur, Glenburn, Montgomery Creek, Round Mountain, Bella Vista, Whitmore, and Shingletown; Northern Shasta County - Lakehead, O'Brien, Jones Valley; Western Shasta County - Igo-Ono, French Gulch, and Keswick.
- Stillwater Learning Program: Serves disabled individuals with rehabilitation services. Service area includes Anderson, Redding, and Shasta Lake City.
- Veterans Administration: Serves veterans with medical needs throughout Butte, Shasta, and Trinity Counties.

Appendix D provides a detailed account of the benefits of investment into transit, bicycle, and pedestrian transportation facilities. The information provided in Appendix D is based on a published report titled "Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking" by Thomas Gotschi, Ph.D. and Kevin Mills, J.D. from the Rails to Trails Conservancy.

Action Plans Intended to Reduce GHG

The RTP includes numerous Action Plans that are intended to promote the use of Public Transportation, Rail, and Non-motorized systems. Section 2 Project Description provides numerous tables that show the planned facilities under each of these alternative modes.

CONCLUSION

As illustrated in this section the total VMT is projected to increase from 3,886,000 in 1990 to 9,823,000 in 2030, representing an increase of 152 percent over 40 years. The total daily trips are

projected to increase from 764,610 trips in 1990 to 1,950,680 trips in 2035, representing an increase of 155 percent over 40 years. The total CO₂ Emissions are projected to increase from 2,750 tons per day in 1990 to 6,750 tons per day in 2030, representing an increase of 145 percent over 40 years.

Implementation of the mitigation measures described below will assist in the reduction of per capita VMT levels throughout Shasta County, which will assist in meeting the stated goals of AB 32. As described throughout this EIR section, SCRTPA has included numerous projects and programs to promote the use and expansion of alternative transportation systems throughout the County and they continue to coordinate with local land use agencies to assist in the development of plans and policies aimed at reducing VMT.

The most critical step SCRTPA can take to reduce GHGs at this point is to implement the “ShastaFORWARD>>” blueprint and to develop a sustainable communities strategy (SCS), as required by SB 375. The SCRTPA has taken concrete steps to initiate and advance these regional planning efforts, including securing grant funding, initiating extensive public outreach, land use planning coordination with the incorporated cities and Shasta County, the development of a regional growth model, selection of a preferred growth scenario, and the preparation of a final report. The SCRTPA is committed to the continued development of the sustainable communities strategy, and will continue to work with the Regional Target Advisory Committee (RTAC) to identify regional GHG reduction goals specific to Shasta County and the SCRTPA. The sustainable communities strategy process is scheduled to be completed prior to adoption of the next (2015) RTP.

However, even after implementation of all of the policies, action plans, and mitigation measures included in the RTP and this EIR, the proposed project will still contribute to an overall increase in GHGs generated in Shasta County. Therefore, this is considered a ***cumulatively considerable and significant and unavoidable*** impact.

MITIGATION MEASURES

Mitigation Measure 3.7-1: The SCRTPA should coordinate with local and regional agencies to assist in efforts to develop local and regional CAPs (Climate Action Plans) that address climate change and greenhouse gas emissions. Local and regional CAPs should include the following components:

- *Baseline inventory of GHG emissions from community and municipal sources.*
- *A target reduction goal consistent with AB 32.*
- *Policies and measures to reduce GHG emissions.*
- *Quantification of the effectiveness of the proposed policies and measures.*
- *A monitoring program to track the effectiveness and implementation of the CAP(s).*

SCRTPA’s role in the development of local and regional CAPs should include:

- *Assistance in seeking and securing funding for the development of local and regional CAPs.*

- *Collaboration with local and regional agencies throughout their respective planning processes.*

Mitigation Measure 3.7-2: Assist local agencies with the development of an Alternative Fuel Vehicle and Infrastructure Policy. The policy should include provisions that address best practices, and standards related to saving energy and reducing GHG emissions through AFV use, including:

- *A procurement policy for using AFV by franchisees of these cities, such as trash haulers, green waste haulers, street sweepers, and curbside recyclable haulers. Such AFVs should have GHG emissions at least 10 percent lower than comparable gasoline- or diesel-powered vehicles.*
- *A fleet purchase policy to increase the number of AFVs (i.e., vehicles not powered strictly by gasoline or diesel fuel) for municipally owned fleets.*
- *A public education policy to encourage the use of alternative fuel vehicles and development of supporting infrastructure.*

Mitigation Measure 3.7-3: Develop a Sustainable Communities Strategy (SCS) in compliance with SB 375 and building off of the work completed during the ShastaFORWARD>> blueprint planning process. During the development of the SCS explore the feasibility of a transportation pricing policy with the transit system and selected portions of the road network to encourage people to drive less and increase use of transit, walking and bicycling modes. Such a policy may include: free or reduced transit fares during high pollution days; fare-free zones on the transit system; transit vouchers; days on which transit is free; congestion pricing options for portions of the road system, such as tolls on freeways and highways; and parking fees to park in certain high-traffic areas served by public transit (e.g., downtown Redding). The SCS should also consider incorporating a complete streets policy with a strong focus on identifying opportunities to create more active transportation within the region (i.e. bike and pedestrian facilities).

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This section provides an overview of the potential for presence of hazardous materials throughout the planning area, and the effects that transportation facilities can have on human health. Potential problems related to hazardous materials include water and soil contamination, health hazards from existing or historic land uses that utilize or generate these materials, and improper disposal of these materials by business, industry, and individual households. This section concludes with an evaluation of the impacts and recommendations for mitigating impacts. No written comments were received during the public review period for the Notice of Preparation regarding this topic. One verbal comment regarding human health related to transportation facilities was provided during the scoping meeting. Information in this section is derived primarily from the following:

- Shasta County General Plan Background Report (As amended through September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan (Diaz Associates, June 1999)
- Cortese List (Cal EPA Department of Toxic Substances Control, October 2009)
- Cleanup Sites and Hazardous Waste Permitted Facilities (Cal EPA Department of Toxic Substances Control, October 2009)

3.8.1 ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS DEFINED

Under Title 22 of the California Code of Regulations (CCR), the term hazardous substance refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: toxicity, ignitability, corrosiveness, and reactivity (CCR Title 22, Chapter 11, Article 3). A hazardous material is defined as a substance or combination of substances that may cause or significantly contribute to an increase in serious, irreversible, or incapacitating illness, or may pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, discharged, spilled, or contaminated or are being stored until they can be disposed of properly (CCR Title 22, Chapter 11, Article 2, Section 66261.10). While hazardous substances are regulated by multiple agencies, cleanup requirements are determined on a case-by-case basis according to the agency with lead jurisdiction over the project.

Public health is potentially at risk whenever hazardous materials are, or will, be used. It is necessary 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 health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material (California Department of Toxic Substances Control, <http://www.dtsc.ca.gov/>).

Factors that can influence the health effects when human beings are exposed to hazardous materials include: the dose the person is exposed to, 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.

TRANSPORTATION OF HAZARDOUS MATERIALS

The transportation of hazardous materials within the State of California is subject to various federal, State, and local regulations. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery, or the loading of such materials (California Vehicle Code §§ 31602(b), 32104(a)). The California Highway Patrol (CHP) designates through routes to be used for the transportation of hazardous materials. Transportation of hazardous materials is restricted to these routes except in cases where additional travel is required from that route to deliver or receive hazardous materials to and from users.

AIRPORT OPERATIONS HAZARDS

Hazards associated with airport operations are generally associated with aircraft accidents. Aircraft accidents of most concern occur during takeoff and landing operations during which aircraft are operated close to the ground and within close proximity to one another. Potential hazards around an airport can be increased due to many external factors such as incompatible land uses in the vicinity of the airport, installation of power transmission lines, wildlife hazards (i.e., bird strikes, migrating wildlife, etc.), and construction of tall structures.

In order to mitigate the potential hazards of tall structures within the vicinity of an airport, the Federal Aviation Administration (FAA) established an airport height restriction area, defined by Federal Aviation Regulation (FAR) Part 77. FAR Part 77 establishes "imaginary surfaces" around an airport where a structure is considered to pose a hazard to an aircraft. FAR Part 77 requires that the FAA be notified prior to construction of any structure that would pierce these imaginary surfaces. However, the FAA cannot prohibit the construction of such structures. The State of California goes further, requiring that a permit be obtained from the State Division of Aeronautics prior to construction of such a structure.

In addition to imaginary surfaces, a safety restriction area is established around airports within which it is assumed that hazards may exist to people or structures on the ground in the event of an aircraft accident. Nationwide studies of aircraft accidents have found the following:

- Almost half of all accidents occur on airport property.
- An additional 15 percent of aircraft accidents occur outside airport property but within one mile of the airport runway(s).
- A substantial concentration of aircraft accidents occur within the initial climb-out and the final approach sectors of airports.

Further refinement of this data points to an increased risk near the ends of the runway and under the airport traffic pattern. In order to reduce these risks, especially those related to land use in these area, safety restriction areas are established around airports which restrict certain land uses in the vicinity of the airport. Typically, three types of areas are established. The clear zone is an area at each end of the runway(s) within 200 feet of the runway threshold. The clear zone is the most restrictive safety area. The approach/departure zone extends beyond the clear zone and is aligned with the runway as well. The overflight zone represents the area commonly overflowed by aircraft utilizing the airport. The overflight zone surrounds the airport and is the least restrictive safety area.

Imaginary surfaces and safety restriction areas are established as part of the Comprehensive Land Use Plan (CLUP) or Airport Land Use Plan (ALUP) for the airport. Prepared and approved by the local Airport Land Use Commission, the CLUP or ALUP establishes guidelines for development in the vicinity of the airport in the areas of noise impacts, safety hazards, and height restriction.

DATABASES

There is a broad list of federal and state database that provide information for sites with varying potential for risk from the possible existence of hazardous materials. There are numerous redundancies among these various database listings. Below is a brief summary of each.

National Priorities List

The National Priorities List (NPL) of Superfund Sites is EPA's database of more than 1,200 sites designated for priority cleanup under the Superfund program. NPL sites may encompass relatively large areas.

RCRIS System

The Resource Conservation and Recovery Information System (RCRIS) is an EPA database that includes selective information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. Identification on this list does not indicate that there has been an impact on the environment.

CERCLIS Data

Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) is an EPA database that contains information on potential hazardous waste sites that have been reported to EPA by states, municipalities, private companies, and individuals, pursuant to Section 103 of CERCLA. CERCLIS contains sites that are either proposed for or on the NPL, as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

CORRACTS

Corrective Action Report (CORRACTS) is an EPA database that identifies hazardous waste handlers with RCRA corrective action activity.

RAATS System

RCRA Administrative Action Tracking System (RAATS) is an EPA database that contains records based on enforcement actions issued under RCRA pertaining to major violators, and includes administrative and civil actions brought by EPA.

PADS System

PCB Activity Database System (PADS) is an EPA database that identifies generators, transporters, commercial storers, and/or brokers and disposers of polychlorinated biphenyls (PCBs) who are required to notify EPA of such activities.

CHMIRS Data

The California Hazardous Material Incident Report System (CHMIRS) contains information on reported hazardous materials incidents (i.e., accidental releases or spills). The source of this information is the California Office of Emergency Services.

ERNS Sites

The Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances. The source of this database is the U.S. EPA.

Cortese Database

The Cortese database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with underground storage tanks (USTs) having a reportable release, and all solid waste disposal facilities from which there is known hazardous substance migration. The source of this database is the California Environmental Protection Agency (CAL-EPA).

LUST Reports

The Leaking Underground Storage Tank (LUST) Incident Reports contain an inventory of reported leaking underground storage tank incidents. This information comes from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

UST Database

The Underground Storage Tank (UST) database lists registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The UST information comes from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

HIST UST Sites

The Hazardous Substance Storage Container Database is a historical listing of UST sites. The data source is the State Water Resources Control Board.

CA FID Information

The Facility Inventory Database (CA FID) lists active and inactive underground storage tank locations. This database is maintained by the State Water Resources Control Board.

HAZNET Database

The Hazardous Waste Information System (HAZNET) includes data extracted from the copies of hazardous waste manifests each year by the State Department of Toxic Substances Control.

FINDS Data

The Facility Index System (FINDS) contains both facility information and "pointers" to other sources of information that contain more detail (e.g., RCRA Info, Permit Compliance System [PCS], Aerometric Information Retrieval System [AIRS]). The source of this information is the U.S. EPA.

FTTS Database

The Federal Toxics Tracking System (FTTS) tracks administrative cases and pesticide enforcement actions/compliance activities related to the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA), Toxic Substances Control Act (TSCA), and Emergency Planning and Community Right-to-Know Act (EPCRA). The source of this data is the Environmental Protection Agency (EPA) Office of Prevention, Pesticides, and Toxic Substances.

CA SLIC Database

The statewide Spills, Leaks, Investigations, and Cleanups (CA SLIC) database includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites. The data source is the State Water Resources Control Board.

Notify 65 Records

Proposition 65 Notification Records (Notify 65) contain facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The State Water Resources Control Board maintains this database.

EMI Data

Emissions Inventory Data (EMI) is comprised of toxics and criteria pollutant emissions data collected by the state Air Resources Board and local pollution agencies.

Manufactured Gas Plant Database

This database includes records of coal gas plants (manufactured gas plants), which were in operation in the U.S. until the 1950s. Due to common past practices, the potential for on-site hazardous by-products (such as coal tar, sludge, oils, and chemical compounds) remains on such sites, which could result in soil or groundwater contamination. These records are maintained by EDR, Inc., as part of its proprietary database.

SWEEPS Records

The Statewide Environmental Evaluation and Planning System (SWEEPS) UST list, which is no longer maintained or updated, was under the purview of the State Water Resources Control Board. Other agencies (e.g., as identified above) now maintain UST records.

3.8.2 REGULATORY SETTING

FEDERAL

The primary federal agencies that are responsible for overseeing regulations and policies regarding hazardous materials are the Environmental Protection Agency (EPA), Department of Labor Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Several laws governing the transport, storage, and use of hazardous materials are governed by these agencies as well as oversight for contaminated sites cleanup. Federal laws and regulations that are applicable to hazards and hazardous materials are presented below.

HAZARDOUS MATERIALS TRANSPORTATION ACT

The Hazardous Materials Transportation Act, as amended, is the basic statute regulating hazardous materials transportation in the United States. The purpose of the law is to provide adequate protection against the risks to life and property inherent in transporting hazardous materials in interstate commerce. This law gives the U.S. Department of Transportation (USDOT) and other agencies the authority to issue and enforce rules and regulations governing the safe transportation of hazardous materials (DOE 2002).

Resource Conservation and Recovery Act

The 1976 Federal Resource Conservation and Recovery Act (RCRA) and the 1984 RCRA Amendments regulate the treatment, storage, and disposal of hazardous and non-hazardous wastes. The legislation mandated that hazardous wastes be tracked from the point of generation to their ultimate fate in the environment. This includes detailed tracking of hazardous materials during transport and permitting of hazardous material handling facilities.

The 1984 RCRA amendments provided the framework for a regulatory program designed to prevent releases from USTs. The program establishes tank and leak detection standards, including spill and overflow protection devices for new tanks. The tanks must also meet performance standards to ensure that the stored material will not corrode the tanks. Owners and operators of USTs had until December 1998 to meet the new tank standards. As of 2001, an estimated 85 percent of USTs were in compliance with the required standards.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (the Act) introduced active federal involvement to emergency response, site remediation, and spill prevention, most notably the Superfund program. The Act was intended to be comprehensive in encompassing both the prevention of, and response to, uncontrolled hazardous substances releases. The Act deals with environmental response, providing mechanisms for reacting to

emergencies and to chronic hazardous material releases. In addition to establishing procedures to prevent and remedy problems, it establishes a system for compensating appropriate individuals and assigning appropriate liability. It is designed to plan for and respond to failure in other regulatory programs and to remedy problems resulting from action taken before the era of comprehensive regulatory protection.

Natural Gas Pipeline Safety Act

The Natural Gas Pipeline Safety Act authorizes the U.S. Department of Transportation Office of Pipeline Safety to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas. The Office of Pipeline Safety regulates the design, construction, inspection, testing, operation, and maintenance of pipeline facilities. While the federal government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for State assumption of the intrastate regulatory, inspection, and enforcement responsibilities under an annual certification. To qualify for certification, a state must adopt the minimum federal regulations and may adopt additional or more stringent regulations as long as they are not incompatible.

STATE

The primary state agencies that are responsible for overseeing regulations and policies regarding hazardous materials are the California Office of Emergency Services (OES), California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC), California Department of Transportation (Caltrans), California Highway Patrol (CHP), California Water Quality Control Board, and the California Air Resources Board. Several laws governing the generation, transport, and disposal of hazardous materials are administered by these agencies. State laws and regulations that are applicable to hazards and hazardous materials are presented below.

California Health and Safety Code

Cal-EPA has established rules governing the use of hazardous materials and the management of hazardous wastes. Many of these regulations are embodied in the California Health and Safety Code. The code includes regulations that govern safe drinking water, substances control, land reuse and revitalization, remediation, restoration, and methamphetamine contaminated cleanups.

California Code of Regulations Title 22 and Title 26

The California Code of Regulations (CCR) Title 22 provides state regulations for hazardous materials, and CCR Title 26 provides regulation of hazardous materials management. In 1996, Cal/EPA established the “Unified Hazardous Waste and Hazardous Materials Management Regulatory Program” (Unified Program) which consolidated the six administrative components of hazardous waste and materials into one program.

LOCAL

County and City General Plans

The safety elements of the Cities of Anderson, Redding, and Shasta Lake and the County of Shasta contain goals, objectives, and policies aimed at reducing hazards and improving human health conditions throughout their respective jurisdictions. Proponents of specific projects would be required to consult the applicable general plans and design the projects consistent with the applicable guidelines of the jurisdictions in which the projects are located.

Certified Unified Program Agency (CUPA)

The California Environmental Protection Agency designates specific local agencies as Certified Unified Program Agencies (CUPA), typically at the county level. Each designated CUPA is responsible for the implementation of six statewide programs within its jurisdiction. These programs include:

- Underground storage of hazardous substances (USTs)
- Hazardous Materials Business Plan (HMP) requirements
- Hazardous Waste Generator requirements
- California Accidental Release Prevention (Cal-ARP) program
- Uniform Fire Code hazardous materials management plan
- Above Ground Storage Tanks (Spill Prevention Control; and Countermeasures Plan only)

Implementation of these programs involves:

- Permitting and inspection of regulated facilities.
- Providing educational guidance and notice of changing requirements stipulated in State or Federal laws and regulations.
- Investigations of complaints regarding spills or unauthorized releases.
- Administrative enforcement actions levied against facilities that have violated applicable laws and regulations

The Cal/EPA designated CUPAs for Shasta County is the Shasta County Department of Environmental Health. The Cal/EPA performed an evaluation of the CUPA for Shasta County in February 2009 and found that it meets or exceeds its program responsibilities.

Shasta County Hazard Mitigation Plan

Shasta County is currently in the process of preparing a Hazard Mitigation Plan that considers multiple hazardous risks including earthquake, flood, and fire events. The Plan will be prepared in accordance with federal regulations that govern local government hazard mitigation plans and will require coordination and approval by the Federal Emergency Management Agency (FEMA).

3.8.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact from hazards and hazardous materials if it will:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- 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?
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
- Be located on a site which is included on a list of hazardous materials 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?
- 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?
- 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?
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- 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?

IMPACTS AND MITIGATION MEASURES

Impact 3.8-1: Potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (less than significant)

Construction of the individual RTP projects may involve the transportation, use, and/or disposal of hazardous materials, which may involve the use of equipment that contains hazardous materials (e.g., solvents and fuels, diesel-fueled equipment), or the transportation of excavated soil and/or groundwater containing contaminants from areas that are identified as being contaminated. However, the transportation of hazardous materials is heavily regulated and monitored by federal, state, and local regulations and policies. All transportation of hazardous materials, if any, will be required to comply with all existing regulations and policies. Compliance with all existing regulations and policies would ensure that the impact would be **less than significant**, and no additional mitigation is required.

Impact 3.8-2: Potential hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (less than significant)

Hazardous Solvents and Architectural Coatings. The construction and maintenance of individual RTP projects would involve the use of solvents and architectural coatings that may be considered hazardous if not properly used. Typically, “leftover” materials are used on other projects when possible. In any case, the handling and disposal of these products would be governed according to regulations enforced by local fire departments, Certified Unified Program Agencies (CUPAs), the State Division of Occupational Safety and Health, and the Department of Toxic Substances Control. In addition, regulations under the federal and state Clean Water Act require contractors to avoid allowing the release of materials into surface waters. Based on requirement of compliance with the existing regulatory environment, the impact would be **less than significant**.

Asbestos. The construction of RTP projects within areas that are known to have naturally occurring asbestos, or areas where asbestos is contained with existing structures, could lead to the disturbance and release of asbestos fibers. Earthmoving, excavation, and demolitions of materials containing asbestos requires monitoring to insure that they are not used as soil or fill materials, and that they are properly disposed of in accordance with federal and state regulations.

Based upon the regional nature of the RTP, development of detailed, site-specific information on this impact at an RTP planning level is not feasible. The implementing agency of each RTP project will conduct appropriate project-level assessments and will be responsible for consideration of mitigation measures for significant effects on the environment. If asbestos is deemed present, an Asbestos Hazard Dust Mitigation Plan would be prepared to ensure that adequate dust control and asbestos hazard mitigation measures are implemented during project construction. Implementation of the mitigation measures presented in Section 3.3 Air Quality would ensure that this potential impact is reduced to a **less than significant** level.

Impact 3.8-3: Potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (less than significant)

There are 69 schools (K-12) that serve 28,000 students within Shasta County. In addition, Shasta-Tehama-Trinity Community College is located near Redding, with extended education sites in Anderson, Burney, Corning, Hayfork, Los Molinos, McArthur, Red Bluff, the Redding Rancheria, and Weaverville. Because of the regional nature of the transportation improvements, some will inevitably be located within ¼ mile of a school. Hazardous materials used in construction of an RTP project in the vicinity of a school, or other sensitive receptors such as hospitals and residences, could be accidentally released. In the event of a hazardous materials spill or release, notification and cleanup operations would be performed in compliance with applicable federal, state, and local regulations and policies, including hazard mitigation plans. Compliance with all existing regulations, policies, and hazard mitigation plans would ensure that the impact would be **less than significant**, and no additional mitigation is required.

Impact 3.8-4: Impact from being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (less than significant with mitigation)

As of October, 2009, there were a total of 59 sites in Shasta County where DTSC is currently or had previously been involved in the investigation and/or cleanup/permitting activities, including Historical; Evaluation; Military Evaluation; School Evaluation; Border Zone and CalMortgage sites.

Of the 59 sites, 51 are in the preliminary phase of a site investigation, or were found to have no contamination, or were referred to another agency or program. Only eight locations have extensive investigation and/or cleanup actions are planned or have been completed. Of these eight locations, only one site is a Federal Superfund Site, three sites are State Responses, two sites are Voluntary Cleanup Sites, and one is a Corrective Action Site. Of the eight listed sites, five are located in Redding, one is located in Burney, and two are located in Shasta Lake. **Table 3.8-1** lists these eight sites.

TABLE 3.8-1: ENVIROSTOR DATABASE

SITE/FACILITY NAME	SITE TYPE	STATUS	ADDRESS	CITY
Branstetter Mill	Voluntary Cleanup	Inactive Needs Evaluation	1535 Branstetter Lane	Redding
Color Craft	Voluntary Cleanup	No Further Action	4750 Caterpillar Road	Redding
Iron Mountain Mine	Federal Superfund Site - Listed	Active	Off Hwy 299 - 9 mi NW of Redding	Redding
PG&E MGP, Redding	State Response	Active	California, Gold, Oregon & South Streets	Redding
Sellar Brothers Radiator	State Response	Active	38312 Main Street	Burney
Short's Scrap Iron and Metal, Inc.	State Response	Active	2041 Girvan Road	Redding
Valley Plating	Corrective Action	Inactive	3872 El Cajon	Shasta Lake
Valley Plating Company	State Response	Active	3872 El Cajon	Shasta Lake

SOURCE: DEPARTMENT OF TOXIC SUBSTANCES CONTROL 2009

Any construction activities on, through, or adjacent to contaminated sites could lead to a disturbance and release of hazardous materials. The regulatory agencies, including federal, state, and local agencies, have identified sites that are or were contaminated at some point. Additionally, these agencies continue to pursue investigating properties that could potentially be contaminated and all information is maintained in a database system. Based upon the regional nature of the RTP, development of detailed, site-specific information on this impact at an RTP planning level is not feasible. The implementing agency of each RTP project will conduct appropriate project-level environmental review and will be responsible for consideration of mitigation measures for significant effects on the environment. Implementation of the following mitigation measure would ensure that this potential impact is reduced to a **less-than-significant** level.

MITIGATION MEASURES

Mitigation Measure 3.8-1: Prior to approval of RTP projects, the implementing agency should perform a Phase 1 Environmental Site Assessment that includes a review all known databases of contaminated sites. If it is determined that a project is located on or near a contaminated site a Phase II Environmental Site Assessment should be performed to sample the soils/groundwater and further investigate the extent of the contamination. Based on the results of the Phase II Environmental Site Assessment, the implementing agency should devise a remediation plan or avoid disturbance of contaminated areas, in compliance with appropriate regulatory agency requirements. All work should be conducted under a work plan approved by the regulatory oversight agency and should be conducted by a registered environmental assessor (pursuant to 22 CCR 69200).

Impact 3.8-5: Impact to people residing or working within two miles of a public airport, public use airport, or private airstrip. (beneficial)

Hazards related with airports are typically grouped into two categories: air hazards and ground hazards. Air hazards jeopardize the safety of an airborne aircraft and expose passengers, pilots and crews to danger. Examples of air hazards include tall structures, glare-producing objects, bird and wildlife attractants, radio waves from communication centers, or other features that have the potential to interfere with take-off or landing procedures, posing a risk to aircraft. Ground hazards jeopardize the safety of current and future residents and/or workers in the vicinity of an airport. The most obvious ground hazard is a crash, which may produce a serious, immediate risk to those residing in or using areas adjacent to the airport. Most accidents occur during take-off and landing. Therefore, the higher the density around an airport, including transportation facilities, the higher the risk associated with this type of hazard.

Some of the RTP projects are located at or adjacent to several airports within the County. These improvements are transportation related and do not create residences, or other habitable structures within proximity to the airport. Furthermore, these improvements do not create a safety risk for people residing in the area, and they do not conflict with the airport land use plans within Shasta County. The RTP would improve airport facilities, which is expected to improve the safety conditions located at these airports. This is a **beneficial impact**.

Impact 3.8-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (beneficial)

The RTP projects would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The RTP would improve transportation systems throughout the County, which is expected to improve the emergency response and evacuation routes throughout the County. This is a **beneficial impact**.

Impact 3.8-7: Expose people or structures to a risk of loss, injury or death from wildland fires. (beneficial)

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope). Steep slopes contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Fuels such as grass are highly flammable because they have a high surface area to mass ratio and require less heat to reach the ignition point, while fuels such as trees have a lower surface area to mass ratio and require more heat to reach the ignition point.

Wild fires are a major hazard in the State of California. Wild fires burn natural vegetation on developed and undeveloped lands and include timber, brush, woodland, and grass fires. While low intensity wild fires have a role in the County's ecosystem, wild fires put human health and safety, structures (e.g., homes, schools, businesses, etc.), air quality, recreation areas, water quality, wildlife habitat and ecosystem health, and forest resources at risk.

Shasta County has areas with the appropriate fuel loading, and topography for wildfire. When this is combined with the warm and dry summers with temperatures often exceeding 100 degrees Fahrenheit the risk of wildfire increases substantially. Most wildland fires are human caused, so areas with easy human access to land with the appropriate fire parameters generally result in an increased risk of fire.

The RTP projects would not result in the construction of structures that would be occupied by humans; therefore, it would not expose people or structures to a significant risk involving wild fires. The RTP provides for improvements to transportation systems throughout the County, which is expected to improve the ability for fire protection services to access areas that have a high wild fire risk rating. This is considered a **beneficial impact**.

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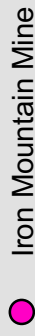
Draft EIR Shasta County 2010 RTP

Legend

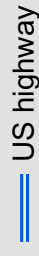
EPA Site Subject to
Environmental Regulation



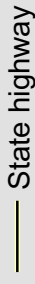
Superfund Site
(National Priorities List)



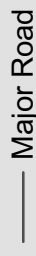
Iron Mountain Mine



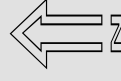
US highway



State highway



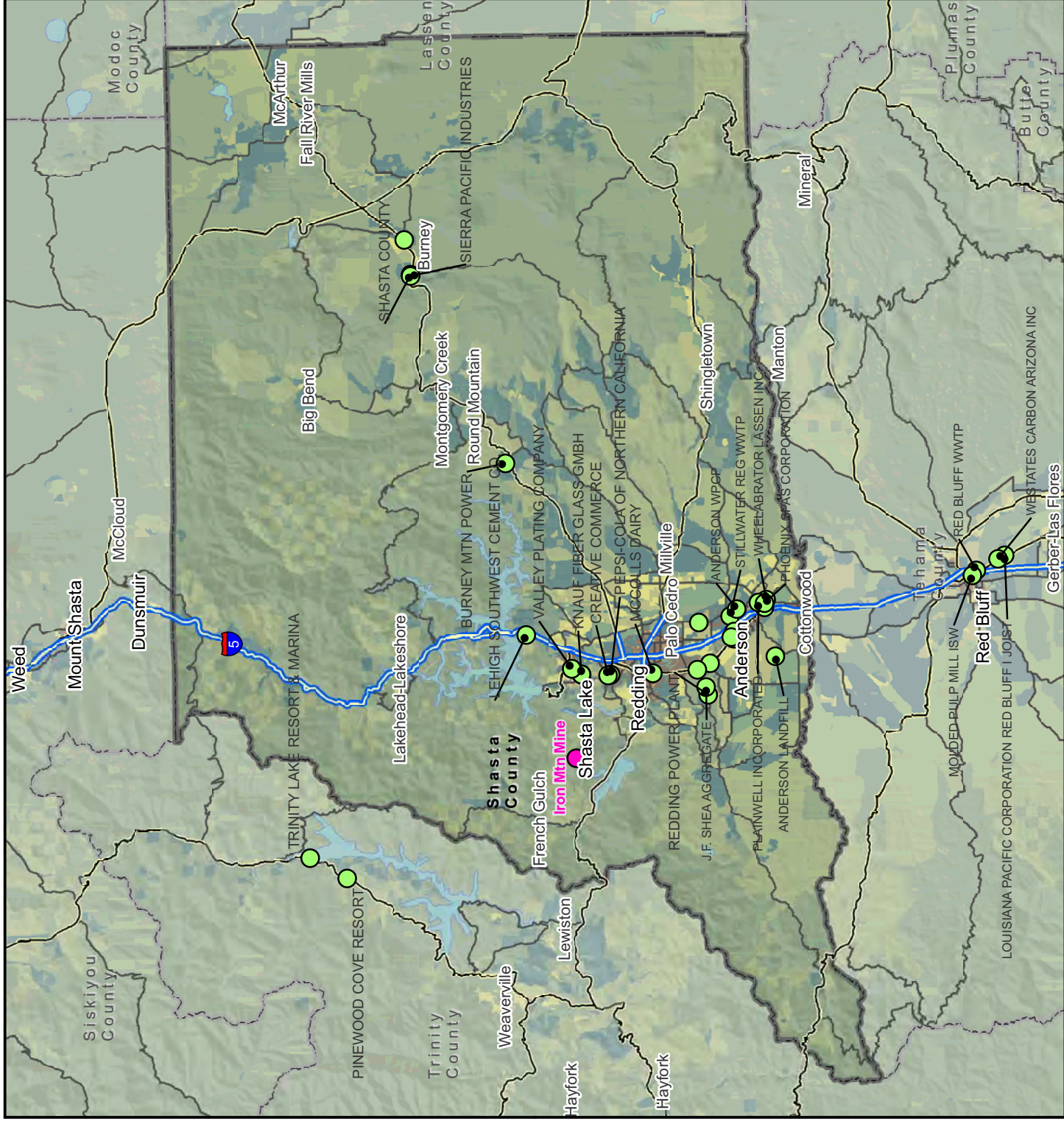
Major Road



Source: ESRI, CaSIL,
US EPA, BLM, USGS,
CA FRAP, and Caltrans

Figure 3.8-1

SUPERFUND SITES



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This section describes the regulatory setting, regional hydrology and water quality, impacts that are likely to result from project implementation, and measures to improve water quality. There was an NOP comment letter provided by the Central Valley Flood Protection Board regarding the need for permits for any construction within the Sacramento River and designated floodways. There were no other comments regarding hydrology and water quality received during the public review period. Information in this section is derived primarily from the following:

- Shasta County Water Resources Master Plan (Shasta County, 1997);
- Groundwater Management Plan for the Redding Groundwater Basin (1998);
- Shasta County General Plan (Shasta County, 2004);
- City of Anderson General Plan (City of Anderson, May 2007);
- City of Redding General Plan (EIP Associates, October 2000);
- City of Shasta Lake General Plan (Diaz Associates, June 1999);
- Literature prepared by the California Division of Mines and Geology;
- Information from the U.S. Natural Resources Conservation Service; and
- Mapping published by the U.S. Geologic Survey

3.9.1 EXISTING SETTING

REGIONAL HYDROLOGY

Watersheds

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife including special-status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State of California uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 3.9-1 shows the primary watershed classification levels used by the State of California. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

TABLE 3.9-1. STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION

WATERSHED LEVEL	APPROXIMATE SQUARE MILES (ACRES)	DESCRIPTION
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2010

HYDROLOGIC REGIONS IN SHASTA COUNTY

Shasta County is located within two Hydrologic Regions: Sacramento River and North Coast.

Sacramento River Hydrologic Region: The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties, and small areas of Alpine and Amador counties. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains.

North Coast Hydrologic Region: The North Coast hydrologic region covers approximately 12.46 million acres (19,470 square miles) and includes all or portions of Modoc, Siskiyou, Del Norte, Trinity, Humboldt, Mendocino, Lake, and Sonoma counties, and small areas of Shasta, Tehama, Glenn, Colusa, and Marin counties. Extending from the Oregon border south to Tomales Bay, the region includes portions of four geomorphic provinces.

HYDROLOGIC UNITS IN SHASTA COUNTY

For purposes of planning on a County-wide basis, hydrologic units are generally considered to be the appropriate watershed planning level. As specific projects within the County are developed the hydrologic unit level may be too large in terms of scale, and a hydrologic area or hydrologic subarea may be considered more appropriate. The remainder of this section is based on the hydrologic unit level for watershed planning purposes.

Shasta County is located within 12 hydrologic areas. These include: Trinity, South Fork Trinity, Lower Pit, McCloud, Sacramento Headwaters, Sacramento-Lower Cow-Lower Clear, Lower Cottonwood, Sacramento-Upper Clear, Cottonwood Headwaters, Upper Cow-Battle, Mill-Big Chico, and North Fork Feather. Table 3.9-2 provides a list of the Hydrologic Units within Shasta County.

TABLE 3.9-2: HYDROLOGIC UNITS (WATERSHEDS)

HYDROLOGIC UNIT NAME	
Trinity	Lower Cottonwood
South Fork Trinity	Sacramento-Upper Clear
Lower Pit	Cottonwood Headwaters
McCloud	Upper Cow-Battle
Sacramento Headwaters	Mill-Big Chico
Sacramento-Lower Cow-Lower Clear	North Fork Feather

SOURCE: US ENVIRONMENTAL PROTECTION AGENCY, 2010

FLOODING

Flood Damage

The extensive rivers and creeks in Shasta County create the potential for flooding in various areas. Development in flood-prone areas of the County has resulted in damage to property and loss of life when flooding occurred. Between 1900 and 1991, there were 16 severe floods in the Sacramento River Basin.

The private and public costs of flooding are substantial. In 1970, flooding resulted in approximately \$12 million in damages, and close to \$8 million in 1974. Problems caused by flooding include loss of life, displacement or complete destruction of buildings, water damage to buildings and furnishings, siltation, temporary loss of utilities, road damage, transportation slowdowns, loss of goods and materials, damage to bridges by objects floating downstream, and the threat of waterborne disease.

Damages resulting from the development of flood-prone areas can be minimized through floodplain management. This management concept encompasses a comprehensive program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control projects, and floodplain management regulations.

Flood Management

The National Flood Insurance Act of 1968 offers an important incentive to communities for implementing a floodplain management program. In communities which have adopted floodplain management regulations, owners of property located in flood-prone areas may obtain federally subsidized flood insurance. Shasta County has adopted such floodplain management regulations.

The boundary of the 100-year floodplain is the basic planning criterion used to distinguish areas where flood hazards justify the establishment of floodplain management regulations. Outside this boundary, the degree of flooding risk is not considered sufficient to justify the imposition of floodplain management regulations, while inside the 100-year floodplain some level of regulation is required to protect public health, safety, and welfare.

100-Year Floodplain

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any particular 12-month period. The risk of this area being flooded in any century is one percent but statistically the risk is almost 40 percent in any 50-year period.

Floodplain zones are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRMs). These tools assist communities in mitigating flooding hazards through land use planning. FEMA also outlines specific regulations for any construction, whether residential, commercial, or industrial within 100-year floodplains.

Lands within the FEMA-designated 100-year floodplain or Zone A are subject to mandatory flood insurance purchase as required by FEMA. The insurance rating is based on the difference between

the base flood elevation (BFE), the average depth of the flooding above the ground surface for a specific area, and the elevation of the lowest floor. Because Shasta County participates in the National Flood Insurance Program, it must require development permits to ensure that construction materials and methods will mitigate future flood damage. New construction and substantial improvements of residential structures are also required to “have the lowest floor (including the basement) elevated to or above the base flood level.” Non-residential structures must have their utility systems above the BFE or be of flood-proof construction.

WATER QUALITY

For the most part, surface water quality in Shasta County is considered good. Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminants in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban storm water runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980's. However, since then, the Federal Environmental Protection Agency has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to National Pollution Discharge Elimination System (NPDES) permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Along the Sacramento River, chemical and physical water quality is usually within desirable limits for most uses, although quality tends to deteriorate during periods of heavy runoff. Biochemical oxygen demand (BOD) in the river rarely exceeds the 2.5 mg/l desirable limit for domestic uses. High coliform (bacteria) counts are sometimes recorded, however, thus requiring filtration and chlorination of water prior to drinking.

Water quality in the lower Sacramento River for domestic use is adversely affected by high levels of storm-discharged turbidity. Water quality impacts on lower Sacramento River aquatic life include elevated levels of dioxin and elevated heavy metal levels resulting from undiluted acid mine drainage (AMD) from old copper mines located west of the Shasta/Keswick Dam area. The principal source of Sacramento River heavy metal contamination is from runoff from the Iron Mountain Mine complex from Spring Creek. Anadromous fish that migrate beyond Cottonwood Creek run the risk of acid mine poisoning from the Spring Creek drainage. Dioxin is believed to

have resulted from discharges from area wood products mills and pose a potential health threat if river-contaminated fish are consumed beyond State recommended quantities.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

The quality of water in underground basins and water-bearing soils is considered generally good throughout most of Shasta County. The 1997 SCWRMP concluded that the quality of both groundwater and surface water in the Redding Basin is generally excellent and suitable for all anticipated beneficial uses. As these basins or soils are the primary sources of water in the rural upland areas of the County, it is very important to prevent contamination. Potential hazards to groundwater quality involve the concentration of nitrates and dissolved solids from agricultural practices and septic tank failures. Several small pockets are found in the eastern portions of Fall River Valley where groundwater testing shows elevated levels of nitrates. Also, several areas within the Eastern Upland planning area contain potential groundwater quality and quantity limitations.

Impaired Water Bodies

Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish Water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

There are fourteen Section 303(d) listed impaired water bodies within six watersheds located in Shasta County. The impaired water bodies are located within the Trinity (two impaired), Lower Pit (one impaired), Sacramento Headwaters (three impaired), Sacramento-lower Cow-Lower Clear (two impaired), Lower Cottonwood (two impaired), Sacramento-Upper Clear (three impaired), and Upper Cow-Battle (four impaired) hydrologic areas. The pollution sources include: mercury, zinc, cadmium, copper, acid mine drainage, lead, fecal coliform, and a few pollution sources that are not currently known. Table 3.9-3 provides a list of the Section 303(d) impaired water bodies in Shasta County.

TABLE 3.9-3: SHASTA COUNTY SECTION 303(D) IMPAIRED WATERBODIES

IMPAIRED WATERSHED	IMPAIRED WATERBODIES
Trinity	1) Trinity River HU, Upper HA, Trinity River, East Fork
Lower Pit	2) Horse Creek (Rising Star Mine to Shasta Lake)
Sacramento Headwaters	3) Little Backbone Creek, Lower
	4) West Squaw Creek (below Balaklala Mine)
	5) Shasta Lake (area where West Squaw Creek enters)
Sacramento-Lower Cow-Lower Clear	6) Sacramento River (Keswick Dam to Cottonwood Creek)
	7) Sacramento River (Cottonwood Creek to Red Bluff)
Sacramento-Upper Clear	8) Keswick Reservoir (Portion Downstream from Spring Creek)
	9) Spring Creek, Lower (Iron Mountain Mine to Keswick Reservoir)
	10) Willow Creek (Shasta County, Below Greenhorn Mine to Clear Creek)
Upper Cow-Battle	11) Clover Creek
	12) Little Cow Creek (Downstream from Afterthought Mine)
	13) Oak Run Creek
	14) South Cow Creek

SOURCE: US ENVIRONMENTAL PROTECTION AGENCY, 2010

WATER SUPPLY

There are two sources of water supplies in Shasta County--surface waters and groundwater--and two general methods of delivering water supplies - community systems and individual or on-site systems. Each type of delivery system uses either surface or groundwater as its supply source. The ground and surface water resources are not uniformly distributed throughout the County, and in different areas of the County, different delivery systems have developed over time.

Shasta County lies at the headwaters of the State's largest watershed, the Sacramento River Basin. About 6.5 percent (5.8 million acre-feet) of all surface runoff in the State of California originates within Shasta County. This represents more than one-fourth of the total surface runoff within the Sacramento River system, the State's largest source of domestic and agricultural water supplies.

The California Department of Water Resources has identified two significant groundwater basins in Shasta County. One is located in the Sacramento River Valley and is named the Redding Groundwater Basin. The other is located in the Fall River Valley and carries its name. Although the firm, or reliable, water yield from these two groundwater basins is unknown, the storage capacity of the 510-square-mile Redding Basin is estimated to contain approximately 5.5 million acre-feet of groundwater and the 120-square-mile Fall River Valley Basin is estimated to contain approximately one million acre-feet of storage.

The majority of the water supply in Shasta County comes from surface flows and is collected in the mountainous regions of the County. Streams, creeks, and rivers carry these surface waters to lower elevations, where a portion is eventually stored in lakes, reservoirs, and groundwater basins. In contrast to groundwater, surface waters are subject to a complex State legal system establishing the rights of individuals and other entities to these flows. The primary surface water resources in Shasta County are impounded within or conveyed through Lake Shasta and Whiskeytown Reservoirs. Rights to these impounded waters are allocated under the jurisdictions of the federally owned and managed Central Valley Project (CVP), subject to preexisting water rights.

3.9.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the water resources of the state and nation including the Federal Emergency Management Agency, the US Environmental Protection Agency, the State Water Resources Board, and the Regional Water Quality Control Board. The following is an overview of the federal, state and local regulations that are applicable to the transportation projects in the RTP.

FEDERAL AND STATE

Clean Water Act (CWA)

The Clean Water Act (CWA), initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for storm water discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for small MS4s covered under the CWA to efficiently regulate numerous storm water discharges under a single permit. Permittees must meet the requirements in Provision D of the General Permit, which require the development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP must include the following six minimum control measures:

- 1) Public Education and Outreach on Storm Water Impacts
- 2) Public Involvement/Participation
- 3) Illicit Discharge Detection and Elimination
- 4) Construction Site Storm Water Runoff Control
- 5) Post-Construction Storm Water Management in New Development
- 6) Redevelopment and Pollution Prevention/Good Housekeeping for Municipal Operations

Federal Emergency Management Agency (FEMA)

The Shasta County is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by FEMA. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of

occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

California Water Code

The Federal Clean Water Act places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although this does establish certain guidelines for the States to follow in developing their programs and allows the Environmental Protection Agency to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region the regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the Environmental Protection Agency Regional Administrator (EPA Region 5). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWC.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

LOCAL

County and City General Plans

The safety elements of the Cities of Anderson, Redding, and Shasta Lake and the County of Shasta contain goals, objectives, and policies aimed at protecting water quality and maintaining flood protection throughout their respective jurisdictions. Proponents of specific projects would be required to consult the applicable general plans and design the projects consistent with the applicable guidelines of the jurisdictions in which the projects are located.

Water Quality Control Plan for the Central Valley Region

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term “water quality standards,” as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region’s ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

3.9.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with hydrology and water quality if it will:

- Violate any water quality standards or waste discharge requirements;
- 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 preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted;
- 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 that would result in substantial erosion, siltation, run-off or flooding on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- 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;
- Otherwise substantially degrade water quality;
- 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;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Result in inundation by seiche, tsunami or mudflow.

IMPACTS AND MITIGATION

Impact 3.9-1: Violate any water quality standards or waste discharge requirements (less than significant with mitigation)

Construction-Related Water Quality Impacts: Grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas. Landslides (a form of erosion) occur throughout Shasta County as a result of the natural characteristics of the region, although they have not been considered a major problem.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. However, each RTP project will

include detailed project specific drainage plans that control storm water runoff and erosion, both during and after construction. The Regional Water Quality Control Board will require a project specific Storm Water Pollution Prevention Plan (SWPPP) to be prepared for each transportation improvement that disturbs an area one acre or larger. The SWPPPs will include project specific best management measures that are designed to control drainage and erosion. The implementing agency will be required to coordinate the improvements with the Central Valley Flood Project Board and obtain the necessary permits. Implementation of the following mitigation measures that were presented in Section 3.6 Geology would ensure that the RTP would have a **less-than-significant** impact from these issues.

MITIGATION MEASURES

(Note: Mitigation Measure 3.6-2 and 3.6-3 are presented previously in Section 3.6 Geology and Soils.)

Mitigation Measure 3.6-2: Prior to approval of RTP projects, the implementing agency should ensure projects will adequately address grading, erosion, sediment, and pollution control requirements of the Regional Water Quality Control Board (RWQCB). If one acre or more of land will be disturbed, the implementing agency should submit a Notice of Intent (N.O.I.) with appropriate fees and a Storm Water Pollution Prevention Plan (SWPPP) to the RWQCB.

Mitigation Measure 3.6-3: During construction, the implementing agency should ensure that control measures and practices are implemented, properly installed, and maintained during the construction of a project. The implementing agency should inspect the project area to verify that SWPPPs are being implemented. The implementing agency should develop and implement record keeping and data management procedures for evaluation of SWPPP compliance and reporting.

Dewatering Water Quality Impacts: Some RTP projects, such as overpasses, underpasses, grade separations, highway interchanges, and other rail crossing structures could require excavation below the ground surface or support structures or foundations secured deep into the ground. Projects that excavate or secure foundations deep in the ground may encounter groundwater. Depending on the location, trenching and excavation associated with these projects may reach depths that can expose the water table and create a direct path to the groundwater basin for contaminants to enter the groundwater system. Primary construction-related contaminants that could reach groundwater would include oil and grease, and construction-related hazardous materials and dewatering effluent.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. However, each transportation RTP project will include detailed project specific geotechnical engineering that would identify the groundwater levels and the need for dewatering. If dewatering was deemed necessary after the appropriate engineering study then the implementing agency would obtain a Dewatering Permit from the Regional Water Quality Control Board and comply with provisions for dewatering. The implementing agency would also need to obtain an NPDES permit and Waste Discharge Requirement before discharging any dewatered effluent to surface water. Implementation of the

following mitigation measure would ensure that the RTP would have a **less than significant** impact from these issues.

MITIGATION MEASURES

Mitigation Measure 3.9-1: Before discharging any dewatered effluent to surface water, the implementing agency should obtain an Dewatering Permit, NPDES permit and Waste Discharge permit from the RWQCB. Design and implement measures as necessary so that discharge limits identified in relevant permits are met.

Impact 3.9.2: Depletion of groundwater supplies or interfere substantially with groundwater recharge. (less than significant)

Individual RTP projects, such as road widenings, interchange reconstruction, railway crossings, and other projects would result in new impervious surfaces and could reduce rainwater infiltration and groundwater recharge. Infiltration rates vary depending on the overlying soil types. In general, sandy soils have higher infiltration rates and can contribute to significant amounts of ground water recharge; clay soils tend to have lower percolation potentials; and impervious surfaces such as pavement significantly reduce infiltration capacity and increase surface water runoff. The amount of new pavement and the extent to which it affects infiltration depends on the site-specific soil type. Projects located in urban areas would have less of an impact than projects converting open lands and spaces.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. However, many of the individual RTP projects are located in urban areas and along existing highways, streets, and roads in which most of the surfaces are already paved or impervious. In addition, extensive storm drainage systems present in these areas currently intercept rainfall and runoff waters, thus limiting the amount of groundwater recharge that occurs. Each project will include detailed project specific drainage plans that control storm water runoff, both during and after construction. The drainage plan will include project specific best management measures that are designed to allow for natural recharge and infiltration of stormwater. Implementation of the RTP would have a **less than significant** impact from these issues.

Impact 3.9-3: Alter the existing drainage pattern in a manner which would result in substantial erosion, siltation, flooding, or polluted runoff. (less than significant with mitigation)

Individual RTP projects would create new impervious surfaces. This would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. In addition, the increase in impervious surfaces, along with the increase in surface water runoff, could increase the non-point source discharge of pollutants. Anticipated runoff contaminants include sediment, pesticides, oil and grease, nutrients, metals, bacteria, and trash. Contributions of these contaminants to stormwater and non-stormwater runoff would degrade the quality of receiving waters. During the

dry season, vehicles and other urban activities release contaminants onto the impervious surfaces, where they can accumulate until the first storm event. During this initial storm event, or first flush, the concentrated pollutants would be transported via runoff to stormwater drainage systems. Contaminated runoff waters could flow into the stormwater drainage systems that discharge into rivers, agricultural ditches, sloughs, and channels and ultimately could degrade the water quality of any of these water bodies.

Additionally, some of the RTP projects could potentially alter surface drainage patterns as a result of directly altering flow patterns, or placing structures in a floodway, all of which could yield increased amounts of stormwater runoff. The construction activities associated with RTP projects, such as road widening, interchange reconstruction, railway crossings, and other projects that convert permeable surfaces or install permanent structures would require stormwater drainage management measures to avoid flooding impacts. The existing storm drainage network in Shasta County may not have sufficient capacity to convey the additional runoff from the individual RTP projects. If the storm drainage network is not appropriately designed it could be overwhelmed during a large storm event and result in flooding.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. As previously discussed, the implementing agency would also be required to obtain permits from the Army Corps of Engineers and the Department of Fish and Game if any work is performed within a waterway. Each RTP project will also include detailed project specific floodplain and drainage studies that assess the drainage characteristics and flood risks so that an appropriate storm drainage plan can be prepared to control storm water runoff, both during and after construction. The drainage plan will ultimately include project specific best management measures that are designed to allow for natural recharge and infiltration of stormwater. Implementation of the following mitigation measures would ensure that the RTP would have a **less than significant** impact from these issues.

MITIGATION MEASURES

Mitigation Measure 3.9-2: Prior to construction, the lead agency should implement source and treatment control measures contained in their applicable Stormwater Management Plans. General site design control measures incorporated into the project design can include conserving natural areas, protecting slopes and channels, and minimizing impervious areas. Treatment control measures may include use of vegetated swales and buffers, detention basins, wet ponds, or constructed wetlands, infiltration basins, and other measures. Selection and implementation of these measures should occur on a project-by-project basis depending on project size and stormwater treatment needs.

Impact 3.9.4 Otherwise substantially degrade water quality. (less than significant with mitigation)

Water Quality Impacts from Discharges to 303(d) Listed Water Bodies: Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

Fourteen waterbodies in the study area, including major rivers, creeks, and tributaries have been identified under Clean Water Act Section 303(d) as being impaired by a variety of contaminants including: mercury, zinc, cadmium, copper, acid mine drainage, lead, fecal coliform, and a few pollution sources that are not currently known.

Under the CWA listing, these water bodies have no remaining assimilative capacity or ability to accommodate additional quantities of these contaminants, irrespective of concentration. Projects are required to comply with requirements of approved TMDLs, as regulated in the region by the Central Valley RWQCB through issuance of Waste Discharge Requirements and NPDES permit amendments.

There are fourteen Section 303(d) listed impaired water bodies within six watersheds located in Shasta County. The impaired water bodies are located within the Trinity (two impaired), Lower Pit (one impaired), Sacramento Headwaters (three impaired), Sacramento-lower Cow-Lower Clear (two impaired), Lower Cottonwood (two impaired), Sacramento-Upper Clear (three impaired), and Upper Cow-Battle (four impaired) hydrologic areas. The pollution sources include: mercury, zinc, cadmium, copper, acid mine drainage, lead, fecal coliform, and a few pollution sources that are not currently known. These constituents originate from a variety of sources, but generally include agricultural activities, such as irrigation runoff, and urban non-point sources of runoff from landscaping, rooftops, trash, and illicit dumping. Table 3.9-3 provides a list of the Section 303(d) impaired water bodies.

Based upon the general planning nature of the RTP, development of detailed, site-specific information on this impact at this planning level is not feasible. However, previous mitigation measures provide for the requirement of each RTP project to include a detailed project specific drainage plan and a Storm Water Pollution Prevention Plan (SWPPP) that will control storm water runoff and erosion, both during and after construction. If the project involves the discharge of dewatering into surface waters the implementing agency will need to acquire a Dewatering Permit, NPDES permit and Waste Discharge permit from the RWQCB. Implementation of the mitigation measures that were presented in Section 3.6 Geology and previously within this Section would ensure that the RTP would have a **less than significant** impact from these issues.

Impact 3.9.5 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. (less than significant)

Implementation of the individual RTP projects would not place housing within a 100-year flood hazard area. Therefore, implementation of the proposed project would have a **less than significant** impact on this environmental issue.

Impact 3.9.6 Place within a 100-year flood hazard area structures which would impede or redirect flood flows. (less than significant with mitigation)

Some of the RTP projects would result in the construction or modification of transportation facilities, such as bridges, within the 100-year flood zone, thus increasing the potential to obstruct or exacerbate floodwaters. The construction of projects involving support structures in the floodway could obstruct floodwaters at some locations. Placement of structures within a floodplain can displace floodwaters and alter the base flood elevations in the surrounding areas. Structures can form a backwater effect, resulting in increases in the flood elevation level upstream and in neighboring areas. Likewise, floodwater can cause scour effects, resulting in erosion and sedimentation problems downstream from structures. Drainage areas could be altered by highway corridors, in which floodwaters could be detained by medians and along the roadside. Proposed bridge supports could block debris in waterways, creating obstructions and further elevating upstream flood levels.

As described in the setting section, numerous federal, state, and local agencies are responsible for maintaining flood protection features in Shasta County, including US Army Corps of Engineers (USACE), Department of Water Resources (DWR), Central Valley Flood Protection Board (CVFPB), and Department of Fish and Game (CDFG) at the federal and state level, as well as local reclamation districts and flood control agencies. A floodplain risk assessment would be prepared for any RTP project that is located within a 100-year floodplain. The RTP project would be designed to a floodplain standard, which would restore and preserve the natural and beneficial floodplain values, and maintain consistency with the standards and criteria of regulations imposed by state and federal agencies. Additionally, the implementing agency would obtain the necessary permits from the USACE, DWR, CVFPB, and the CDFG prior to construction. Implementation of the RTP would have a **less than significant** impact.

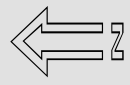
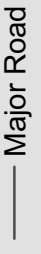
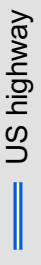
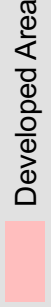
Impact 3.9.7 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, seiche, tsunami, or mudflow. (less than significant)

Significant precipitation, major storm events, and/or seismic activity have the potential to cause levee or dam failure within Shasta County. Despite the potential, the risk of dam failure inundating portions of the County is considered low due to the fact that they are regulated by the California Dam Safety Act, which is implemented by the California Department of Water Resources, Division

of Safety of Dams (DSD). The DSD is responsible for inspecting and monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury as a result of dam failure. The County Office of Emergency Services is responsible for developing and implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information. The Lake Britton Bridge improvement is the only RTP project that will result in construction activities on the facilities that are regulated by the DSD. The implementing agency will be required to engage DSD during the entire project to ensure that the project incorporates the appropriate design measures. Implementation of the proposed project would have a **less than significant** impact from these issues.

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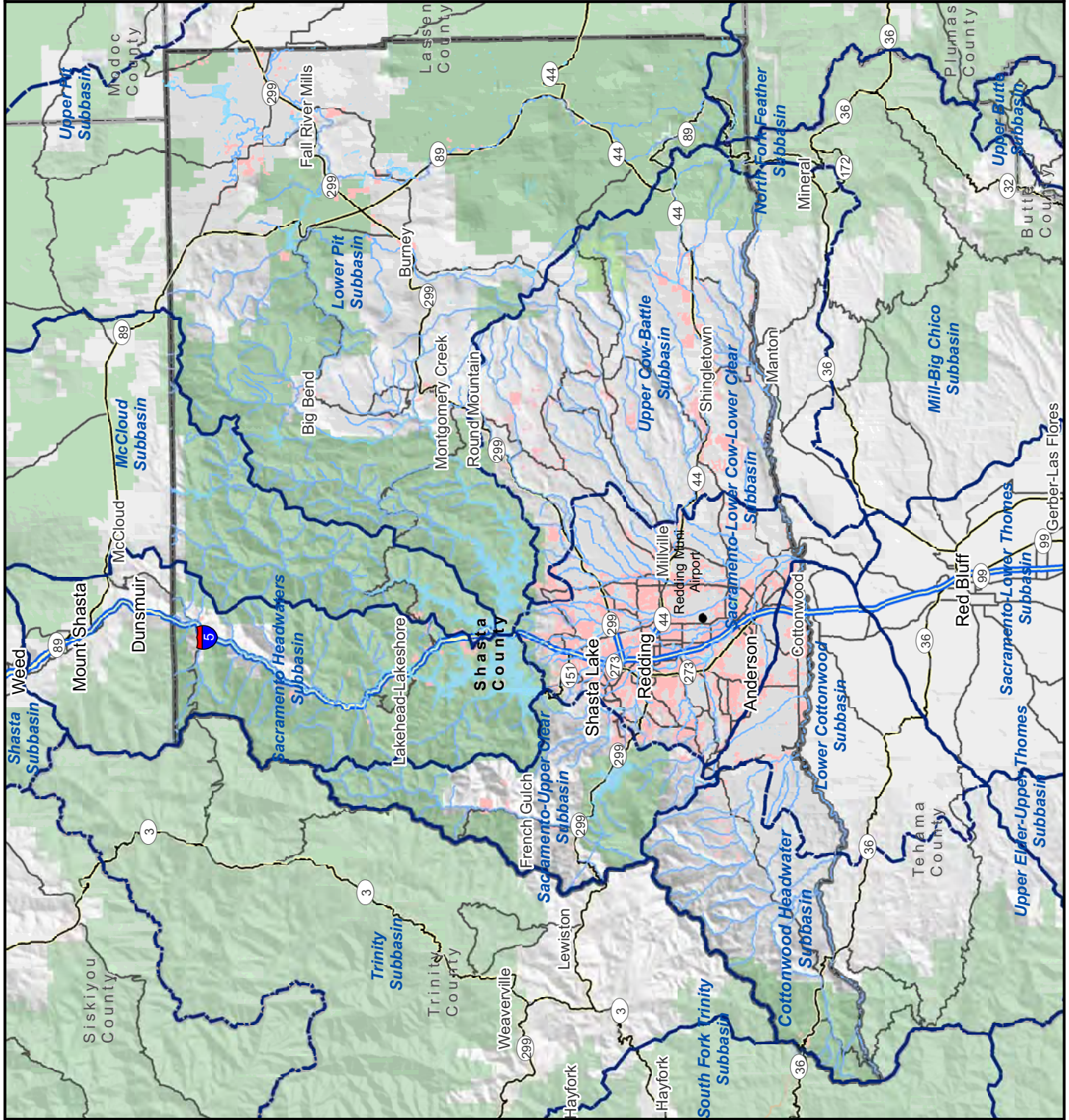
Legend



Source: ESRI, CaSIL,
BLM, USGS, CA FRAP,
and Caltrans

Figure 3.9-1

HYDROLOGY MAP



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This section describes the existing land uses in Shasta County and its incorporated communities, describes the land use regulations for each jurisdiction, and evaluates the environmental effects of implementation of the 2010 RTP. No Notice of Preparation comments regarding land use and population were received. Information in this section is derived primarily from the following:

- Shasta County General Plan (September 2004)
- City of Redding General Plan (EIP Associates, October 2000)
- City of Anderson General Plan 2007 (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan (Diaz Associates, June 1999)

3.10.1 ENVIRONMENTAL SETTING

EXISTING PHYSICAL ENVIRONMENT

Shasta County is located at the convergence of the northern Sacramento Valley with the Klamath and Coastal Mountain Ranges to the northwest and west, and the Cascade Mountain Range to the northeast and east. Shasta County is 150 miles from Sacramento, its largest urbanized neighbor, and 110 miles south of the Oregon border.

Elevations in the valley portion of Shasta County range between 400 and 700 feet. The Cascade Range divides the Central or Sacramento Valley region of the County from the Modoc Plateau (Fall River Valley) situated in its northeast corner at an elevation of approximately 3,300 feet. Elevations in Shasta County increase to more than 10,000 feet at Lassen National Park.

Based on 2000 U. S. Census information, approximately 84 percent of the County's population lives in the Sacramento Valley area of the County in a north-south band of urban and suburban communities that include the City of Shasta Lake and the other incorporated cities of Redding and Anderson, and the unincorporated community of Cottonwood. Around this urban and suburban core are several smaller communities including Mountain Gate, Jones Valley, Bella Vista, Palo Cedro, Happy Valley, Centerville, and the Shasta/Keswick area.

Urban levels of development in Shasta County, including the incorporated cities of Anderson, Shasta Lake, and Redding, are concentrated in the Sacramento River Valley area of the county along the transportation corridor provided by Interstate 5, Highway 273, and the Union Pacific Railroad. The unincorporated community of Cottonwood, located south of Anderson, is also characterized by residential and commercial development at urban densities.

Adjacent the urban corridor in the Sacramento Valley portion of the County, the development pattern is characterized by rural communities, including Mountain Gate, Jones Valley, Bella Vista, Palo Cedro, Happy Valley, Centerville, and the Shasta/Keswick, which are generally served by community water and/or sewer districts. On either side of the Sacramento River Valley, development in the upland areas takes the form of agriculture, grazing, and timber operations, with small rural community centers and individual homesites dispersed throughout. Many of the

small rural communities have their origins in the early settlement of Shasta County. North of Shasta Lake, several resort and retirement communities are located along the Sacramento River Canyon. The urban core and adjacent rural development along the Sacramento Valley corridor accounted for approximately 84 percent of the County's population in 2000.

The Burney Creek, Hat Creek, and Fall River Valleys are located in the mountains of eastern Shasta County, northeast of the Sacramento Valley beyond Hatchet Mountain Pass. This area is traversed by State Highway 299, which runs from the southwest to the northeast. In 2000, approximately five percent of the County's population lived in this area. The unincorporated communities of Burney/Johnson Park, Fall River Mills/McArthur, Cassel, and Hat Creek, are located along this highway corridor. Outside of these communities, agricultural and timberlands are the predominant land uses, along with outdoor recreation. Small rural community centers are located along Hat Creek.

In Shasta County, approximately 29,328 acres, 2 percent of the County's land area, are incorporated lands and the remaining 1,376,954 acres are unincorporated lands. In the unincorporated area, approximately 45,500 acres (3.2 percent) are developed (Shasta County General Plan, 2004). Figure 3.10-1 provides an illustration of the land uses within the County.

Political Jurisdictions

SHASTA COUNTY

The County of Shasta governs all land outside the city limits of Anderson, Redding, and Shasta Lake. Much of the population within the county lies in the south-central, non-mountainous portion of Shasta County, which is usually referred to as the South Central Region (SCR). The SCR contains about 335 square miles or about 8.8 percent of the county's area, yet it is home to about 85 percent of the county's total population. Within the SCR the town centers of Cottonwood and Palo Cedro are governed by the County. Outside of the SCR, there are two more town centers located in Burney/Johnson Park and Fall River Mills/McArthur, which are both located in the mountains of northeastern Shasta County. Urban development in Shasta County has traditionally been concentrated in the urban areas formed by the county's three incorporated communities, Redding, Anderson, and Shasta Lake.

CITY OF ANDERSON

Anderson is located in south Shasta County along the Sacramento River. It is characterized by the Sacramento Valley landscape that rises in the west into rolling foothills. Anderson began as an unincorporated rural settlement with the introduction of the railroad in 1872 and gradually urbanized. Land in the city is primarily former agricultural land that has been developed with residential, commercial and industrial uses. The Sacramento River, Anderson Creek, other streams and man-made canals and waterways traverse the area.

CITY OF REDDING

The City of Redding is located in south-central Shasta County at the far north end of the Sacramento Valley where the valley meets the foothills of the Cascade mountain range. Redding is surrounded by mountains to the west, north, and east. The Sacramento River flows through the City in a general north-south direction. Redding was founded in 1872 and incorporated in 1887 with the introduction of the railroad. The primary industries include retail trade, construction, and tourism, and lumber. Interstate 5 and State Routes 299, 273, and 44 pass through Redding, connecting the City with the California coast, Oregon, Nevada, and Central California.

CITY OF SHASTA LAKE

The City of Shasta Lake is located in central Shasta County in the foothills of the Cascade mountain range. The City of Shasta Lake is located just north of Redding and just south of the largest man-made reservoir in northern California--Shasta Lake. The region is characterized by mountains to the west, north, and east. The area began settlement in 1937 with the announcement by the federal government that a large concrete dam would be constructed in Shasta County. Three small communities emerged within the area: Summit City, Project City, and Central Valley. The residents of these three communities voted in 1993 to incorporate into what is now the City of Shasta Lake.

PIT RIVER TRIBE

The Pit River Tribe, also known as the Achomawi, are eleven autonomous bands: Ajumawi, Atsugewi, Atwamsini, Illmawi, Astarawi, Hammawi, Hewisedawi, Itsatawi, Aporige, Kosealekte, and Madesi. These bands reside in a 100 square mile area within Shasta, Siskiyou, Modoc, and Lassen Counties. The Pit River Tribe was federally recognized in 1976. Today the Pit River Tribe operates a Day Care center, environmental program, and Housing Authority through Government grants and has developed community housing projects including housing for low income families and elders. The Tribe also operates the Pit River Casino located in Burney, California.

REDDING RANCHERIA

The Bureau of Indian Affairs purchased the land that is now considered the Redding Rancheria in 1922 to provide a place for homeless Indians to camp and live. The Rancheria was unique because it included Indians from Pit-River, Wintu and Yana descent. In 1959, the Redding Rancheria was terminated by an act of congress and the people were no longer recognized as Indians. In 1983 the Redding Rancheria and 17 other tribes were restored as federally-recognized Indian tribes. In 1987 the tribe formally adopted its Constitution and to it is structured with a Tribal Government, Tribal Court, RREDCO, and the Win River Casino.

POPULATION, HOUSING, EMPLOYMENT, AND OTHER DEMOGRAPHICS

The RTP includes various statistical projections for the region to aid in regional planning issues. The population and employment projections for the region are shown in Tables 3.10-1 through 3.10-3. While these projections may be referenced by jurisdictions updating their general plans, the projections may differ from individual jurisdiction general plan buildout estimates. These

projections represent regional growth as a whole based on trends, and are useful in considering the cumulative buildout scenario of the region.

Population

It is anticipated that Shasta County and the incorporated communities in the county would grow at rates governed by market influences (the demand for housing as influenced by interest rates, employment rates, etc) as regulated by adopted general plans and local regulations regardless of approval of the 2010 RTP. Table 3.10-1 provides the population estimates from 2000-2009.

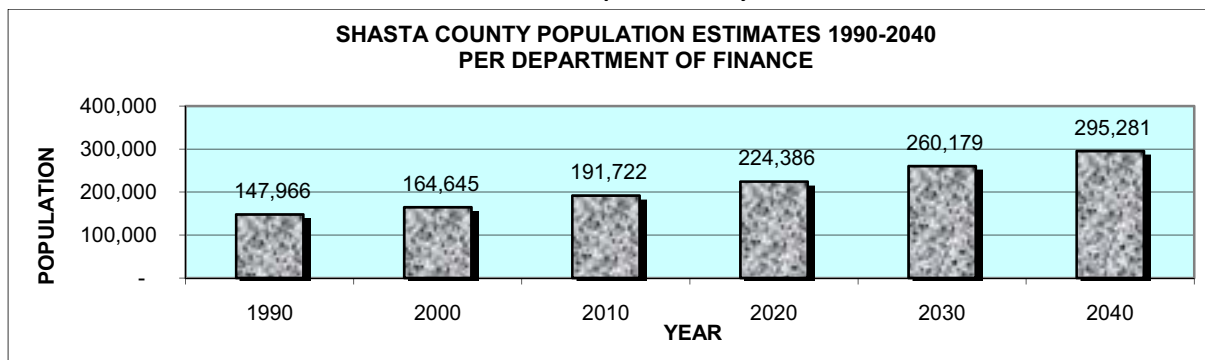
TABLE 3.10-1: POPULATION ESTIMATES FOR MAJOR JURISDICTIONS AND SUBAREAS IN SHASTA CO.

JURISDICTION OR AREA	2000 US CENSUS	2009 E-1 DEPT OF FINANCE ESTIMATE	PERCENTAGE CHANGE 2000-2009
State of California	33,871,648	38,292,687	13.1%
Shasta County total	163,256	183,023	12.1%
Shasta County unincorporated	54,361	71,091	30.8%
Shasta Urbanized Area	105,267	No estimate	N/A
City of Redding	80,865	90,898	12.4%
City of Anderson	9,022	10,765	19.3%
City of Shasta Lake	9,008	10,279	14.1%
Burney	3,217	No estimate	N/A
Cottonwood	2,960	No estimate	N/A
Shingletown	2,222	No estimate	N/A

SOURCE: SHASTA COUNTY RTPA, 2009

The population in the RTP area is expected to grow from 191,722 in 2010 to 280,179 by 2030. This represents a population increase of approximately 46.1 percent. Although the 2010 RTP does not control growth directly, it does provide a strategy to reduce the adverse traffic and circulation effects, including demands on energy and air quality effects, of planned growth. Exhibit 3.10-1 provides the population estimates for Shasta County from 1990 to 2040.

EXHIBIT 3.10-: POPULATION ESTIMATES IN SHASTA CO. (1990-2040)



SOURCE: SHASTA COUNTY RTPA, 2009

HOUSING

The county and incorporated communities are the agencies responsible for approving housing projects; the 2010 RTP is simply a regional plan for infrastructure that does not provide approval of housing projects. The land use characteristics for each of the agencies responsible for development approvals is presented below. Table 3.10-2 provides a breakdown of the housing in each community.

TABLE 3.10-2: SHASTA COUNTY HOUSING BY HOUSING TYPE (CITIES AND UNINCORPORATED AREA) - 2009

<i>JURISDICTION</i>	<i>SINGLE FAMILY</i>	<i>MULTIFAMILY</i>	<i>MOBILE HOME</i>	<i>TOTAL</i>	<i>PERCENT VACANT</i>
Anderson	2,921	1,191	179	4,291	5.78
Redding	26,131	9,488	2,619	38,238	5.03
Shasta Lake	3,436	361	484	4,281	9.04
Unincorporated Area	22,109	619	8,071	30,799	11.33
Total	54,597	11,659	11,353	77,609	7.79

SOURCE: CALIFORNIA DEPARTMENT OF FINANCE, 2009

ANDERSON

The City of Anderson General Plan allows for residential densities of up to 20 units per acre. The overall residential density in the developed portion of Anderson is slightly higher than in Redding with an average five to six dwelling units per acre. The commercial and industrial land uses are not centralized, in part because State Route 273 bisects the city. The central business district is experiencing high vacancy due to construction of commercial centers in other parts of Anderson.

REDDING

Redding, the urban center of Shasta County, features a wide range of residential densities. The Redding General Plan provides opportunities in select areas for high-density residential development, including no limit on residential density in the downtown core area. Other areas allow up to 20-30 units per acre. However, recent development trends have led to construction of residential units at lower than the allowed maximum densities. This has resulted in a low overall residential density of three to four dwelling units per acre within the developed areas. Redding has also become decentralized, leaving a smaller portion of retail business in the downtown area.

SHASTA LAKE

The City of Shasta Lake also supports denser overall residential development than Redding, but lacks enough commercial and service uses to compete with the draw from Redding's plentiful shopping and service opportunities. Shasta Lake is currently in the process of creating additional commercial opportunities through its redevelopment plans near Interstate 5.

SHASTA COUNTY

The unincorporated portion of the county is subject to the provisions of the Shasta County General Plan. This plan features a wide range of land uses. Large portions of the outlying areas of the

county are designated for resource uses including open space, timber, and agriculture. Residential uses are incidental to the primary resource use of the land and feature extremely low residential densities. Rural residential uses featuring densities of one dwelling unit per two to five acres occupy approximately 99,000 acres out of a total of 186,000 acres in the entire South Central Region. The purpose of planning low-density rural residential areas is to focus growth in the rural community centers and the cities where urban services are available. Suburban residential densities of up to three dwelling units per acre are located next to the boundaries of the cities and in some unincorporated community centers. Urban residential densities of up to 16 dwelling units per acre are found primarily in the unincorporated communities of Cottonwood and Burney where supporting sewer and water service is available. Other rural community centers feature mixed-use designations that allow up to one residential unit per acre along with certain commercial uses.

Employment

Shasta County's economic base has a number of major components: tourism, agriculture, forest products, government, healthcare, education and retail trade. Retail trade has received considerable impetus from the recent development of several major retail centers. Transportation of goods to distant markets is also an important component of the region's economy. Over the years, Shasta County has seen a steady increase in taxable sales. The City of Redding is experiencing most of the economic growth due to its role as the goods and employment center for the region. The current recession has altered this trend, with sales taxes declining over the last few years. Tables 3.10-3 through 3.10-5 provide a breakdown of the employment statistics within Shasta County.

The County's labor force in year 2030 is projected to be about 111,000, of which about 103,800 are projected to be employed residents. Shasta County has less than 50% of the statewide average of manufacturing and information industry. The ratio of employed residents to Shasta County jobs is projected to remain essentially constant over the 20 years, with local jobs projected to rise from about 76,017 in 2010 to 103,800 by 2030. This represents an employment increase of approximately 36.5 percent. The distribution of jobs by industry is projected to continue to be in the service sector. Retail employment is about 25% higher than the statewide average. Its share of overall employment will continue to increase.

TABLE 3.10-3: REGION TO STATE PROFILE OF SELECTED EMPLOYMENT CHARACTERISTICS PER 2000 CENSUS

INDUSTRY	CALIFORNIA	SHASTA COUNTY	% DIFFERENCE
Agriculture, forestry, fishing and hunting and mining	1.9%	2.5%	31.6%
Construction	6.2%	7.4%	19.4%
Manufacturing	13.1%	6.4%	-51.1%
Wholesale trade	4.1%	3.0%	-26.8%
Retail trade	11.2%	14.1%	25.9%
Transportation and warehousing, and utilities	4.7%	5.7%	21.3%
Information	3.9%	2.0%	-48.7%
Finance, insurance, real estate, and rental and leasing	6.9%	5.2%	-24.6%
Professional, scientific, management administrative, and waste management services	11.6%	7.7%	-33.6%
Educational, health and social services	18.5%	24.7%	33.5%
Arts, entertainment, recreation, accommodation and food services	8.2%	9.5%	15.9%
Other Services	5.2%	6.0%	15.4%
Public Administration	4.5%	5.8%	28.9%

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-4: REGION TO STATE PROFILE OF SELECTED EMPLOYMENT CHARACTERISTICS PER 2000 CENSUS

CLASS OF WORKER	CALIFORNIA	SHASTA COUNTY	% DIFFERENCE
Private wage and salary worker	76.5%	70.8%	-7.5%
Government worker	14.7%	18.4%	25.2%
Self-employed workers in own business	8.5%	10.2%	20.0%
Unpaid family workers	0.4%	0.5%	25.0%

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-5: REGION TO STATE PROFILE OF SELECTED EMPLOYMENT CHARACTERISTICS PER 2000 CENSUS

OCCUPATION	CALIFORNIA	SHASTA COUNTY	% DIFFERENCE
Management, professional and related occupations	36.0%	30.4%	-15.6%
Service Occupations	14.8%	19.6%	32.4%
Sales and Office Occupations	26.8%	27.0%	0.7%
Farming, fishing, and forestry occupations	1.3%	0.9%	-30.8%
Construction, extraction, and maintenance occupations	8.4%	9.8%	16.7%
Productions, transportation, and material moving occupations	12.7%	12.3%	-3.1%

SOURCE: SHASTA COUNTY RTPA, 2009

Other Demographics

Table 3.10-6 through 3.10-11 provides a variety of statistics that are based on the 2000 US Census, including: age distribution, household income, number of vehicles per household, and selected characteristics of the state compared to the region and locality.

TABLE 3.10-6: AGE DISTRIBUTION

AGE	AMOUNT	PERCENTAGE
Under 16	37,343	22.87%
16-20	11,909	7.29%
21-24	6,732	4.12%
25-44	41,210	25.24%
45-64	41,296	25.30%
65+	24,766	15.17%

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-7: HOUSEHOLD INCOME IN 1999

BY INCOME GROUP (\$)	AMOUNT	PERCENTAGE
Less than 15,000	12,742	20.07%
15,000-19,999	5,350	8.43%
20,000-24,999	5,197	8.18%
25,000-49,999	19,838	31.24%
50,000-74,999	11,088	17.46%
75,000-99,999	4,706	7.41%
100,000 +	4,576	7.21%
Total Households Shasta County	63,497	100.00%
Mean HH Income (Dollars)	\$ 45,204	
Median HH Income (Dollars)	\$ 34,335	

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-8: NUMBER OF VEHICLES PER HOUSEHOLD (HH)

NUMBER	HH's	PERCENTAGE
0 Vehicles	4,546	7.16%
1 Vehicles	21,544	33.93%
2 Vehicles	24,776	39.02%
3 Vehicles +	12,631	19.89%
	63,497	100.00%

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-9: REGION TO STATE PROFILE OF SELECTED CHARACTERISTICS

SELECTED CHARACTERISTICS	CALIFORNIA	SHASTA COUNTY	% DIFFERENCE
Median Age	33.3	38.9	16.82%
Age 65 and over	10.6%	15.2%	43.40%
Veterans	10.5%	17.0%	61.90%
Disabilities by age group (5 – 20)	7.5%	7.7%	2.67%
Disabilities by age group (21 – 64)	20.0%	23.3%	16.50%
Disabilities by age group (65+)	42.2%	45.5%	7.82%
HH Income Less than \$10,000	8.4%	11.6%	38.10%
HH Income Less than \$25,000	25.5%	36.6%	43.53%
HH Income Less than \$50,000	52.1%	67.8%	30.13%
Median HH Income	\$ 47,493.00	\$ 34,335.00	-27.71%

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-10: CENSUS PLACE TO STATE PROFILE OF SELECTED CHARACTERISTICS

PLACE	TOTAL POP.	MALE	FEMALE	65+ YEARS	AVG HH SIZE	IN LABOR FORCE
Redding	80,865	38,750	42,115	12,569	2.44	36,618
Anderson	9,022	4,207	4,815	1,251	2.64	3,813
Shasta Lake	9,008	4,454	4,554	1,184	2.64	3,818
Burney	3,217	1,557	1,660	483	2.45	1,321
Cottonwood	2,960	1,401	1,559	321	2.77	1,397
Shingletown	2,222	1,121	1,101	503	2.43	831
Palo Cedro	1,247	610	637	177	2.85	563
Fall River Mills	648	295	353	111	2.46	215
Millville	610	296	314	89	2.81	302
McArthur	365	193	172	43	2.43	159
French Gulch	254	130	124	36	2.33	98
Big Bend	149	81	68	21	2.13	50
Round Mountain	122	62	60	21	2.14	34
Montgomery Cr.	96	50	46	11	2.29	38
Total Region in Census	110,785	53,207	57,578	16,820	N/A	N/A
Total Shasta Co.	163,256	79,572	83,684	24,861	2.52	72,193
Total California	33,871,648	16,874,892	16,996,756	3,595,658	2.87	15,977,879

SOURCE: SHASTA COUNTY RTPA, 2009

TABLE 3.10-11: CENSUS PLACE TO STATE PROFILE OF SELECTED CHARACTERISTICS

PLACE	TRAVEL TIME TO WORK	MEDIAN HH INCOME	FAMILIES BELOW POVERTY LEVEL	SF OWNER OCCUPIED HOMES	MEDIAN VALUE WITH MORTGAGE	MEDIAN OWNER COSTS W/MORTGAGE
Redding	17.8	34,194	2,400	15,583	121,600	1,073
Anderson	20.2	24,558	528	1,559	86,900	791
Shasta Lake	23.4	26,275	396	1,862	91,100	817
Burney	13.5	30,510	136	764	84,500	716
Cottonwood	30	30,191	93	525	95,700	865
Shingletown	35.7	32,813	66	537	126,300	923
Palo Cedro	25.3	51,471	20	344	152,700	1,113
Fall River Mills	15.3	29,833	44	148	78,800	1,009
Millville	20.6	51,406	11	145	202,700	1,500
McArthur	16.6	16,116	41	66	101,500	754
French Gulch	33.4	27,083	16	50	98,000	1,036
Big Bend	21.5	23,750	16	7	182,500	-
Round Mountain	26.1	18,250	7	9	88,300	625
Montgomery Creek	19.1	26,250	8	2	12,500	350
Ave. for Shasta Co.	20.9	34,335	5,006	31,137	120,800	1,025
Average for Calif.	27.7	47,493	845,991	5,527,618	211,500	1,478

SOURCE: SHASTA COUNTY RTPA, 2009

3.10.2 REGULATORY SETTING

FEDERAL AND STATE

At the federal and state levels, a number of agencies, including the BLM, USFWS, USACOE, USDA Natural Resource Conservation Service, Caltrans, CDFG, Calif. Department of Forestry and Fire Protection, and Calif. Department of Conservation, all participate in land use and planning as a regulatory agency responsible for certain permitting or approval requirements. Land use designations and policies are regulated at the local level by Shasta County and the incorporated communities, as described below.

Department of Transportation Act - Section 4(f)

The Department of Transportation Act of 1966, which was previously discussed in the Biological Resources section of this EIR, is set forth in Title 49 United States Code (U.S.C.). This law established that it is the policy of the United States Government to make a special effort to preserve the natural beauty of the countryside and public parks and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation may approve a transportation program or project that requires the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance only if: a) There is no prudent and feasible alternative to using

that land; and b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

California Department of Transportation

The jurisdiction of the California Department of Transportation (Caltrans) includes right-of-ways of state and interstate routes within California. Any work within the right-of-way of a federal or state transportation corridor is subject to Caltrans' regulations governing allowable actions and modifications to the right-of-way. Caltrans issues permits to encroach on land within their jurisdiction to ensure encroachment is compatible with the primary uses of the State Highway System, to ensure safety, and to protect the State's investment in the highway facility. The encroachment permit requirement applies to persons, corporations, cities, counties, utilities, and other government agencies.

LOCAL

At the local levels, a number of agencies, including the Local Area Formation Commission, Shasta County Airport Land Use Commission, Shasta County Regional Transportation Planning Agency, Shasta County, City of Anderson, City of Redding, and City of Shasta Lake, all participate in land use and planning, typically as a lead agency with the discretionary approval authority.

Local Area Formation Commission

The Shasta Local Agency Formation Commission (LAFCO) is a legislatively established commission responsible for coordinating logical and timely changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structure, and preparing a sphere of influence for each city and special district within each county. LAFCO is directed to see that services are provided efficiently and economically while agricultural and open-space lands are protected.

Redding Municipal Airport Specific Plan

The Redding Municipal Airport Specific Plan, adopted by the Cities of Redding and Anderson and Shasta County, is the official land use planning document governing land use activities in the RMASP. The General Plans of Shasta County and the incorporated cities must be consistent with this specific plan to ensure that land use in adjacent jurisdictions do not allow land uses that could pose a significant threat to operations at the airport or that public health and safety might somehow be jeopardized by uses allowed too close to airport operations.

Shasta County General Plan

The Shasta County General Plan was updated in 2004. The Community Organization chapter of the General Plan identifies the following objectives related to land use:

- To promote a development pattern which will accommodate, consistent with the other objectives of the Plan, the growth which will be experienced by Shasta County

during the planning period (2005-2025), and/or such periods as may be extended by future revisions of the Plan.

- To guide development in a pattern that will provide opportunities for present and future County residents to enjoy the variety of living environments which currently exist within the County, including:
 - Incorporated communities served by the full range of urban services, unincorporated communities served by most but not all urban services.
 - Unincorporated rural communities provided with very limited or no urban services.
 - Rural homesites located outside of community centers on relatively large lots or in clustered development accompanied by open space areas within the project provided that the clustering does not create an adverse impact on neighboring properties.
- To guide development in a pattern that will respect the natural resource values of County lands and their contributions to the County's economic base.
- To guide development in a pattern that will minimize land use conflicts between adjacent land users.
- To guide development in a pattern that will establish an acceptable balance between public facility and service costs and public revenues derived from new development.
- To fashion a development pattern whose implementation mechanisms such as zoning, subdivision, and other regulations, explicitly define a relationship between public and private expectations and responsibilities concerning land use that is based on the following principles:
 - Public programs shall recognize both the expectations of individual property owners to be able to use their lands as they desire, and the responsibility of government to provide a regulatory climate which does not impede reasonable private expectations.
 - Property owners shall recognize public programs emphasizing that land be used in a responsible manner that does not adversely affect either adjacent property owners, the County's fiscal ability to provide services, or the community values of the citizens of Shasta County.
 - A workable relationship between public and private land use expectations must be achieved in order for each to be well served.
 - Periodic review of the relationship between public and private land use expectations is necessary to reflect changing community values.
- To recognize that the major economic resources for achieving the development pattern will come from the private sector, rather than government, and that the General Plan, as the expression of community values, will guide the use of these resources.

The Community Organization chapter of the Shasta County General Plan identifies 14 land use designations (Urban, Suburban, Rural Residential A, Rural Residential B, Existing Residential, Local

Convenience Center, Retail Commercial, Commercial/Light Industrial, Office Commercial or Business Park, Highway Commercial, Commercial Recreational, Mixed Use, General Industrial, and Light Industrial). Applicable principles and standards, including allowed uses, location requirements, and factors to be considered in determining the appropriate zoning classification, are provided for each land use designation in the Community Organization chapter of the General Plan.

City of Anderson General Plan

The City of Anderson General Plan was adopted in 2007 and includes the following objectives related to land use and transportation planning:

- To make Anderson a "complete" city by offering a full range of goods, services, housing, employment and recreation to diminish the need for residents to go elsewhere; and
- To maintain the orderly growth and stable physical development of the City of Anderson while enhancing the physical, social, economic and environmental characteristics of the community; and ensure the continuance of the City's "small town" atmosphere.

City of Redding General Plan

The City of Redding General Plan was adopted in 2000, and the Housing Element was updated 2009. The City of Redding Community Development and Design Element identifies eight residential land use categories ranging from 1 dwelling unit per five acres and larger to 20 to 30 dwelling units per acre, eight commercial land use categories ranging from limited office to s to mixed use core to heavy commercial, two industrial land use classifications, and five other classifications to address public, recreation and open space land uses. The General Plan identifies a holding capacity for 85,138 dwelling units (210,292 persons) and 129,025 square feet of commercial/industrial development. The City's General Plan includes the following objectives related to land use:

- Encourage urban growth to occur within the city and provide a development pattern that establishes an orderly urban service area;
- Ensure a proper balance between development areas and the natural environment;
- Promote the development of a cohesive, well-defined city;
- Maintain existing community character and fabric and promote the development of livable and cohesive neighborhoods and districts;
- Ensure that new residential development is well-located and well-designed and can accommodate a mixture of housing types and uses;
- Ensure that neighborhoods are attractive, safe, and well-maintained;
- Designate retail commercial lands in appropriate locations to meet the present and future needs of Redding's residents and visitors and to maintain the city's economic vitality;
- Encourage project development which is compatible with surrounding properties and which improves the image of the city; and

- Improve the visual attractiveness of the city's arterial and collector streets; improve pedestrian safety.

City of Shasta Lake

The City of Shasta Lake General Plan includes eight elements, adopted in 1999. At the time of adoption, the City encompassed approximately 6,942 acres of land and proposed to include an additional 1,948 acres (3 square miles) within the City Sphere of Influence. The City's General Plan includes the following objectives related to land use:

- LU-1 Promote a development pattern which will accommodate, consistent with the other objectives of the Plan, the growth which will be experienced by City of Shasta Lake during the planning period (1999-2020), and as such period is extended by future revisions of the Plan.
- LU-2 Guide development in a pattern that will provide opportunities for present and future City residents to enjoy the variety of living environments, which currently exist within the City, which are served by the full range of urban services.
- LU-3 Guide development in a pattern that will minimize land use conflicts between adjacent land users.
- LU-4 Guide development in a pattern that will establish an acceptable balance between public facility and service costs and public revenues derived from new development.
- LU-5 Fashion a development pattern whose implementation mechanisms such as zoning, subdivision, and other regulations, explicitly define a relationship between public and private expectations and responsibilities concerning land use that is based on the following principles:
 - Public programs shall recognize both the expectations of individual property owners to be able to use their lands as they desire and the responsibility of government to provide a regulatory climate, which does not impede reasonable private expectations.
 - Property owners shall recognize public programs emphasizing that land be used in a responsible manner that does not adversely affect either adjacent property owners or the community values of the citizens of the City.
- LU-6 To recognize that the major economic resources for achieving the development pattern will come from the private sector, rather than government, and that the General Plan, as the expression of community values, will guide the use of these resources.
- LU-7 To integrate the Central Business District Plan into the General Plan.
- LU-8 To establish a sense of community "village" quality and character throughout the City.
- LU-9 To improve existing neighborhood aesthetics.

Specific and Community Plans

The county or the incorporated communities may also provide additional specificity in land use planning beyond that identified in their respective General Plans by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored

to the area, as well as systematic implementation of the general plan. Specific and community plans are required to be consistent with the city or county's general plan.

Zoning

The zoning code of the county and each incorporated community is the set of detailed requirements that implement the general plan land use designations and policies at the individual parcel level. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan, except in charter cities.

ShastaFORWARD>>Regional Blueprint Planning

In 2007, the SCRTPA started a regional blueprint planning program, called "ShastaFORWARD>>". Funded by state grants, the program has involved an unprecedented public outreach effort to solicit input from as many residents of Shasta County as possible. The purpose of a blueprint is to explore planning options to create communities or nodes of development that are less dependent on the automobile. Air quality, traffic congestion, fiscal constraints, and quality of life concerns have all stimulated these efforts. Pedestrian and transit-oriented designs with mixed-use development are being experimented within other communities. They show promise in addressing the land use/transportation link and other related issues.

PREFERRED GROWTH ALTERNATIVE

Many of the issues identified by the public in the ShastaFORWARD>> process coincide with land use/transportation link concepts, such as compact urban form and pedestrian- and transit-oriented design.

In terms of raw survey responses, Scenario B (Urban Core & Corridors) was selected by nearly one-half (48.7%) of all survey participants. Scenario C (Distinct Cities & Towns) was nearly as popular, garnering over 40.5% of the vote. Based on a combined analysis of survey responses and open-ended comments, a melding of Scenario B and Scenario C is recommended to inform future implementation efforts. Scenario B and Scenario C are discussed below.

The Final Report was approved by the SCRTPA Board in February 2010. The Final Report will be presented to the city councils and Board of Supervisors in Shasta County.

SCENARIO B - URBAN CORE & CORRIDORS

'Scenario B' focuses on the benefits of urban living without sacrificing the closeness and accessibility of Shasta County's unique natural setting. Conceptually, this scenario resembles a 'hub and spoke' development pattern. Employment, commerce, and regional destinations are focused within an urban 'hub'. Radiating outward along a select number of transportation corridors or 'spokes', are linear communities containing a mix of multifamily housing, townhouses, neighborhood commercial, and traditional neighborhoods.

The area of developed land in the regional core stays about the same size as today, but previously passed over and underutilized land is filled in over time. Residents travel in and out of the urban core for work and regional shopping, but have access to routine goods and services close to home. Between urban corridors, a network of interconnected open space enhances the connection between urban and natural areas. A regional trails network provides access to open space and doubles as non-motorized transportation corridors to and from the urban core. By concentrating new development along select corridors, miles of additional new roadways are greatly reduced. More focused investments in public transportation, bicycling, and walking facilities along the urban corridors make transportation options more accessible and convenient to use. Public infrastructure is likewise combined along these key corridors to help reduce housing costs. Large lot development continues to occur, but is grouped together at the end of urban corridors.

SCENARIO C - DISTINCT CITIES & TOWNS

'Scenario C' focuses on maintaining individual community identity and a strong sense of place. Rather than have Shasta County's cities and towns grow together into one large metropolitan area, individual communities focus their energies inward. Each 'micropolitan' area contains a well-defined, cohesive, and compact city or town built around an appropriately-scaled downtown and community gathering places. Surrounding open spaces serve as buffers between cities and towns and help meet the functional needs of the natural environment and nearby agriculture production.

The size of each city/town is based on a locally-defined 'build-out' area. Infill and redevelopment are used to knit respective communities together and take advantage of existing public infrastructure and services. Transportation investments are used to link respective cities and towns as well as support a wide range of mobility choices within each individual community.

Local government policies and programs work in concert to encourage more 'complete' and economically self-sufficient communities; places where residents can live, work, and shop. Economic growth, population, and political clout are more evenly distributed throughout the region. Rural development is primarily located on the fringe of designated cities and towns, but clustered or grouped together in order to make the best use of infrastructure and avoid disruption to prime agricultural lands, open spaces, and environmentally sensitive areas.

SUSTAINABLE COMMUNITY STRATEGY

Although an adopted Sustainable Communities Strategy (SCS) is not required until the 2015 RTP update, SCRTPA is pursuing SCS development at this time to capitalize on the momentum generated by ShastaFORWARD>> and to allow the region to build and test an SCS under real-world conditions for several years prior to the requirement. Experience gained and lessons learned during this time will be utilized to address potential issues and to allow desired modifications prior to the SCS element's formal inclusion in the 2015 RTP.

3.10.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on land use and planning and population and housing if it will:

- Physically divide an established community;
- 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;
- Conflict with any applicable habitat conservation plan or natural community conservation plan;
- Induce substantial population 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);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Physical Division of an Established Community (beneficial)

The majority of RTP projects would involve transportation system improvements to existing facilities, which would mostly occur within or in close proximity to existing rights-of-way. Some RTP projects will involve new facilities that will occur within or adjacent to existing communities. New facilities may include roadway widening, roadway extensions, bicycle lanes, bicycle/pedestrian paths, bridges, interchanges, and park-n-ride lots. Additionally, the 2010 includes a "Complete Streets" policy that is intended to provide the existing land uses with a complete transportation system that has a broader level of safe transportation choices for the citizens. A complete transportation system with more safe choices provides an enhancement to the quality of life within the community.

In many cases, improvements to facilities will occur where communities are already physically divided by existing facilities, including highways, roadways, intersections, interchanges, transit routes, and airports. The 2010 RTP is intended to improve inter- and intra-regional connectivity and new or improved land use linkages. This is a **beneficial impact**.

Impact 3.10-2: Conflicts with Applicable Land Use Plan, Policy, or Regulation Adopted to Avoid or Mitigate an Environmental Effect (less than significant)

As described above under Regulatory Setting, each of the jurisdictions in Shasta County has an adopted General Plan to guide land use and development decisions, including circulation patterns and improvements. The RTP projects will respond to growth anticipated in adopted general plans, as well as address safety and rehabilitation issues necessary to maintain the existing transportation system. The RTP projects will also enhance mobility primarily within established communities, and provide connectivity between established communities.

Although the SCRTPA does not have the jurisdiction to make land use decisions, the 2010 RTP includes several objectives, policies, and implementation measures intended to coordinate regional transportation planning with local planning efforts, including Land Use Objective 7 "Integrate land use planning with supporting transportation programs to stabilize and, over time, reduce trip length," Land Use Policy 2 "Coordinate local land use planning with the RTP," and Land Use Policy 8 "Encourage information sharing and communication among local agencies and the SCRTPA on regionally significant land use applications."

Each individual RTP project will be evaluated by the implementing agency on a project-specific level during the design and engineering stage of the process. Each RTP project will be reviewed for conformance with the general plan of the jurisdiction(s) in which the project will be located, as well as conformance with the policies of the 2010 RTP.

The 2010 RTP is intended to accommodate growth envisioned by the General Plans of Shasta County and its incorporated communities by providing multimodal circulation infrastructure necessary for orderly growth. The 2010 RTP includes policies that ensure consistency with local plans and regulations and a conformance review of individual RTP projects will ensure consistency with adopted policies and regulations. The 2010 RTP would not result in significant conflicts with plans, policies, and regulations adopted to mitigate an environmental effect. Therefore, this impact is considered *less than significant*. No mitigation measures are necessary.

Impact 3.10-3: Conflicts with Any Applicable Habitat Conservation Plan or Natural Community Conservation Plan (less than significant)

There are no Habitat Conservation Plans or Natural Community Conservation Plans in effect in Shasta County. Implementation of the proposed project would have a less than significant impact on this environmental topic.

Impact 3.10-4: Induce Substantial Population Growth in an Area (significant and unavoidable)

It is anticipated that most of the population and economic growth of Shasta County will continue to occur near to the north-south Interstate 5 corridor in the area known as the South-Central Region

(SCR). This region contains about 335 square miles (about 8.8 percent of the county's area), yet 85 percent of the county's total population. The population density in the SCR is 373 people per square mile versus an average for the county of 42 people per square mile.

As previously noted, 85 percent of the population is concentrated in a relatively small area of the county with the remainder dispersed throughout the county in small concentrations. Transportation service costs to rural areas are greater per person, and service options are fewer, than for those in the SCR. Due to limited funds, transportation improvements will continue to be concentrated in the SCR. This is consistent with the ShastaFORWARD>>Regional Blueprint Plan and the General Plans for the local governments.

The 2010 RTP is a document that is generally used to plan transportation improvements to existing traffic conditions, and/or provide an increase in capacity to enable development consistent with local General Plans. This is a beneficial impact; however, a transportation improvement could induce growth if they are developed before there is demand for them. Additionally, projects planned in areas of little development can induce growth by improving access to these areas.

The 2010 RTP has been planned to accommodate anticipated levels of growth, including growth associated with adopted general plans as well as growth envisioned within the ShastaFORWARD>>Regional Blueprint Plan, which is a beneficial impact. While the RTP does not involve approvals associated with any development projects, the RTP would provide infrastructure that could facilitate additional development in the region. Thus, the RTP could indirectly induce growth, although not above or beyond the growth that is planned or being planned by local jurisdictions both locally and regionally.

This Draft EIR provides mitigation measures that would reduce potentially significant or significant environmental impacts associated with 2010 RTP projects. However, additional environmental effects could occur as discussed in Chapter 5. Projects that would contribute to these effects would be under the jurisdiction of Caltrans, Shasta County, the incorporated cities. SCRTPA would not make approvals associated with this growth and does not have the authority to require mitigation for these future projects that may occur. This growth-inducing component of the project is considered **significant and unavoidable**, although there are numerous beneficial impacts also associated with the proposed project.

MITIGATION MEASURES

Mitigation Measure 3.10-1: The SCRTPA should coordinate planning efforts with local and regional agencies to ensure that transportation and land use plans complement each other. The SCRTPA should engage local and regional agencies, as well as the general public, in the development of a Sustainable Communities Strategy (SCS) in compliance with SB 375 and building off of the work completed during the ShastaFORWARD>> blueprint planning process.

Impact 3.10-5: Displace Substantial Numbers of People or Existing Housing, Necessitating the Construction of Replacement Housing Elsewhere (less than significant)

The 2010 RTP would not, in and of itself, displace substantial numbers of housing units or people. The majority of RTP projects involve work within or adjacent to existing rights-of-way and would not involve displacement of substantial numbers of persons or housing.

State and federal law require due compensation for property taken to carry out the infrastructure projects. Any private development that may implement RTP projects would pay the fair market price for any land/housing acquired as a result of project development.

Growth planned in the general plans of the jurisdictions of Shasta County would result in additional housing opportunities and would more than offset any units removed in association with RTP projects. Therefore, impacts related to a substantial displacement of housing units or persons as a result of the 2010 RTP are *less than significant*. No mitigation measures are necessary.

Draft EIR Shasta County 2010 RTP

Legend

-  Existing Urban
-  PublicLandOpenSpace
-  National Park Service/
Shasta Land Trust
-  Timberland
Production Zone
-  Water body
-  US highway
-  State highway
-  Major Road

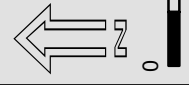
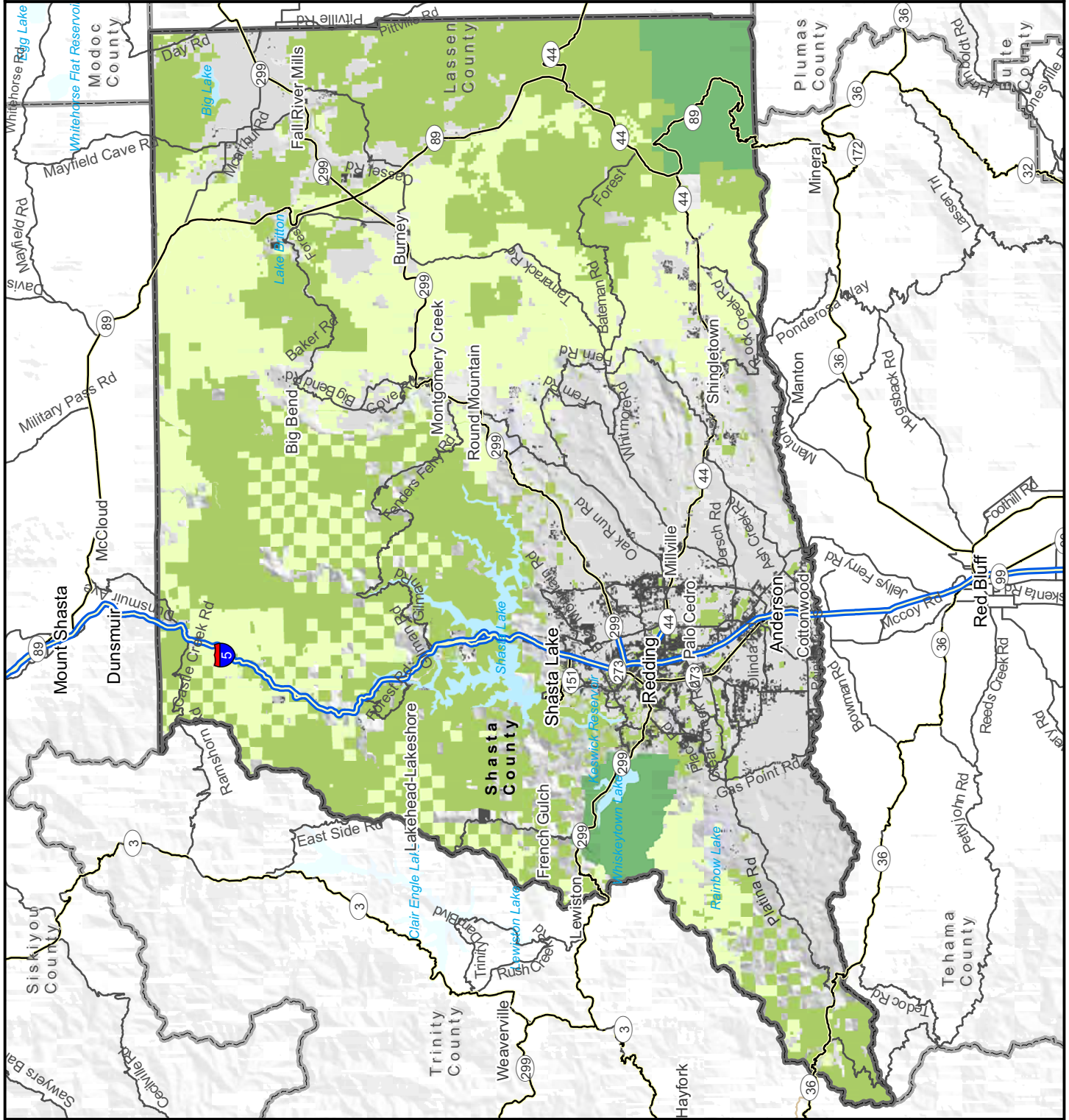


Figure 3.10-1

LAND USE



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This section provides a discussion of the regulatory setting, a general description of existing noise sources in the 2010 RTP project area and a discussion of the impacts and mitigation measures associated with implementation of the 2010 RTP. The analysis in this section was prepared with assistance from AMBIENT Air Quality & Noise Consulting. The technical data in support of this EIR section is presented in Appendix E. Information in this section is derived, in part, from a combination of field work, information from the project traffic study, and the following:

- Shasta County 2010 Regional Transportation Plan (Shasta County RTPA, 2010)
- Shasta County General Plan Noise Element (Shasta County, September 2004)
- City of Redding General Plan Noise Element (EIP Associates, October 2000)
- City of Anderson General Plan Noise Element (Blaney Dyett, February 1999)
- City of Shasta Lake General Plan Noise Element (Diaz Associates, June 1999)

3.11.1 ENVIRONMENTAL SETTING

ACOUSTIC FUNDAMENTALS

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

Amplitude

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

Frequency

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as “A-weighted decibels” (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and associated noise levels, in dBA, are depicted in Figure 3.11-1.

Addition of Decibels

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

Sound Propagation & Attenuation

GEOMETRIC SPREADING

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

ATMOSPHERIC EFFECTS

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

SHIELDING BY NATURAL OR HUMAN-MADE FEATURES

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to

reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in minimum 5 dB of noise reduction. Taller barriers provide increased noise reduction.

Noise Descriptors

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

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

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are L_{eq} , L_{dn} , CNEL and SEL. The energy-equivalent noise level, L_{eq} , is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn} , is the 24-hour average of the noise intensity, with a 10-dBA “penalty” added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community noise equivalent level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.). Another descriptor that is commonly discussed is the single-event noise exposure level, also referred to as the sound-exposure level, expressed as SEL. The SEL describes a receiver’s cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration (0.5 second), such as a backup beeper, the sound of an airplane traveling overhead, or a train whistle. Common noise level descriptors are summarized in **Table 3.11-1**.

TABLE 3.11-1: COMMON ACOUSTICAL DESCRIPTORS

DESCRIPTOR	DEFINITION
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Noise Level (DNL or L_{dn})	The DNL was first recommended by the U.S. EPA in 1974 as a “simple, uniform and appropriate way” of measuring long term environmental noise. DNL takes into account both the frequency of occurrence and duration of all noise events during a 24-hour period with a 10 dBA “penalty” for noise events that occur between the more noise-sensitive hours of 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is “added” to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA “penalty” added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn} .
Single Event Level (SEL)	The level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second.

Human Response to Noise

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

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person’s subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called “ambient” environment. In general, the more a new noise exceeds the

previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

SENSITIVE RECEPTORS

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as, uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, hotels, places of worship, libraries, and other uses where low interior noise levels are essential.

MAJOR NOISE SOURCES IN SHASTA COUNTY

Noise sources are commonly grouped into two major categories: transportation and non-transportation noise sources. Transportation noise sources include surface traffic on public roadways, railroad line operations, and aircraft in flight. Non-transportation (or fixed), noise sources, commonly consist of industrial activities, railroad yard activities, small mechanical devices (lawnmowers, leaf blowers, air conditioners, radios, etc.), and other sources not included in the traffic, railroad and aircraft category. Major transportation and non-transportation noise sources in Shasta County are discussed in more detail below.

Transportation Noise Sources

ROADWAY TRAFFIC

There are a number of major transportation noise sources within Shasta County and incorporated Cities including traffic, railroad noise sources, and airports. Major roadways include Interstate 5 and State Routes 44, 151, 273, and 299. Other major arterials and collector roadways that also contribute to the ambient noise environment include portions of Airport Road, Cypress Avenue, Dana Drive, Deschutes Road, Gas Point Road, Oasis Road, Old Alturas Road, Placer Street and South Bonnyview Road. Generally, traffic noise levels peak during the morning and evening commute periods. Major highways will generally create the most substantial amount of noise as

the traffic volumes, truck volumes, and speeds are much higher when compared to other roadways.

The FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) was used to predict traffic noise levels along major area roadways. The FHWA modeling was based upon the CALVENO noise emission factors for automobiles and medium and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Traffic volumes were derived from the Shasta County travel demand model. Vehicle distribution percentages were based on traffic data obtained during the site reconnaissance, as well as heavy-duty truck distribution percentages for major highways obtained from the California Department of Transportation (Caltrans 2007).

Predicted traffic noise levels for major roadway segments, including distances to the predicted existing 60, 65, and 70-dBA Ldn/CNEL noise contours, are summarized in **Table 3.11-2**. Predicted noise contours are approximate and do not take into account shielding or reflection of noise due to intervening terrain or structures. As a result, predicted noise contours should be considered to represent bands of similar noise exposure along roadway segments, rather than absolute lines of demarcation. Although these predicted noise contours are not considered site-specific, they are useful for determining potential land-use conflicts.

TABLE 3.11-2: EXISTING (YEAR 2010) TRAFFIC NOISE LEVELS

ROADWAY - SEGMENT	L _{DN} /CNEL AT 50 FEET FROM NEAR TRAVEL-LANE CENTERLINE	DISTANCE TO TRAFFIC NOISE CONTOURS (FEET)		
		70 dBA L _{DN} /CNEL	65 dBA L _{DN} /CNEL	60 dBA L _{DN} /CNEL
I-5, North of Riverside Avenue	78.85	338	723	1554
I-5, South of SR44	80.04	419	896	1927
I-5, South of SR151	78.41	319	680	1461
I-5, Fawndale Road	79.15	307	658	1415
SR44, West of I-5	74.19	146	308	661
SR44, East of Victor Avenue	72.07	127	257	546
SR151, East of Cascade Boulevard	67.25	--	104	219
SR273, North of Deschutes Road	70.24	84	170	362
SR273, South of Quartz Hill Road	70.46	73	153	327
SR299, West of Ridge Road	67.83	57	112	236
SR299, East of Black Ranch Road	70.86	66	141	304
Airport Road, South of Argyle Road	68.92	--	107	229
Cypress Avenue, East of Athens Avenue	69.91	74	152	325
Dana Drive, East of Hilltop Drive	65.81	--	90	185
Deschutes Road, East of SR273	69.54	52	112	241
Gas Point Road, West of Rhonda Road	62.52	--	--	82
Oasis Road, East of I-5	68.29	--	92	199
Old Alturas Road, East of Victor Avenue	67.49	--	82	176
Placer Street, West of Buenaventura Blvd.	67.65	--	100	213
South Bonnyview Road, West of Bechelli Lane	72.26	79	170	366

RAILROADS

Shasta County is served by one railroad line: The Union Pacific Railroad (UPRR) single track main line which parallels Interstate 5 and travels north-south through the study area. **Table 3.11-3** summarizes typical noise levels for the UPRR main line and approximate distances to the 60 dB and 65 dB L_{dn} noise contours.

TABLE 3.11-3: UPRR NOISE LEVELS

LDN, BASED UPON DISTANCE FROM RR TRACKS				DISTANCE TO LDN CONTOUR (FEET)			
At 50'		At 100'		60 dB		65 dB	
EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
SOUTH OF BONNYVIEW ROAD							
69.5	70.8	65.0	66.3 dB	215	262	100	122
COTTONWOOD							
76.0	77.3	71.5	72.8	580	711	269	330
Source: Shasta County 1998							

AIRPORTS

Noise levels due to aircraft operations have been identified as a major noise source within the County. There are three existing airports within the planning area: Redding Municipal Airport, Falls River Mills Airport, and Benton Airpark. The former Shingletown Airport was decommissioned in 2009. Operational characteristics and noise levels associated with these airports are discussed in more detail below.

Redding Municipal Airport

The Redding Municipal Airport is a commercial service primary airport, owned by the City of Redding. The airport has two runways with headings 16/34 and 12/30. There are currently a total of approximately 161 aircraft based at the Redding Municipal Airport, consisting of single engine airplanes, multi-engine airplanes, jets and helicopters. In 2001, there were approximately 78,058 total aircraft operations. Existing airline passenger enplanements are estimated at approximately 65,000 per year. By year 2022, the total number of aircraft operations is projected to increase to approximately 147,200 with a total of 130,000 airline passenger enplanements (RMA 2004, City of Redding 2000).

Noise contours for Redding Municipal Airport for existing and future (year 2022) conditions are depicted in Figure 3.11-2 and Figure 3.11-3, respectively. As depicted, the existing 65 dBA CNEL contour is confined primarily to the airport property. The future 65 dBA CNEL contour extends outside of the existing airport property line, but does not affect existing residential uses. Although

not available from existing environmental documentation, the projected future 60 dBA CNEL noise contour would be anticipated to encroach upon existing residential uses (RMA 2004, City of Redding 2000).

Fall River Mills Airport

Fall River Mills Airport is located at an elevation of 3,323 feet in the extreme northeast corner of the county, 70 miles from Redding. Fall River Mills Airport is currently a General Aviation facility with a single runway, 14 based aircraft, and serving both piston-powered and turbine-powered general aviation transient aircraft. Services are limited to card-lock Aviation Fuel sales. It has been projected that the number of based aircraft will increase from 14 to 21. There are currently no other services and no Fixed Base Operators on-site (Shasta County 1998).

Existing and future CNEL contours for Falls River Mills Airport are not currently available. However, according to the Shasta County General Plan, the existing 65 CNEL contour is reportedly contained entirely within the existing airport boundary. The future (year 2021) 65 dB CNEL contour is confined to lands designated Public Facility and Agriculture. The 60 dB CNEL contour encompasses Public Facility, Agriculture, and Urban Residential lands (Shasta County 1998).

Benton Airpark

Benton Airpark is located within the City of Redding, approximately eight miles north of the Redding Municipal Airport. Benton Airpark is classified as a General Aviation Facility and consists of a single runway. There are approximately 130 private aircraft based at Benton, in addition to both the California Highway Patrol air operations and the Mercy Medical Center air ambulance operations. There are currently approximately 32,000 annual aircraft operations (City of Redding 2000).

Existing CNEL contours for Benton Airpark are not currently available. However, according to the City of Redding General Plan, the 60 dB CNEL noise contour may intrude into residential areas north and south of the Airpark when operations reach a level of 75,000 to 100,000. This level, however, is unlikely to be reached given hangar, tie-down, and other capacity limitations at the Airpark. Figure 3.11-4 depicts projected noise contours based on 90,000 operations a year (City of Redding 2000).

Non-Transportation Noise Sources

Major non-transportation noise sources consist predominantly of industrial and commercial land uses, as well as recreational uses. Many industrial processes produce noise, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and state employee health and safety regulations (i.e., regulations of the Occupational Safety and Health Administration of the U.S. Department of Labor [OSHA] and the California Division of Occupational Safety and Health [Cal-OSHA]).

Exterior noise levels that affect neighboring parcels are typically subject to local standards. Commercial, recreational, and public facility activities can also produce noise that may affect adjacent noise-sensitive land uses. These noise sources can be continuous or intermittent and may contain tonal components that are annoying to individuals who live nearby. For instance, emergency-use sirens and backup alarms are often considered nuisance noise sources, but may not occur frequently enough to be considered incompatible with noise-sensitive land uses (Shasta County 1998).

Non-transportation noise sources within Shasta County consist predominantly of commercial and industrial uses. Such uses include, but are not limited to, lumber mills, trucking operations, aggregate mines, quarries, cement and concrete plants, race tracks, metal fabrication facilities, and energy production plants. To a somewhat lesser extent, other non-transportation noise sources include automotive/equipment repair and maintenance facilities, building mechanical equipment, loading docks, maintenance yards, and construction activities. Noise levels associated with non-transportation noise sources can vary depending on various factors, including site conditions, equipment operated, and the specific activities being conducted. As a result, actual noise levels at nearby noise-sensitive receptors will likely vary depending on the above mentioned conditions and other influences, such as location, distance from source, shielding provided by intervening terrain and structures, and ground attenuation rates (Shasta County 1998).

3.11.2 REGULATORY SETTING

NOISE

In general, the federal government sets noise standards for transportation noise sources that are related to interstate commerce. These typically include aircraft, railroads, and motor carriers. State governments establish noise standards for those sources not regulated by federal standards such as automobiles, light trucks, motor boats and motorcycles. Other noise sources associated with construction, as well as industrial and commercial activities, are usually regulated by noise ordinances and general plan policies, which are established by local jurisdictions.

FEDERAL

Noise Control Act of 1972

The Noise Control Act (NCA) of 1972 directed the United States Environmental Protection Agency (U.S. EPA) to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The NCA directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations. It also required that the U.S. EPA establish criterion for noise level adequate to protect health and welfare with an adequate margin of safety but without regard to cost or feasibility. In addition, the U.S. EPA was also given the responsibility for coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The NCA was subsequently amended by the Quiet Communities Act of 1978, which encouraged the development of noise control programs at the State and community level (Caltrans 2002[a]).

U.S. Environmental Protection Agency

A report published in 1974 by the U.S. EPA, Office of Noise Abatement and Control, continues to be a source of useful background information. Entitled *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, this report is better known as the “Levels Document.” The document is intended to “provide state and local governments as well as the federal government and the private sector with an informational

point of departure for the purposes of decision-making.” Using Yearly Day-Night Average Sound Level (DNL) as a measure of noise acceptability, the document states that “undue interference with activity and annoyance” will not occur if outdoor noise levels in residential areas are below DNL 55 dB and indoor levels are below DNL 45 dB. These thresholds include an “adequate margin of safety” as the document title indicates (U.S. EPA 1974).

Department of Housing and Urban Development (HUD)

HUD guidelines for the acceptability of residential land use are set forth in the Code of Federal Regulations (CFR) Title 24, Part 51, “Environmental Criteria and Standards.” These guidelines parallel those suggested in the FICUN report: noise exposure of DNL 65 dB or less is acceptable; between 65 and 75 dB is normally acceptable if appropriate sound attenuation is provided; and above DNL 75 dB is unacceptable. The goal for interior noise levels is DNL 45 dB. These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities (Caltrans 2002[a]).

Federal Aviation Administration

Title 14 of the CFR, Part 150, “Airport Noise Compatibility Planning,” prescribes the procedures, standards, and methodology to be applied airport noise compatibility planning activities. Noise levels below 65 L_{dn} are normally considered to be acceptable for noise sensitive land uses (Caltrans 2002[a]).

Federal Highway Administration

Federal Highway Administration (FHWA) regulations (23 CFR 772) specify procedures for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise abatement actions. The FHWA noise abatement criteria are based on worst hourly L_{eq} sound levels, not L_{dn} or CNEL values. The worst-hour 1-hour L_{eq} criteria for residential, educational, and healthcare facilities are 67 dBA outdoors and 52 dBA indoors. The worst-hour 1-hour L_{eq} criterion for commercial and industrial areas is 72 dB (outdoors).

The FHWA document, *Highway Traffic Noise Analysis and Abatement: Policy and Guidance* (1995), calls for each state highway agency to prepare and adopt written guidelines specific to that state which must demonstrate compliance with 23CFR772. State highway agencies are allowed flexibility to establish their own definitions and quantifications of different criteria and decision items that are used in the guidelines to make noise abatement determinations.

Federal Transit Administration

The Federal Transit Administration (FTA) procedures for the evaluation of noise from transit projects are specified in the document titled, “Transit Noise and Vibration Impact Assessment”. The FTA Noise Impact Criteria categorizes noise sensitive land uses as follows (FTA 2006):

- Category 1: buildings or parks where quiet is an essential element of their purpose.

- Category 2: residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- Category 3: institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches, and active parks. L_{dn} is used to characterize noise exposure for residential areas (Category 2). For other noise sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour L_{eq} during the facility's operating period is used. Noise impacts are identified based on absolute predicted noise levels and increases in noise associated with the Project.

STATE

State of California Public Utilities Code

Section 21669, Article 3, Chapter 4, Part 1, Division 9 of the California Public Utilities Code (PUC) (Aeronautics Law) provides the legislative authority to adopt noise standards governing the operation of aircraft and aircraft engines for airports. Caltrans Division of Aeronautics is the agency responsible for compliance with this PUC section. Section 21662.4 (a), Article 3, Chapter 4, Part 1, Division 9 of the PUC exempts emergency service helicopters from local ordinances (Caltrans 2002[a]).

State Aeronautics Act

Chapter 4, Article 3, Section 21669 of the State Aeronautics Act (Division 9, Part 1 of the California Public Utilities Code) requires the State Department of Transportation to adopt— to an extent not prohibited by federal law—noise standards applicable to all airports operating under a state permit (Caltrans 2002[a]).

California Airport Noise Regulations

The airport noise standards promulgated in accordance with the State Aeronautics Act are set forth in Section 5000 et seq. of the California Code of Regulations (Title 21, Division 2.5, Chapter 6). The current version of the regulations became effective in March 1990.

In Section 5006, the regulations state that: "The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dBA for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep and community reaction." In accordance with procedures listed in Section 5020, the county board of supervisors can declare an airport to have a "noise problem." As specified in Section 5012, no such airport shall operate "with a noise impact area based on the standard of 65 dBA CNEL unless the operator has applied for or received a variance as prescribed in..." the regulations. For designated noise problem airports, the "noise impact area" is the area within the airport's 65 dB CNEL contour that is composed of incompatible land uses. Four types of land uses are defined as incompatible (Caltrans 2002[a]):

- Residences of all types;
- Public and private schools;
- Hospitals and convalescent homes; and
- Churches, synagogues, temples, and other places of worship.

However, these uses are not deemed incompatible if any of several mitigative actions has been taken as spelled out in Section 5014. Among these measures are airport acquisitions of an aviation easement for aircraft noise and, except for some residential uses, acoustical insulation adequate to ensure that the interior CNEL due to aircraft noise is 45 dBA or less in all habitable rooms (Caltrans 2002[a]).

Caltrans Division of Aeronautics

The California Department of Transportation (Caltrans), Division of Aeronautics, has adopted the Community Noise Equivalent Level (CNEL) as the noise descriptor to be used in describing the noise impact boundary of California airports. The Division of Aeronautics has identified a noise impact criterion of 65 dBA CNEL for noise-sensitive land uses, such as single family dwellings. The CNEL descriptor is typically about 1 dB more than the L_{dn} because it applies an additional penalty for noise sources between the hours of 7:00 p.m. and 10:00 p.m. The L_{dn} descriptor only applies a penalty to noise levels between the hours of 10:00 p.m. and 7:00 a.m. (Caltrans 2002[a]).

State of California General Plan Guidelines

Section 65302(f) of the California Government Code (Title 7, Division 1, Chapter 3, Article 5), requires that a noise element be included as part of local general plans. Transportation noise sources are among the noise sources to be analyzed and addressed in general plans. To the extent practical, both current and future noise contours (expressed in terms of either CNEL) are to be included. The noise contours are to be “used as a guide for establishing a pattern of land uses...that minimizes the exposure of community residents to excessive noise (OPR 2003).”

Guidance on the preparation and content of general plan noise elements is provided by the Office of Planning and Research in its General Plan Guidelines (1998). This guidance represents an updated version of guidelines originally published by the State Department of Health Services in 1976. Included in the document are recommended noise compatibility criteria for a variety of land use designations. These standards may be adjusted to reflect noise-source characteristics and to reflect the communities noise control goals and sensitivities to noise pollution (OPR 2003).

LOCAL

Shasta County General Plan

There are numerous policies set forth in the Shasta County General Plan Noise Element that are related to noise. Listed below are the noise policies that are applicable to the 2010 RTP (Shasta County 1998):

- Policy N-f: Noise created by new transportation sources shall be mitigated to satisfy the levels specified in Table N–VI at outdoor activity areas and/or interior spaces of existing

noise-sensitive land uses. Transportation noise shall be compared with existing and projected noise levels shown in Tables N-I and N-II.

- Policy N-g: Existing noise-sensitive uses may be exposed to increased noise levels due to future roadway improvement projects as a result of increased traffic capacity and volumes and increases in travel speeds. In these instances, it may not be practical to reduce increased traffic noise levels consistent with those contained in Table N-VI. Therefore, as an alternative, the following criteria may be used as a test of significance for increases in the ambient outdoor activity areas of the noise level of noise-sensitive uses created as a result of a new roadway improvement project:
 - Where existing traffic noise levels are less than 60 dBA L_{dn} , a +5 dB L_{dn} increase will be considered significant; and
 - Where existing traffic noise levels range between 60 and 65 dBA L_{dn} , a +3 dB L_{dn} increase will be considered significant; and
 - Where existing traffic noise levels are greater than 65 dBA L_{dn} , a + 1.5 dB L_{dn} increase will be considered significant.

The Shasta County General Plan establishes 60 dBA L_{dn} /CNEL as the acceptable exterior noise level standard for most noise-sensitive land uses (i.e., residential, places of worship, hospitals, nursing homes) exposed to transportation noise sources. Acceptable interior noise standards for noise-sensitive land uses range from 35 to 45 dBA L_{dn} /CNEL (Shasta County 1998).

City of Redding General Plan

There are numerous policies set forth in the City of Redding General Plan Noise Element that are related to noise. Listed below are the noise policies that are applicable to the 2010 RTP (City of Redding 2000):

- Policy N2C: Mitigate noise created by new transportation noise sources consistent with the levels specified in Table 5-4 in outdoor-activity areas and interior spaces of existing noise-sensitive land uses.
- Policy N2D: Consider the significance of noise-level increases associated with roadway improvement projects needed to accommodate buildout of the General Plan. Since it may be impractical to reduce increased traffic noise to levels in Table 5-4, the following criteria may be used as a test of significance for roadway-improvement projects:
 - Where existing traffic noise levels are less than 60 dB L_{dn} in the outdoor-activity areas of noise-sensitive uses, roadway improvement projects which increase noise levels to 60 dB L_{dn} will not be considered significant.
 - Where existing traffic noise levels range between 60 and 65 dB L_{dn} in the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels due to a roadway-improvement project will be considered significant.

- Where existing traffic noise levels are greater than 65 dB L_{dn} in the outdoor activity areas of noise-sensitive uses, a +1.5dB L_{dn} increase in noise levels due to a roadway-improvement project will be considered significant.
- Policy N2F: Minimize motor vehicle noise impacts from streets and highways through proper route location and sensitive roadway design by employing the following strategies:
 - Consider the impacts of truck routes, the effects of a variety of truck traffic, and future motor vehicle volumes on noise levels adjacent to master planned roadways when improvements to the circulation system are planned.
 - Mitigate traffic volumes and vehicle speed through residential neighborhoods.
 - Work closely with Caltrans in the early stages of highway improvements and design modifications to ensure that proper consideration is given to potential noise impacts on the City.

City of Anderson General Plan

There are numerous policies set forth in the Anderson General Plan Noise Element that are related to noise. Listed below are the noise policies that are applicable to the 2010 RTP (City of Anderson 2007):

- Policy NP-1: Ensure that noise is kept within acceptable levels in all residential and mixed-use neighborhoods. (Land Use Element) (Housing Element)

The City of Anderson General Plan establishes 60-65 dB L_{dn} /CNEL as the acceptable exterior noise level standard for most noise-sensitive land uses (i.e., residential, schools, places of worship, hospitals, and nursing homes) exposed to transportation noise sources (City of Anderson 2007).

City of Shasta Lake General Plan

There are numerous policies set forth in the City of Shasta Lake General Plan Noise Element that are related to noise. Listed below are the noise policies that are applicable to the 2010 RTP (City of Shasta Lake 1999):

- Policy N-b: The planning and design of improvements in the circulation systems shall consider their noise impacts on adjacent land uses and shall include measure to mitigate significant noise impacts.

The City of Shasta Lake General Plan establishes 60-65 dB L_{dn} /CNEL as the acceptable exterior noise level standard for most noise-sensitive land uses (i.e., residential, schools, places of worship, hospitals, and nursing homes) exposed to transportation noise sources (City of Shasta Lake 1999).

GROUNDBORNE VIBRATION

There are no federal, state, or local regulatory standards for ground-borne vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. However, both the Federal Transit Administration and the California Department of Transportation (Caltrans) have developed vibration criteria based on potential structural damage risks and human

annoyance. These criteria differentiate between transient and continuous/frequent vibration sources. Transient sources of ground-borne vibration include intermittent events, such as blasting; whereas, continuous and frequent events would include the operations of equipment, including construction equipment, and vehicle traffic on roadways (Caltrans 2002(b), 2004).

The ground-borne vibration criteria often used for evaluation of potential structural damage are based on building classifications, which take into account the age and condition of the building. For instance, for residential structures and newer buildings, Caltrans considers a minimum peak-particle velocity (ppv) threshold of 0.25 inches per second (in/sec) for transient sources and 0.04 in/sec for continuous/frequent sources to be sufficient to protect against building damage. Continuous ground-borne vibration levels below approximately 0.02 in/sec ppv are unlikely to cause damage to any structure. In terms of human annoyance, continuous vibrations in excess of 0.04 in/sec ppv and transient sources in excess of 0.25 in/sec ppv are identified by Caltrans as the minimum perceptible level for ground vibration. Short periods of ground vibration in excess of 2.0 in/sec ppv can be expected to result in severe annoyance to people. Short periods of ground vibration in excess of 0.1 in/sec ppv (0.2 in/sec ppv within buildings) can be expected to result in increased levels of annoyance (Caltrans 2002[b], 2004).

3.11.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the project will have a significant impact related to noise if it will result in:

- Exposure of persons or generation of noise levels in excess of standards in the local general plan or noise ordinances or applicable standards of other agencies.
- Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- Expose people residing or working in the project area to excessive noise levels (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).
- Expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).

The proposed project would not result in any operational changes (e.g., changes in flight patterns) to Shasta County Airports or result in the placement of new land uses in the vicinity of any airports. Therefore, exposure to aircraft noise levels would not apply to the proposed project and are not addressed further in this section.

IMPACTS AND MITIGATION MEASURES

Impact 3.11-1: Grading and Construction Activities Would Intermittently and Temporarily Generate Noise Levels Above Ambient Background Levels. (significant and unavoidable)

The 2010 RTP does not directly cause a noise impact, although it could indirectly have noise impacts as a result of development and operation of RTP projects during both the short and long-term. A majority of the RTP projects, with the exception of changes in transit operations, transportation demand management, and regional planning, would require some level of construction. Larger construction-related projects, such as interchange improvements, bridge improvements, and road realignment and widening projects, would be of particular concern given the noise and ground-borne vibration generation potential of these projects.

Noise levels typically associated with roadway construction equipment and distances to predicted noise contours are summarized in **Table 3.11-5**. As indicated, maximum intermittent noise levels associated with construction equipment typically range from approximately 77 to 95 dBA $L_{\max}$ at 50 feet. Pile driving and demolition activities involving the use of pavement breakers and jackhammers are among the noisiest of activities associated with transportation improvement and construction projects. Depending on equipment usage and duration, average-hourly noise levels at this same distance typically range from approximately 73 to 88 dBA L_{eq} . Distances to predicted noise contours would, likewise, vary depending on the specific activities conducted and equipment usage. Delivery vehicles, construction employee vehicle trips, and haul truck trips may also contribute to overall construction noise levels.

Increases in ambient noise levels associated with construction projects located near sensitive land uses can result in increased levels of annoyance, as well as, potential violation of local noise standards. Construction activities occurring during the more noise-sensitive nighttime hours would be of particular concern, given the potential for increased sleep disruption. Impacts to sensitive receptors resulting from RTP projects would depend on several factors, such as the equipment used, surrounding land uses, shielding provided by intervening structures and terrain, and duration of construction activities.

While adopted County and City policies and federal and state regulations would be required of each RTP project, local regulations do not provide consistent requirements for the mitigation of construction noise for public and/or transportation improvements. Implementation of Mitigation Measure 3.11-1 would require implementing agencies to limit construction to the daytime hours (unless another local standard is specified with the local General Plan), to the extent feasible, and would require equipment to be properly maintained and muffled.

Although the policy and regulatory controls for noise related impacts are in place in the planning area and Mitigation Measure 3.11-1 would reduce the impacts associated with noise, the potential remains for excessive noise associated with construction activities. The nature of some roadway improvement projects (e.g., lane closures, detours, etc) benefit from nighttime construction activities to reduce potential safety hazards and traffic congestion. Also, some of the projects may

be in the vicinity of sensitive receptors and may not be able to be designed to ensure that construction equipment does not adversely affect the sensitive receptors. Therefore, construction related noise impacts from the RTP projects are **significant and unavoidable**.

MITIGATION MEASURE

Mitigation Measure 3.11-1: The RTP projects should be designed and implemented to reduce adverse construction noise and vibration impacts to sensitive receptors, as feasible. Measures to reduce noise and vibration effects should be consistent with the FHWA standards for federally funded projects (i.e. federal soundwall standards), or consistent with local standards for locally sponsored projects. Measures may include, but are not limited to:

- *Construction of temporary sound barriers to shield noise-sensitive land uses.*
- *Location of noise-generating stationary equipment (e.g., power generators, compressors, etc.) at the furthest practical distance from nearby noise-sensitive land uses.*
- *Phase demolition, earth-moving and ground-impacting operations so as not to occur in the same time period.*
- *Use of equipment noise-reduction devices (e.g., mufflers, intake silencers, and engine shrouds) in accordance with manufacturers' recommendations.*
- *Substituting noise/vibration-generating equipment with equipment or procedures that would generate lower levels of noise/vibration. For instance, in comparison to impact piles, drilled piles or the use of a sonic or vibratory pile driver are preferred alternatives where geological conditions would permit their use.*
- *Limit noise-generating construction activities, excluding those that would result in a safety concern to workers or the public, to the least noise-sensitive daytime hours or within the timeframe specified by the local General Plan.*

Other specific measures as they are deemed appropriate by the implementing agency to maintain consistency with adopted policies and regulations regarding noise.

TABLE 3.11-5: CONSTRUCTION EQUIPMENT NOISE LEVELS

EQUIPMENT	TYPICAL NOISE LEVEL (dBA) 50 FEET FROM SOURCE		DISTANCE TO NOISE CONTOURS (FEET, dBA L _{EQ})		
	L _{MAX}	L _{EQ}	70 dBA	65 dBA	60 dBA
Air Compressor	80	76	105	187	334
Auger/Rock Drill	85	78	133	236	420
Backhoe/Front End Loader	80	76	105	187	334
Blasting	94	74	83	149	265
Boring Hydraulic Jack/Power Unit	80	77	118	210	374
Compactor (Ground)	80	73	74	133	236
Concrete Batch Plant	83	75	94	167	297
Concrete Mixer Truck	85	81	187	334	594
Concrete Mixer (Vibratory)	80	73	74	133	236
Concrete Pump Truck	82	75	94	167	297
Concrete Saw	90	83	236	420	748
Crane	85	77	118	210	374
Dozer/Grader/Excavator/Scraper	85	81	187	334	594
Drill Rig Truck	84	77	118	210	374
Generator	82	79	149	265	472
Gradall	85	81	187	334	594
Hydraulic Break Ram	90	80	167	297	529
Jack Hammer	85	78	133	236	420
Impact Hammer/Hoe Ram (Mounted)	90	83	236	420	748
Pavement Scarifier/Roller	85	78	133	236	420
Paver	85	82	210	374	667
Pile Driver (Impact/Vibratory)	95	88	420	748	1,330
Pneumatic Tools	85	82	210	374	667
Pumps	77	74	83	149	265
Truck (Dump/Flat Bed)	84	80	167	297	529
Based on typical equipment noise levels and default equipment usage rates obtained from the FHWA Road Construction Noise Model (2006). Distances to noise contours are approximate and assume do not include excess ground attenuation or shielding. Actual noise levels and contour distances will vary depending on project and site-specific conditions. Sources: FHWA 2006					

Impact 3.11-2: Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise. (significant and unavoidable)

The 2010 RTP does not directly cause a noise impact, although it could indirectly have noise impacts as a result of development and operation of RTP projects during both the short and long-term. While many of these projects will likely have no effect on the operational noise generation of the facility, some improvement projects, which involve new facilities or capacity enhancements for existing facilities, could affect noise-sensitive land uses. Noise-sensitive land uses could be exposed to noise in excess of normally acceptable noise levels or increases in noise as a result of the operation of expanded or new transportation facilities (i.e., increased traffic resulting from roadway capacity improvements, new transit facilities, airport modifications, etc.).

The FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) was used to predict changes in future (year 2030) traffic noise levels along major area roadways attributable to the proposed project. The FHWA modeling was based upon the CALVENO noise emission factors for automobiles and medium and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Traffic volumes were derived from the Shasta County travel demand model. Vehicle distribution percentages were based on traffic data obtained during the site reconnaissance, as well as heavy-duty truck distribution percentages for major highways obtained from the California Department of Transportation (Caltrans 2007).

While noise levels would increase in comparison to existing conditions (**Table 3.11-2**), predicted increases would be primarily associated with future development and not the result of the proposed project. Traffic noise modeling was, therefore, conducted for “Constrained” and “Unconstrained” proposed project conditions in comparison to “Year 2030 No-Build” conditions. Predicted future traffic noise contours for the “Constrained” and “Unconstrained” proposed project scenarios are summarized in **Table 3.11-6**.

Based upon the data shown in **Table 3.11-7**, implementation of the proposed project would be projected to result in significant increases in traffic noise levels that could contribute to unacceptable noise levels at noise-sensitive land uses located near adversely affected roadway segments. Although predicted traffic noise levels would vary by roadway segment, both the “Constrained” and “Unconstrained” project scenarios would result in similar overall levels of impact. Both project scenarios would result in a significant increase in traffic noise levels along three of the twenty roadway segments analyzed. It should be noted, however, that the traffic noise levels under the Constrained and Unconstrained project scenarios are an improvement when compared to the No Build scenario.

The county and incorporated communities have adopted Noise Elements of their General Plans that establish noise-related policies that, when implemented, protect sensitive receptors from significant noise. The policies that are laid out in the Noise Element(s) are consistent with federal and state regulations designed to protect noise sensitive receptors. During the design process, the implementing agency would be responsible for ensuring that the project is designed consistent

with adopted policies and state and federal regulations. Although the policy and regulatory controls for noise-related impacts are in place in the planning area, RTP projects would result in an increase in traffic noise levels. For most projects, consistency with the adopted policies and established regulations would help to reduce exposure of sensitive receptors to transportation noise levels. However, it may not be feasible to mitigate this impact to a less-than-significant level in all instances, particularly in areas where existing development is located near proposed projects. For this reason, this increase in ambient noise levels is **significant and unavoidable**.

TABLE 3.11-6: PREDICTED INCREASES IN FUTURE (YEAR 2030) TRAFFIC NOISE LEVELS

ROADWAY - SEGMENT	$L_{dn}/CNEL$ AT 50 FEET FROM				$L_{dn}/CNEL$ AT 50 FEET FROM			
	2030 No BUILD	2030 CONSTRAINED	CHANGE	SIGNIFICANT?	2030 No BUILD	2030 UNCONSTRAINED	CHANGE	SIGNIFICANT?
I-5, North of Riverside Avenue	80.74	80.14	-0.6	No	80.74	80.70	-0.04	No
I-5, South of SR44	81.38	81.04	-0.34	No	81.38	81.35	-0.03	No
I-5, South of SR151	80.08	80.00	-0.08	No	80.08	80.0	-0.08	No
I-5, Fawndale Road	80.57	80.49	-0.08	No	80.57	80.57	0	No
SR44, West of I-5	75.21	75.20	-0.01	No	75.21	75.2	-0.01	No
SR44, East of Victor Avenue	72.91	73.03	0.12	No	72.91	72.94	0.03	No
SR151, East of Cascade Boulevard	69.12	68.78	-0.34	No	69.12	68.98	-0.14	No
SR273, North of Deschutes Road	72.12	70.69	-1.43	No	72.12	70.92	-1.2	No
SR273, South of Quartz Hill Road	71.63	71.40	-0.23	No	71.63	71.34	-0.29	No
SR299, West of Ridge Road	69.26	69.19	-0.07	No	69.26	69.27	0.01	No
SR299, East of Black Ranch Road	71.07	70.96	-0.11	No	71.07	71.06	-0.01	No
Airport Road, South of Argyle Road	68.92	70.84	1.92	Yes	68.92	71.18	2.26	Yes
Cypress Avenue, East of Athens Avenue	70.44	70.41	-0.03	No	70.44	70.31	-0.13	No
Dana Drive, East of Hilltop Drive	65.99	65.49	-0.5	No	65.99	65.05	-0.94	No
Deschutes Road, East of SR273	69.43	68.35	-1.08	No	69.43	70.89	1.46	Yes
Gas Point Road, West of Rhonda Road	64.50	66.61	2.11	Yes	64.50	63.75	-0.75	No
Oasis Road, East of I-5	70.46	73.53	3.07	Yes	70.46	72.40	1.94	Yes
Old Alturas Road, East of Victor Avenue	70.03	69.43	-0.6	No	70.03	69.56	-0.47	No
Placer Street, West of Buenaventura Blvd.	68.05	68.28	0.23	No	68.05	68.26	0.21	No
South Bonnyview Road, West of Bechelli	72.83	72.95	0.12	No	72.83	72.61	-0.22	No
Significant impacts are based on the following thresholds derived from the Shasta County General Plan (1998): (1) an increase of 5 dBA, or greater, where traffic noise levels are less than 60 dBA CNEL/Ldn; (2) an increase of 3 dBA, or greater, where traffic noise levels range between 60 and 65 dBA CNEL/Ldn; or (3) an increase of 1.5 dBA CNEL/Ldn, or greater, where traffic noise levels are greater than 65 dBA CNEL/Ldn.								

TABLE 3.11-7: PREDICTED FUTURE (YEAR 2030) TRAFFIC NOISE CONTOURS

ROADWAY - SEGMENT	DISTANCES TO NOISE CONTOURS ($L_{dn}/CNEL$)							
	2030 CONSTRAINED				2030 UNCONSTRAINED			
	70 dBA	65 dBA	60 dBA	70 dBA	65 dBA	60 dBA	70 dBA	60 dBA
I-5, North of Riverside Avenue	411	880	1,893	447	959			2,063
I-5, South of SR44	487	1,044	2,246	510	1,094			2,354
I-5, South of SR151	405	866	1,864	405	867			1,865
I-5, Fawndale Road	376	807	1,738	380	817			1,760
SR44, West of I-5	169	359	771	173	369			792
SR44, East of Victor Avenue	144	297	633	142	293			624
SR151, East of Cascade Boulevard	65	130	276	66	134			284
SR273, North of Deschutes Road	89	182	387	92	188			401
SR273, South of Quartz Hill Road	83	176	377	83	174			374
SR299, West of Ridge Road	67	137	291	68	139			295
SR299, East of Black Ranch Road	67	144	309	68	146			314
Airport Road, South of Argyle Road	67	143	308	70	151			324
Cypress Avenue, East of Athens Avenue	79	164	350	78	162			345
Dana Drive, East of Hilltop Drive	--	87	177	--	82			165
Deschutes Road, East of SR273	--	93	201	64	138			296
Gas Point Road, West of Rhonda Road	--	72	154	--	--			99
Oasis Road, East of I-5	96	206	444	81	173			373
Old Alturas Road, East of Victor Avenue	51	110	237	52	112			241
Placer Street, West of Buenaventura Blvd.	54	110	234	53	110			234
South Bonnyview Road, West of Bechelli Lane	88	189	406	83	179			386

Impact 3.11-3: Grading and Construction Activities Would Intermittently and Temporarily Expose Sensitive Receptors to Groundborne Vibration Levels. (significant and unavoidable)

Groundborne vibration and noise levels associated with highway traffic is typically considered to pose no threat to buildings and potential annoyance to people would be minimal. Traffic vibration levels are typically highest associated with truck passbys. Automobile traffic normally generates vibration peaks of one-fifth to one-tenth that of trucks. Based on measurements conducted by Caltrans, even the highest truck generated vibrations, which were measured at approximately 16 feet from the centerline of the near travel-lane, were not found to exceed 0.08 in/sec. This level coincides with the maximum recommended “safe level” for ruins and historical structures (Caltrans 2002(b), 2004).

Construction activities would, however, require the use of off-road equipment which could adversely affect nearby land uses. Groundborne vibration levels commonly associated with construction equipment typically associated with transportation projects are summarized in **Table 3.11-8**. As indicated, the highest groundborne vibration levels would be generated by the use of pile drivers and vibratory rollers. Groundborne vibration levels associated with proposed construction improvement projects could potentially exceed recommended criteria for structural damage and/or human annoyance (0.2 and 0.1 in/sec ppv, respectively) at nearby existing land uses. As a result, exposure to construction-generated groundborne vibration levels would be considered potentially significant.

TABLE 3.11-8: REPRESENTATIVE VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

EQUIPMENT		PEAK PARTICLE VELOCITY AT 25 FEET (IN/SEC)
Pile Driver (Impact)	Upper Range	1.518
	Typical	0.644
Pile Driver (Sonic)	Upper Range	0.734
	Typical	0.170
Vibratory Roller		0.210
Hoe Ram		0.089
Large Bulldozers		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozers		0.003
Source: FTA 2006, Caltrans 2004		

Mitigation Measure 3.11-1 would require implementing agencies to either limit construction to the least noise-sensitive daytime hours or within the timeframe specified by the local General Plan. Additionally, it requires the contractor to use equipment with reduced equipment noise/vibration

levels, to the extent practical. The level of mitigation would be project and site specific and would include measures normally required by Caltrans, as well as requirements under the General Plan Noise Elements and Noise Ordinances of the applicable jurisdictions. For most projects, implementation of mitigation measures would be anticipated to reduce groundborne vibration levels and potential damage to nearby structures to a less than significant level. However, in some instances, feasible mitigation measures may not be available to reduce resultant short-term increases in levels of annoyance to nearby individuals to a less-than-significant level. As a result, this impact would be considered **significant and unavoidable**.

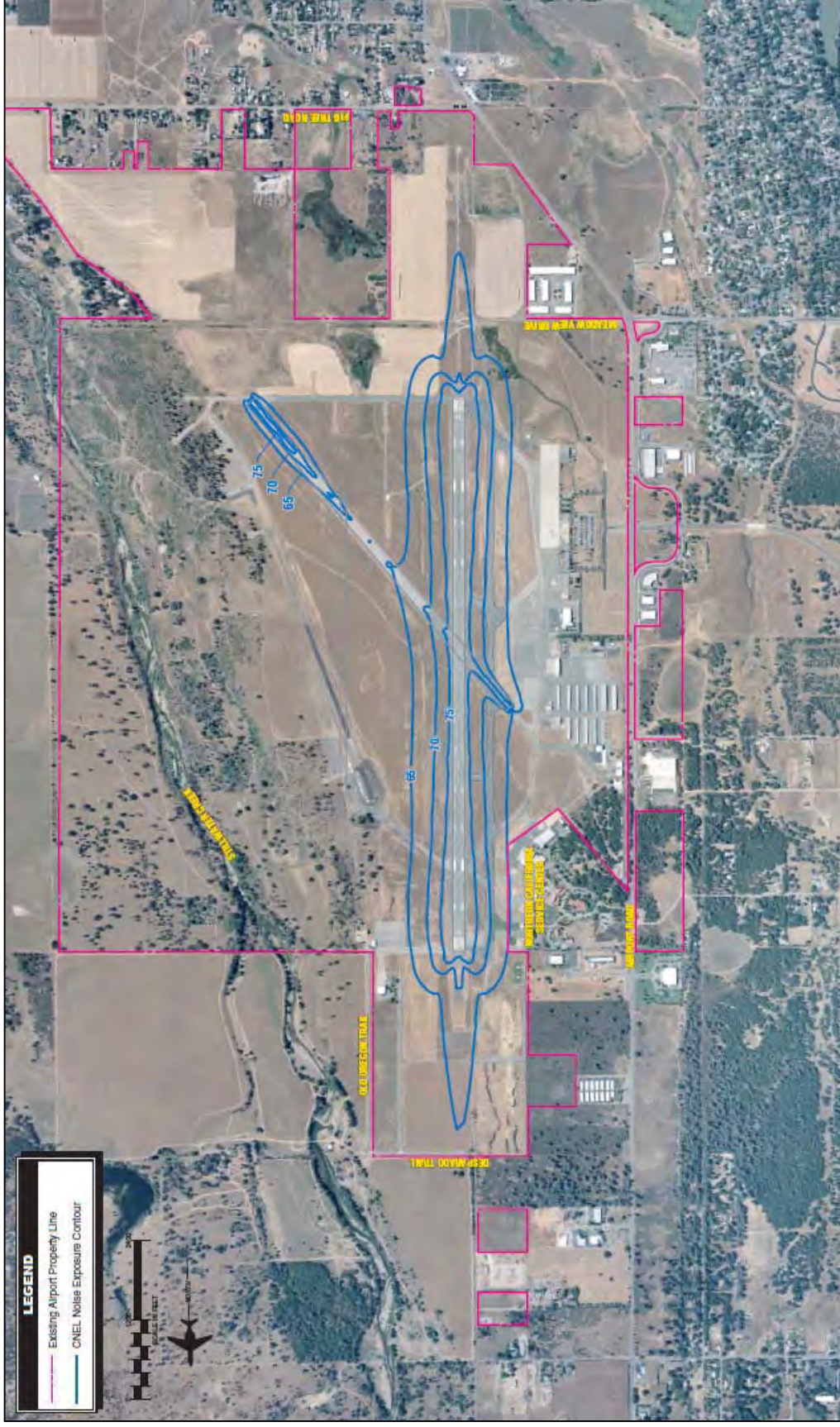
FIGURE 3.11-1: COMMON NOISE LEVELS

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

Source: Caltrans 2008

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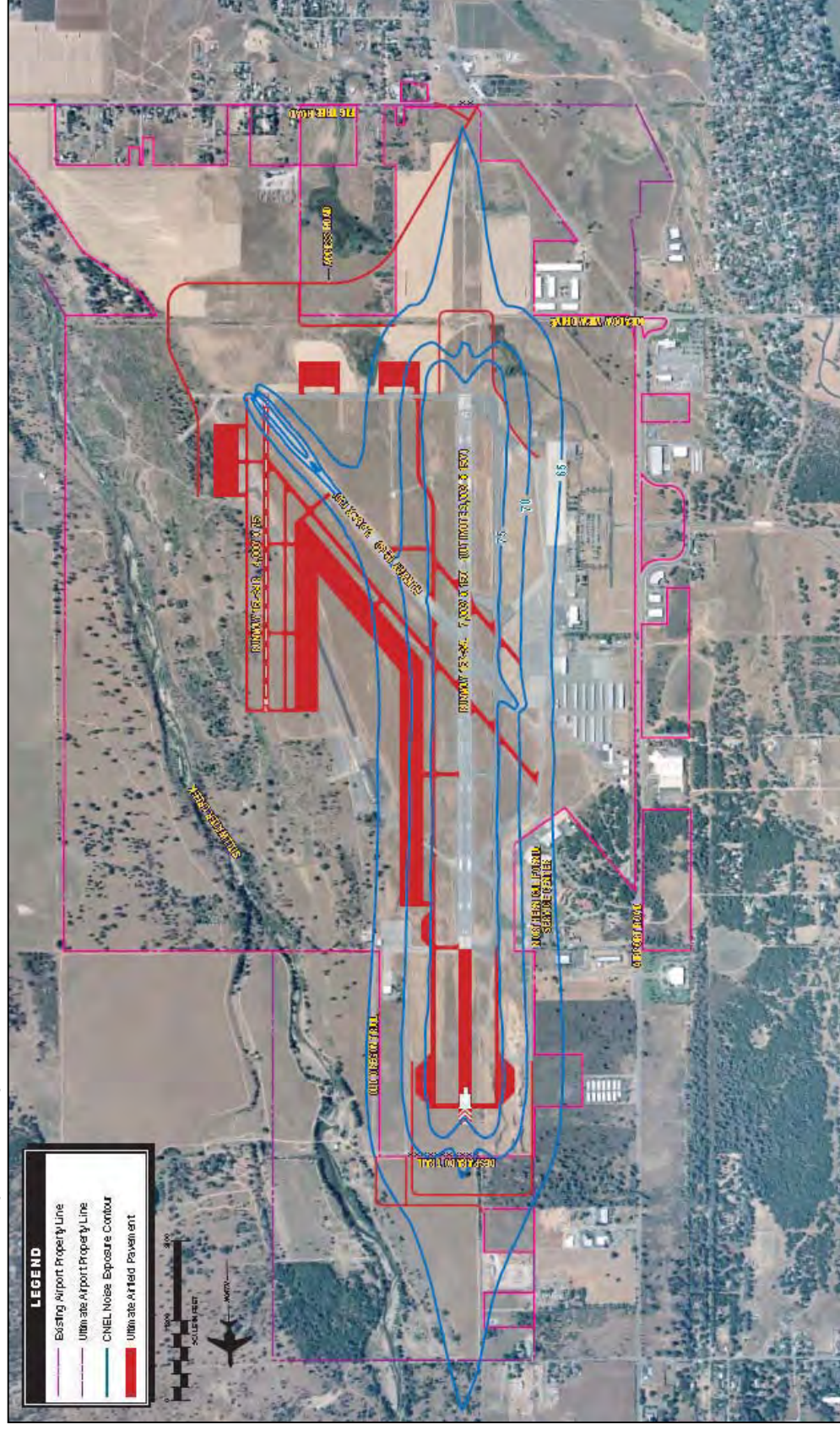
FIGURE 3.11-2: EXISTING (YEAR 2002) NOISE CONTOURS – REDDING MUNICIPAL AIRPORT



Sources: RMA 2004, City of Redding 2000

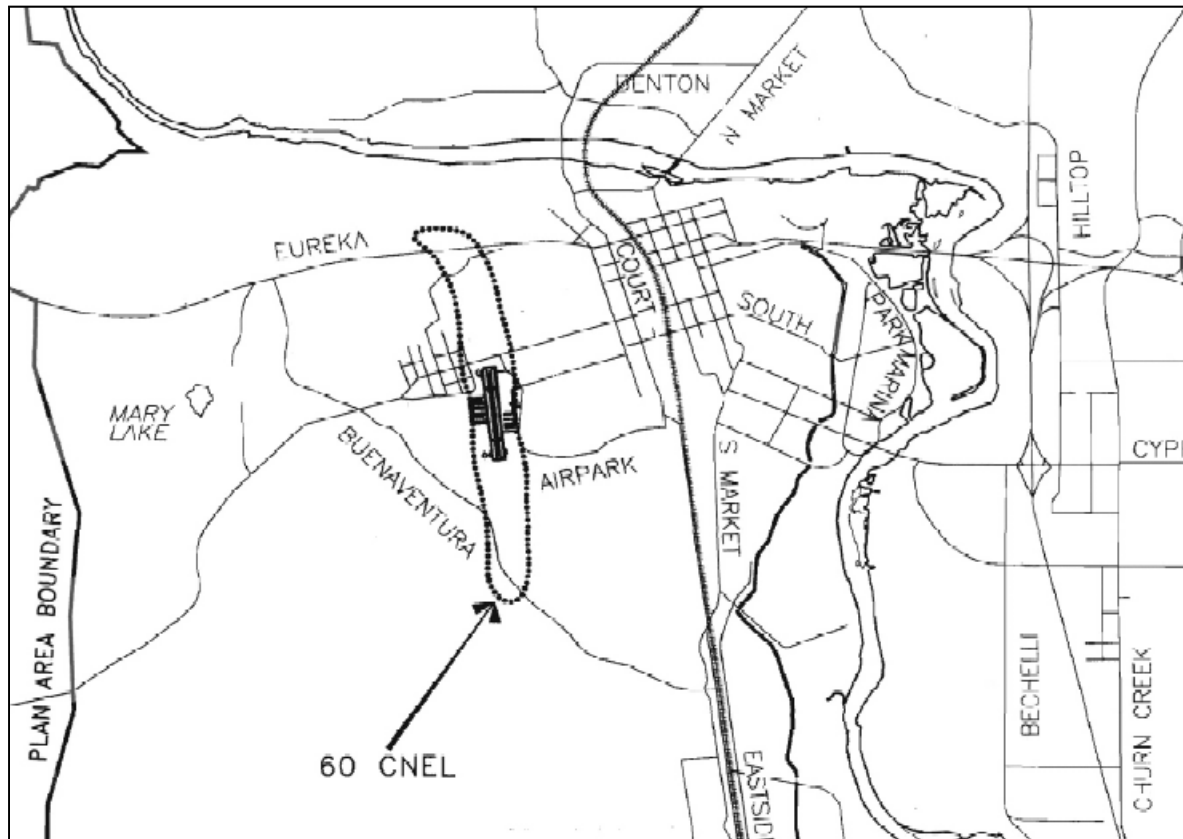
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FIGURE 3.11-3: FUTURE (YEAR 2022) NOISE CONTOURS – REDDING MUNICIPAL AIRPORT



Sources: RMA 2004, City of Redding 2000

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FIGURE 3.11-4: FUTURE (YEAR 2022) NOISE CONTOURS – BENTON AIRPARK

Source: City of Redding 2000

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This section describes existing and future regional multi-modal transportation related conditions associated with implementation of the 2010 RTP. The analysis in this section addresses existing and future transportation conditions both with and without the 2010 RTP. Information in this section is derived from the 2010 RTP and from analysis prepared by Dowling Associates.

3.12.1 SETTING

PHYSICAL SETTING

Shasta County is the geographical center and transportation crossroads of California, north of Sacramento. It lies at the north end of the Sacramento Valley, 150 miles from Sacramento, its largest urbanized neighbor, and 110 miles south of the Oregon border.

Shasta County's 3,788 square miles range in elevation from 425 feet in the Sacramento Valley, to 3,300 feet in the Fall River Valley, to more than 10,000 feet at Lassen National Park.

The County's three incorporated cities (Redding, Anderson and Shasta Lake) all lay in the central non-mountainous portion of Shasta County - referred to as the South Central Region. In the southernmost portion of the South Central Region is Cottonwood, one of the County's four Town Centers. The other three major Town Centers are Palo Cedro, just east of Redding and Burney/Johnson Park and Fall River Mills/McArthur which are both located in the mountains of eastern Shasta County.

REGIONAL ROAD NETWORK

Shasta County has over 2,600 miles of public roadways under the jurisdiction of various government entities. These roadways carry an estimated 2,016 million miles of travel demand annually, according to the 2007 Caltrans California Motor Vehicle Travel Forecast.

Functional Classification and Design Standards of Roadways

Shasta County's streets and highways can be described in terms of a hierarchy of roadways according to their functional classification. The resulting hierarchy of roadways, as well as the general characteristics of each type, is described below. Two major classifications, urban and rural streets, are grouped according to the character of service they are expected to provide. It is necessary to differentiate between urban and rural areas since the services they provide can differ greatly.

URBAN ROADWAY CLASSES

Urban Local Roadways

Urban local roadways are intended to serve adjacent properties only. They carry very little, if any, through traffic and generally have low volumes. They are normally discontinuous in alignment to discourage through traffic, although they are occasionally laid out in a grid system. Speed limits on local roads seldom exceed 25 miles per hour. An example of a local roadway in an urban environment is the cul-de-sac.

Urban Collector Roadways

Urban collector roadways are intended to collect traffic from local roadways and carry it to roads higher in the hierarchy of classification. Collector roads also serve adjacent properties. They generally carry light to moderate traffic volumes at speed limits typically in the range of 35 to 45 miles per hour.

Urban Arterial Roadways

Urban arterial roadways can be further divided into major and minor facilities. They are fed by local and collector roads and provide intra-city circulation and connection to regional roadways. Although their primary purpose is to move heavy volumes of traffic, arterial roadways often provide access to adjacent properties, especially in commercial areas. Speed limits on arterial roadways typically range from 45 to 55 miles per hour.

RURAL ROADWAY CLASSES***Rural Local Roads***

Rural local roads serve primarily to provide access to adjacent land and provide for travel over relatively short distances.

Rural Collector Roads

Rural collector roads serve travel that is primarily intra-county rather than of regional or statewide importance. Travel distances on these roads are usually shorter than on arterial roadways.

Rural Arterial Roadways

Rural arterial roadways provide for corridor movements having trip lengths and volumes that indicate substantial statewide or interstate travel. They generally link urban areas of over 50,000 population as well as many areas with 25,000 population or more. They are often regional highways or freeways as described below.

The following classifications of roadway serve both rural and urban areas by providing travel on important, high-volume corridors.

REGIONAL HIGHWAYS

Regional highways are used as primary connections between major traffic generators or as primary links in state and national highway networks. Such routes often have sections of many miles through rural environments without traffic control interruptions.

FREEWAYS AND EXPRESSWAYS

Freeways and expressways are intended to serve both intra-regional and inter-regional travel. They provide no access to adjacent properties, but rather are fed traffic from collector and arterial roadways by access ramps. Freeways provide connections to other regional highways and are capable of carrying heavy traffic volumes. Speed limits on freeways are usually the highest allowed by law.

This hierarchy of streets and highways is only a general guide to the classification of roadways that make up the circulation system. Because streets often serve dual functions, they cannot be definitively classified. In addition, the width of a roadway does not always correspond directly to its function in the overall circulation system, though the wider roadways tend to have more regional function.

Major Roadways in Shasta County

FREEWAYS

Shasta County has three segments of four-lane limited-access freeway or expressway.

Interstate 5 (I-5) runs from the south border of Shasta County to the north border. Freeway interchanges provide access to all of the urbanized areas in the south part of the county and to rural communities in the north part of the county.

State Route 44 (SR 44) has a limited-access freeway segment between Liberty Street in Redding and Old Oregon Trail. State Route 299 (SR 299) has a limited-access freeway segment between I-5 and Old Oregon Trail.

REGIONAL HIGHWAYS

Six state highways serve as regional highways in Shasta County. These highways, which provide the primary access through the county, are listed in Table 3.12-1.

TABLE 3.12-1: STATE HIGHWAYS IN SHASTA COUNTY

State Route 36	State Route 89	State Route 273
State Route 44	State Route 151	State Route 299

OTHER SIGNIFICANT ROADWAYS

A number of arterial and collector roadways in Shasta County are regionally significant in that they serve regional population areas. Most of these are part of the county's roadway network. Figure 3.12-1 presents the major roadways in the network.

TRANSIT

Public transit service is provided by the Redding Area Bus Authority (RABA). RABA provides fixed-route and demand responsive service (paratransit). Other transit service is provided by various social service agencies, Greyhound Bus Lines, and other private transportation services including limousines, airport shuttles, taxi service, pedi-cabs, and non-emergency medical transportation.

Fixed Route Public Transit**REDDING AREA BUS AUTHORITY**

RABA operates 12 fixed routes within the cities of Redding, Shasta Lake and Anderson. Ten of the routes operate on one-hour headways using one vehicle apiece. Route 9 is a 90-minute route utilizing two vehicles. Route 12 operates on a 30-minute headway utilizing the same vehicles as Route 9. In total, 12 vehicles are required.

BURNEY EXPRESS

Shasta County contracts with RABA for a rural commuter bus service. The commuter service offers express transportation into Redding from the outlying community of Burney. The service operates Monday through Friday, with two round trips each day.

Demand-Response**REDDING AREA BUS AUTHORITY**

The RABA Demand-Response system provides complementary transportation to the disabled residents within the fixed-route service area. The service area is generally within three-quarters of a mile of the fixed routes, complying with the minimum mandates of the Americans with Disabilities Act (ADA). To be eligible for this service, passengers must apply and be accepted into the system. In Redding, approximately 195 passenger trips are provided per day.

SOCIAL SERVICE TRANSPORTATION PROVIDERS

These are non-RABA public and private services for the elderly and disabled.

CONSOLIDATED TRANSPORTATION SERVICES AGENCY (CTSA)

This is a community transit service funded "off the top" by the RTPA pursuant to TDA, Article 4.5. These services are not subject to "unmet transit need" and "reasonable to meet" standards. Funding is limited to five percent of the money available for apportionment countywide. This service provides the elderly and frail people with an opportunity to get out and improve the quality of their lives.

Intercity Buses

Greyhound Bus Lines has four northbound and seven southbound buses passing through Shasta County each day. Anderson and Redding are the only Shasta County stops. Red Bluff is the next stop to the south and Dunsmuir to the north.

In July 2009, the Susanville Indian Rancheria began providing round-trip service from Susanville to Redding, via Westwood, Chester, and Red Bluff. The service operates on Monday, Tuesday, and Thursday (excluding holidays), and includes three round-trips daily from Red Bluff to Redding. Paratransit vans that seat eight passengers and one wheelchair are used for the service. Service is currently free, however, special trips are available for a fee.

Trinity Transit, the public transit operator for Trinity County, began operating a new "Intercity Service" between Weaverville and Redding in January 2010. This service operates Monday, Wednesday, and Friday from 10:00 AM to 2:00 PM. This service connects Highway 101 and Interstate 5 via Highway 299.

Modoc Transportation Agency operates an intercity route (Sage Stage) between Alturas and Redding two days per week, along the SR 299 east corridor.

Taxicabs

Redding Yellow Cab and ABC Cab Company operate in the Redding area 24 hours a day, seven days a week with five and four cabs, respectively.

School Transportation

By far, the largest source of transportation besides the private auto is the public school bus. The 26 public county school districts and the County Superintendent of Schools Office together operate 159 buses, traveling more than 2.28 million miles a year and transporting an average of 8,965 students a day.

Shasta College operates an interregional type of service between the college and Tehama County (Red Bluff), Trinity County (Weaverville), and Eastern Shasta County (McArthur). The college has a total of nine buses and uses four of these daily on the above runs, transporting 150-170 students daily, and also contracts for a lift-equipped van for disabled students.

AVIATION

Overview of Aviation Facilities

There are three public use airports in Shasta County. Two airports are operated by the City of Redding and one is operated by Shasta County. The Redding Municipal Airport is the only commercial airport in the county.

City of Redding Airports

The City of Redding operates the Redding Municipal Airport and the Benton Airport.

REDDING MUNICIPAL AIRPORT

Redding Municipal Airport is the only airport in the county served by scheduled airlines. It is a regional airport serving Shasta and the seven surrounding counties. It was originally built by the U.S. Army as a military airfield in 1942. It was dedicated to the City of Redding in 1947. Today, it is the largest civilian facility in California, north of Sacramento. The airport has eighty-four tie-down spaces and the City of Redding owns hangars that will accommodate 102 aircraft.

Scheduled air service is provided by two airlines. Horizon Air generally provides two daily flights to/from Los Angeles, one daily flight to/from Seattle and two flights connecting to Arcata. United Express provides four round trips each day to San Francisco.

Charter service is provided by Redding Aero Enterprises and Air Shasta. These fixed-base operators also provide aircraft sales, maintenance service, aircraft fuels, and accessories. Helicopter charter is provided by Redding Air Service and Air Shasta.

The mix of aircraft is as follows: 125 single engine airplanes; 28 multi-engine airplanes; one jet; and six helicopters. The operational statistics is as follows: 6,000 Air Carrier; zero Commuter; 11,000 Air Taxi; 24,000 GA Local; 33,000 GA Itinerant; and 1,000 Military. The total annual operations is 75,100.

The main runway used by commercial aircraft is 7,000 feet long, and includes a high intensity lighting system, precision approach path indicator lights on Runway 34, runway end identification lights, and a visual approach slope indicator on Runway 16. The airport also has a terminal very high frequency omni range radio facility and a precision instrument landing system to Runway 34 with a localizer back course approach on Runway 16.

BENTON AIRPORT

Benton Airport is uniquely situated within the city limits slightly more than one mile from the midtown business area and the center of Redding. Benton is a small, single runway, Visual Flight Rules (VFR) airport for single and small twin-engine general aviation aircraft. It is classified as a General Aviation Facility within the USDOT/FAA National Plan of Integrated Airport Systems. It contains 416 acres for aviation and commercial development, but its growth potential is constrained both by topography and residential encroachment. There are approximately 130 private aircraft based at Benton, in addition to both the California Highway Patrol air operations and the Mercy Medical Center air ambulance operations. Hillside Aviation provides charter air service, sales, fuel, and maintenance.

The mix of aircraft is as follows: 113 Single engine; 12 Multi-engine; and three Helicopters. The operational statistics is as follows: 1,000 Air Taxi; 17,000 GA Local; and 17,000 GA Itinerant. The airport includes 30 Shelters (monthly rentals), 50 T-Hangars (monthly rentals), 64 Tie-downs (58 monthly, 6 daily rentals), and 25 Transient.

County Airport

FALL RIVER MILLS AIRPORT

Fall River Mills Airport is located at an elevation of 3,323 feet in the extreme northeast corner of the county, 70 miles from Redding, and was originally built in the 1940's as a graveled runway. Hangars, runway lights, tie-downs and security fencing have been added since 1965. This is a designated Remote Access airport. In 2006 and 2007, Shasta County overlaid the runway and taxiway, which were badly deteriorated.

Fall River Mills Airport is currently a General Aviation facility with a 5,000-foot runway, 13 based aircraft, and serving both piston-powered and turbine-powered general aviation transient aircraft. Services are limited to card-lock Aviation Fuel sales. There are currently no other services and no Fixed Base Operators on-site.

Since the last RTP Update approximately \$10 million in improvements have been completed. Most notable was the extension of the runway and taxiways to 5000 feet, apron expansion and construction of a nine unit T-hangar with pilots lounge and ADA bathrooms. The entire airfield is now protected by chain link security fencing.

GOODS MOVEMENT

Rail Transport

Shasta County is served by the Union Pacific Railroad (UPRR).

UNION PACIFIC RAILROAD

Freight loading/unloading opportunities on the UPRR mainline are available at the following rail siding locations: Cottonwood, Culp, Anderson, Girvan, Redding, Silverthorn, O'Brien, Mead, Lakehead, Delta, Lamoine, Gibson, Sims, Conant, Dirigo, and Castle Craggs. House track or spur is available at all listed stations.

Air Transport

The volume of freight currently moved by air into or out of Redding is small compared to the volume moved by trucks. However, the county has the potential capacity to increase airfreight volumes greatly. As the only commercial airport in Shasta County, Redding Municipal Airport is the center of airfreight and package movement activity. The most visible airfreight carriers are Federal Express and Airborne Express with terminal facilities and several based aircraft. The following entities also provide airfreight service at the Redding Municipal Airport: Burlington Air Express, Emery Worldwide, United Parcel Service and the United States Postal Service.

Truck Transport

Eight truck terminals serve the Redding area and Shasta County with daily service by 18 major carriers. Many local California and interstate carriers provide service to Washington, Oregon, Nevada, and Arizona. Including owner-operated trucking firms, there are close to 80 carriers in the Redding area.

NON-MOTORIZED TRANSPORTATION

Bicycles

Each of the unincorporated cities and Shasta County have existing and proposed designated bikeways. Bicycles are also permitted on certain segments of state routes.

BICYCLE FACILITY DEFINITIONS.

Bike facilities are categorized into three different classifications:

- **Class I Bike Paths** are bikeway facilities designated for exclusive use by both bicycles and pedestrians, which are separated from, but usually adjacent to, roadways. They are usually

designed for two-way travel with an eight-foot minimum wide of asphalt concrete pavement and two-foot wide graded aggregate base shoulders wherever practical.

- **Class II Bike Lanes** usually consist of adjacent one-way lanes on either side of the roadway that provide for the exclusive and semi-exclusive use of bicycles and pedestrians within the road travel way. Class II bike lane facilities require four-foot minimum width lanes on both sides of the roadway where shoulders are present and five-foot minimum width lanes where curb and gutters are present. These facilities are for the exclusive use of bicycles and pedestrians where they are separated from the motor vehicle lane by a six-inch painted white stripe and designated with signs and permanent pavement markings. Shared use by motor vehicles within these facilities is only permissible where indicated by broken or dashed striping.
- **Class III Bike Routes** may be located on roadway facilities with sufficient width for shared motor vehicle and bicycle usage and are usually only designated by signs or permanent pavement markings indicating the route.

CITY OF ANDERSON

The City of Anderson has 0.3 miles of Class I Bike Paths, 3.5 miles of Class II bike Lanes, and 1.0 mile of Class III Bike Routes. The City of Anderson adopted a new Bikeway Plan in October of 2007. The Bikeway Plan must be kept current in order to qualify the agency to apply for Bicycle Transportation Account grants. These plans promote the use of bicycles as an alternate means of transportation.

CITY OF REDDING

The City of Redding Sacramento River Trail includes approximately eleven miles of paved trail on both sides of the river. The trail system primarily serves recreational uses. The City of Redding's Blue Gravel Mine Trail and Canyon Creek Trail total 2.5 miles of trails. The City of Redding has designated Class III bike routes on many streets, and has existing and proposed Class II bike lanes on approximately 20 streets.

CITY OF SHASTA LAKE

The City of Shasta Lake has 0.3 miles of Class I bike paths, 6.8 miles of Class II bike lanes, and no Class III bike routes. Shasta Lake adopted a new Bicycle Transportation Plan in 2009.

SHASTA COUNTY

Unincorporated Shasta County has three existing Class II bikeways on Lake Boulevard, Deschutes Road, and Ashby Road. The County plans to add bike lanes to most of the major roads in the south central region.

STATE ROUTES

Existing bike routes in the county include portions of the state and federal highways (Table 3.12-2). The state highways provide vital links from the rural areas of Shasta County to the cities of Redding, Anderson and Shasta Lake.

TABLE 3.12-2: BICYCLE ROUTES ON STATE HIGHWAYS IN SHASTA COUNTY

STATE ROUTE	LOCATION	MILES OPEN TO BICYCLES
Interstate 5	North of Cottonwood to Anderson	5 miles
Interstate 5	City of Shasta Lake to Dunsmuir	40 miles
SR 36	Platina to Trinity Co.	12 miles
SR 44	Redding to Lassen Co.	75 miles
SR 89	Siskiyou to Viola	50 miles
SR 151	City of Shasta Lake	3 miles
SR 273	Redding to Anderson	15 miles
SR 299	Trinity Co. to Lassen Co.	100 miles

In the vicinity of Redding, there are sections of SR 299, Interstate 5 and SR 44 that prohibit bicycle and/or pedestrian traffic. The state highways provide vital links from the rural areas of Shasta County to the cities of Redding, Anderson and Shasta Lake.

Pedestrian

The majority of the pedestrian facilities located within the urban areas of Shasta County consist of sidewalk facilities which were placed in conjunction with site improvements for subdivisions and commercial development.

CITY OF REDDING

The City of Redding has built a series of interconnected river and park trails along the Sacramento River. Seven miles of paved pedestrian/ bicycle trails have been completed along the Sacramento River near Lake Redding Park. A footbridge was completed in 1990 at the northerly end of the trail to provide a looped system. New feeder trails have been funded and are under design. These trails will provide bicycle and pedestrian access from adjacent residential areas to the main river trail. Various extensions of the main trail are planned as funding becomes available, including "The Sundial Bridge" connecting the Museums of Turtle Bay with the Redding Arboretum across the Sacramento River, which opened July 2004.

A former railroad grade has been improved and provides a seven mile unpaved trail from near Keswick Dam to Shasta Dam. Plans are in place to eventually connect this trail with the City of Redding's network of trails. These trails are coordinated with designated bikeways incorporated into streets and roads to provide loop possibilities to the trail users.

TRANSPORTATION SYSTEMS MANAGEMENT

Intelligent Transportation Systems

Intelligent Transportation System (ITS) involves the application of electronics, computers, and technology to more efficiently manage transportation systems and assets. The main purpose of an ITS architecture is to ensure that the involved transportation agencies plan, develop, and deploy their systems in a coordinated and consistent manner. Other equally important purposes are to eliminate duplication of efforts, to stretch funding dollars, and to ensure that ITS deployment in Shasta County is coordinated with ITS protocols in adjacent regions.

Certain ITS elements are in place in Shasta County region. These include Closed Circuit Television Cameras (CCTV), Changeable Message Signs (CMS), Highway Advisory Radio (HAR) and Roadside Weather Information Systems (RWIS). More deployments of each of these technologies are planned for over the period covered by the RTP.

3.12.2 REGULATORY SETTING

FEDERAL

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

SAFETEA-LU continues the program structure established for highways and transit under the earlier TEA-21 legislation, such as flexibility in the use of funds for a variety of locally defined purposes, including helping meet federal air quality standards. SAFETEA-LU also encourages development of Intelligent Transportation Systems (ITS), to help improve operations and management of transportation systems and vehicle safety.

Under SAFETEA-LU, the U.S. Department of Transportation (USDOT) requires the Metropolitan Planning Organization, like the SC RTPA, to prepare long-range transportation plans and that these plans be updated every three years. Key federal requirements for long-range plans include the following:

- RTPs must be developed through an open and inclusive process that ensures public input and seeks out and considers the needs of those traditionally under served by existing transportation systems;
- RTPs must be developed for a period of not less than 20 years into the future
- RTPs must reflect the most recent assumptions for population, travel, land use, congestion, employment, and economic activity;
- RTPs must have a financially constrained element, and transportation revenue assumptions must be reasonable;
- RTPs must conform to the applicable federal air quality plan, called the State Implementation Plan (SIP), for ozone and other pollutants for which an area is not in attainment; and
- RTPs must consider seven planning factors and strategies, in the local context.

National Environmental Policy Act

The National Environment Policy Act of 1969 (NEPA) requires federal agencies to assess the possible environmental consequences of projects which they propose to undertake, fund, or approve. While the 2010 RTP is not subject to NEPA, individual federally funded programs or projects requiring federal approval will be subject to a NEPA evaluation.

STATE

The State requirements largely mirror the Federal requirements and the State has adopted extensive RTP guidelines. Key additional requirements of the State include:

Regional Transportation Plan Requirements

State planning guidelines call for the adoption and submittal of an RTP every five years to the California Transportation Commission (CTC) and Caltrans. If the current RTP is determined to be adequate such that an update is not warranted, a Regional Transportation Planning Agency, may re-adopt the current RTP. Also, the guidelines specify three elements of the RTP – a policy element, an action element, and a financial element – be prepared. A detailed list of seven related RTP preparation planning factors is contained in the California Transportation Commission, Regional Transportation Guidelines, December 1999.

LOCAL

Local Jurisdictions

Local jurisdictions within Shasta County have established standards for the performance of roadways and intersections within their boundaries. The most common standards apply to peak hour operations at surface street intersections or roadways, which are defined as a minimum level-of-service (LOS). LOS is typically defined on an A through F scale; with LOS A corresponding to little or no congestion or delay, and LOS F to the most congested condition or a high level of delay.

The specific standard applied, calculation methodology, and exceptions for unique conditions vary widely among jurisdictions. The standards are applied on a location-by-location basis, and do not account for overall system performance either within the jurisdiction, or in areas outside the jurisdiction. The performance measures used for evaluation of the RTP are intended to supplement these local standards by focusing on overall system performance.

3.12.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project is considered to have a significant impact on the environment associated with transportation and circulation if it will:

- 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);

- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;
- Result in a change in the air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Interfere substantially with implementation of any adopted non-motorized transportation plan;
- Result in inadequate emergency access;
- Result in inadequate parking capacity.

IMPACTS AND MITIGATION MEASURES

Impacts associated with the RTP have been analyzed based upon full implementation of the Short-term and Long-term Action Plans. Because this is a programmatic level environmental document, the analysis is based on the multi-modal projects collectively, rather than impacts associated with each mode of travel individually.

Impact 3.12-1: 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) or Exceed, either Individually or Cumulatively, a Level of Service Standard Established by the County Congestion Management Agency for Designated Roads or Highways (beneficial impact)

The 2010 RTP was evaluated for traffic impacts in regard to regional indicators and roadway LOS. Vehicle Miles Traveled (VMT), Vehicle Hours of Delay (VHD), Average Speeds, and Miles of Road at Deficient LOS were the regional indicators used to analyze the alternatives. Table 3.12-3 provides a comparison of the alternatives by the regional performance indicators.

TABLE 3.12-3: REGIONAL PERFORMANCE INDICATOR COMPARISON

REGIONAL MEASURE	2010 EXISTING CONDITION	2030 NO PROJECT	2030 FINANCIALLY CONSTRAINED	2030 FINANCIALLY UNCONSTRAINED
Daily Vehicle Miles of Travel	5,944,900	8,317,300	8,246,000	8,227,500
Daily Vehicle Hours of Delay	3,730	17,620	9,870	7,820
Average Speeds				
- Freeways	63.0	58.7	62.9	62.9
- Rural Highways	48.6	48.4	48.5	48.7
- Arterials	36.3	33.3	35.0	36.0
- All Roads	42.2	40.1	41.7	42.1
Miles of Roads at LOS E/F	23	115	58	35

SOURCE: DOWLING ASSOCIATES, 2009

Table 3.12-4 presents a roadway segment level of service analysis for selected roadways in Shasta County. The analysis presents the roadway daily traffic volume for Existing Conditions and for each of the Regional Transportation Plan Alternatives. The forecasted traffic volumes were generated using the Shasta County Transportation Demand Model. The model results in this Draft EIR are used to analyze regional transportation through 2030 and is not intended to be used to plan local roadway improvements or to provide the level of detail necessary to analyze impacts of development projects.

TABLE 3.12-4: ROADWAY SEGMENT LEVEL OF SERVICE ANALYSIS

ROADWAY	SEGMENT	EXISTING CONDITION (2010)		FUTURE CONDITIONS (2030)					
				NO PROJECT		FINANCIALLY CONSTRAINED		FINANCIALLY UNCONSTRAINED	
		VOLUME ¹	LOS ²	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS
Interstate 5	North of Riverside	58,800	C	92,900	F	91,600	D	92,000	D
Interstate 5	South of SR 44	77,200	C	105,100	D	104,400	C	104,200	C
Interstate 5	South of SR 151 Shasta Dam	36,500	A	55,400	B	55,400	B	54,400	B
Interstate 5	Fawndale	23,300	A	33,600	B	33,600	B	33,600	B
SR 44	West of I-5	52,900	C	66,900	E	69,900	E	69,400	E
SR 44	East of Victor	36,900	B	45,100	C	45,800	C	45,400	C
SR 151	East of Cascade	15,000	D	23,600	D	23,600	D	22,900	D
SR 273	North of Deschutes	12,200	C	18,600	C	15,500	C	14,100	C
SR 273	South of Quartz Hill	22,600	D	30,000	E	29,000	E	28,000	E
SR 299	West of Ridge	11,100	C	15,800	D	15,800	D	15,900	D
SR 299	East of Black Ranch	6,200	B	7,200	B	7,200	B	7,200	B
Airport Rd.	South of Argyle	16,900	D	24,900	B	28,400	B	28,400	B
Cypress Ave.	East of Athen	51,600	D	58,700	E	59,200	E	57,000	E
Dana Dr.	East of Hilltop	22,000	D	23,000	D	20,900	D	18,500	D
Deschutes Rd.	East of SR 273	13,300	E	13,700	F	20,600	F	19,200	F
Gas Point Rd.	West of Rhonda	3,700	B	5,700	D	4,800	C	4,800	B
Oasis Rd.	East of I-5	16,200	E	22,500	F	36,600	D	35,100	D
Old Alturas	East of Victor	11,700	E	20,400	D	20,700	D	18,300	D
Placer St.	West of Buenaventura	15,300	D	16,500	F	17,800	D	17,400	D
S. Bonnyview	West of Bechelli	34,500	D	38,800	F	40,100	F	36,900	E

SOURCE: DOWLING ASSOCIATES, 2009

- 1 Average daily traffic volume based on the Shasta County Transportation Demand Model
- 2 Level of service based on highest direction traffic volume during the P.M. peak hour and level of service thresholds by facility type based on the 2000 Highway Capacity Manual (HCM) as compiled by the Florida Department of Transportation (FDOT).

Bold Unacceptable LOS

Implementation of the 2010 RTP, or any of the alternative scenarios will not improve all roadway LOS conditions throughout the regional transportation network to acceptable levels. While traffic conditions would worsen compared with existing conditions, this is largely due to the projected increase in development. The proposed 2010 RTP has been developed to accommodate planned and proposed growth in the region within its financial constraints, however, it does not control or involve approvals of development projects.

As identified in Table 3.12-3, the RTP projects would either maintain or improve roadway congestion conditions when compared with the No Project scenario. Therefore, implementation of the RTP would result in a **beneficial impact**.

Impact 3.12-2: Result in a Change in the Air Traffic Patterns, including either an Increase in Traffic Levels or a Change in Location that Results in Substantial Safety Risks (less than significant)

The RTP includes improvement projects for aviation that are intended to accommodate the aviation forecasts discussed previously. Implementation of the 2010 RTP would allow for an increase in air traffic levels. These projects would not result in a change in the air traffic patterns; rather the RTP will accommodate an increase in air traffic. The increase in air traffic levels is not expected to cause a substantial safety risk, rather it is expected to facilitate increased safety and operations. Implementation of the proposed project would have a **less than significant** impact on air safety. No mitigation measure is required.

Impact 3.12-3: Substantially Increase Hazards Due to Design Features (e.g. sharp curves or dangerous intersections) or Incompatible Uses (beneficial impact)

While the RTP includes numerous projects that will involve a design/engineering process, the project-specific designs and plans for these improvements are not available for analysis in this EIR. However, all improvements will be designed to the specifications of Caltrans and/or the implementing agencies roadway standards, as appropriate. As such, the proposed project is not anticipated to cause a substantial increase in hazards due to design features or incompatible uses. The design and review process for individual projects would require the implementing agency to review the design to ensure that it is consistent with local, state, and federal design standards to ensure that there are not any unnecessary hazards and to ensure that there are not any incompatible uses. The 2010 RTP includes roadway projects designed to alleviate existing congestion issues and to reduce traffic hazards. Implementation of the RTP would have a **beneficial impact** on this environmental topic.

Impact 3.12-4: Interfere Substantially with Implementation of any Adopted Non-Motorized Transportation Plan (beneficial impact)

The 2010 RTP includes non-motorized transportation projects for the region, including bicycle/pedestrian projects that would carry out components of the county and incorporated communities' bicycle plans and would implement local policies associated with alternative modes

of transportation. The 2010 RTP is designed to be consistent with adopted regional plans, including non-motorized transportation plans. Implementation of the RTP would have a **beneficial impact** on this environmental topic.

Impact 3.12-5: Result in Inadequate Emergency Access (less than significant)

Emergency access could potentially be affected during construction activities associated with implementation of the various roadway and transit improvement projects identified in the RTP. However, the implementing agency for each improvement project would be responsible for coordinating with the emergency providers to ensure that emergency routes remain available during construction activities. The RTP does not propose any specific projects that are believed to result in inadequate emergency access. The RTP would provide increased regional connectivity and should improve movement of emergency vehicles in the long-term. Therefore, the impact is **less than significant**. No mitigation measure is required.

Impact 3.12-6: Result in Inadequate Parking Capacity (beneficial impact)

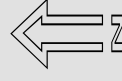
The 2010 RTP would not result in increased demand for parking facilities; however, it would result in increased parking capacity. Implementation of the RTP would have a **beneficial impact** on this environmental topic.

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Draft EIR Shasta County 2010 RTP

Legend

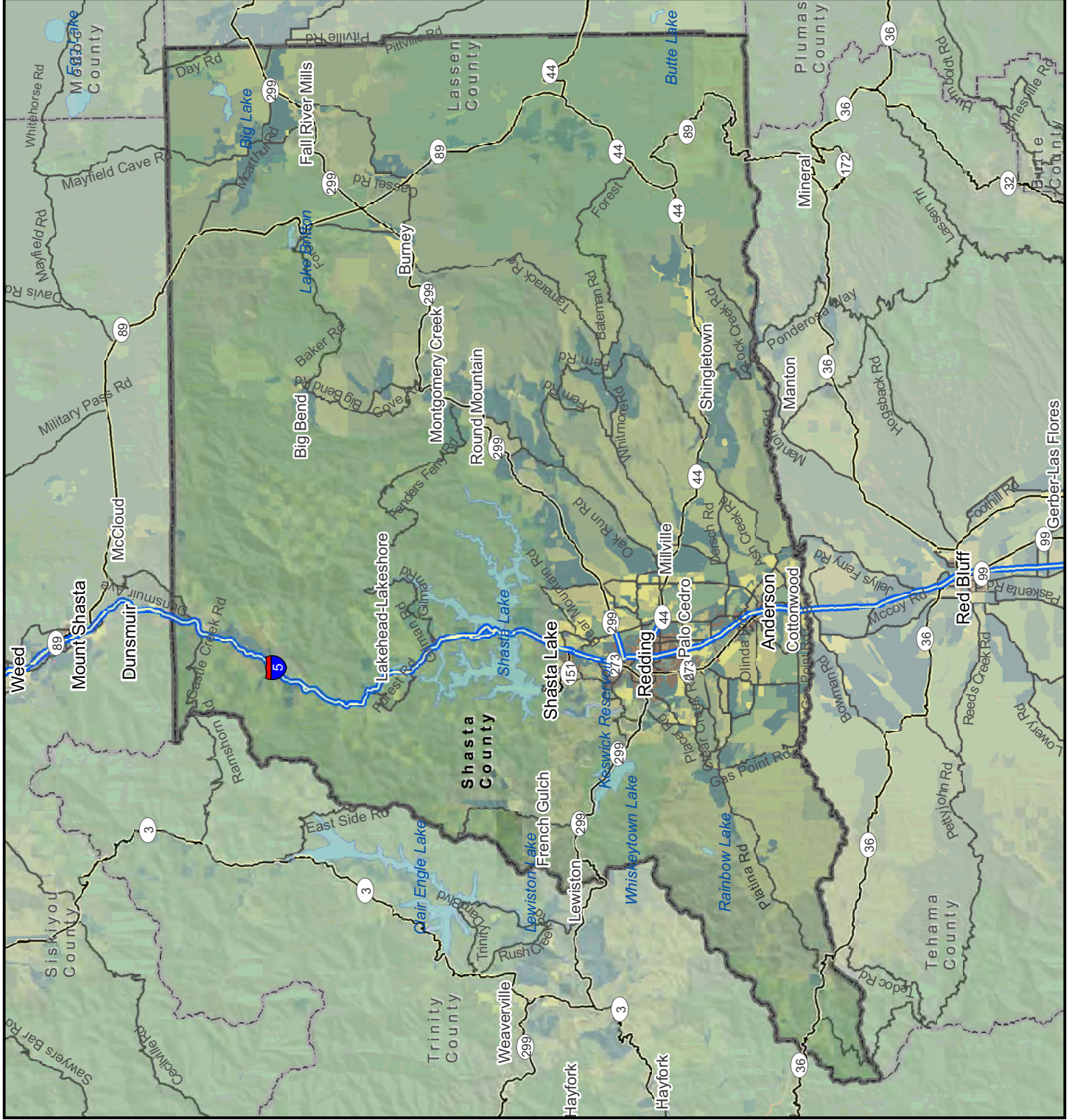
- US highway
- State highway
- Major Road



Source: ESRI, CaSIL,
BLM, USGS, CA FRAP,
and Caltrans

Figure 3.12-1

REGIONAL ROADWAY NETWORK



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CEQA requires an EIR to evaluate a project's effects in relationship to broader changes occurring, or that are foreseeable to occur, in the surrounding environment. Accordingly, this chapter presents discussion of CEQA-mandated analysis for cumulative impacts, irreversible impacts, and growth inducement associated with the 2010 RTP.

4.1 CUMULATIVE SETTING AND IMPACT ANALYSIS

CUMULATIVE SETTING

Under CEQA, the discussion of cumulative impacts should focus on the severity of the impacts and the likelihood of their occurrence. The cumulative scenario for the 2010 RTP includes growth planned for Shasta County and incorporated communities. The analysis of cumulative effects considered the cumulative projected general plan buildout throughout Shasta County.

The RTP includes various statistical estimates for the region to aid in regional planning issues. The population and employment estimates for the region are shown in Tables 4.1-1 and 4.1-2. While these estimates will be referenced by jurisdictions updating their general plans, the estimates may differ from individual jurisdiction general plan buildout estimates. These estimates represent regional growth as a whole based on trends, and are useful in considering the cumulative buildout scenario of the region.

TABLE 4.1-1: POPULATION ESTIMATES FOR MAJOR JURISDICTIONS AND SUBAREAS IN SHASTA CO.

<i>JURISDICTION OR AREA</i>	<i>2000 US CENSUS</i>	<i>2009 E-1 DEPT OF FINANCE ESTIMATE</i>	<i>PERCENTAGE CHANGE 2000-2009</i>
State of California	33,871,648	38,292,687	13.1%
Shasta County total	163,256	183,023	12.1%
Shasta County unincorporated	54,361	71,091	30.8%
Shasta Urbanized Area	105,267	No estimate	N/A
City of Redding	80,865	90,898	12.4%
City of Anderson	9,022	10,765	19.3%
City of Shasta Lake	9,008	10,279	14.1%
Burney	3,217	No estimate	N/A
Cottonwood	2,960	No estimate	N/A
Shingletown	2,222	No estimate	N/A

SOURCE: SHASTA COUNTY RTPA, 2009

Shasta County's economic base has a number of major components: tourism, agriculture, forest products, government, healthcare, education and retail trade (see Table 4.1-2). Retail trade has received considerable impetus from the recent development of several major retail centers. Transportation of goods to distant markets is also an important component of the region's economy. Over the years, Shasta County has seen a steady increase in taxable sales. The City of Redding is experiencing most of the economic growth due to its role as the goods and employment

center for the region. The current recession has altered this trend, with sales taxes declining over the last few years.

TABLE 4.1-2: REGION TO STATE PROFILE OF SELECTED EMPLOYMENT CHARACTERISTICS PER 2000 CENSUS

<i>INDUSTRY</i>	<i>CALIFORNIA</i>	<i>SHASTA COUNTY</i>	<i>% DIFFERENCE</i>
Agriculture, forestry, fishing and hunting and mining	1.9%	2.5%	31.6%
Construction	6.2%	7.4%	19.4%
Manufacturing	13.1%	6.4%	-51.1%
Wholesale trade	4.1%	3.0%	-26.8%
Retail trade	11.2%	14.1%	25.9%
Transportation and warehousing, and utilities	4.7%	5.7%	21.3%
Information	3.9%	2.0%	-48.7%
Finance, insurance, real estate, and rental and leasing	6.9%	5.2%	-24.6%
Professional, scientific, management administrative, and waste management services	11.6%	7.7%	-33.6%
Educational, health and social services	18.5%	24.7%	33.5%
Arts, entertainment, recreation, accommodation and food services	8.2%	9.5%	15.9%
Other Services	5.2%	6.0%	15.4%
Public Administration	4.5%	5.8%	28.9%
<i>CLASS OF WORKER</i>	<i>CALIFORNIA</i>	<i>SHASTA COUNTY</i>	<i>% DIFFERENCE</i>
Private wage and salary worker	76.5%	70.8%	-7.5%
Government worker	14.7%	18.4%	25.2%
Self-employed workers in own business	8.5%	10.2%	20.0%
Unpaid family workers	0.4%	0.5%	25.0%
<i>OCCUPATION</i>	<i>CALIFORNIA</i>	<i>SHASTA COUNTY</i>	<i>% DIFFERENCE</i>
Management, professional and related occupations	36.0%	30.4%	-15.6%
Service Occupations	14.8%	19.6%	32.4%
Sales and Office Occupations	26.8%	27.0%	0.7%
Farming, fishing, and forestry occupations	1.3%	0.9%	-30.8%
Construction, extraction, and maintenance occupations	8.4%	9.8%	16.7%
Productions, transportation, and material moving occupations	12.7%	12.3%	-3.1%

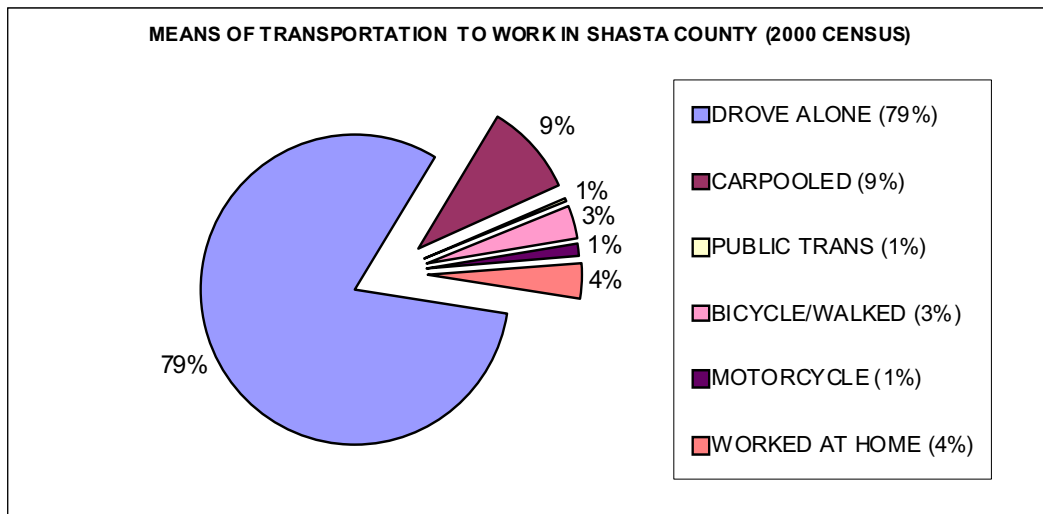
SOURCE: SHASTA COUNTY RTPA, 2009

The County's labor force in year 2030 is projected to be about 111,000, of which about 103,800 are projected to be employed residents. Shasta County has less than 50% of the statewide average of manufacturing and information industry. The ratio of employed residents to Shasta

County jobs is projected to remain essentially constant over the 20 years, with local jobs projected to rise from about 76,017 in 2010 to 103,800 by 2030. The distribution of jobs by industry is projected to continue to be in the service sector. Retail employment is greater than 25% higher than the statewide average. Its share of overall employment will continue to increase.

To estimate current and future traffic, the SCRTPA uses a countywide travel demand model. The model is a computer program that simulates which roads get used when people travel from one place to another - from homes to work, shopping, or recreation, for example. It was recently recalibrated to year 2005 traffic data and is used to forecast traffic for years up to 2030. The model was used to project trip length information for various trip designations. Although work trips are only part of the transportation picture, work trips are a primary concern since they are the main cause of congestion during peak flow periods. Exhibit 4.0-1 illustrates the modal breakdown for getting to work.

EXHIBIT 4.0-1: MEANS OF TRANSPORTATION TO WORK IN SHASTA CO.



SOURCE: SHASTA COUNTY RTPA, 2009

CUMULATIVE EFFECTS OF THE PROJECT

Method of Analysis

Although the environmental effects of an individual project may not be significant when that project is considered separately, the combined effects of several projects may be significant when considered collectively. State CEQA Guidelines 15130 requires a reasonable analysis of a project's cumulative impacts, which are defined as "two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts." The cumulative impact that results from several closely related projects is: the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a

period of time (State CEQA Guidelines 15355[b]). Cumulative impact analysis may be less detailed than the analysis of the Project's individual effects (State CEQA Guidelines 15130[b]).

There are two approaches to identifying cumulative projects and the associated impacts. The list approach identifies individual projects known to be occurring or proposed in the surrounding area in order to potential cumulative impacts. The projection approach uses a summary of projections in adopted General Plans or related planning documents to identify potential cumulative impacts. Because of the programmatic and county-wide nature of the 2010 RTP, this EIR uses the projection approach for the cumulative analysis and considers the development plans of Shasta County as well as its incorporated communities.

Cumulative Impacts

Effects associated with mineral resources, population (except growth inducement), public services, recreation, and utilities (except storm drainage, which is addressed in hydrology and water quality) were discussed in the Initial Study and determined to not have an impact, have a less than significant impact, or have a less than significant impact with mitigation. The analysis in the Initial Study has identified that these impacts will not contribute any substantial incremental effects, no comments were received in response to the NOP regarding these issues, and the analysis performed for preparation of this Draft EIR did not indicate that the project would have a considerable contribution to significant cumulative effects in these issue areas; therefore, the project is determined to have a less than considerable contribution to cumulative impacts associated with mineral resources, population (except growth inducement), public services, recreation, and utilities (except storm drainage, which is addressed in hydrology and water quality).

Cumulative impacts for most issue areas are not quantifiable and are therefore discussed in general terms as they pertain to development patterns in the surrounding region. Exceptions to this are traffic and air quality (the latter of which is associated with traffic volumes), which may be quantified by estimating future traffic patterns, pollutant emitters, etc. and determining the combined effects that may result. In consideration of the cumulative scenario described above, the 2010 RTP improvements may result in the following cumulative impacts.

AESTHETICS

Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region (Considerable Contribution and Significant and Unavoidable)

The existing regional setting, which includes Shasta County and the viewsheds that can be seen from Shasta County, is composed primarily of large tracts of agricultural, grazing, and timber land with urban-scale development in the three incorporated communities and rural population centers located in communities throughout the County. While growth is anticipated to occur in Shasta County, the majority of growth is anticipated to occur in and around the incorporated communities. Development of residential, office, commercial, recreational, and associated infrastructure development is currently occurring and is planned to occur in the coming years to

accommodate growth envisioned in the adopted general plans and in the proposed land use diagrams/vision statements of those general plans being updated.

The 2010 RTP is representative of this planned development. Regional growth has and will continue to result in a cumulative aesthetic effect by converting undeveloped land into developed and occupied areas and increasing overall levels of nighttime lighting. Cumulative development entails grading/landform alteration, the development of structures, and the installation of roadways and other infrastructure that has altered and will continue to permanently alter the region's existing visual character. Subsequent projects implemented under the 2010 RTP would be required to be consistent with the general plan and adopted regulations pertaining to aesthetics and lighting of the implementing jurisdiction(s). Chapter 3.1 identifies mitigation measures to reduce project-level impacts on visual resources. However, even with implementation of adopted policies and regulations and the mitigation measures proposed in this EIR, the proposed project has the potential to considerably contribute to permanent changes in visual character, such as obstruction of scenic views, conversion of existing visual character, and increased lighting. No feasible mitigation is available to fully reduce the cumulative effect on visual character, or to mitigate the proposed project's contribution to a less-than-significant level. Therefore, the 2010 RTP's contribution to this cumulative impact is considerable and the impact is **significant and unavoidable**.

AGRICULTURE

Impact 4.2: Cumulative Impact on Agricultural Land and Uses (Considerable Contribution and Significant and Unavoidable)

The cumulative setting for agricultural resources includes Shasta County and the greater Sacramento Valley agricultural region. Cumulative development anticipated in Shasta County and the greater Sacramento Valley area, including growth projected by adopted general plans and those being updated, will result in the permanent loss of agricultural land, including important farmlands, significant farmlands, land under Williamson Act contracts, and other farmlands. Cumulative levels of development may also result in significant conflicts between agricultural uses and uses that may consider agricultural operations a nuisance, such as residential uses, or otherwise conflict with agricultural uses. Transportation facilities associated with the proposed 2010 RTP are not anticipated to result in significant conflicts with agricultural uses as discussed in Chapter 3.2. However, infrastructure improvements associated with the 2010 RTP could result in the conversion of agricultural lands to developed uses, as discussed in Chapter 3. While most projects would occur within or adjacent to existing rights-of way, development of new and/or extended transportation and circulation facilities will require conversion of agricultural land, and may convert important and significant farmlands, as well as lands under Williamson Act contract or in other agricultural uses. Agricultural land is a limited resources and the cumulative loss of this land is considered significant. While mitigation measures identified in this EIR would result in the protection of existing agricultural land and/or the creation of new agricultural land, it is anticipated that the proposed project will result in a net reduction in agricultural land and have a considerable contribution to the cumulative reduction in agricultural lands. This impact is considered **significant and unavoidable**.

AIR QUALITY

Impact 4.3: Cumulative Impact on the Region's Air Quality (Less than Cumulatively Considerable)

The cumulative setting for air quality impacts is the Sacramento Valley Air Basin (see Figure 3.3-1). As discussed under Section 3.3, the emission outputs reflect a decreasing trend of criteria pollutant emissions from 2010 through 2030. The results of the emission model reflects the fact that the state and federal EPA's vehicle and fuel regulations that are being phased into place over the study horizon will bring about significantly lower emission levels, which is particularly important for the reduction of emissions in nonattainment areas.

Implementation of the 2010 RTP will not conflict with the Air Quality Plan, cause a violation of Air Quality Standards, contribute substantially to an existing air quality violation, or result in a cumulatively considerable net increase of a criteria pollutant in a nonattainment area. This is a **less than cumulatively considerable** impact.

BIOLOGICAL RESOURCES

Impact 4.4: Cumulative Loss of Biological Resources Including Habitats and Special Status Species (Considerable Contribution and Significant and Unavoidable)

The cumulative setting for biological resources includes the entirety of Shasta County. Cumulative development anticipated in Shasta County, including growth projected by adopted general plans and those being updated, will result in the permanent loss of habitat for special-status species, corridor fragmentation, direct and indirect to special-status species, and reduction and degradation of sensitive habitat. While mitigation would reduce the project-level biological impacts associated with the 2010 RTP to a less than significant level, the proposed project would contribute to a net reduction in habitat, and increased vehicle and human presence in the vicinity of special-status species and sensitive habitat. Therefore, the project would have a cumulatively considerable contribution to **significant and unavoidable** impacts to biological resources.

CULTURAL RESOURCES

Impact 4.5: Cumulative Impacts on Known and Undiscovered Cultural Resources (Less than Cumulatively Considerable)

The cumulative setting for cultural resources includes the entirety of Shasta County. Cumulative development anticipated in Shasta County, including growth projected by adopted general plans and those being updated, may result in the discovery and removal of cultural resources, including archaeological, paleontological, historical, and Native American resources and human remains. Mitigation measures provided in Chapter 3.5 would require the proposed project to survey for potential resources and to evaluate any resources discovered during construction activities. Any significant finds would be required to be preserved, either through relocation or documentation and the project is not anticipated to considerably contribute to a significant reduction in cultural resources. Therefore, the project would have a **less than cumulatively considerable** contribution to impacts to cultural resources.

GEOLOGY AND SOILS

Impact 4.6: Cumulative Impacts related to Geology and Soils (Less than Cumulatively Considerable)

Construction of the individual transportation projects identified in the RTP will result in risks associated with geology and soils. For example, there will always be a chance that a fault located anywhere in the state (or region) could rupture and cause seismic ground shaking, although the relative risk to safety from the potential ground shaking within most of the County is considered low. Additionally, grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Other geologic risk such as liquefaction, landsliding, lateral spreading, and soil expansion are also geologic risks that are present.

While some cumulative impacts will occur in the region as individual projects are constructed, there are several regulations, policies, and laws in place that will reduce the risk to people in the region. Considering the protection granted by local, state, and federal agencies and their requirements for the seismic design, as discussed in Section 3.6, the overall cumulative impact would not be significant. By the same token, the proposed project's incremental contribution to cumulative geologic and soil impacts would be **less than cumulatively considerable** in accordance with the mitigation measures outlined in Section 3.6.

GREENHOUSE GASES AND CLIMATE CHANGE

Impact 4.7: Increased Transportation Greenhouse Gas Emissions May Contribute to Climate Change (Considerable Contribution and Significant and Unavoidable)

As discussed under Section 3.7, the proposed project would have a cumulatively considerable contribution to significant impacts associated with climate change and global warming. As illustrated in Section 3.7 the total VMT is projected to increase from 3,886,000 in 1990 to 9,823,000 in 2030, representing an increase of 152 percent over 40 years. The total daily trips are projected to increase from 764,610 trips in 1990 to 1,950,680 trips in 2030, representing an increase of 155 percent over 40 years. The total CO₂ Emissions are projected to increase from 2,750 tons per day in 1990 to 6,750 tons per day in 2030, representing an increase of 145 percent over 40 years.

Implementation of the mitigation measures described Section 3.7 will assist in the reduction of per capita VMT levels throughout Shasta County, which will assist in meeting the stated goals of AB 32 and comply with the requirements of SB 375. As described throughout this EIR, SCRTPA has included numerous projects and programs to promote the use and expansion of alternative transportation systems throughout the County and they continue to coordinate with local land use agencies to assist in the development of plans and policies aimed at reducing VMT.

However, even after implementation of all of the policies, action plans, and mitigation measures included in the RTP and this EIR, the proposed project will still contribute to an overall increase in GHGs generated in Shasta County. Therefore, this is considered a **cumulatively considerable and significant and unavoidable** impact.

HAZARDS AND HAZARDOUS MATERIALS

Impact 4.8: Cumulative impacts from hazardous materials and human health risks. (Less than Cumulatively Considerable)

Construction of the individual transportation projects identified in the RTP may involve the transportation, use, and/or disposal of hazardous materials, which may involve the use of equipment that contains hazardous materials (e.g., solvents and fuels, diesel-fueled equipment), or the transportation of excavated soil and/or groundwater containing contaminants from areas that are identified as being contaminated. Furthermore, because of the regional nature of the transportation improvements, some will inevitably use hazardous materials within ¼ mile of a school, or other sensitive receptors such as hospitals and residences.

While some cumulative impacts will occur in the region as individual projects are constructed, there are several regulations, policies, and laws in place that will reduce the risk to people in the region. Considering the protection granted by local, state, and federal agencies and their requirements for the use of hazardous materials in the region, as discussed in Section 3.7, the overall cumulative impact would not be significant. By the same token, the proposed project's incremental contribution to cumulative hazards and human health impacts would be **less than cumulatively considerable** in accordance with the mitigation measures outlined in Section 3.7.

HYDROLOGY AND WATER QUALITY

Impact 4.9: Cumulative impacts from to Hydrology and Water Quality. (Less than Cumulatively Considerable)

Construction of the individual transportation projects identified in the RTP has the potential to have construction and dewatering related water quality impacts, impacts to groundwater recharge, and cause flooding, erosion, or siltation from the alteration of drainage patterns. While some cumulative impacts will occur in the region as individual projects are constructed, there are several regulations, policies, and laws in place that will substantially reduce the impacts. Additionally, mitigation measures are presented in Section 3.9 Hydrology that when implemented will substantially reduce the impacts associated with individual projects. Considering the protection granted by local, state, and federal agencies and their permit and monitoring requirements, as discussed in Section 3.9, the overall cumulative impact would not be significant. By the same token, the proposed project's incremental contribution to cumulative hydrology impacts would be **less than cumulatively considerable** in accordance with the mitigation measures outlined in Section 3.9.

LAND USE AND PLANNING/POPULATION AND HOUSING

Impact 4.10: Cumulative Impact on Communities and Local Land Uses (Less than Considerable Contribution)

The cumulative setting for land use and planning impacts includes Shasta County, its incorporated communities, and the jurisdictions bordering Shasta County. Cumulative land use and planning impacts, such as the potential for conflicts with adjacent land uses and consistency with adopted plans and regulations, are typically site- and project-specific. Subsequent projects under the 2010

RTP may require removal of homes and result in the displacement of people and housing; however, these effects are not anticipated to be cumulatively considerable and adequate replacement housing is anticipated to be available as discussed in Chapter 3.9. These effects are not considered cumulatively considerable. However, the programmatic nature of the 2010 RTP requires consideration of the overall planning and land use setting under cumulative conditions. As cumulative development occurs, there is the potential for development to occur that is not consistent with adopted plans and regulations and the potential for land use conflicts to occur between communities or jurisdictions. Under cumulative conditions, the majority of 2010 RTP projects would involve work within an existing right-of-way or extension of an existing right-of-way to widen or lengthen existing facilities. These uses would generally be compatible with adjacent uses as the RTP projects are the continuation/extension of existing uses and would not add new land use conflicts.

The 2010 RTP considers the adopted and planned land uses in Shasta County and its incorporated communities. Projects included in the 2010 RTP are intended to primarily address safety and operational deficiencies and will also assist in improving linkages between existing communities. Growth under the 2010 RTP would be consistent with growth envisioned by local agencies and the RTP is not anticipated to result in growth at greater levels than already anticipated. Subsequent projects under the 2010 RTP will be evaluated for consistency with the RTP as well as consistency with the adopted plans and regulations of the implementing agency(ies). As a result, the 2010 RTP would result in development that is generally compatible and consistent with existing land uses and policies. Therefore, the 2010 RTP would have a **less than considerable** contribution to cumulative land use and planning impacts.

NOISE

Impact 4.11: Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise (Considerable Contribution and Significant and Unavoidable)

The cumulative setting for noise impacts includes Shasta County as well as regional highways and roadways connecting Shasta County to other population centers. Under cumulative conditions, the increase in development is anticipated to result in increased traffic congestion on local and regional roadways, as well as a result in a corresponding increase in roadway noise.

As a means of analyzing the noise impacts the FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) was used to predict changes in future (year 2030) traffic noise levels along major area roadways attributable to the proposed project. While noise levels would increase in comparison to existing conditions (Table 3.11-2), predicted increases would be primarily associated with future development and not the result of the proposed project. Traffic noise modeling was, therefore, conducted for “Constrained” and “Unconstrained” proposed project conditions in comparison to “Year 2030 No-Build” conditions. Predicted future traffic noise contours for the “Constrained” and “Unconstrained” proposed project scenarios are summarized in Table 3.11-6.

Based upon the data shown in **Table 3.11-7**, implementation of the proposed project would be projected to result in significant increases in traffic noise levels that could contribute to unacceptable noise levels at noise-sensitive land uses located near adversely affected roadway segments. Although predicted traffic noise levels would vary by roadway segment, both the “Constrained” and “Unconstrained” project scenarios would result in similar overall levels of impact. Both project scenarios would result in a significant increase in traffic noise levels along three of the twenty roadway segments analyzed.

The County and incorporated cities have adopted Noise Elements of their General Plans that establish noise-related policies that, when implemented, protect sensitive receptors from significant noise. The policies that are laid out in the Noise Element(s) are consistent with federal and state regulations designed to protect noise sensitive receptors. During the design process, the implementing agency would be responsible for ensuring that the project is designed consistent with adopted policies and state and federal regulations. Although the policy and regulatory controls for noise-related impacts are in place in the planning area, subsequent improvement projects would result in an increase in traffic noise levels. For most projects, consistency with the adopted policies and established regulations would help to reduce exposure of sensitive receptors to transportation noise levels. However, it may not be feasible to mitigate this impact to a less-than-significant level in all instances, particularly in areas where existing development is located near proposed projects. Although the policy and regulatory controls for noise related impacts are in place in the planning area, subsequent improvement projects may result in an increase in ambient noise levels at specific project locations, which may subject surrounding land uses to **cumulatively considerable** increases in ambient noise levels. This cumulative impact is considered **significant and unavoidable**.

TRANSPORTATION AND CIRCULATION

Impact 4.12: Cumulative Impact on the Transportation Network (Beneficial Contribution and Less than Cumulatively Considerable)

The cumulative setting for transportation and circulation impacts includes Shasta County as well as regional roadways and highways connecting Shasta County to other population centers. Under cumulative conditions, the increase in development is anticipated to result in increased traffic congestion on local and regional roadways, as well as result in increased demand for transit, bicycle/pedestrian, rail, and aviation facilities and infrastructure.

The 2010 RTP would result in projects that would improve traffic and circulation conditions compared with the 2030 conditions without the project. Without the 2010 RTP improvements, the percentage of persons driving alone to work would increase under the current conditions. Public transit use would remain at current levels, which given the projected population increase, would mean more vehicles on the road and an overall worsening of LOS on County and City roadways. Without the proposed project, there would not necessarily be fewer vehicle miles travelled, but as some of the proposed roadway improvements would not be carried out, the county would experience an overall increase in vehicle hours of delay.

Without the 2010 RTP improvements, the use of alternate forms of transit would be limited. Lack of funding for transit system improvements, bicycle/pedestrian routes and facilities, and rail improvements could hamper the use of these transit modes by an increasing population. This is anticipated to result in more trips and more automobiles and trucks on the road. The conditions without the 2010 RTP improvements would also represent greater safety risks, particularly under cumulative conditions, there will be an increase of vehicles on roadways throughout the county regardless of the 2010 RTP, but safety and maintenance improvements identified in the 2010 RTP would not be implemented. Bicycle routes would not be expanded nor would railroad grade separations be constructed. The potential for adverse interactions between trains, vehicles, pedestrians, and/or bicyclists would increase.

As a result of the implementation of the 2010 RTP, these will be a beneficial effect on cumulative transportation and circulation traffic conditions and the project would have a **less than considerable** contribution to significant transportation and circulation impacts under cumulative conditions.

4.2 GROWTH-INDUCING EFFECTS

INTRODUCTION

Section 15126.2(d) of the CEQA Guidelines requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

The way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth...It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment.

Based on the CEQA Guidelines, growth inducement is any growth that exceeds planned growth of an area and results in new development that would not have taken place without implementation of the project. A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project, for example, involved construction of new housing. A project would have indirect growth inducement potential if it established substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand (*Napa Citizens for Honest Government v. Napa County Board of Supervisors*). Similarly, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth-inducing.

The State CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of

growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

Components of Growth

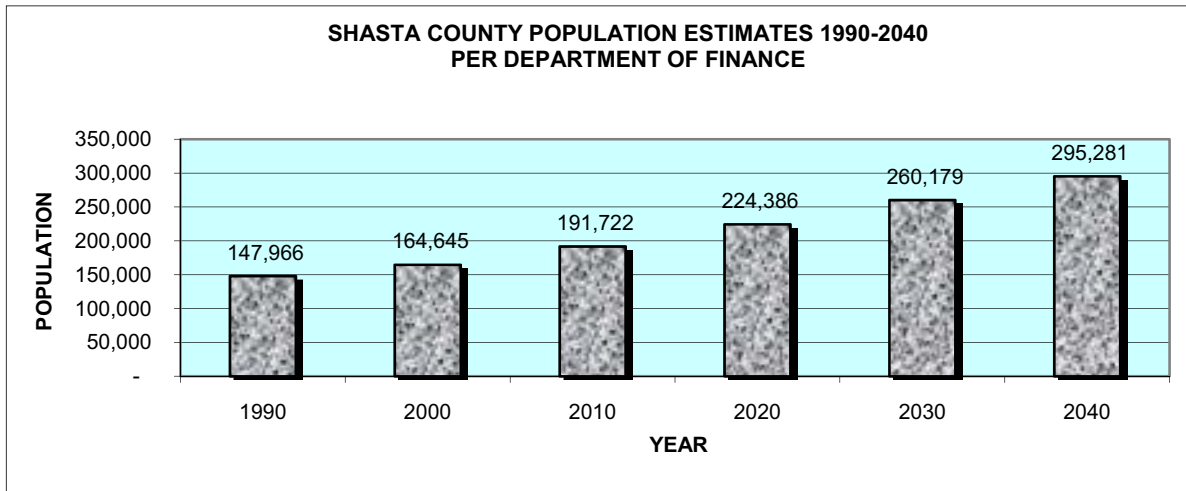
The timing, magnitude, and location of land development and population growth in a region are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and non-residential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Since the general plan of a community defines the location, type, and intensity of growth, it is the primary means of regulating development and growth in California.

GROWTH EFFECTS OF THE PROJECT

The proposed 2010 RTP is intended provide efficient and effective regional road, transit, rail, bicycle, pedestrian, and aviation systems that accommodates the demand for safe movement of people and goods, while reducing usage of nonrenewable energy resources for transportation purposes and achieving federal and state air quality standards.

Population Growth

The population in the RTP area is expected to grow from 191,722 in 2010 to 280,179 by 2030. Employment in the RTP area is expected to grow from 76,017 in 2010 to 103,800 by 2030. This represents a population increase and employment increase of approximately 46.1 and 36.5 percent, respectively. The RTP will accommodate growth planned by Shasta County and the incorporated communities.

EXHIBIT 4.2-1: POPULATION ESTIMATES IN SHASTA CO. (1990-2040)

SOURCE: SHASTA COUNTY RTPA, 2009

The transportation system improvements included in the 2010 RTP are intended to respond to growth anticipated in adopted local general plans and to ensure that General Plan standards are maintained for regional facilities. Although the SCRTPA does not have the jurisdiction to make land use decisions, the 2010 RTP includes several objectives, policies, and implementation measures intended to coordinate regional transportation planning with local planning efforts, including Land Use Objective 7 "Integrate land use planning with supporting transportation programs to stabilize and, over time, reduce trip length," Land Use Policy 2 "Coordinate local land use planning with the RTP," and Land Use Policy 8 "Encourage information sharing and communication among local agencies and the SCRTPA on regionally significant land use applications."

The county and incorporated communities are the agencies responsible for approving land development projects; the 2010 RTP plans infrastructure to implement regional transportation infrastructure but does not provide approval of development projects. The 2010 RTP does not increase the amount of growth that could occur under the adopted and draft General Plans of the County and incorporated communities, nor does it provide infrastructure that would accommodate growth in excess of planned levels.

It is anticipated that Shasta County and the incorporated communities in the county would grow at rates governed by market influences (the demand for housing as influenced by interest rates, employment rates, etc) as regulated by adopted general plans and local regulations regardless of approval of the 2010 RTP. The 2010 RTP provides a strategy to reduce the adverse traffic and circulation effects, including demands on energy and air quality effects, of planned growth and would not directly induce growth. However, because it does plan infrastructure that would accommodate planned growth, it could be considered to indirectly induce growth.

Growth Effects Associated with Infrastructure Improvements

The 2010 RTP provides a strategy to reduce the adverse traffic and circulation effects, including demands on energy and air quality effects, of planned growth and would not directly induce growth. However, because it does plan infrastructure that would accommodate planned growth, it could be considered to indirectly induce growth.

The 2010 RTP could indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. The 2010 RTP includes proposed roadway and transportation improvements that have been designed to support the general plans of Shasta County, the Cities of Anderson, Redding, and Shasta Lake. The 2010 RTP does not include any provisions requiring the oversizing of infrastructure facilities to serve growth not currently planned. The 2010 RTP also includes provisions to increase alternative modes of transportation, (transit, bicycle, and pedestrian), including increasing transit ridership at a rate that maintains pace population growth, and thus, would not provide roadway improvements that could improve vehicle levels of service at the detriment of transit, pedestrian and bicycle uses. The physical environmental effects of the proposed roadway improvements within the county and any offsite impacts that could result from the proposed roadway improvements have been disclosed in this Draft EIR. However, because the 2010 RTP plans for infrastructure improvements that would increase the capacity of the circulation system serving the county, it is considered to indirectly induce growth.

Environmental Effects of Growth

As described above, the 2010 RTP is considered to be growth-inducing because it would allow the county and incorporated cities to continue to grow as envisioned in the general plans of local agencies. The following environmental effects could be experienced due to growth throughout the county:

Air Quality – Increases in air pollutant emissions potentially conflicting with air quality attainment efforts under state and federal Clean Air Acts, greenhouse gas emissions, and increased potential for the exposure to toxic air contaminants.

Aesthetics – Changes to views from scenic corridors, small areas where views of scenic resources may be obstructed, removal and/or relocation of scenic resources, such as trees, and increases in daytime glare and nighttime lighting.

Agricultural Resources – Loss of important and significant farmlands, including lands under Williamson Act contract, and conflicts with agricultural activities on lands zoned or planned for agricultural uses

Biological Resources – Adverse effects to special-status plant, fish, and wildlife species associated with habitat reduction and take, and loss or degradation of sensitive communities, including wetlands.

Cultural and Historic Resources – Loss and degradation of cultural resources, including prehistoric and archaeological artifacts, paleontologic resources, and historic resources, including structures and districts of historic significance.

Geology and Soils – Increased development in areas prone to slope failure, erosion, effects of seismic activity, and unstable soils.

Hydrology and Water Quality – Increased development in areas prone to flooding and reduction in water quality.

Noise – Increased transportation noise levels from increased traffic volumes and exposure of sensitive receptors to excessive noise levels.

Public Services and Utilities – Increased demand for public services and utilities, including water supply, wastewater treatment and disposal, solid waste removal and disposal, energy, and telecommunications.

Traffic and Circulation – Increased traffic volumes on the region's highways and regional roadways resulting in deficient levels of service of operation.

It is noted that these effects of growth are anticipated to occur regardless of adoption of the proposed 2010 RTP as development and other growth projects could continue to be approved and implemented by the County and incorporated communities.

4.3 SIGNIFICANT IRREVERSIBLE EFFECTS

CEQA requires that EIRs prepared for the adoption of a plan, policy, or ordinance of a public agency must include a discussion of significant irreversible environmental changes of project implementation. CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes as:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Implementation of the 2010 RTP could result in the conversion of undeveloped agricultural and open space land areas to transportation facilities, including roadway, transit, bicycle, pedestrian, aviation, and other transportation improvements. These improvements would be long-term 2010 RTP would constitute a long-term commitment to transportation infrastructure. It is unlikely that circumstances would arise that would justify the return of the land to its original condition.

Development of transportation infrastructure and facilities would irretrievably commit building materials and energy to the construction and maintenance of buildings and infrastructure. Renewable, nonrenewable, and limited resources that would likely be consumed as part of transportation infrastructure and facilities would include, but are not limited to, oil, gasoline, lumber, sand and gravel, asphalt, water, steel, and similar materials. The project would also result in significant unavoidable effects related to air emissions, including emissions of greenhouse gases (see Chapter 3.3, Air Quality and Chapter 3.7, Climate Change).

4.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires an EIR to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance. The following significant and unavoidable impacts of the 2010 RTP are discussed in Chapters 3 (project-level) and previously in this chapter (cumulative-level). Refer to those discussions for further details and analysis of the significant and unavoidable impact identified below:

- Impact 3.1-1: Substantial Adverse Effects on Scenic Vistas and Resources or Substantial Degradation of Visual Character
- Impact 3.2-1: Conversion of Farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance, to Non-Agricultural Use
- Impact 3.7-1: Cumulative Effects on Climate Change and Global Warming
- Impact 3.10-4: Induce Substantial Population Growth in an Area
- Impact 3.11-1: Grading and Construction Activities Would Intermittently and Temporarily Generate Noise Levels Above Ambient Background Levels
- Impact 3.11-2: Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise
- Impact 3.11-3: Grading and Construction Activities Would Intermittently and Temporarily Expose Sensitive Receptors to Groundborne Vibration Levels
- Impact 3.12-1: 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) or Exceed, either Individually or Cumulatively, a Level of Service Standard Established by the County Congestion Management Agency for Designated Roads or Highways
- Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region
- Impact 4.2: Cumulative Impact on Agricultural Land and Uses
- Impact 4.4: Cumulative Loss of Biological Resources Including Habitats and Special Status Species
- Impact 4.7: Increased Transportation Greenhouse Gas Emissions May Contribute to Climate Change
- Impact 4.11: Cumulative Exposure of Existing and Future Noise- Sensitive Land Uses to Increased Traffic Noise Resulting from Cumulative Development

4.5 ISSUES DETERMINED TO BE LESS THAN SIGNIFICANT

An Initial Study was prepared at the onset of the proposed project. It was determined that there are four environmental topics where the proposed project would result in a less than significant or no impact. These include Mineral Resources, Public Services, Recreation, and Utilities and Service Systems.

The Initial Study was circulated with the Notice of Preparation (NOP) on September 23rd 2008 to trustee and responsible agencies, the State Clearinghouse, and the public. A scoping meeting was held on November 20th 2008 at 3:30 PM in the City of Redding. Those present at the scoping meeting included representatives from the following: SCRTPA, Shasta County Planning Commission, California Department of Transportation, California Department of Fish and Game, Pit River Tribe, City of Anderson, City of Redding, De Novo Planning Group, and David Evans and Associates. There were no concerns raised in public comment regarding this determination. The NOP, Initial Study, and Scoping Meeting Notes are presented in **Appendix A**.

Below is a brief discussion of each environmental topic that was previously determined to be less than significant.

MINERAL RESOURCES

Some improvements identified in the RTP are located in the vicinity of land that is used for mineral resource extraction. Implementation of the improvements identified in the RTP would not cause land use changes or conversion of any mineral extraction operations into a different use. Implementation of the proposed project will have a less than significant impact on land classified as mineral resource districts.

There are currently 38 active mineral resource sites in Shasta County according to the AB 3098 list. The proposed project will not result in the loss of availability of any of these sites. Implementation of the proposed project will therefore have no adverse impact with regards to this topic and no mitigation is required.

PUBLIC SERVICES

The improvements identified in the RTP include a variety of transportation improvements that will not result in an increased need for any public services or facilities. The transportation improvements are expected to improve travel conditions throughout the county, which would improve travel conditions to existing public facilities such as recreation, schools, and libraries, and is expected to improve the travel conditions for public services such as police and fire protection during responses. These are considered beneficial impacts. Implementation of the proposed project will therefore have no adverse impact on public services or facilities and no mitigation is required.

RECREATION

The improvements identified in the RTP include a variety of transportation improvements that will not result in an increased need for any recreational facilities. The transportation improvements are expected to improve travel conditions throughout the county, which would improve travel conditions to existing recreation facilities. These improvements will provide the infrastructure necessary for safe travel conditions to such recreational facilities, which is considered a beneficial impact to the public health and safety. The improved roadway infrastructure will not cause an increased demand, or require the need for expansion of the existing recreational facilities; rather, it will facilitate safe travel. Furthermore, the improved roadway infrastructure will not require a need for new recreational facilities. Implementation of the proposed project will therefore have a less than significant impact on recreational facilities and no mitigation is required.

UTILITIES AND SERVICE SYSTEMS

The County has an elaborate network of public utilities and services, such as water, wastewater treatment, and storm drainage. It has been a goal of the County and local municipalities to maintain an adequate level of services for all public utilities and services for the community. Utility infrastructure exists in various parts of the incorporated and unincorporated county. The proposed project does not require the use of utilities or infrastructure and would not result in the expansion of utilities or infrastructure. The improvements identified in the RTP include a variety of transportation improvements that will not result in an increased need for any utilities. Implementation of the proposed project will therefore have no impact on public services or facilities and no mitigation is required.

5.1 CEQA REQUIREMENTS

CEQA requires that an EIR analyze a reasonable range of feasible alternatives that meet most or all project objectives while reducing or avoiding one or more significant environmental effects of the project. The range of alternatives required in an EIR is governed by a “rule of reason” that requires an EIR to set forth only those alternatives necessary to permit a reasoned choice (CEQA Guidelines Section 15126.6[f]). Where a potential alternative was examined but not chosen as one of the range of alternatives, the CEQA Guidelines require that the EIR briefly discuss the reasons the alternative was dismissed.

PROJECT OBJECTIVES

The alternatives to the proposed project selected for analysis in the EIR were developed to minimize significant environmental impacts while fulfilling the basic objectives of the project. As described in Chapter 2, Project Description, the following objectives have been identified for the 2010 Regional Transportation Plan project.

Public Transportation: Prioritize transportation services for funding and implementation, with an emphasis on the transportation needs of the transit-dependent.

SHORT-RANGE (2010-2020)

- O-1 Continue implementation strategies addressed in the 2007 Shasta County Coordinated Human Transportation Plan.
- O-2 Increase public awareness of transit through outreach and marketing.
- O-3 Continue distribution of the “Need a Ride” brochure.
- O-4 Improve coordination of transportation services through agency participation.
- O-5 Support and participate in mobility-management programs, such as California 211.
- O-6 Provide mobility-management information to populations that require specialized transportation in efforts to reduce dependency on heavily subsidized paratransit services.
- O-7 Obtain maximum transit and paratransit system efficiency by continuously monitoring transit needs, performance, funding, and capital requirements.
- O-8 Continue to work with local land-use planning agencies to further coordinate development with transit.
- O-9 Work in conjunction with transit advocacy groups to address legal ramifications for transit providers involved in coordination efforts.
- O-10 Pursue grants and other funding resources to improve and provide interconnectivity between transportation providers and neighboring counties.
- O-11 Research opportunities for volunteer driver programs.

LONG-RANGE (2020-2030)

- O-12 Provide the highest feasible level of transit service within the region consistent with TDA and FTA revenue sources.
- O-13 Invest in infrastructure and land-use patterns to create transit friendly communities.
- O-14 Consolidation of operations and services into one mobility-management center or centralized dispatch center.

Streets and Roads: Maintain a safe and efficient road system within the limits of existing and projected funding constraints.*SHORT-RANGE (2010-2020)*

- O-1 Develop more cost-effective methods to maintain the existing road network.
- O-2 Identify anticipated street and road problems before they become critical in order to program preventive measures.
- O-3 Plan for and reserve necessary road right-of-way for future expansion prior to development occurring.
- O-4 Maximize the number of persons that can use the existing transportation system.

LONG-RANGE (2020-2030)

- O-5 Develop a safe, sustainable street and highway system that can be maintained within the projected available funding and will meet automobile, truck, and transit needs.

Goods Movement: Maintain an efficient goods movement industry within the region with the least adverse impact possible on the transportation system.*SHORT-RANGE (2010-2020)*

- O-1 Maximize use of the existing goods movement infrastructure of the region.
- O-2 Protect the transportation infrastructure from deterioration.
- O-3 Minimize conflicts between trucks and other vehicles. Obtain data to determine the locations that need to be improved.
- O-4 Reduce truck and rail accidents by supporting proposals for grade separation improvements, crossing arms, and railroad crossing upgrades of gates and warning devices (lights and bells).
- O-5 Continue to work on the Buckhorn Grade Project to improve the horizontal and vertical alignment on SR 299.
- O-6 Continue to work with the trucking industry to identify funding sources for intermodal freight facilities and rail spurs.

LONG-RANGE (2020-2030)

- O-6 Improve or increase goods movement modes available in the county.
- O-7 Support the increasing need for regional truck parking areas by supporting attempts to identify funding.

Aviation: Maintain efficient accessible air service in a safe and convenient manner.*SHORT-RANGE (2010-2020)*

- O-1 Prevent deterioration of the airport facilities within the county.
- O-2 Enhance the passenger service at Redding Municipal Airport.
- O-3 Continue to apply for state and federal grants to make needed improvements at the three airports in the county and acquire funds to update plans.
- O-4 Acquire property north and south of the Redding Municipal Airport, to enhance runway approach protection and to provide land for future expansion. In 2003 and 2004, the City of Redding acquired over 140 acres towards this objective.

LONG-RANGE (2020-2030)

- O-4 Encourage airport operators (Shasta County and City of Redding) to develop projects that enhance the safety, capacity, and security of regional aviation facilities.
- O-5 Provide economical and frequent passenger service at Redding Municipal Airport connecting with surrounding major cities.
- O-6 Support implementation of the Shastec Redevelopment Project.

Rail: Make rail service convenient to Shasta County citizens when economically feasible*SHORT-RANGE (2010-2020)*

- O-1 Maintain existing railroad right-of-way and railroad services within the county.
- O-2 Maintain feeder bus service to connect with rail service south.
- O-3 Obtain more convenient daytime passenger rail service at the Redding station.
- O-4 Maximize opportunities to study, plan, and install grade separations between rail and roadways.

LONG-RANGE (2020-2030)

- O-5 If transit corridors are developed, provide for the eventual use by rail or other fixed-guide way systems.
- O-6 Consider the feasibility of construction of a new rail line between Eureka and Redding.

Non-Motorized: Create a transportation environment that encourages non-motorized alternatives.*SHORT-RANGE (2010-2020)*

- O-1 Strive to eliminate barriers to bicycle/pedestrian traffic.
- O-2 Integrate non-motorized transportation into development throughout the region.
- O-3 Keep bicycle/pedestrian lanes in a usable condition through a continued maintenance program.
- O-4 Mark the road as to where a bicycle should be placed to trip all new traffic signals.

- O-5 At fixed-time traffic signals, where feasible, make all new walk/don't walk signals automatic so they go to walk without having to push the button. This is considered an ITS application for pedestrian crossing detection information.

LONG-RANGE (2020-2030)

- O-6 Strive to provide an interconnected bicycle/pedestrian network throughout the county.
- O-7 Mark all signaled intersections as to where to place a bicycle to trip signal.
- O-8 Encourage the public to use non-motorized transportation facilities.

Land use: Provide a Regional Transportation Plan that is supportive of the land use goals of the cities and county general plans and focuses transportation investments along major transportation corridors to encourage infill development within the urbanized area.

SHORT-RANGE (2010-2020)

- O-1 Focus residential growth and commercial uses near transit corridors and design them for efficient, convenient transit use.
- O-2 Promote developments designed to encourage non-motorized trips by providing efficient, convenient, and safe pedestrian and bicycle facilities.
- O-3 Encourage increased non-motorized accessibility by placing residential development, employment, and commercial uses near each other.
- O-4 Ensure that transportation improvements necessary for development are Financially constrained.
- O-5 Perform a periodic review of traffic impact fees developed by the agencies.
- O-6 Encourage the agencies to keep the RTPA in the loop at the onset of an application process.

LONG-RANGE (2020-2030)

- O-7 Integrate land use planning with supporting transportation programs to stabilize and, over time, reduce trip length.

Air Quality: Reduce harmful air emissions in Shasta County and maintain a level that meets or exceeds minimum state and federal health standards

SHORT-RANGE (2010-2020)

- O-1 Prepare for Shasta County being designated a nonattainment area for federal air quality standards.
- O-2 Reduce emissions of inhalable particulate matter (PM10) and emissions contributing to ozone production to, at a minimum, meet state ambient air quality standards.
- O-3 Reduce emissions of greenhouse gases.

LONG-RANGE (2020-2030)

- O-4 Reduce emissions of inhalable particulate matter and emissions contributing to ozone production to a level that assures compliance with state ambient air standards.

Environmental Resources: Minimize the negative environmental effects of transportation projects.*SHORT-RANGE (2010-2020)*

- O-1 Minimize environmental impacts, project delays, and added costs through early, continued resource agency consultation and public involvement.
- O-2 Streamline administration of the NEPA and CEQA process to avoid duplication of efforts.

LONG-RANGE (2020-2030)

- O-3 As NEPA and CEQA reviews become more common for regional and corridor studies, develop standardized methods for content, format, and coordination of these documents to facilitate tiering (referring to prior applicable studies, rather than regenerating them) for later projects.

Financial Element: Provide the best multimodal transportation system possible with available funds.*SHORT-RANGE (2010-2020)*

- O-1 Address the maintenance deficit for streets and roads faced by the cities and county to prevent further deterioration of the existing transportation system.
- O-2 Obtain funding to expand non-motorized transportation opportunities.
- O-3 Continue to refine a system to prioritize projects for utilizing Regional Improvement Program funds.

LONG-RANGE (2020-2030)

- O-4 Identify a stable long-term source of funding for construction and maintenance of a multimodal transportation system.

ALTERNATIVES NOT SELECTED FOR FURTHER ANALYSIS

A Notice of Preparation was circulated to the public to solicit recommendations for a reasonable range of alternatives to the proposed project. Additionally, a scoping meeting was held during the public review period to solicit recommendations for a reasonable range of alternatives to the proposed project. No specific alternatives were recommended by commenting agencies or the general public during the NOP public review process.

5.2 ALTERNATIVES CONSIDERED IN THIS EIR

Three alternatives to the proposed project were developed based on public input and the technical analysis performed to identify the environmental effects of the proposed project. Due to the nature of the proposed project, there are elements common to each of the alternatives, with each alternative having the same approach and investment associated with goods movement, aviation, energy, land use strategies, and outreach and coordination objectives. The alternatives analyzed in this EIR include the following three regional alternatives in addition to the proposed 2010 RTP project.

- No Project Alternative
- Financially Constrained Alternative
- Financially Unconstrained Alternative
- Transit Investment Alternative

NO PROJECT ALTERNATIVE

The CEQA Guidelines (Section 15126.6[e]) require consideration of a no project alternative that represents the existing conditions, as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved. When a project involves the revision of an existing plan, the no-project alternative should reflect continuation of the existing plan. For purposes of this analysis, the No Project Alternative is the continuation of SCRTPA's adopted 2004 RTP into the future. It should be noted however that some of the dollars that are programmed for projects under the 2004 RTP will not be available until such time that there is an adopted RTP. Therefore, under this alternative the SCRTPA would not be able to carry out all of the transportation projects in the 2004 RTP. This alternative also anticipates that the land uses and population estimates that were the basis for the 2004 RTP are extrapolated to the planning horizon year 2030.

FINANCIALLY CONSTRAINED ALTERNATIVE (PROPOSED PROJECT)

The proposed project represents a financially-constrained approach to the 2010 RTP, focusing on a balanced transportation system that will provide regional and local mobility through programming most funding for highway and multi-modal network improvements. The proposed project only includes improvements for which funding has been identified as is intended to balance funds between the various modes of transportation. The Financially Constrained Alternative leverages Caltrans funding for the road network while also emphasizing transit and multi-modal systems and networks. The Financially Constrained Alternative would continue to support bicycle and pedestrian projects. The Financially Constrained Alternative focuses on decreasing traffic congestion and reducing air pollutant emissions through a combination of capacity and operational improvements directed at single occupancy vehicles, and investments in the regional transit system and bike and pedestrian facilities. The RTP embodies three elements: Policy Element, Action Element, and Financial Element. These elements are described in detail in Section 2 Project Description along with the individual improvements and funding

sources. There are no specific improvement designs or approvals that are available for these improvements at this time.

FINANCIALLY UNCONSTRAINED ALTERNATIVE

The Financially Unconstrained Alternative includes all of the individual projects identified under the Financially Constrained Alternative (discussed above and in Section 2.0 Project Description) plus numerous additional projects that are needed but not yet funded over the planning horizon. Under this alternative, total spending would increase by approximately \$834,234,133 million. This alternative includes all projects without regard to whether or not they can be funded. Table 5.2-1 provides a complete list of the additional projects under this alternative.

TABLE 5.2-1: UNCONSTRAINED PROJECTS

REGIONAL TRANSPORTATION PROJECTS	LONG TERM PROJECT COST	PROJECT TYPE / INTENT
CALTRANS		
Add Lanes to I-5 - SR 273 (exit 667) in Anderson to Riverside Av Overcrossing (exit 670)	\$69,850,000	Capacity Increase / (1, 2, 3, 5)
Add Lanes to I-5 - Shasta County Border to 4th Street Overcrossing	\$22,225,000	Capacity Increase / (1, 2, 3, 5)
Add Lanes to I-5 - SR 151 to Mtn Gate Overcrossing	\$22,860,000	Capacity Increase / (1, 2, 3, 5)
Highway 44 - Stillwater Project	\$64,000,000	Capacity Increase / (1, 2, 3, 5)
Reconfigure I-5/44 Interchange (Central Redding) Exit 678 A,B,C	\$50,000,000	Interchange/ (1,2,3,5,7)
TOTAL LONG TERM FUNDABLE NEEDS	\$228,935,000	
SHASTA COUNTY - CAPACITY		
\$\$ -I-5 Main St Interchange Exit 665 - Connect to Rhonda, add roundabouts	\$9,781,000	Interchange (1, 2, 3, 4, 5, 6)
Rhonda Road Gas Point - I-5 Main New realigned 3 lane road	\$3,920,000	Capacity Increase (1, 2, 3, 4, 5, 6)
New N-S Road - First St to New E-W Construct to 3 lanes	\$4,687,600	Capacity Increase (1, 2, 3, 4, 5, 6)
New E-W Road - New N-S to Rhonda Construct 3 lane road	\$2,357,200	Capacity Increase (1, 2, 3, 4, 5, 6)
Reconfigure Knighton Road Over-Crossing at Interchange Exit 673	\$23,000,000	Interchange (1, 2, 3, 4, 6)
Churn Ck Rd, Hartmeyer to Huntington, Widen, Realign,	\$3,200,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Deschutes Road Widen to 3-Lanes, Old 44 Drive to Boyle Road	\$2,815,000	Capacity/Safety (1, 2, 3, 4, 5, 7)
I-5 Gas Point Interchange Improvements exit 664	\$12,235,000	Interchange (1, 2, 3, 4, 5, 6)
First Street Widen from 2 to 5 lanes, N/S Arterial to Overcrossing	\$562,800	Capacity Increase (1, 2, 3, 4, 5, 6)
New N-S Road - New E-W to Rhonda	\$7,275,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Deschutes Road Widen to 3-Lanes, Palo Cedro to Dersch Road	\$5,000,000	Capacity/Safety (1,3,7,8,9)
Cottonwood - Front, Magnolia, Pine and Chestnut St Roundabouts	\$500,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Dry Creek Road Shoulder Widening, Deschutes Rd to Bear Mtn Rd	\$4,250,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Knighton Road West	\$29,000,000	New Facility (1,2,3,4,6)
Improve SR 299 Old Oregon Trail Interchange - Exit 143	\$2,500,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Intermountain Road, SR 299 to Bear Mtn Road	\$7,090,000	New Facility (1,2,3,4,6)
East Stillwater Way, Shoulder Widen and Extend to Bear Mtn Road	\$5,060,000	New Facility (1,2,3,4,6)
Oasis Road Widen to 4-Lanes, Randolph to Old Oasis	\$950,000	Capacity Increase (1, 2, 3, 4, 5, 6)
Black Ranch Road Extension	\$2,350,000	New Facility (1,2,3,4,6)
TOTAL LONG TERM FUNDABLE NEEDS	\$126,533,600	
SHASTA COUNTY - SAFETY		
Placer Road at Swasey Drive, Roundabout	\$500,000	Safety (2,6,7,8)
Canyon Road at China Gulch Drive Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Old Oregon Trail at Old Alturas Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Deschutes Road at Boyle and Old Deschutes Rd Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Cottonwood - Fourth Street and Locust Street Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Quartz Hill and Keswick Dam Roads, Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Cottonwood - Happy Valley at Gas Point Road Roundabout/Signal	\$500,000	Intersection (1, 2, 3, 4, 6, 7)
Deschutes Rd @ SR 44 Ramps and Old 44 Dr, Roundabouts/Signals	\$2,000,000	Intersection (1, 2, 3, 4, 6, 7)
TOTAL LONG TERM NEEDS	\$3,500,000	
CITY OF ANDERSON - CAPACITY		
\$\$ Deschutes/I-5 Interchange, Phase 1 - (See Note 3)	\$6,680,000	Interchange/ (1, 2, 3, 7)
McMurray Drive - North of Canyon Drive - Widening	\$500,000	Capacity Increase (1, 2, 3, 4,7,8)
Gateway Drive - From Balls Ferry South - Widen	\$1,193,750	New Facility (2, 3, 8)
East Street - North of Willow Glen Dr. - Extension	\$1,662,500	New Facility (2, 3, 8)

REGIONAL TRANSPORTATION PROJECTS	LONG TERM PROJECT COST	PROJECT TYPE / INTENT
Reconfigure I-5 Central Anderson Interchange (North Street)	\$3,100,000	Interchange / (1, 2, 3, 7)
Pleasant Hills SR 273 Vineyards construct 2 lane road extension	\$3,323,946	New Facility (2, 3, 8)
Gateway Drive - Balls Ferry to Deschutes - Construct 2 lane road	\$6,500,000	New Facility (2, 3, 8)
Rhonda Road - Factory Outlets Drive to Pleasant Hills - Intersection Reconstruction	\$2,286,875	New Facility (2, 3, 8)
Deschutes/I-5 interchange phase 2	\$10,500,000	Interchange / (1, 2, 3, 7)
Anderson Hills Parkway -W of Pleasant Hills - Construct 4 lane road	\$4,980,000	New Facility (2, 3, 8)
Anderson Hills Parkway Pleasant to Rhonda - Construct 4 lane road	\$3,000,000	New Facility (2, 3, 8)
Anderson Hills Parkway - Rhonda to Locust - Construct 4 lane road	\$2,659,157	New Facility (2, 3, 8)
Emily Drive - Widening	\$738,000	Capacity Increase (1, 2, 3, 4,7,8)
Ox Yoke Rd. - SR 273 to Riverside Av - Widening to 5 lanes	\$2,000,000	Capacity Increase (1, 2, 3, 4,7,8)
Riverside Avenue - Ox Yoke to North St. - Widening to 5 lanes	\$7,000,000	Capacity Increase (1, 2, 3, 4,7,8)
Balls Ferry Rd. - From Stingy Lane to the City Limits - Widening	\$1,193,750	Capacity Increase (1, 2, 3, 4,7,8)
South Street - SR 273 west to City Limits - Widening	\$3,750,000	Capacity Increase (1, 2, 3, 4,7,8)
Stingy Lane - North St. to Balls Ferry - Widening	\$13,500,000	Capacity Increase (1, 2, 3, 4,7,8)
Gateway Drive - From Existing Improvements to Deschutes - Widen	\$5,621,463	New Facility (2, 3, 8)
Fairgrounds Drive - 1st St. to 3rd St. -Widening	\$1,100,000	Capacity Increase (1, 2, 3, 4,7,8)
Third Street - SR 273 to Fairgrounds Dr. - Widening	\$1,800,000	Capacity Increase (1, 2, 3, 4,7,8)
Auto Mall - Extend to North Street - Extension	\$3,800,000	Capacity Increase (1, 2, 3, 4,7,8)
South County Extension - Ronda Rd to Anderson Hills - Extension	\$5,500,000	New Facility (2, 3, 8)
TOTAL LONG TERM NEEDS	\$69,429,244	
CITY OF ANDERSON - SAFETY		
Reconfigure I-5 Riverside Interchange. Widen and signals	\$17,200,000	Interchange (1), (2), (3), (5), (7)
Little Street - Realignment	\$700,000	Safety (3,4,7,8)
Alexander St - Widening	\$500,000	Safety (3,4,7,8)
TOTAL LONG TERM NEEDS	\$18,400,000	
CITY OF REDDING - CAPACITY		
Oasis Road & I-5 Interchange Exit 682 - Reconstruction and Widening	\$20,700,000	Interchange / (1,3,4,5,7,8)
Oasis Road Widening - Randolph Road to Old Oasis Road	\$3,500,000	Capacity Increase / (1,5,7,8)
Airport Road Widening - SR 44 to Rancho Rd.	\$6,121,000	Capacity Increase / (1,5,7,8)
Browning Street Reconfigure to 4 Lane - Hilltop Drive to Old Alturas	\$400,000	Capacity Increase / (1,5,7,8)
\$\$ Cascade Blvd Realignment- North and South of Oasis Road	\$8,713,400	Capacity Increase / (1,5,7,8)
Caterpillar Road - George Drive to SR273 Widen Roadway and Signal	\$1,700,000	Capacity Increase / (1,5,7,8)
Cypress Ave Connection - Victor Avenue to Shasta View Drive	\$17,000,000	New Facility / (3,4)
Hilltop Drive Extension - Lake Boulevard to Twin View	\$1,000,000	New Facility / (3,4)
Old Alturas Road Widening - Victor Avenue to Shasta View Drive	\$8,550,000	Capacity Increase / (1,5,7,8)
Palacio Drive Connection - Churn Creek to Cornell Place	\$8,500,000	New Facility / (3,4)
Shasta View Drive Extension - 2 Lane Widening - Collyer Drive to Manzanoaks Drive	\$6,000,000	New Facility / (3,4)
Shasta View Drive Widening - Hartnell Avenue to Goodwater Drive	\$5,819,000	Capacity Increase / (1,5,7,8)
South Bonnyview & I-5 Interchange Exit 675 - Improvements	\$10,000,000	Interchange / (1,3,4,5,7,8)
Twin View Blvd & I-5 Interchange Exit 681 - Improvements	\$4,000,000	Interchange / (1,3,4,5,7,8)
Airport Road & SR44 Interchange Exit 5 - Improvements	\$15,000,000	Interchange / (1,3,4,5,7,8)
Airport Road Widening - Sacramento River to Rancho Road	\$35,000,000	Capacity Increase / (1,5,7,8)
Buenaventura Blvd Reconfigure to 4 lane - Summit Drive to Railroad Avenue	\$300,000	Capacity Increase / (1,5,7,8)
Buenaventura Blvd Widening - Starlight Boulevard to Placer Road	\$1,500,000	Capacity Increase / (1,5,7,8)
Court Street Widening - 11th Street to Riverside Drive	\$500,000	Capacity Increase / (1,5,7,8)
Hartnell Avenue at Airport Road Widening and Realignment	\$7,925,000	Capacity Increase / (1,5,7,8)
Oak Mesa Lane Extension - Tarmac Road to Candlewood Drive	\$1,125,825	New Facility / (3,4)
Oasis Road Widening - Gold Hills Drive to Shasta View Drive	\$2,000,000	Capacity Increase / (1,5,7,8)
Old Alturas Road Widening - Shasta View Drive to City Limits	\$4,585,000	Capacity Increase / (1,5,7,8)
Old Oregon Trail Widening - Old Highway 44 to Viking Way	\$4,000,000	Capacity Increase / (1,5,7,8)
Parkview Ave Widening - ACID Canal to Park Marina	\$925,000	Capacity Increase / (1,5,7,8)
Rancho Road Widening - Goodwater to Airport Road	\$6,750,000	Capacity Increase / (1,5,7,8)
Shasta View Drive Extension - Manzanoaks Drive to Oasis Road	\$4,000,000	New Facility / (3,4)
Shasta View Drive Extension - Rancho Road to Airport Road	\$5,000,000	New Facility / (3,4)
Stillwater Business Park Improvements - Phase 3	\$5,000,000	New Facility / (3,4)
Tarmac Road Extension to Old Oregon Trail	\$5,974,000	New Facility / (3,4)
Twin View Road Realignment - North and South of Oasis Road	\$6,483,064	Capacity Increase / (1,5,7,8)
Westside Road Frontage Extension - Glengary Drive to Clear Creek	\$1,304,000	New Facility / (3,4)

REGIONAL TRANSPORTATION PROJECTS	LONG TERM PROJECT COST	PROJECT TYPE / INTENT
Road		
Beltline Road Extension - Oasis Rd to Ashby Rd	\$4,725,000	New Facility / (3,4)
Buenaventura Blvd Extension - Eureka Way to Keswick Dam Road	\$10,000,000	New Facility / (3,4)
Cedars Road Extension - El Reno Lane to Buenaventura Boulevard	\$900,000	New Facility / (3,4)
Creekside Drive Extension - Sacramento Street to Bonnyview Road	\$1,000,000	New Facility / (3,4)
Cypress Ave & I-5 Interchange Exit 677 - Reconstruction	\$13,028,000	Interchange / (1,3,4,5,7,8)
Cypress Avenue Reliever Project - Industrial Street Extension Over crossing of I-5	\$5,738,000	Capacity Increase / (1,5,7,8)
Eastside Road Extension - Girvan Road to Southern City Limits	\$5,650,000	New Facility / (3,4)
George Drive Extension - North Terminus to Oasis Road	\$1,000,000	New Facility / (3,4)
Kenyon Drive Extension - West Terminus to Placer Road	\$10,000,000	New Facility / (3,4)
Loma Vista Drive Extension - Churn Creek Road to Victor Avenue	\$6,000,000	New Facility / (3,4)
Palacio Drive Extension - Shasta View Drive to Old Oregon Trail	\$3,500,000	New Facility / (3,4)
S. Bonnyview Road @ SR273 - Grade Separation	\$30,000,000	Intersection/ (7)
Santa Rosa Avenue Extension - Quartz Hill Road to Lake Boulevard	\$2,000,000	New Facility / (3,4)
Shasta View Drive Extension - 4 Lane Widening - Collyer Drive to Manzanoaks Drive	\$7,000,000	Capacity Increase
Shasta View Drive Extension - College View Drive to Collyer Drive - SR299 OC	\$10,000,000	New Facility / (3,4)
Shasta View Drive Extension - Oasis Road to North City Limits	\$4,000,000	New Facility / (3,4)
South Street Railroad Crossing- Grade Separation	\$9,450,000	Intersection/ (7)
TOTAL LONG TERM NEEDS	\$333,366,289	
CITY OF REDDING-SAFETY		
Churn Creek Road/Rancho Road/Victor Avenue - Construct Roundabout	\$1,500,000	Safety / (4,5,7,8)
Old Oregon Trail 2 lane Realignment - Midland Drive to Frontier Road	\$4,420,000	Safety / (4,5,7,8)
Signal: Court Street - Schley Avenue	\$400,000	Intersection / (1,7,8)
Signal: Court Street - Riverside Drive	\$400,000	Intersection / (1,7,8)
Signal: Park Marina Drive - Locust Street	\$400,000	Intersection / (1,7,8)
Signal: Airport Road - Meadowview Drive	\$400,000	Intersection / (1,7,8)
Signal: Victor Avenue - Vega Street	\$400,000	Intersection / (1,7,8)
Signal: Victor Avenue - Marlene Avenue	\$400,000	Intersection / (1,7,8)
Signal: Lake Boulevard - Panorama Drive	\$400,000	Intersection / (1,7,8)
Signal: Placer - O'conner Avenue	\$400,000	Intersection / (1,7,8)
Signal: Twin View - Caterpillar	\$400,000	Intersection / (1,7,8)
Signal: Hilltop Drive - Sand Point Drive	\$400,000	Intersection / (1,7,8)
Signal: Churn Creek/Hawley Road - Collyer Drive	\$400,000	Intersection / (1,7,8)
Signal: Churn Creek Road - Palacio Drive	\$400,000	Intersection / (1,7,8)
Signal: Shasta View Drive - College View	\$400,000	Intersection / (1,7,8)
Signal: Victor Ave - El Vista Street	\$400,000	Intersection / (1,7,8)
Signal: Lake Boulevard - Santa Rosa Way	\$400,000	Intersection / (1,7,8)
Signal: Hartnell Avenue - Lawrence Road	\$400,000	Intersection / (1,7,8)
LONG TERM FUNDABLE NEEDS	\$12,820,000	
CITY OF SHASTA LAKE - CAPACITY AND SAFETY		
Reconfigure Pine Grove Interchange East Exit 684	\$3,875,000	Interchange / (1), (2), (4)
Cabello Extension - Vallecito to Pine Grove Ave.	\$2,025,000	New Facility / (1), (2), (6)
Improve Mountain Gate Interchange Exit 687	\$2,000,000	Interchange / (1), (2), (4)
Shasta Gateway Dr. Extension to Cascade	\$11,200,000	New Facility / (2), (3), (4), (6)
Cascade Ave. Extension - North of Union School	\$4,000,000	New Facility /
Improve Shasta Dam Blvd Interchange Exit 685	\$4,000,000	Interchange / (1), (2), (4)
Cascade Blvd Realignment, SR 151 to South City Limit	\$2,650,000	Capacity Increase / (1), (2), (4), (6)
Ashby Rd. widening, sidewalks - SR 151 to Pine Grove Ave.	\$7,000,000	Capacity Increase and Safety/ (1), (2), (4), (6), (8)
Pine Grove Avenue Extension to Akrich	\$4,500,000	New Facility/ (4)
TOTAL LONG TERM NEEDS	\$41,250,000	

Project Intent Legend

- 1) Reduce Congestion
- 2) Increase Mobility
- 3) Economic Development
- 4) Improve Access
- 5) Reduce Pollutants

- 6) Connectivity
- 7) Collision Reduction
- 8) Improve Bike/Ped Access
- 9) Transit Improvements

SOURCE: SHASTA COUNTY RTPA, 2009

TRANSIT INVESTMENT ALTERNATIVE

The Transit Investment Alternative focuses investment into development of alternative transportation modes, emphasizing transit, bus, pedestrian, and bicycle modes of transportation, while also funding the locally-funded transportation improvements included in the Financially Constrained Alternative. This alternative would remove \$834,234,133 million from roadway improvement projects under the Financially Unconstrained Alternative and would shift the money to fund transit capital, operational, and maintenance improvements, as well as bike and pedestrian facilities. It should be noted that this money is not available and/or programmed at this time and it is not known if any moneys identified under the Financially Unconstrained Alternative will ever become available.

SCRTPA's transit maintenance/refueling/management facility would need to be extensively expanded in order to accommodate any significant capital purchases, such as a large increase in the transit fleet. It is noted that the increases in transit improvements under this alternative would not result in a proportionate increase in ridership, particularly in the smaller communities and more rural areas. Under this alternative, the following would occur:

- Funding for regional roadway improvements would be shifted to be used for transit capital, operational, and maintenance improvements necessary to increase transit service in the County.
- The increase in transit service would be both local (incorporated cities) and regional (rural unincorporated communities). Additionally, interregional transit service would be provided between Shasta County and adjacent counties.
- Funding for pedestrian and bicycle facilities would be increased.
- The increase in pedestrian and bicycle facilities would be focused on local (incorporated cities) as opposed to regional (rural unincorporated communities). The increase in facilities would be significant when compared to the existing conditions.
- Funding would be provided for the construction of park and ride lots to accommodate demand from the increased regional and commuter transit service.

Appendix D provides a detailed account of the benefits of investment into transit, bicycle, and pedestrian transportation facilities. The information provided in Appendix D is based on a published report titled "Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking" by Thomas Gotschi, Ph.D. and Kevin Mills, J.D. from the Rails to Trails Conservancy.

5.3 ENVIRONMENTAL ANALYSIS

The alternatives analysis provides a summary of the relative impact level of significance associated with each alternative for each of the environmental issue areas analyzed in this EIR. Following the analysis of each alternative, Table 5.0-5 summarizes the comparative effects of each alternative.

NO PROJECT ALTERNATIVE

Aesthetics

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the potential for visual impacts as there would be less roadway widening/extensions, interchanges, and bicycle/pedestrian path improvement projects. Therefore, this alternative would have a better effect on aesthetics in comparison to the other alternatives and is considered superior to the other alternatives.

Agricultural Resources

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the amount of farmland converted to non-agricultural uses as there would be fewer roadway widening/extensions, interchanges, and bicycle/pedestrian path improvement projects. Therefore, this alternative would have a better effect on important and significant farmlands in comparison to the other alternatives and is considered superior to the other alternatives.

Air Quality

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the amount of construction-related emissions as there would be fewer roadway widening and extensions, bicycle/pedestrian path improvement projects. However, the No Project Alternative would result in increased congestion on area roadways since operational improvements needed to improve traffic flows and decrease idling times would not occur under this alternative. Both VMT and VHD would increase under this alternative, which would result in worse air pollutant emissions in comparison to the other alternatives. This alternative would have less of an adverse effect on short term air quality impacts, but a greater effect on long-term operational air quality impacts. This alternative is considered inferior to the other alternatives.

Biological Resources

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the potential to disturb or biological resources. This alternative would have a better effect on biological resources in comparison to the other alternatives and is considered superior to the other alternatives.

Cultural Resources

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the potential to disturb or destroy cultural, historic, and archaeological resources, as well as paleontological resources. This alternative would have a better effect on cultural resources in comparison to the other alternatives and is considered superior to the other alternatives.

Geology and Soils

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the risks associated with geology and soils, including temporarily increase in runoff, erosion, and sedimentation. Additionally, risks to humans from fault rupture, seismic ground shaking, liquefaction, landsliding, lateral spreading, and soil expansion would be reduced. This alternative would have a better effect with regards to geology and soils in comparison to the other alternatives and is considered superior to the other alternatives.

Greenhouse Gases and Climate Change

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the amount of construction-related emissions of greenhouse gases as there would be fewer improvement projects. However, the No Project Alternative would result in increased congestion on area roadways since operational improvements needed to improve traffic flows and decrease idling times would not occur under this alternative. Both VMT and VHD would increase under this alternative, which would result in worse greenhouse gas emissions in comparison to the other alternatives. This alternative would have less of an adverse effect on short term greenhouse gas emissions, but a greater effect on long-term operational greenhouse gas emissions. This alternative is considered inferior to the other alternatives.

Hazards and Human Health

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives, and would reduce the risks associated with hazards and hazardous materials, including the transportation, use, and/or disposal of hazardous materials, which may involve the use of equipment that contains hazardous materials (e.g., solvents and fuels, diesel-fueled equipment), or the transportation of excavated soil and/or groundwater containing contaminants from areas that are identified as being contaminated. Furthermore, there would be fewer projects located near sensitive receptors such as a school, hospitals, or residences. This alternative would have a better effect with regards to hazards and hazardous materials in comparison to the other alternatives and is considered superior to the other alternatives.

Hydrology and Water Quality

The No Project Alternative would implement fewer transportation improvement projects than the other alternatives and would reduce the potential for increased water quality impacts from construction and dewatering. Furthermore, this alternative would cause fewer impacts to groundwater recharge, and cause flooding, erosion, or siltation from the alteration of drainage patterns. This alternative would have a better effect on hydrology in comparison to the other alternatives and is considered superior to the other alternatives.

Land Use/Population and Housing

The No Project Alternative would not reflect changes in land uses that have been approved since the 2004 RTP and it would also not be consistent with planning efforts that are currently underway, including general plan updates. As such, the No Project Alternative may result in conflicts with land uses and result in an infrastructure system not consistent with current growth and population projections for the county and its communities. Therefore, this alternative would have a worse effect on land use planning/population and housing than the other alternatives and is considered inferior to the other alternatives.

Noise

The FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) was used to predict changes in future (year 2030) traffic noise levels along major area roadways attributable to the proposed project. The FHWA modeling was based upon the CALVENO noise emission factors for automobiles and medium and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Traffic volumes were derived from the Shasta County travel demand model. Vehicle distribution percentages were based on traffic data obtained during the site reconnaissance, as well as heavy-duty truck distribution percentages for major highways obtained from the California Department of Transportation (Caltrans 2007).

The No Project Alternative would result in fewer traffic and transportation improvement projects than the other alternatives, and would therefore have less of a short-term noise impact associated with construction activities than the other alternatives. All alternatives would result in similar overall levels of noise impact as a result of a significant increase in traffic noise levels along the roadway segments analyzed. However, the No Project Alternative would not have the improvement projects that improve the circulation system and reduce VMT and VHD, which are the primary sources of noise. Therefore, this alternative would have a worse effect on noise conditions compared to the other alternatives and is considered inferior to the other alternatives.

TABLE 5.3-1: PREDICTED INCREASES IN FUTURE (YEAR 2030) TRAFFIC NOISE LEVELS

LDN/CNEL AT 50 FEET FROM NEAR-TRAVEL-LANE CENTERLINE										
ROADWAY - SEGMENT	NO BUILD	CONSTRAINED	CHANGE & SIGNIFICANCE		UNCONSTRAINED	CHANGE & SIGNIFICANCE		TRANSIT INVESTMENT	CHANGE & SIGNIFICANCE	
I-5, North of Riverside Avenue	80.74	80.14	-0.6	No	80.70	-0.04	No	80.14	-0.6	No
I-5, South of SR44	81.38	81.04	-0.34	No	81.35	-0.03	No	81.04	-0.34	No
I-5, South of SR151	80.08	80.00	-0.08	No	80.0	-0.08	No	80.00	-0.08	No
I-5, Fawndale Road	80.57	80.49	-0.08	No	80.57	0	No	80.49	-0.08	No
SR44, West of I- 5	75.21	75.20	-0.01	No	75.2	-0.01	No	75.20	-0.01	No
SR44, East of Victor Avenue	72.91	73.03	0.12	No	72.94	0.03	No	73.03	0.12	No
SR151, East of Cascade Boulevard	69.12	68.78	-0.34	No	68.98	-0.14	No	68.78	-0.34	No
SR273, North of Deschutes Road	72.12	70.69	-1.43	No	70.92	-1.2	No	70.69	-1.43	No
SR273, South of Quartz Hill Road	71.63	71.40	-0.23	No	71.34	-0.29	No	71.40	-0.23	No
SR299, West of Ridge Road	69.26	69.19	-0.07	No	69.27	0.01	No	69.19	-0.07	No
SR299, East of Black Ranch Road	71.07	70.96	-0.11	No	71.06	-0.01	No	70.96	-0.11	No
Airport Road, South of Argyle Road	68.92	70.84	1.92	Yes	71.18	2.26	Yes	70.84	1.92	Yes
Cypress Avenue, East of Athens Avenue	70.44	70.41	-0.03	No	70.31	-0.13	No	70.41	-0.03	No
Dana Drive, East of Hilltop Drive	65.99	65.49	-0.5	No	65.05	-0.94	No	65.49	-0.5	No
Deschutes Road, East of SR273	69.43	68.35	-1.08	No	70.89	1.46	Yes	68.35	-1.08	No
Gas Point Road, West of Rhonda Road	64.50	66.61	2.11	Yes	63.75	-0.75	No	66.61	2.11	Yes
Oasis Road, East of I-5	70.46	73.53	3.07	Yes	72.40	1.94	Yes	73.53	3.07	Yes
Old Alturas Road, East of Victor Avenue	70.03	69.43	-0.6	No	69.56	-0.47	No	69.43	-0.6	No
Placer Street, West of Buenaventura Blvd.	68.05	68.28	0.23	No	68.26	0.21	No	68.28	0.23	No
South Bonnyview Road, West of Bechelli Lane	72.83	72.95	0.12	No	72.61	-0.22	No	72.95	0.12	No
Significant impacts are based on the following thresholds derived from the Shasta County General Plan (1998): (1) an increase of 5 dBA, or greater, where traffic noise levels are less than 60 dBA CNEL/Ldn; (2) an increase of 3 dBA, or greater, where traffic noise levels range between 60 and 65 dBA CNEL/Ldn; or (3) an increase of 1.5 dBA CNEL/Ldn, or greater, where traffic noise levels are greater than 65 dBA CNEL/Ldn.										

SOURCE: AMBIENT NOISE CONSULTING, 2009

Traffic/Circulation

The No Project Alternative would result in an increase in vehicle miles travelled (VMT), and vehicle hours of delay (VHD) which would result in more congestion than the other alternatives. This alternative would have fewer improvement projects that address safety deficiencies; thus, this alternative is anticipated to result in more accidents and potentially an increase in fatalities. An improvement factor of three percent was applied to the VMT and VHD under the Transit Investment Alternative, although the actual improvement may vary substantially based on actual ridership. Table 5.3-2 compares transportation system indicators, including vehicle miles traveled, vehicle hours of delay, vehicle trips, and roadway safety between the alternatives analyzed.

TABLE 5.3-2: REGIONAL TRANSPORTATION COMPARISON

REGIONAL MEASURE	2010 EXISTING CONDITION	2030 No PROJECT	FINANCIALLY CONSTRAINED	FINANCIALLY UNCONSTRAINED	TRANSIT INVESTMENT ALTERNATIVE
Daily Vehicle Miles of Travel	5,944,900	8,317,300	8,246,000	8,227,500	7,998,620
Daily Vehicle Hours of Delay	3,730	17,620	9,870	7,820	9,573
Average Speeds					
- Freeways	63.0	58.7	62.9	62.9	64.7
- Rural Highways	48.6	48.4	48.5	48.7	49.9
- Arterials	36.3	33.3	35.0	36.0	36.0
- All Roads	42.2	40.1	41.7	42.1	42.9
Miles of Roads at LOS E/F	23	115	58	35	N/A
Safety	23	4th	3rd	Highest	2nd

SOURCE: DOWLING ASSOCIATES, 2009

Table 5.3-3 provides a comparison of study roadway LOS between the alternatives analyzed. It is noted that the roadway analysis is based on modeling used to project regional impacts and conditions and that the model may produce accurate, but not precise, results at the local (link-by-link) level. As identified in Table 5.3-3, the improvement projects that would be carried out under the Financially Constrained and Unconstrained alternatives would either maintain or improve roadway congestion conditions when compared with the No Project Alternative. However, implementation of any of the alternative scenarios will not improve all roadway LOS conditions throughout the regional transportation network to acceptable levels. While traffic conditions would worsen compared with existing conditions, this is largely due to the projected increase in development. Overall, the No Project Alternative is inferior to the other alternatives.

TABLE 5.3-3: ROADWAY LEVELS OF SERVICE COMPARISON BETWEEN THE ALTERNATIVES

ROADWAY	SEGMENT	EXISTING CONDITION (2010)		FUTURE CONDITIONS ¹							
				NO PROJECT		FINANCIALLY CONSTRAINED		FINANCIALLY UNCONSTRAINED		TRANSIT INVESTMENT ALTERNATIVE	
		VOLUME ¹	LOS ²	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS
Interstate 5	North of Riverside	58,800	C	92,900	F	91,600	D	92,000	D	88,852	D
Interstate 5	South of SR 44	77,200	C	105,100	D	104,400	C	104,200	C	101,268	C
Interstate 5	South of SR 151 Shasta Dam	36,500	A	55,400	B	55,400	B	54,400	B	53,738	B
Interstate 5	Fawndale	23,300	A	33,600	B	33,600	B	33,600	B	32,592	B
SR 44	West of I-5	52,900	C	66,900	E	69,900	E	69,400	E	67,803	E
SR 44	East of Victor	36,900	B	45,100	C	45,800	C	45,400	C	44,426	C
SR 151	East of Cascade	15,000	D	23,600	D	23,600	D	22,900	D	22,892	D
SR 273	North of Deschutes	12,200	C	18,600	C	15,500	C	14,100	C	15,035	C
SR 273	South of Quartz Hill	22,600	D	30,000	E	29,000	E	28,000	E	28,130	E
SR 299	West of Ridge	11,100	C	15,800	D	15,800	D	15,900	D	15,326	D
SR 299	East of Black Ranch	6,200	B	7,200	B	7,200	B	7,200	B	6,984	B
Airport Rd.	South of Argyle	16,900	D	24,900	B	28,400	B	28,400	B	27,548	B
Cypress Ave.	East of Athen	51,600	D	58,700	E	59,200	E	57,000	E	57,424	E
Dana Dr.	East of Hilltop	22,000	D	23,000	D	20,900	D	18,500	D	20,273	D
Deschutes Rd.	East of SR 273	13,300	E	13,700	F	20,600	F	19,200	F	19,982	F
Gas Point Rd.	West of Rhonda	3,700	B	5,700	D	4,800	C	4,800	B	4,656	B
Oasis Rd.	East of I-5	16,200	E	22,500	F	36,600	D	35,100	D	35,502	D
Old Alturas	East of Victor	11,700	E	20,400	D	20,700	D	18,300	D	20,079	D
Placer St.	West of Buenaventura	15,300	D	16,500	F	17,800	D	17,400	D	17,266	D
S. Bonnyview	West of Bechelli	34,500	D	38,800	F	40,100	F	36,900	E	38,897	E

¹ Average daily traffic volume based on the Shasta County Transportation Demand Model

² Level of service based on highest direction traffic volume during the P.M. peak hour and level of service thresholds by facility type based on the 2000 Highway Capacity Manual (HCM) as compiled by the Florida Department of Transportation (FDOT).

Bold Unacceptable LOS

SOURCE: DOWLING ASSOCIATES, 2009

FINANCIALLY UNCONSTRAINED ALTERNATIVE

Aesthetics

The Financially Unconstrained Alternative would result in the construction of \$834,234,133 million worth of additional improvement projects than the Financially Constrained Alternative, thus creating the greatest potential for adverse impacts on aesthetics compared to the other alternatives. This alternative would increase the potential for loss or degradation of scenic views and resources, change in visual character, and increased light and glare. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Air Quality

The Financially Unconstrained Alternative would result in more construction-related emissions than other alternatives. Although this alternative will allow for greater traffic capacity it will also result in less traffic congestion and associated pollutant emissions (CO hotspots). This alternative would result in a reduction in VMT and VHD in comparison to the Financially Constrained and No Project Alternatives; however, it would have greater VMT and VHD when compared to the Transit Investment Alternative. This alternative is superior to the Fiscally Constrained and No Project Alternative in regards to air quality and is inferior to the Transit Investment Alternative.

Biological Resources

The Financially Unconstrained Alternative would result in the construction of additional improvement projects resulting in a greater risk of impact to biological resources. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Cultural Resources

The Financially Unconstrained Alternative would result in the construction of additional improvement projects resulting in a greater chance of disturbing cultural and historical resources due to the increase in grading and other land disturbance associated with roadway and transportation infrastructure projects associated with this alternative. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Geology and Soils

The Financially Unconstrained Alternative would result in the construction of additional improvement projects resulting in a greater risks associated with geology and soils, including temporarily increase in runoff, erosion, and sedimentation. Additionally, risks to humans from fault rupture, seismic ground shaking, liquefaction, landsliding, lateral spreading, and soil expansion would be increased. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Greenhouse Gases and Climate Change

The Financially Unconstrained Alternative would implement more transportation improvement projects than the other alternatives and would result in decreased congestion on area roadways since operational improvements needed to improve traffic flows and decrease idling times would occur. Both VMT and VHD would decrease under this alternative, which would result in better greenhouse gas emissions in comparison to the No Project and Financial Constrained Alternatives, but not as large of an improvement when compared to the Transit Investment Alternative. This alternative would have more of an adverse effect on short term greenhouse gas emissions when compared to the other alternatives because of the increased number of projects. This alternative is superior to the Fiscally Constrained and No Project Alternative in regards to greenhouse gases and is inferior to the Transit Investment Alternative.

Hazards and Human Health

The Financially Unconstrained Alternative would result in the construction of additional improvement projects resulting in greater risks associated with hazards and hazardous materials, including the transportation, use, and/or disposal of hazardous materials. Furthermore, there would be more projects located near sensitive receptors such as a school, hospitals, or residences. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Hydrology and Water Quality

The Financially Unconstrained Alternative would result in the construction of additional improvement projects resulting in increased water quality impacts from construction and dewatering. Furthermore, this alternative would cause impacts to groundwater recharge, and cause flooding, erosion, or siltation from the alteration of drainage patterns. This alternative would have a worse effect compared to the other alternatives and is considered inferior to the other alternatives.

Land Use/Population and Housing

The Financially Unconstrained Alternative would result in the construction of more transportation improvement projects when compared to the other alternatives. These improvements are designed to facilitate growth consistent with the General Plans and planning activities of the county and incorporated communities. This alternative would implement planned roadway improvements. The other alternatives would not result in the development of needed capacity improvements that would facilitate implementation of the general plan. This alternative is superior to the other alternative with regard to land use and planning.

Noise

The Financially Unconstrained Alternative would result in the construction of more improvement projects than the other alternatives, which would result in greater short-term construction related noise impacts. As shown in Table 5.3-1, this alternative would have similar traffic noise levels as the Financially Constrained Alternative, but would reduce traffic noise on several roadways. Therefore, this alternative would have reduced long-term operational noise impacts compared to the Financially Constrained Alternative. This alternative would be slightly superior to the Financially Constrained and the Transit Investment Alternative in terms of noise impacts, but is inferior to the No Project Alternative.

Traffic/Circulation

The Financially Unconstrained Alternative would reduce impacts to roadway LOS on two additional segments in comparison to the Fiscally Constrained and Transit Investment Alternative, and six in comparison to the No Project Alternative. This alternative would result in increased traffic safety in comparison to the other alternatives. While additional trips would occur under this alternative, VMT and VHD would decrease in comparison to the other alternatives. This alternative would allow for more improvement projects that are needed to maintain acceptable levels of service and roadway safety to be constructed, including alternative mode projects. Overall, this alternative is superior to the other alternatives with regard to traffic.

TRANSIT INVESTMENT ALTERNATIVE

Aesthetics

The Transit Investment Alternative would result in significant new investments in transit capital, operational, and maintenance improvements, as well as bike and pedestrian facilities in addition to the projects under the Financially Constrained Alternative. This alternative would result in more physical development because all of the roadway improvement projects under the Fiscally Constrained Alternative would occur. As a result, this alternative has potential for degradation to scenic views or resources, potential for changes along scenic routes, and would result in new sources of light and glare. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Agricultural Resources

The Transit Investment Alternative would result in the construction of additional improvement projects resulting in the impacts to agricultural lands. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Air Quality

The Transit Investment Alternative would result in more construction-related emissions from the construction of new projects; however, this alternative will allow for greater traffic capacity from new roadway projects and a switch to alternative modes for some citizens. This will result in less traffic congestion and associated pollutant emissions (CO hotspots). This alternative would result in a reduction in VMT and VHD in comparison to the other alternatives. This alternative is superior to the other alternatives in terms of air quality.

Biological Resources

The Transit Investment Alternative would result in the construction of additional improvement projects resulting in a greater risk of impact to biological resources. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Cultural Resources

The Transit Investment Alternative would result in the construction of additional improvement projects resulting in a greater chance of disturbing cultural and historical resources due to the increase in grading and other land disturbance associated with infrastructure projects associated with this alternative. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Geology and Soils

The Transit Investment Alternative would result in a greater chance of risks associated with geology and soils, including temporary increases in runoff, erosion, and sedimentation. Additionally, risks to humans from fault rupture, seismic ground shaking, liquefaction, landsliding, lateral spreading, and soil expansion would be increased. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Greenhouse Gases and Climate Change

The Transit Investment Alternative is intended to reduce automobile trips, and thus decrease greenhouse gas emissions, through shifting three percent of the trip volume from vehicular trips to transit, bicycle, and pedestrian trips. Overall, this alternative would increase the use of public transit and other alternative modes of transportation, which would also help reduce congestion on the roadway network. This alternative would be superior to the other alternatives.

Hazards and Human Health

The Transit Investment Alternative would increase the risks associated with hazards and hazardous materials, including the transportation, use, and/or disposal of hazardous materials. Furthermore, there would be more projects located near sensitive receptors such as a school, hospitals, or residences. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Hydrology and Water Quality

The Transit Investment Alternative would increase water quality impacts from construction and dewatering. Furthermore, this alternative would cause impacts to groundwater recharge, and cause flooding, erosion, or siltation from the alteration of drainage patterns. This alternative would be inferior to the No Project and Financially Constrained Alternative, and superior to the Financially Unconstrained Alternative.

Land Use/Population and Housing

The Transit Investment Alternative would result in significant new investments in transit capital, operational, and maintenance improvements, as well as bike and pedestrian facilities in addition to the projects under the Financially Constrained Alternative. The improvements under the Financially Constrained Alternative are designed to facilitate growth consistent with the General Plans and planning activities of the county and incorporated communities. This alternative would implement all of those planned roadway improvements plus provide significant funding for alternative modes to incentivize the use of non-motorized modes of transportation by the citizens. It should be noted that the population of the county may not increase its use of transit and alternative modes at a level that is proportionate with the shift of funds from roadway to alternative mode projects. Thus, the increase in transit services may not fully offset the capacity improvements needed in the region and may constrain the ability of jurisdictions in the county to develop in a manner consistent with their adopted land use plans as transit routes may not provide the transportation opportunities to areas planned for development that are served by roadways projected to exceed their capacity. This alternative would be superior to the No Project and Financially Constrained Alternative, and inferior to the Financially Unconstrained Alternative.

Noise

The Transit Investment Alternative would result in the construction of more improvement projects, which would result in greater short-term construction related and operational noise impacts. This alternative would have a slightly lower potential for adverse impacts from noise compared to the Financially Constrained Alternative as it would result in fewer infrastructure construction projects and would result in reduced vehicle miles traveled each year and associated roadway noise. However, as the change in VMT is not substantial, this alternative would result in similar calculated noise levels on individual roadways throughout the county shown in 5.3-1. This alternative would be superior to the No Project Alternative, slightly superior to the Financially Constrained and the inferior to the Financially Unconstrained Alternative.

Traffic/Circulation

The Transit Investment Alternative would provide the LOS benefits of the Financially Constrained Alternative, but is also intended to reduce automobile trips, and thus increase roadway capacity, through shifting three percent of the trip volume from vehicular trips to transit, bicycle, and pedestrian trips. Overall, this alternative would increase the use of public transit and other alternative modes of transportation, which is intended to help reduce

congestion on the roadway network. This alternative would be superior to the No Project and Financially Constrained Alternative, and inferior to the Financially Unconstrained Alternative.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative be identified among the alternatives that are analyzed in the EIR. If the No Project Alternative is the environmentally superior alternative, an EIR must also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)). The environmentally superior alternative is that alternative with the least adverse environmental impacts when compared to the proposed project.

Table 5.3-4 provides a comparison of the alternatives using a qualitative matrix that quantifies the impacts of each alternative relative to the other alternatives. As shown in Table 5.3-4 below, the No Project Alternative has the lowest overall impact (score of 27) and is environmentally superior to the three other alternatives. As previously stated, CEQA requires the EIR to identify an environmentally superior alternative among the other alternatives when the No Project Alternative is identified as the environmentally superior alternative.

The Financially Constrained Alternative and the Transit Investment Alternative both tie for the second lowest overall impact with a score of 29. However, the Financially Constrained Alternative has a lower score compared to the Transit Investment Alternative in seven of the twelve impact topics that are analyzed. Therefore, not considering the No Project Alternative, the Financially Constrained Alternative is deemed the environmentally superior alternative because it provides the greatest reduction of potential impacts in comparison to the other alternatives. The Transit Investment Alternative is the second best alternative in terms of environmental impacts.

TABLE 5.3-4: COMPARISON SUMMARY OF ALTERNATIVES

<i>ENVIRONMENTAL ISSUE</i>	<i>NO PROJECT ALTERNATIVE</i>	<i>FINANCIALLY CONSTRAINED ALTERNATIVE</i>	<i>FINANCIALLY UNCONSTRAINED ALTERNATIVE</i>	<i>TRANSIT INVESTMENT ALTERNATIVE</i>
Aesthetics	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on aesthetics. As roadway infrastructure improvement projects would decrease under this alternative, the potential for development of roadway infrastructure to degrade scenic views, remove scenic resources, change visual character, and result in increased light and glare would be less under the No Project Alternative when compared to the other alternatives.			
Agricultural Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on agricultural resources. As roadway infrastructure improvement projects would decrease under this alternative, the potential for development of roadway infrastructure to convert agricultural lands to non-agricultural uses as well as the potential for conflicts with agricultural lands would be less under the No Project Alternative when compared to the other alternatives.			
Air Quality	4 (Worst)	3 (Medium)	2 (Better)	1 (Best)
	The Transit Investment Alternative would result in the lowest potential for adverse impacts on air quality. As roadway infrastructure improvement projects would			

ENVIRONMENTAL ISSUE	NO PROJECT ALTERNATIVE	FINANCIALLY CONSTRAINED ALTERNATIVE	FINANCIALLY UNCONSTRAINED ALTERNATIVE	TRANSIT INVESTMENT ALTERNATIVE
	increase to alleviate LOS deficiencies and transit service and bike/pedestrian use would increase under this alternative, the total VMT per capita would decrease, which would result in a corresponding decrease of vehicle related air quality emissions. However, the increase in transit funding may not result in a proportionate decrease in emissions.			
Biological Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on biological resources. As roadway infrastructure improvement projects would decrease there would be fewer construction and infrastructure development projects that would negatively impact special-status species, their habitat, sensitive habitat, migration corridors, and wetlands/riparian resources under the No Project Alternative when compared to the other alternatives.			
Cultural Resources	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts on cultural resources. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to degrade or destroy cultural resources, including archaeological, paleontological, historic, and human remains, under the No Project Alternative when compared to the other alternatives.			
Geology and Soils	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have a greater chance of risks associated with geology and soils, including runoff, erosion, sedimentation, as well as risks to humans from fault rupture, seismic ground shaking, liquefaction, landsliding, lateral spreading, and soil expansion, under the No Project Alternative when compared to the other alternatives.			
Greenhouse Gases and Climate Change	4 (Worst)	3 (Medium)	2 (Better)	1 (Best)
	The Transit Investment Alternative would result in the lowest potential for adverse impacts from Greenhouse Gases and Climate Change. As roadway infrastructure improvement projects would increase to alleviate LOS deficiencies and transit service and bike/pedestrian use would increase under this alternative, the total VMT per capita would decrease, which would result in a corresponding decrease of vehicle related greenhouse gas emissions. However, the increase in transit funding may not result in a proportionate decrease in emissions.			
Hazards and Human Health	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to increase the risks associated with hazards and hazardous materials, under the No Project Alternative when compared to the other alternatives.			
Hydrology and Water Quality	1 (Best)	2 (Better)	4 (Worst)	3 (Medium)
	The No Project Alternative would result in the lowest potential for adverse impacts from geology and soils. As roadway infrastructure improvement projects would decrease under this alternative, there would be fewer construction and infrastructure development projects that would have the potential to increase water quality impacts from construction and dewatering, or cause impacts to groundwater recharge,			

2010 5.0 ALTERNATIVES

<i>ENVIRONMENTAL ISSUE</i>	<i>NO PROJECT ALTERNATIVE</i>	<i>FINANCIALLY CONSTRAINED ALTERNATIVE</i>	<i>FINANCIALLY UNCONSTRAINED ALTERNATIVE</i>	<i>TRANSIT INVESTMENT ALTERNATIVE</i>
	flooding, erosion, or siltation from the alteration of drainage patterns, under the No Project Alternative when compared to the other alternatives.			
Land Use/ Population and Housing	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would result in the lowest potential for adverse impacts associated with land use/population and housing. While this alternative would have the potential to induce additional growth due to increased roadway capacity, this alternative would also be the most consistent with land use planning activities in the county and its jurisdictions as this alternative would implement the transportation projects necessary to serve planned development as well as provide transportation services at adequate levels. Therefore, the Financially Unconstrained Alternative would have less of an impact on land use/population and housing than other alternatives.			
Noise	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would improve the vehicle circulation system to provide a reduction in VMT and VHD. The result would be an improvement to the roadway traffic noise levels. Under the Transit Investment Alternative roadway infrastructure improvement projects would also increase as would transit service and bike/pedestrian use so there would be improvements to the noise environment.			
Transportation and Circulation	4 (Worst)	3 (Medium)	1 (Best)	2 (Better)
	The Financially Unconstrained Alternative would reduce greater impacts associated with roadway LOS and roadway safety in comparison to the other alternatives. As this alternative would involve additional improvements to the roadway system to increase capacity and roadway safety, this alternative would result in improved roadway safety, improved LOS, and a reduction in VHD in comparison with the proposed project and other alternatives.			

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